MALD GOVT ARTS & SCIENCE DEGREE COLLEGE GADWAL
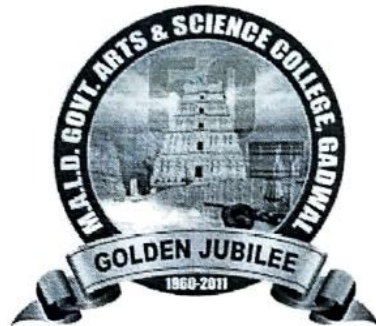
(Affiliated to Palamuru University, Mahabubnagar)

DEPARTMENT OF COMPUTERS

Student study Project

TITLE : AADHAAR

TEAM MEMBERS B.Com(Computer Applications)

1.B.JAGAN

2.B.NAGARJ

3.B.SREEKANTH

4.MAHESH

5.K.PRABHAKAR

Academic Year:2018-19

Under the guidance of

D. Hari Babu

Lecturer in Mathematics
Govt. Degree College
GADWAL - 509125

PRINCIPAL
M.A.L.D. Govt. Arts & Science College
GADWAL - 509 125

Country	India
Ministry	[Ministry of Electronics and Information Technology](#), [India](#)
Key people	• [J. Satyanarayana](#), [IAS](#), Chairman, UIDAI • Saurabh Garg, [IAS](#), CEO, UIDAI
Launched	28 January 2009; 12 years ago
Budget	☐ 11,366 crore (US$1.6billion) (up to the month of August 2019
Status	▲1.305 billion holders as of September 2021
Website	[uidai.gov.in](#)

Aadhaar Card

Specimen of an Aadhaar Card.

Type	[Identity document](#)
Issued by	[Unique Identification Authority of India](#) (UIDAI)
First issued	January 28, 2009
Purpose	• [Identification](#) • [Direct Benefit Transfer](#)
Valid in	India
Eligibility	[Resident of India](#)
Expiration	Lifetime validity
Cost	First time enrollment is free of cost.

Further demographic updates cost 50 (70¢US) & biometric updates cost 100 (US$1.40).

Aadhaar ([English](#): *foundation* or *base*) is a 12-digit unique identity number that can be obtained voluntarily by citizens of India, non-residents passport holders of India and resident foreign nationals who have spent over 182 days in twelve months immediately preceding the date of application for enrolment, based on their [biometric](#) and [demographic](#) data. The data is collected by the Unique Identification Authority of India (UIDAI), a statutory authority established in January 2009 by the government of India, under the jurisdiction of the [Ministry of Electronics and Information Technology](#), following the provisions of the [Aadhaar (Targeted Delivery of Financial and other Subsidies, benefits and services) Act, 2016](#).

Aadhaar is the world's largest [biometric ID system](#). [World Bank Chief Economist Paul Romer](#) described Aadhaar as "the most sophisticated ID programme in the world".[5] Considered a proof of residence and not a proof of citizenship, Aadhaar does not itself grant any rights to domicile in India.[6] In June 2017, the [Home Ministry](#) clarified that Aadhaar is not a valid [identification document](#) for Indians travelling to [Nepal](#) and [Bhutan](#)

Prior to the enactment of the Act, the UIDAI had functioned, since 28 January 2009, as an attached office of the Planning Commission (now [NITI Aayog](#)). On 3 March 2016 a [money bill](#) was introduced in the Parliament to give legislative backing to Aadhaar. On 11 March 2016 the Aadhaar (Targeted Delivery of Financial and other Subsidies, benefits and services) Act, 2016, was passed in the [Lok Sabha](#).

Aadhaar is the subject of several rulings by the [Supreme Court of India](#). On 23 September 2013 the Supreme Court issued an interim order saying that "no person should suffer for not getting Aadhaar adding that the government cannot deny a service to a resident who does not possess Aadhaar, as it is voluntary and not mandatory. The court also limited the scope of the program and reaffirmed

the voluntary nature of the entity number in other rulings On 24 August 2017 the Indian Supreme Court delivered a landmark verdict affirming the right to privacy as a fundamental right, overruling previous judgments on the issue. A five-judge constitutional bench of the Supreme Court heard various cases relating to the validity of Aadhaar on various grounds including privacy, surveillance, and exclusion from welfare benefits. On 9 January 2017 the five-judge Constitution bench of the Supreme Court of India reserved its judgement on the interim relief sought by petitions to extend the deadline making Aadhaar mandatory for everything from bank accounts to mobile services. The final hearing began on 17 January 2018. In September 2018, the top court upheld the validity of the Aadhaar system. In the September 2018 judgment, the Supreme Court nevertheless stipulated that the Aadhaar card is not mandatory for opening bank accounts, getting a mobile number, or being admitted to a school. Some civil liberty groups such as the Citizens Forum for Civil Liberties and the Indian Social Action Forum (INSAF) have also opposed the project over privacy concerns.

Despite the validity of Aadhaar being challenged in the court, the central government has pushed citizens to link their Aadhaar numbers with a host of services, including mobile sim cards, bank accounts, the Employees' Provident Fund Organisation, and a large number of welfare schemes including but not limited to the Mahatma Gandhi National Rural Employment Guarantee Act, the Public Distribution System, and old age pensions In 2017 reports suggested that HIV patients were being forced to discontinue treatment for fear of identity breach as access to the treatment has become contingent on producing Aadhaar

Government Unique Identification Authority

The Unique Identification Authority of India (UIDAI) is a statutory authority and a government department, established on 12 July 2016 by the of India under the jurisdiction of the Ministry of Electronics and Information Technology, following the provisions of the Aadhaar Act 2016

The UIDAI is mandated to assign a 12-digit unique identification (UID) number (termed "Aadhaar") to all the residents of India. The implementation of the UID scheme entails generation and assignment of UIDs to residents; defining mechanisms and processes for interlinking UIDs with partner databases; operation and management of all stages of the UID life cycle; framing policies

and procedures for updating mechanism and defining usage and applicability of UIDs for delivery of various services, among others. The number is linked to the resident's basic demographic and biometric information such as a photograph, ten fingerprints and two iris scans, which are stored in a centralized database

The UIDAI was initially set up by the Government of India in January 2009, as an attached office under the aegis of the Planning Commission via a notification in the *Gazette of India*. According to the notification, the UIDAI was given the responsibility to lay down plans and policies to implement the UID scheme, to own and operate the UID database, and to be responsible for its updating and maintenance on an ongoing basis.

The UIDAI data centre is located at the Industrial Model Township (IMT), Manesar Hich was inaugurated by the then Chief minister of Haryana Bhupinder Singh Hooda on 7 January 2013. Aadhaar data is kept in about 7,000 servers in Bengaluru and Manesar

Starting with the issuing of the first UID in September 2010, the UIDAI has been aiming to issue an Aadhaar number to all the residents ensuring that it is robust enough to eliminate duplicate and fake identities, and that the number can be verified and authenticated in an easy and cost-effective way online anywhere, anytime. In a notification dated 16 December 2010 the Government of India indicated that it would recognise a letter issued by the UIDAI containing details of name, address, and Aadhaar number, as an official, valid documentAadhaar is not intended to replace any existing identity cards, nor does it constitute proof of citizenship Aadhaar neither confers citizenship nor guarantees rights, benefits, or entitlements. Aadhaar is a random number that never starts with a 0 or 1, and is not loaded with profiling or intelligence that would make it insusceptible to fraud or theft, and thus provides a measure of privacy in this regard. The unique ID also qualifies as a valid ID while availing various government services such as a LPG connection, a subsidised ration, kerosene from the PDS, or benefits under NSAP or pension schemes, e-sign, a digital locker, a Universal Account Number (UAN) under EPFO and some other services such as a SIM card or opening a bank account. According to the UIDAI website, any Aadhaar holder or service provider can verify the genuineness of an Aadhaar number through a user-friendly service of UIDAI called the Aadhaar Verification Service (AVS), which is available on its website. Also, a resident already enrolled under the National Population Register is not required to enrol again for Aadhaar.

Previous identity card programs

<mark>History</mark>

In 1999 after the [Kargil war](#), the [Kargil Review Committee](#), headed by security analyst [K. Subrahmanyam](#), was formed to study the state of [national security](#). It submitted its report to the then [Prime Minister](#), [Atal Bihari Vajpayee](#), on 7 January 2000 Among its various recommendations was the proposal that citizens in villages in border regions be issued identity cards on a priority basis, with such ID cards issued later to all people living in border states.

The Rangarajan Commission set up to revamp the statistical system in India in 2000 recommended under the Socio-economic statistics chapter the setting up of a centralized database of citizens in India. The Commission submitted its report to the Government in August 2001 and in its analysis noted under para 9.2.26. Many developed countries and an increasing number of developing countries, including China, have databases of their citizens while also providing for each adult individual citizen of the country a unique identification number. Such a unique identification number assigned to a citizen would be a proof of his/her identity for a variety of purposes. The major advantage is that all this can be taken care of by simply producing citizen identity card as a proof of individual identity. Presently, there are different kinds of cards and means of establishing identity in India, such as electoral identity card, income-tax PAN card, passport, ration card, driving license, birth, and education certificates, etc. However, none of the systems are equipped to handle a population figure that exceeds more than one billion in India. So far there has not been any attempt whatsoever to standardize a format of citizen's database, which can link the information available for each citizen from different sources and analyse this according to the needs and project a comprehensive picture of the human resources in the country. Further, the Commission made the specific recommendation under para 9.2.27 made the following observations: 9.2.27 Taking note of the initiative taken by the Ministry of Home Affairs for issuing national identification cards to the citizens, the Commission concludes that: A centralised database of the citizens of the country with a system of issuing a unique identification number/card has several potential benefits to its citizens and will improve the efficiency of administration. The project, if implemented, will have obvious benefits to the statistical system.

A Group of Ministers (GoM), headed by [L. K. Advani](#), was formed to study the recommendations and examine possible implementation. The GoM submitted its report in May 2001 in which it accepted the recommendation for an ID card and stated that a "multi-purpose National Identity Card" project would be started

soon, with the card to be issued first in border villages and then elsewhere. In late September 2001 the Ministry of External Affairs proposed that a mandatory national identity card be issued. This announcement followed reports that some people had obtained multiple Indian passports with different details. This was attributed to the lack of computerisation between the passport centres. In December 2003 the Citizenship (Amendment) Bill 2003 was introduced in the Lok Sabha by L. K. Advani. It primarily aimed to provide various rights to persons of Indian origin, but the bill also introduced Clause 14 (a) that said: "The Central Government may compulsorily register every citizen of India and issue national identity card to him."

2009–2013

The UIDAI was established on 28 January 2009 after the Planning Commission issued a notification. On 23 June Nandan Nilekani, the co-founder of Infosys, was appointed by the then-government, UPA, to head the project. He was given the newly created position of Chairman of the UIDAI, which was equivalent in rank to a Cabinet minister. In April 2010 the logo and the brand name *Aadhaar* was launched by Nilekani. In May 2010 Nilekani said he would support legislation to protect the data held by the UIDAI.

In July 2010 UIDAI published a list 15 of agencies which were qualified to provide training to personnel to be involved in the enrollment process. It also published a list of 220 agencies that were qualified to take part in the enrollment process. Before this, the project had been only 20 states and with the LIC of India and the State Bank of India as qualified registrars. This announcement introduced several private firms. It was estimated that to achieve the target of enrolling 40% of the population in two years, 31,019 personnel and 155 training centres would be needed. It was also estimated that 4,431 enrollment centres and 22,157 enrollment stations would have to be established

On 3 Nov 2011 Former Supreme Court judge Hon"ble Justice V R Krishna Iyer released a book "AADHAAR; How a Nation is Deceived" in Kochi by handing over the first copy to Dr. Sebastian Paul. The book authored by Mr. P B Jijeesh was the first critique of Aadhaar Project. Speaking on the occasion Justice V R Krishna Iyer said that "the project AADHAAR should not be implemented for it amounts to an assault on privacy and basic rights of individuals and is suited only for fascist nations.

On 7 February 2012 the UIDAI launched an online verification system for Aadhaar numbers. Using the system, banks, telecom companies and government departments could enter an Aadhaar number and verify if the person was a resident of India.

On 26 November 2012 Prime Minister Manmohan Singh launched an Aadhaar-linked direct benefit transfer scheme. The project aimed to eliminate leakages in the system by directly transferring the money to the bank account of the recipient. The project was to be introduced in 51 districts on 1 January 2013 and then slowly expanded to cover all of India.

2012 a former Karnataka High Court judge, K. S. Puttaswamy, and a lawyer, Parvesh Khanna, filed a Public Interest Litigation (PIL) against the government in the Supreme Court of India. They contended that the government was implementing the project without any legislative backing. They pointed out that the National Identification Authority of India Bill 2010, which had been introduced in the In late November Rajya Sabha, was still pending. They further said that since the UIDAI was proceeding only on the basis of an executive order issued on 28 January 2009, it could not collect biometric data of citizens as it would be a violation of privacy under Article 21 of the Constitution In December 2011 the Parliamentary Standing Committee on Finance, led by Yashwant Sinha, rejected the National Identification Authority of India Bill 2010 and suggested modifications. It termed the project "unethical and violative of Parliament's prerogatives". On 23 September 2013 the Supreme Court issued an interim order saying that the government could not deny a service to anyone who did not possess Aadhaar, as the identity number was voluntary.

In late September 2013, following the Supreme Court verdict, Union Minister of State for Parliamentary Affairs and Planning, Rajeev Shukla, said that it would attempt to pass the National Identification Authority of India Bill 2010 in the winter session of the Parliament. On 9 October 2013 the National Payments Corporation of India launched an Aadhaar-based remittance system. Using the system, funds could be transferred to any Aadhaar-linked bank accounts if the Aadhaar number was known. It was announced that an SMS could be used for amounts up to □ 5,000 (US$70) and for amounts over that a mobile bank app could be used. By this time around 440 million Aadhaar numbers had been issued.

2014–2015

In March 2014 Nilekani resigned as the Chairman to contest in the [general election](#) on an [Indian National Congress](#) nomination from Bangalore Sout—His responsibilities were taken over by 1981-batch [IAS](#) officer Vijay Madan, who was given an extension of his term as the director-general and mission director by the government Nilekani lost to [Ananth Kumar](#).

On 10 June 2014, the new government disbanded four cabinet committees to streamline the decision-making process; among them was the cabinet committee on Aadhaar— Also in June 2014, the [IT Department](#) held a meeting with the secretaries of the states to receive feedback on the project.

On 1 July 2014, Nilekani met with the prime minister Modi and finance minister [Arun Jaitley](#) to convince them of the project's merits On 5 July 2014, Modi announced that his government would retain the project, and asked an official to look into the possibility of linking the project with passports. The [2014 budget](#) allotted ▯ 20.3964 billion (US$290 million) to the project for the fiscal year 2014–2015. It was a substantial increase from the [previous year's](#) allotment of ▯ 15.50 billion (US$220 million). Also in July, it was reported that UIDAI would hire an advertising agency, and spend about ▯ 300 million (US$4.2 million) on an advertising campaign

On 10 September 2014, the Cabinet Committee on Economic Affairs gave approval to Phase V of the UIDAI project, starting the enrollment process in [Uttar Pradesh](#), [Bihar](#), [Chhattisgarh](#), and [Uttarakhand](#) The Union Cabinet allocated ▯ 12 billion (US$170 million) to the project in order to reach the target of one billion enrollments by the end of 2015.

On 5 July 2015, finding the experience with DBT scheme in LPG "very encouraging", with a reported savings of ▯ 127 billion (US$1.8 billion) to the public exchequer this year, Jaitley said, "If we can realize the government's JAM—Jan Dhan, Aadhaar, Mobile—vision we can ensure that money goes directly and more quickly into the pockets of the poor and from the savings we achieve, we can put even more money for the poor. If we can be careful in our design and implementation, we can extend DBT to other commodities, so that the poor get more money to spend for their upliftment."

In March 2015 the Aadhaar-linked DigiLocker service was launched, using which Aadhaar-holders can scan and save their documents on the [cloud](#), and can share them with the government officials whenever required without any need to carry them.

On 18 June 2015, in a high-level review meeting on the progress of the UID project and DBT scheme, Modi asked officials to accelerate the delivery of benefits and expand the applications of the Aadhaar (UID) platform. He also asked them to examine the possibility of offering incentives to the states to increase participation in the project, through a one-time sharing of a portion of the savings. It was reported that the government was saving up to 14–15% in the direct benefit transfers of subsidies on LPG to the beneficiaries through Aadhaar.

2016–present

During the budget presentation on 29 February 2016, Jaitley announced that a bill would be introduced within a week to provide legislative support to the Aadhaar project On 3 March 2016 the Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Bill, 2016, was introduced in the Parliament as a money bill by Jaitley. The decision to introduce it as a money bill was criticised by the opposition parties. Ghulam Nabi Azad, an INC leader, wrote in a letter to Jaitley that the ruling party, the BJP, was attempting to bypass the Rajya Sabha, as they did not have the majority in the upper house. A money bill is only required to pass in the lower house Lok Sabha. Tathagata Satpathy of Biju Janata Dal (BJD) raised concerns that the project could be used for mass surveillance or ethnic cleansing in the future[]

On 11 March 2016 the Aadhaar (Targeted Delivery of Financial and other Subsidies, benefits and services) Act, 2016, was passed in the Lok Sabha. During the Rajya Sabha debate on 16 March, Sitaram Yechury of the CPI-M said that bill should not have been passed when the issue of the right to privacy was still in the Supreme Court. On 16 March 2016 the bill was returned to the Lok Sabha by the Rajya Sabha with some suggested amendments which the Lok Sabha promptly rejected.

The Unique Identification Authority of India (UIDAI) introduces Face Authentication to further strengthen Aadhaar security. It decided to enable 'Face Authentication' in fusion mode on registered devices by 1 July 2018, so that people facing difficulties in other existing mode of verification such as iris, Fingerprint or One Time Password (OTP) could easily authenticate.[] In 2019, Nirmala Sitharaman, the finance minister of India, has proposed the use of Aadhaar card for the cash transactions above INR 50,000 in her maiden budget speech.

Predominant uses of Aadhaar

Direct Benefit Transfer (DBT)

Main article: [Direct Benefit Transfer](#)

The Aadhaar project has been linked to some public subsidy and [unemployment benefit](#) schemes such as the domestic LPG scheme and [MGNREGA](#). In these [Direct Benefit Transfer](#) schemes, the subsidy money is directly transferred to a bank account which is Aadhaar-linked. Previously, however, the direct-benefit transfer had been carried out quite successfully via the [National Electronic Funds Transfer](#) (NEFT) system, which did not depend on Aadhaar.

On 29 July 2011, the [Ministry of Petroleum and Natural Gas](#) signed a [memorandum of understanding](#) with UIDAI. The Ministry had hoped the ID system would help eliminate loss of the subsidised kerosene and LPG. In May 2012 the government announced that it would begin issuing Aadhaar-linked MGNREGS cards. On 26 November 2012 a pilot programme was launched in 51 districts.

Under the original policy for liquefied petroleum gas subsidies, the customers bought gas cylinders from retailers at subsidised prices, and the government compensated companies for their losses. Under the current Direct Benefit Transfer of LPG (DBTL), introduced in 2013, customers had to buy at full price, and the subsidy would be then directly credited to their Aadhaar-linked bank accounts. This scheme, however, did not take off, and in September 2013 a Supreme Court order put a halt on it. Subsequently, the GOI constituted a committee to review the "Direct Benefits Transfer for LPG Scheme to study the shortcomings in the scheme and recommend changes. The DBTL scheme was modified later as PAHAL by the new government in November 2014. Under PAHAL, subsidies could be credited to a purchaser's bank account even if he or she did not have an Aadhaar number. Official data show that cooking gas consumption during the January–June period grew at a slower 7.82%, which is nearly four percentage points less than the 11.4% growth in the same period last year.

The PAHAL scheme has covered 118.9 million of the 145.4 million active LPG consumers until March, as stated by the Petroleum Minister in the Parliament. The DBT has thereby become a "game changer" for India, claimed the Chief Economic Adviser to the Finance Ministry, Government of India, Arvind Subramanian, for in case of LPG subsidy, DBT had resulted in a 24% reduction in the sale of subsidized LPG, as "ghost beneficiaries" had been excluded. The

savings to the government were to the tune of ☐ 127 billion (US$1.8billion) in 2014–2015 The success of the modified scheme helped fuel marketing companies save almost ☐ 80 billion (US$1.1billion) from November 2014 to June 2015, said oil company officials. The DBT for the [public distribution system](#) (PDS) will be rolled out in September 2015

The government's own data, however, suggest that the cost of implementing the DBT for LPG was over a million dollars, a figure quite at odds with the savings figures that the government cites.

Prime Minister Modi has asked for integration of all land records with Aadhaar at the earliest, emphasising at his monthly PRAGATI (Pro-Active Governance And Timely Implementation) meeting on 23 March 2016 that this was extremely important to enable monitoring of the successful implementation of the [Pradhan Mantri Fasal Bima Yojana](#) or crop insurance scheme.

Aadhaar-enabled biometric attendance systems

In July 2014 Aadhaar-enabled biometric attendance systems were introduced in government offices. The system was introduced to check late arrival and absenteeism of government employees. The public could see the daily in and out of employees on the website *attendance.gov.in*. In October 2014 the website was closed to the public but as of 24 March 2016 is again active and open to public access. The employees use the last four digits (last eight digits for government employee registering as of August 2016) of their Aadhaar number and their fingerprints, for authentication.

Other uses by central government agencies

In November 2014 it was reported that the Ministry for External Affairs was considering making Aadhaar a mandatory requirement for passport holders. In February 2015 it was reported that people with an Aadhaar number would get their passports issued within 10 days, as it sped up the verification process by making it easier to check if an applicant had any criminal records in the [National Crime Records Bureau](#) In May 2015, it was announced that the Ministry of External Affairs was testing the linking of passports to the Aadhaar database.

In October 2014 the [Department of Electronics and Information Technology](#) said that they were considering linking Aadhaar to [SIM cards](#). In November 2014 the [Department of Telecom](#) asked all telecom operators to collect Aadhaar from all new applicants of SIM cards. On 4 March 2015 a pilot project was launched

allowing Aadhaar-linked SIM cards to be sold in some cities. The purchaser could activate the SIM at the time of purchase by submitting his Aadhaar number and pressing his fingerprints on a machine It is part of the Digital India plan. The Digital India project aims to provide all government services to citizens electronically and is expected to be completed by 2018.

In July 2014 the Employees' Provident Fund Organisation of India (EPFO) began linking provident fund accounts with Aadhaar numbers.[41] In November 2014 the EPFO became a UIDAI registrar and began issuing Aadhaar number to provident fund subscribers In December 2014 Labour Minister Bandaru Dattatreya clarified that an Aadhaar number was not necessary for any provident fund transaction

In August 2014 Prime Minister Modi directed the Planning Commission of India to enrol all prisoners in India under the UIDAI.

In December 2014 it was proposed by the Minister for Women and Child Development, Maneka Gandhi, that Aadhaar should be made mandatory for men to create a profile on matrimonial websites, to prevent fake profiles In July 2015 the Department of Electronics and Information Technology (DeitY) called a meeting of various matrimonial sites and other stakeholders discuss the use of Aadhaar to prevent fake profiles and protect women from exploitation.

On 3 March 2015 the National Electoral Roll Purification and Authentication Programme (NERPAP) of the Election Commission was started. It aims to link the Elector's Photo Identity Card (EPIC) with the Aadhaar number of the registered voter. It aims to create an error-free voter identification system in India, especially by removing duplications.

Other uses by states

In the Hyderabad region of Telangana state, Aadhaar numbers were linked to ration cards to remove duplicate ration cards. The project was started in July 2012 and was carried out despite the 2013 Supreme Court order. More than 63,932 ration cards in the white category and 229,757 names were removed from its database in the drive between July 2012 and September 2014. In August 2012 the government of the state of Andhra Pradesh asked citizens to surrender illegal ration cards before it began to link them with Aadhaar numbers. By September 2014 15 lakh illegal ration cards had been surrendered. In April 2015 the state of Maharashtra began enrolling all school students in the state in the Aadhaar project to implement the Right to Education Act properly.

Electronic-Know Your Customer (e-KYC) using Aadhaar card is also being introduced to activate mobile connections instantly to check Aadhaar Card Status.

PVC Card

Sample PVC Aadhar Card Front

Sample PVC Aadhar Card Back

In the year 2020, UIDAI introduced a PVC Aadhar Card with additional security features such as holograms, micro text, ghost images, guilloché Patterns, invisible logos etc The PVC Aadhar card can be ordered by any Aadhar holder from UIDAI's website.

Bhudhaar

Main article: Bhudhaar

Government of Andhra Pradesh started Aadhaar based innovative first of its kind project called Bhudhaar to assign an 11-digit unique number for every land parcel in the state as part of the "land hub in E-Pragati Program". Andhra Pradesh Chief Minister Nara Chandrababu Naidu launchedthe program on 20-Nov-2018 to streamline the land records. Bhuseva Authority an inter-departmental committee was formulated to implement and its progress monitored in real time

basis by [Andhra Pradesh Chief Minister](#) and all citizens using **[CM Dashboard](#)** (Developed and managed by [Real Time Governance Society](#))

Any type of land parcel categories i.e. agriculture lands, rural properties & urban properties (like houses, house sites, vacant lands) are managed by all land related department in the states. These are Revenue, Panchayat Raj, Municipal Administration, Registration, Survey & Settlements, Forest, Endowments, Wakf. Under the Land Hub core platform these departments integrating their land related services and issuing a new Bhudhaar number to each land holding or property upon ownership change.

In general Land records consists of two type of data.

1) Textual data (like village name, name of land owner, survey number, extent, ID proof like Aadhaar, [voter id](#) or other related documents).

2) Spatial data (the data depicting the sketch of the land, its measurements (in links/meters/feet), adjacent fields, location on ground).

The [Bhudhaar](#) issuing process contain 2 stages. Firstly Temporary Bhudhaar is assigned based on valid textual data of an agriculture land holding/rural property/urban property. It will be started with 99 and following numbers are generated on random basis only and there is no meaning for these 9 digits. But it is a unique id for that land holding / rural property/urban property. A special series number is allocated to government lands either agriculture lands or rural/urban properties.for example 99.312.725.202). "99" indicate that it is a

temporary Bhudhaar.

Permanent Bhudhaar is assigned once the spatial data is also captured and linked to textual data, the spatial data contains measurement of the land and its resultant sketch(FMB), location of the land on ground along with [geo-coordinates](#). To capture the measurement of land holding or a sub-division, [Andhra Pradesh Government](#) using[142] [Continuously Operating Reference Station](#)" (CORS) a state-of the art technology in surveying of land holdings/properties.Once the Geo-coordinates captured was completed using CORS, Permanent Bhudhaar will

be assigned and first two numbers i.e, 99 in the temporary Bhudhaar will be replaced with 28 (State Census Code).

Impediments and other concerns

Feasibility concerns

In October 2010 R. Ramakumar, an economist at the Tata Institute of Social Sciences, wrote in an editorial for *The Hindu* that the project was being implemented without any cost-benefit or feasibility studies to ensure whether the project would meet its stipulated goals. He also pointed out that the government was obscuring the security aspects of Aadhaar and focusing on the social benefit schemes. He quoted a former chief of the Intelligence Bureau Ajit Doval, who had said that originally Aadhaar aimed to weed out illegal aliens.

In March 2011 Rajanish Dass of IIM Ahmedabad's Computer and Information Systems Group published a paper titled "Unique Identity Project in India: A divine dream or a miscalculated heroism". Dass claimed that even if enrollment was voluntary, it was being made mandatory by indirect means. He pointed out that essential schemes like the National Food Security Act, 2013, was being linked to the UIDAI. He also stated that the feasibility of a project of this size had not been studied and raised concerns about the quality of the biometric data being collected. He cited statements of another researcher, Usha Ramanathan, that the UIDAI would ultimately have to become profit-making to sustain itself.

The debate on the feasibility of sustaining a project of the size of population of India is settled as over 1.22 billion Indians are enrolled in Aadhaar as of July 2018, representing about 90% of the total estimated population. The scheme complements other initiatives taken by the government, for example Digital India, to benefit people by giving easier access to public services.

On 9 November 2012 the National Institute of Public Finance and Policy (NIPFP) published a paper titled *A cost-benefit analysis of Aadhaar*. The paper claimed that by 2015–2016 the benefits of the project would surpass the costs, and by 2020–2021 the total benefit would be ☐ 251 billion (US$3.5billion) against a total expenditure of ☐ 48.35 billion (US$680million). The benefits would come from plugging leakages in various subsidy and social benefit schemes.

On 2 February 2013 Reetika Khera, a development economist at IIT Delhi, published a paper in the *Economic and Political Weekly* titled *A 'Cost-Benefit'*

Analysis of UID, in response to the cost-benefit analysis published by NIPFP. She argued that the seemingly large benefits were based 'almost entirely on unrealistic assumptions' and outdated data. The paper pointed to how the relative cost-effectiveness of Aadhaar in comparison with alternative technologies – the basic premise of any cost-benefit analysis – was entirely ignored. Further, concerns regarding a possible conflict of interest were also raised In March 2016 the [International Institute for Sustainable Development](#) released a report that the benefit from Aadhaar-linked LPG subsidy scheme for 2014–2015 was □ 140 million (US$2.0 million) and for 2015–2016 was □ 1.209 billion (US$17 million). These sums were much lower than the number stated by Finance Minister Jaitley in the Lok Sabha. He had said in March 2016 that the government had saved □ 150 billion (US$2.1billion) from the scheme. The paper said that the government was also including the savings from the efforts of oil marketing companies (OMCs) prior to the introduction of Aadhaar. The method used by the OMCs to weed out duplicates and ghost customers was 15–20 times more effective than the Aadhaar-based method. It has to be noted that the savings of □ 150 billion (US$2.1billion) from the scheme was not claimed by the government to be from LPG subsidy alone, but by plugging leaks and checking corruption with the help of Aadhaar in all the schemes administered by the government of India.

Lack of legislation and privacy concerns

On 2 February 2015, the Supreme Court asked the new government to clarify its stance on the project. This was in response to a new PIL filed by Mathew Thomas, a former army officer. Thomas had claimed that the government was ignoring previous orders while pushing ahead with the project and that the project was unconstitutional as it allowed [profiling](#) of citizens. In a reply on 12 February the government said that it would continue the project. On 16 July 2015 the government requested the Supreme Court to revoke its order, saying that it intended to use Aadhaar for various services. On 21 July 2015 the Court noted that some states were insisting on Aadhaar for benefits despite its order.

On 11 August 2015, the Supreme Court directed the government to widely publicise in print and electronic media that Aadhaar was not mandatory for any welfare scheme. The Court also referred the petitions claiming Aadhaar was unconstitutional to a Constitutional Bench

On 19 July 2017, a nine judge bench of the Supreme Court began hearing the arguments on whether there is a fundamental right to privacyOn 24 August 2017

the nine judge bench unanimously upheld the right to privacy as a fundamental right under the Constitution.

A five-judge constitutional bench of the Supreme Court has heard various cases relating to the validity of Aadhaar on various grounds including privacy, surveillance, and exclusion from welfare benefits. As of 27 February 2018, senior counsels Shyam Divan Kapil Sibal, and Gopal Subramanium, argued over a span of 13 days in this matter.

In a majority opinion dated 26 September 2018, the Supreme Court upheld the use of Aadhaar.

Legality of sharing data with law enforcement

In 2013 in Goa the CBI was trying to solve the case of a rape of a schoolgirl. It approached a Goa local court saying that they had acquired some fingerprints from the scene that could be matched with the UIDAI database. The court asked the UIDAI to hand over all data of all persons in Goa to the CBI

The UIDAI appealed in the Bombay High Court saying that accepting such a request would set precedent for more such requests. The High Court rejected the argument and on 26 February 2014 in an interim order directed Central Forensic Science Laboratory (CFSL) to study the technological capability of the database to see if it could solve such a crime. The UIDAI then appealed in the Supreme Court. It argued that the chance of a false positive was 0.057% and with 600 million people in its database it would result in hundreds of thousands of false results.

On 24 March 2014, the Supreme Court restrained the central government and the UIDAI from sharing data with any third party or agency, whether government or private, without the consent of the Aadhaar-holder in writing. Vide another interim order dated 16 March 2015, the Supreme Court of India has directed that the Union of India and States and all their functionaries should adhere to the order passed by this court on 23 September 2013. It observed that some government agencies were still treating Aadhaar as mandatory and asked all agencies to issue notifications clarifying that it was no

On 26 September 2018, the Supreme Court ruled that Section 57 of the Aadhaar Act was unconstitutional, meaning that private entities cannot compel their customers to provide their Aadhaar number as a condition of service to verify their identity, specifically citing requiring it for bank accounts, school

admissions, and mobile phone service as examples of unlawful use cases. However, it did uphold its requirement for income tax filing and welfare programmes.

Land allotment dispute

In September 2013 the Delhi Development Authority accepted a complaint from the activist group India Against Corruption and cancelled a land allotment to the UIDAI. The land was previously owned by BSNL, and MTNL had also laid claims on it. It had an estimated ☐ 9 billion (US$130million) value but had been allotted to the UIDAI at a very cheap rate

The issue of constructing the UIDAI HQs and UIDAI Regional Office building in Delhi was resolved with Department of Telecom (DoT), following which the Ministry of Urban Development issued a notification on 21 May 2015 clearing the titles of the land in favour of the UIDAI, including projected land use.

Security concerns

In an August 2009 interview with the *Tehelka*, former chief of the Intelligence Bureau (IB), Ajit Doval, said that Aadhaar was originally intended to flush out illegal immigrants, but social security benefits were later added to avoid privacy concerns In December 2011 the Parliamentary Standing Committee on Finance, led by Yashwant Sinha, rejected the National Identification Authority of India Bill, 2010, and suggested modifications. It expressed objections to the issuing of Aadhaar numbers to illegal immigrants. The Committee said that the project was being implemented in an unplanned manner and bypassing the Parliament\In May 2013, deputy director general of the UIDAI, Ashok Dalwai, admitted that there had been some errors in the registration process. Some people had received Aadhaar cards with wrong photographs or fingerprintsAccording to Aloke Tikku of the *Hindustan Times*, some officials of the Intelligence Bureau (IB) had criticised the UIDAI project in September 2013, with the officials saying that the Aadhaar number cannot be considered a credible proof of residence. As under the liberal pilot phase, where a person claimed to live was accepted as the address and recorded.

Overlaps with National Population Register

Main article: National Population Register

The Union Home Minister Rajnath Singh reviewing the implementation of the National Population Register (NPR), at a meeting in New Delhi on 18 June 2014

The Aadhaar and the similar National Population Register (NPR) projects have been reported to be having conflicts. In January 2012 it was reported that the UIDAI would share its data with NPR and the NPR would continue to collect its own data In January 2013 then-Home Minister Sushilkumar Shinde said that Aadhaar was not an identity card but a number, while the NPR was necessary for national security purposes. The 2013 Supreme Court order did not affect the NPR project as it was not linked to any subsidy.

In July 2014 a meeting was held to discuss the possibility of merging the two projects, Aadhaar and NPR, or making them complementary. The meeting was attended by Home Minister Rajnath Singh, Law and Justice and Telecom Minister Ravi Shankar Prasad, and Minister of State for Planning Rao Inderjit Singh. Later in the same month, Rao Inderjit Singh told the Lok Sabha that no plan to merge the two projects has been made

On 23 September 2019, the then Union Home Minister Amit Shah announced an idea where the NPR and Aadhaar would be on 2021 census and would be used with the census data to build a new unique national document, however, UIDAI confirmed that for 2021 census, the Aadhaar use would be voluntary, also saying that "Collection of biometrics is not been provided under Citizenship Rules".

In order to make Aadhaar accessible to often undocumented poorer citizens, obtaining an Aadhaar card does not require significant documentation, with multiple options available. In theory, the use of biometric facilities should reduce or eliminate duplication. So, in theory, while it may be possible to obtain the card under a false name, it is less likely that a person would be able to obtain another Aadhaar card under a different (or real) name.

The Aadhaar card itself is not a secure document (being printed on paper) and according to the agency should not be treated as an identity car‑ though it is often treated as such. However, with currently no practical way to validate the card (e.g. by police at airport entry locations) it is of questionable utility as an identity card. "There are five main components in an Aadhaar app transaction – the customer, the vendor, the app, the back-end validation software, and the Aadhaar system itself. There are also two main external concerns – the security of the data at rest on the phone and the security of the data in transit. At all seven points, the customer's data is vulnerable to attack ... The app and validation software are insecure, the Aadhaar system itself is insecure, the network infrastructure is insecure, and the laws are inadequate," claims Bhairav Acharya, Program Fellow, New America

 The Aadhaar card is usually printed on glossy paper, and the government has stated black and white copies are valid. Some agencies charge extra to laminate the document. Other agencies have been reported charging ☐ 50 to 200 to produce a PVC version of the card, and it is marketed by them as a smart card, despite having no official validity and no chip.

Certain mobile apps claim to verify an Aadhaar card using a QR code scanner. However, the QR code is not a secure representation of an Aadhaar card either and can be copied and edited. The only way to validate an Aadhaar card is to perform an online validation, which will confirm that the card number is valid, confirm the postal code and gender of the holder (but not their name or photo). In theory, this means that is possible to create a false Aadhaar card using the number of a genuine holder from the same postal code with the same gender, with the card subject to a number of cases of counterfeiting

The digital document itself is self-signed by a non-internationally recognised certificate authority (n)Code Solutions, a division of Gujarat Narmada Valley Fertilizers Company Ltd (GNFC) and needs to be manually installed on the PC. This is despite Entrust assisting in the development of the solutiod

Application issues

While the service is free for citizens, some agents have been charging fees Despite the modern processes, there are cases where enrollments are lost in the system without explanation. mAadhaar is an official mobile application developed by the UIDAI to provide an interface to Aadhaar number holders to carry their demographic information including name, date of birth, gender, and

address along with photograph as linked with their Aadhaar number in smartphones. In one case, every resident in a village in Haridwar was assigned a birthday of 1 January.

Threat of exclusion

Many private and public benefits are being linked to Aadhaar numbers and made contingent on it: food aid, cooking-gas subsidies, mobile connections, NREGA wages, government examinations, banking facilities, tax filings etc. In fact, much of the massive enrolment resulted from the fear of being excluded from these benefits. There have been instances where people have been denied food aid because of issues with authentication rising from network issues or problems with identifying fingerprints (sometimes fingerprints become faded from age or manual labour).

Documentary proof may be difficult to obtain, with the system requiring documents such as bank accounts, insurance policies, and driving licences that themselves increasingly require an Aadhaar card or similar documentary evidence to originate. This may lead to a significant minority underclass of undocumented citizens who will find it harder to obtain necessary services. Introducers and Heads of family may also assist in documentation; however, for many agencies and legitimate applications, this facility may not be practical.

Non-resident Indians, overseas citizens of India, and other resident foreigners may also find it difficult to avail themselves of services they could previously freely obtain, such as local SIM cards, despite assurances to the contrary.

Since the Unique Identification Authority office first opened in Delhi, people have been allowed to designate their gender as "transgender" on their Aadhaar card, according to an August 2013 report.

Data leaks

The detailed personal information being collected is of extremely high importance to an individual. However, once collected, it is not being treated with the required sensitivity for privacy concerns. Major financial transactions are linked with information collected in Aadhaar. Data leaks are a gold mine for criminals who now use sophisticated hackers. Government departments and various other agencies that collect this information such as banks cannot be trusted to maintain the secrecy of all this collected information. Another case occurred wherein Aadhaar data collected by Reliance Jio was leaked online, and

the data may now be widely available to hackers. The UIDAI confirms more than 200 government websites were publicly displaying confidential Aadhaar data; though removed now, the data leaked cannot be scrubbed from hackers' databases. In July 2017 privacy issues with regard to the Aadhaar card were discussed in the Supreme Court. A report from the Center for Internet and Society suggests that the records of about 135 million Indians may have been leaked. A loophole was identified that allows all records to be accessed by anyone though hackers can find other routes.

Wikileaks tweeted on 25 August 2017 that the same American supplier of fingerprint and Iris scanning equipment that collaborated with the CIA to identify Osama Bin Laden was also supplying equipment to India. The complex structure of ownership is detailed in an article in Fountainink.in Concerns were raised as early as 2011 in the Sunday *Guardian* regarding not following due process and handing over contracts to entities with links to the FBI and having a past history of leaking data across countries. How the CIA can hack and access the Aadhaar database using a secret Expresslane project is documented in a report on the GGInews website and saved in an archive lest it be removed. Further communications have also identified the clauses under which data may have freely flowed to foreign agencies due to the nature and wordings in the Aadhaar contracts and archived here.

Virtual ID

On 1 March 2018, Virtual ID aka VID was introduced and was made as an option for agencies to use Virtual ID by 1 September 2018. A Virtual ID is a 16 digit number that is generated using your Aadhaar number. This Virtual ID can then be used instead of your Aadhaar number to carry out some Aadhaar related work.[]

Revolving door problem

The question of the "revolving door" phenomenon (where "individuals using experience, knowledge and clout gained while in public service in pursuit of profit for private companies") has been raised in the context of Aadhaar, as people who were involved in the creation, design and popularization of Aadhaar are now working in the private sector where they can use this knowledge for their own private enterprises which profit off this knowledge. Some examples of this are Khosla Labs as well as iSPIRT, a non-profit

M.A.L.D. GOVT. Arts & Science College, GADWAL

(Affiliated to Palamuru University, Mahabubnagar)

Department of Computers

Student study Project
Title: Banking Sector in India

Team : B.Com(Computer Applications)

1. **N.UdayDatta**
2. **M.Vivek**
3. **B.Goutham**
4. **M.Prashanth**
5. **Y.Arjun**

Academic Year:2018-19

Under the guidance of
1. D. Siva Reddy
2. D. Hari Babu

Lecturer in Mathematics
Govt. Degree College
GADWAL - 509125

PRINCIPAL
M.A.L.D. Govt. Arts & Science College
GADWAL - 509 125

History of Banking Sector In India

Modern **banking in India** originated in the last decade of the 18th century. Among the first banks were the Bank of Hindustan, which was established in 1770 and liquidated in 1829–32; and the General Bank of India, established in 1786 but failed in 1791.
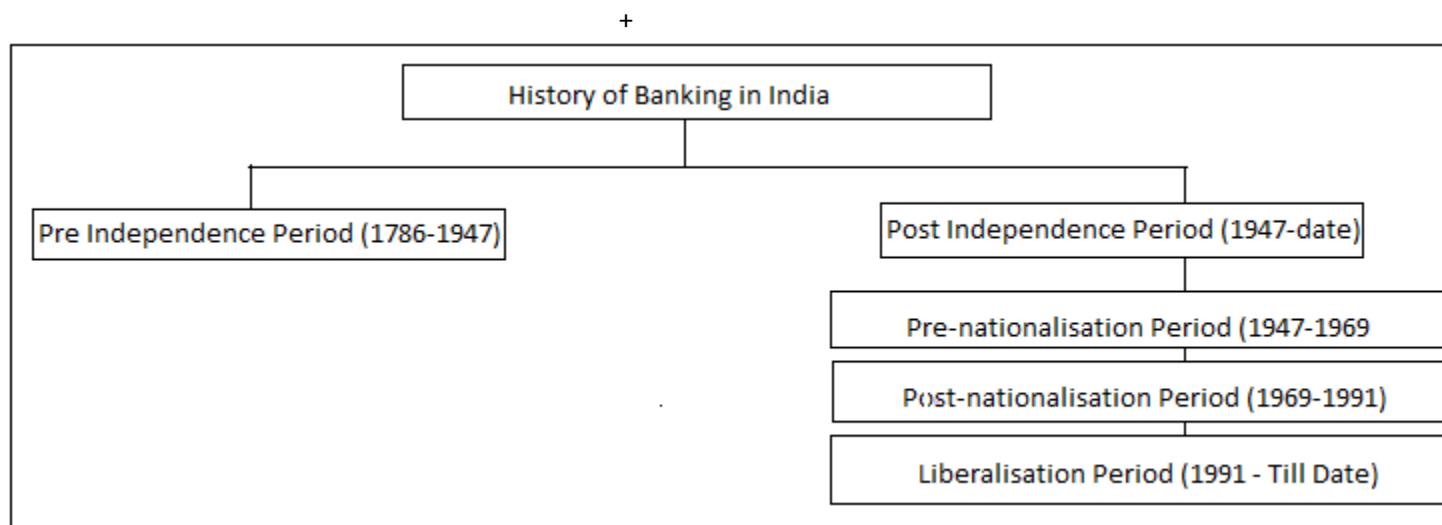
The largest and the oldest bank which is still in existence is the State Bank of India (SBI). It originated and started working as the Bank of Calcutta in mid-June 1806. In 1809, it was renamed as the Bank of Bengal. This was one of the three banks founded by a presidency government, the other two were the Bank of Bombay in 1840 and the Bank of Madras in 1843. The three banks were merged in 1921 to form the Imperial Bank of India, which upon India's independence, became the State Bank of India in 1955. For many years, the presidency banks had acted as quasi-central banks, as did their successors, until the Reserve Bank of India was established in 1935, under the Reserve Bank of India Act, 1934.[6][7]

In 1960, the State Banks of India was given control of eight state-associated banks under the State Bank of India (Subsidiary Banks) Act, 1959. These are now called its associate banks. In 1969, the Government of India nationalised 14 major private banks; one of the big banks was Bank of India. In 1980, 6 more private banks were nationalised. These nationalised banks are the majority of lenders in the Indian economy. They dominate the banking sector because of their large size and widespread networks.

The Indian banking sector is broadly classified into scheduled and non-scheduled banks. The scheduled banks are those included under the 2nd Schedule of the Reserve Bank of India Act, 1934. The scheduled banks are further classified into: nationalised banks; State Bank of India and its

associates; Regional Rural Banks (RRBs); foreign banks; and other Indian private sector banks. The SBI has merged its Associate banks into itself to create the largest Bank in India on 1 April 2017. With this merger SBI has a global ranking of 236 on Fortune 500 index. The term commercial banks refers to both scheduled and non-scheduled commercial banks regulated under the Banking Regulation Act, 1949.

Generally the supply, product range and reach of banking in India is fairly mature-even though reach in rural India and to the poor still remains a challenge. The government has developed initiatives to address this through the State Bank of India expanding its branch network and through the National Bank for Agriculture and Rural Development (NABARD) with facilities like microfinance.

+

```
                      ┌─────────────────────────────┐
                      │  History of Banking in India │
                      └─────────────────────────────┘
           ┌──────────────────────────┐       ┌──────────────────────────────────┐
           │ Pre Independence Period   │       │ Post Independence Period (1947-date) │
           │ (1786-1947)               │       └──────────────────────────────────┘
           └──────────────────────────┘            ┌────────────────────────────────────┐
                                                    │ Pre-nationalisation Period (1947-1969 │
                                                    ├────────────────────────────────────┤
                                                    │ Post-nationalisation Period (1969-1991) │
                                                    ├────────────────────────────────────┤
                                                    │ Liberalisation Period (1991 - Till Date) │
                                                    └────────────────────────────────────┘
```

HISTORY OF Reserve Bank of India (RBI)

The Reserve Bank of India (RBI); is India's central bank and regulatory body under the jurisdiction of Ministry of Finance, Government of India. It is responsible for the issue and supply of the Indian rupee and the regulation of the Indian banking system. It also manages the country's main

payment systems and works to promote its economic development. Bharatiya Reserve Bank Note Mudran is one of the specialised divisions of RBI through which it mints Indian bank notes and coins. RBI established the National Payments Corporation of India as one of its specialised division to regulate the payment and settlement systems in India. Deposit Insurance and Credit Guarantee Corporation was established by RBI as one of its specialised division for the purpose of providing insurance of deposits and guaranteeing of credit facilities to all Indian banks.

Until the Monetary Policy Committee was established in 2016,[5] it also had full control over monetary policy in India.[6] It commenced its operations on 1 April 1935 in accordance with the Reserve Bank of India Act, 1934.[7] The original share capital was divided into shares of 100 each fully paid.[8] Following India's independence on 15 August 1947, the RBI was nationalised on 1 January 1949

The overall direction of the RBI lies with the 21-member central board of directors, composed of: the governor; four deputy governors; two finance ministry representatives (usually the Economic Affairs Secretary and the Financial Services Secretary); ten government-nominated directors; and four directors who represent local boards for Mumbai, Kolkata, Chennai, and Delhi. Each of these local boards consists of five members who represent regional interests and the interests of co-operative and indigenous banks.

It is a member bank of the Asian Clearing Union. The bank is also active in promoting financial inclusion policy and is a leading member of the Alliance for Financial Inclusion (AFI). The bank is often referred to by the name 'Mint Street'.[10]

Reserve Bank of India	
Seal of the RBI	
Headquarters	Mumbai, Maharashtra, India
Established	1 April 1935; 86 years ago
Ownership	Ministry of Finance, Government of India
Governor	Shaktikanta Das,[1] IAS
Central bank of	India
Currency	Indian rupee (□)
Reserves	□4,669,426 crore (US$650 billion)[2]

Chennai.There are four zonal offices of RBI at Mumbai, Kolkata, Delhi and

RBI has nineteen regional offices at: Thiruvananthapuram, Patna, Nagpur, Lucknow, Mumbai, Kochi, Kolkata, Jammu, Kanpur, Chennai, Delhi, Guwahati, Bhubaneshwar, Bhopal, Hyderabad, Ahmedabad, Chandigarh, Jaipur and Bangalore.

These offices are established mostly in the state capitals with few exceptions.

There are four Regional Representations of RBI. New Delhi represents North region, Mumbai represents West region, while Kolkata represents East and Chennai South region.

Eleven sub-offices of RBI are at: Agartala, Aizawl, Shillong, Dehradun, Gangtok, Imphal, Panaji, Srinagar, Raipur, Shimla and Ranchi. Previously RBI had nine sub-offices. Aizwal and Imphal are the latest additions.

RBI has two training establishments that are directly under its control. These are: Reserve Bank of India Staff College in Chennai and College of Agricultural Banking, located at Pune

- Deposit Insurance and Credit Guarantee Corporation (DICGC) – This was created by merging Deposit Insurance Corporation and Credit Guarantee Corporation of India on July 15, 1978 under 'The Deposit Insurance and Credit Guarantee Corporation Act, 1961' and is fully subsidised by RBI. This insures all kinds of deposits like fixed, savings, current as well as recurrent deposits of all eligible banks and guarantees the credit facilities, thus helping to bring financial stability to banking system and benefiting the depositors. Every depositor is insured up to a maximum deposit of Rs 1 lakhs for both principal and interest amount. The deposits that are exempted from this are: Deposits of foreign, Central or State governments, Inter-bank deposits, any deposit received outside India, Deposits made by State Land Development Banks to the State cooperative banks or any amount that is specifically exempted by any entity with the pre-approval of RBI.
- National Bank for Agriculture and Rural Development (NABARD) – RBI has a major stake in NABARD and this entity shoulders multiple responsibilities such as:

- Promoting agricultural and rural development by meeting the credit needs

- Providing refinancing to different approved financial institutions for financing of rural economic developments and activities
- Maintaining Research and development of rural and agricultural sectors
- Providing short, medium and long term credits to State Cooperative Banks, Regional Rural Banks and Land Development Banks to promote rural and agricultural development. Also NABARD inspects the activities of all these banks periodically
- Providing long term assistance to state governments

Reserve Bank of India consists of 33 Departments that focus on policy issues, internal operation and different functional areas of RBI. These broadly include corporate strategy and services, consumer education and protection, Banking and non-banking supervision and regulation, currency management, financial markets operation and regulation, Economic strategy and research, Foreign exchange, Internal and external investments, monetary policy, Risk monitoring, legal policy and so on.

Organizational Structure of Reserve Bank of India

1. Central Board — All the activities of RBI are governed by the Central Board of Directors in accordance with the Reserve Bank of India Act. This is the main committee of the Central bank responsible for superintendence of the general affairs of the bank. The Central Board consists of 21 members. The structure of the Central Board is as follows:

- One Governor and Four Deputy Governors – Governor is the chairperson of the Central Board. Governor can nominate one of the 4 Deputy Governors as chairman in his absence. Governor and 4 Deputy Governors are the full time

officials and nominated by Government of India. The highest term in the office is up to 5 years or till the age of 62 years, whichever commences earlier. However the term may be fixed by the Government. Governor and Deputy Governors are eligible for extension of their terms as well as for re-appointment. Out of the four Deputy Governors, traditionally two are from RBI ranks and are selected from the Executive Directors of the bank. One is an economist and the other person will be nominated from the public sector banks who hold the designation of chairperson. Indian Administrative Services officers are also eligible to be selected as Deputy Governors of RBI.

- Four Directors to represent Local Boards – These are Non-official directors and nominated by Central Government. They are selected from the four local boards, one from each of the Delhi, Mumbai, Kolkata and Chennai Local Boards. Their term depends on their membership of the Local Boards.

- Ten directors nominated by Government of India – These are also non-official directors and nominated by central government as experts in different walks of life like Business, Finance and cooperation, Industry and so on. They are nominated for 4 years term with the possibility of re-appointment.

tended to stabilize commodity prices, control inflation, manage consumption, monitor adequate flow of credit in the different sectors and increase the overall economic development of the country. Monetary policy is implemented through different instruments in the open market. Some of the major ones are discussed below:

Bank Rate – RBI lends money to banks against government securities kept as collaterals to increase the liquidity position of the bank. The fixed interest rate charged for lending money by

RBI is known as Repo (Repurchase) Rate. Also RBI absorbs liquidity from the bank against government securities as collaterals. This is called Reverse Repo. The control of these interest rates enables RBI to control economy by altering the credit supply to commercial banks.

1. Cash Reserve Ratio (CRR) – is the percentage of deposit that the commercial banks need to make to RBI. The higher the CRR, the lower will be the cash reserve to banks and this controls the available liquidity in the market.
2. Open Market Operations – is the tool to allow buying and selling of government securities from or to the banks and public. This alters the liquidity position of the banks by altering the cash reserve position of the banks. This also allows RBI to sell Government securities maintaining the stability in the Government securities market.
3. Statutory Liquidity Ratio – is the non-cash liquid assets that all financial institutions need to maintain. This limits the capability of the banks to lend resulting in anti-inflationary effect.
4. Credit Ceiling – RBI issues directions to commercial banks regarding a limit of loans to be given to them. This restricts commercial banks to their lending activity to public.

3) Banker of the banks – With the objective of developing and maintaining public confidence over the financial system of the country, RBI regulates and supervises certain parameters of banking operation in India. Reserve Bank acts like a bank to commercial banks where the latter borrow money from RBI. Statutory obligation makes every bank deposit a minimum cash reserve with RBI. RBI maintains the accounts for all the scheduled banks. RBI also supports the scheduled banks by providing financial assistance to them through loans and advances which banks can avail against approved securities.

As per the Banking Regulation Act of 1949 and the subsequent amendments, RBI is given the control and power of supervision over the banking system extensively. These include regulatory authority for offering bank licenses, opening new branches and extension counters, controlling the management and working methods of the banks, monitoring the liquidity of bank assets, collation of periodic information regarding various components of assets and liabilities, amalgamation, inspection of banks, liquidation and reconstruction of banks.

RBI has control over Non-Bank Financial Institutions (NBFIs) as well and can issue directives regarding their operation and functioning. RBI has the right of periodic inspection of NBFIs and thus exerts control over them.

4) Credit Control – This is one of the most important functions of RBI. RBI has the power and authority to take responsibility of credit control to ensure internal control of price and sustainable economic growth. This is an important tool for RBI to regulate the demand and supply of money (that is liquidity) in the economy. This measure prevents the inflation or deflation of economy and stabilises the market pricing, an essential component for economic development.

Power of credit control allows RBI to channelize adequate bank credits to the different sectors resulting in the economic boost. RBI restricts supply of money during inflation and allows the inflow of money during deflation by allowing commercial banks to pump more money in the system.

SBI;

SBI merged with its associate bank State Bank of Saurashtra in 2008 and State Bank of Indore in 2009.

Following a merger process, the merger of the 5 remaining associate banks, (viz. State Bank of Bikaner and Jaipur, State Bank of Hyderabad, State Bank of Mysore, State Bank of Patiala, State Bank of Travancore); and the Bharatiya Mahila Bank) with the SBI was given an in-principle approval by the Union Cabinet on 15 June 2016. This came a month after the SBI board had, on 17 May 2016, cleared a proposal to merge its five associate banks and Bharatiya Mahila Bank with itself.

On 15 February 2017, the Union Cabinet approved the merger of five associate banks with SBI. An analyst foresaw an initial negative impact as a result of different pension liability provisions and accounting policies for bad loans. The merger went into effect from 1 April 2017.

After India's independence in 1947, the Reserve Bank was nationalized and given broader powers. In 1969 the government nationalized the 14 largest commercial banks; the government nationalized the six next largest in 1980. Currently, India has 88 scheduled commercial banks (SCBs) – 27 public sector banks (that is with the Government of India holding a stake), 31 private banks (these do not have government stake; they may be publicly listed and traded on stock exchanges) and 38 foreign banks. They have a combined network of over 53,000 branches and 17,000 ATMs.

The oldest bank in existence in India is the State Bank of India, which originated in the Bank of Calcutta in June 1806, which The Bank of Bengal, which later became the State Bank of India. almost immediately became the Bank of Bengal. This was one of the three presidency banks, the other two being the Bank of Bombay and the Bank of Madras, all three of which were established under charters from the British East India Company.

That honor belongs to the Bank of Upper India, which was established in 1863, and which survived until 1913, when it failed, with some of its assets and liabilities being transferred to the Alliance Bank of Simla. When the [American Civil War](#) stopped the supply of cotton to Lancashire from the Confederate States, promoters opened banks to finance trading in Indian cotton. With large exposure to speculative ventures, most of the banks opened in India during that period failed. The depositors lost money and lost interest in keeping deposits with banks.

The first entirely Indian joint stock bank was the Oudh Commercial Bank, established in 1881 in Faizabad. It failed in 1958. The next was the Punjab National Bank, established in Lahore in 1895, which has survived to the present and is now one of the largest banks in India. Around the turn of the [20th Century](#), the Indian economy was passing through a relative period of stability. Around five decades had elapsed since the Indian Mutiny, and the social, industrial and other infrastructure had improved. Indians had established small banks, most of which served particular ethnic and religious ommunities. The presidency banks dominated banking in India but there were also some exchange banks and a number of Indian joint stock banks. All these banks operated in different segments of the economy. The exchange banks, mostly owned by Europeans, concentrated on financing foreign trade. Indian joint stock banks were generally under capitalized and lacked the experience and maturity to

compete with the presidency and exchange banks. This segmentation let Lord Curzon to observe, "In respect of banking it seems we are behind the times.

Public Sector Banks

(

Public-sector banks (PSBs)

- Public Sector Banks (PSBs) are a major type of bank in India, where a majority stake (i.e. more than 50%) is held by the government

- On 30 August 2019, Union Finance Minister Nirmala Sitaraman announced merger of six public sector banks (PSBs) with four better performing anchor banks in order to streamline their operation and size, two banks were amalgamated to strengthen national presence and four were amalgamated to strengthen regional focuses. Subsequently, the number of public sector bank has been reduced to 12 from 27.[1][2] This new amalgamation came effective from 1 April 2020.[3]

Below is a list of 12 Public-Sector Banks[4] in India, as of 1 April 2020:

Anchor Bank	Government Shareholding	Merged Banks	Branches	Established	Headquarter	Total Assets
Bank of Baroda	71.60%	• Vijaya Bank • Dena Bank	8,192	1908	Vadodara, Gujarat	□16,130 billion (US
Bank of India	89.10%		5,000	1906	Mumbai, Maharashtra	□9,030 billion (US$
Bank of Maharashtra	92.49%		1,897	1935	Pune, Maharashtra	□2,340 billion (US$
Canara Bank	78.52%	• Syndicate Bank	10,342	1906	Bengaluru, Karnataka	□15,203 billion (US
Central Bank of India	92.39%		4,666	1911	Mumbai, Maharashtra	□4,680 billion (US$
Indian Bank	88.06%	• Allahabad Bank	6,004	1907	Chennai, Tamil Nadu	□8,080 billion (US$
Indian Overseas Bank	95.84%		3,400	1937	Chennai, Tamil Nadu	□3,750 billion (US$

Anchor Bank	Government Shareholding	Merged Banks	Branches	Established	Headquarter	Total Assets
Punjab and Sind Bank	83.06%		1,554	1908	New Delhi, Delhi	▯1,710 billion (US$
Punjab National Bank	85.59%	• Oriental Bank of Commerce • United Bank of India	10,641	1894	New Delhi, Delhi	▯17,940 billion (US
State Bank of India	56.92%	• State Bank of Bikaner & Jaipur • State Bank of Hyderabad • State Bank of Indore • State Bank of Mysore • State Bank of Patiala • State Bank of Saurashtra • State Bank of Travancore • Bhartiya Mahila Bank	24,000	1955	Mumbai, Maharashtra	▯52,050 billion (US
UCO Bank	94.44%		4,000	1943	Kolkata, West Bengal	▯3,170 billion (US$
Union Bank of India	89.07%	• Andhra Bank • Corporation Bank	9,609	1919	Mumbai, Maharashtra	▯14,594 billion (US

State Bank of India

State Bank of India (**SBI**) is an Indian [multinational](#) [public sector](#) [bank](#) and [financial services](#) statutory body headquartered in [Mumbai, Maharashtra](#). SBI is the [43rd largest bank in the world](#) and ranked 221st in the *[Fortune Global 500](#)* list of the world's biggest corporations of 2020, being the only Indian bank on the list.[ ] It is a [public sector bank](#) and the largest bank in India with a 23% market share by assets and a 25% share of the total loan and deposits market.[ ] It is also the [fifth largest employer in India](#) with nearly 250,000 employees.[9][10]

The bank descends from the [Bank of Calcutta](#), founded in 1806 via the [Imperial Bank of India](#), making it [the oldest commercial bank](#) in the [Indian Subcontinent](#). The [Bank of Madras](#) merged into the other two presidency banks in [British India](#), the [Bank of Calcutta](#) and the [Bank of Bombay](#), to form the [Imperial Bank of India](#), which in turn became the State Bank of India in 1955.[11] The [Government of India](#) took control of the Imperial Bank of India in 1955, with [Reserve Bank of India](#) (India's central bank) taking a 60% stake, renaming it State Bank of India.

History

Stamp dedicated to the State Bank of India in 2005

Seal of Imperial Bank of India

The roots of State Bank of India lie in the first decade of the 19th century when the Bank of Calcutta later renamed the Bank of Bengal, was established on 2 June 1806. The Bank of Bengal was one of three Presidency banks, the other two being the Bank of Bombay (incorporated on 15 April 1840) and the Bank of Madras (incorporated on 1 July 1843). All three Presidency banks were incorporated as joint stock companies and were the result of royal charters. These three banks received the exclusive right to issue paper currency till 1861 when, with the Paper Currency Act, the right was taken over by the Government of India. The Presidency banks amalgamated on 27 January 1921, and the re-organised banking entity took as its name Imperial Bank of India. The Imperial Bank of India remained a joint-stock company but without Government participation.

Pursuant to the provisions of the State Bank of India Act of 1955, the Reserve Bank of India, which is India's central bank, acquired a controlling interest in the Imperial Bank of India. On 1 July 1955, the Imperial Bank of India became the State Bank of India. In 2008, the Government of India acquired the Reserve Bank of India's stake in SBI so as to remove any conflict of interest because the RBI is the country's banking regulatory authority.

In 1959, the government passed the State Bank of India (Subsidiary Banks) Act. This made eight banks that had belonged to princely states into subsidiaries of SBI. This was at the time of the First Five Year Plan, which prioritised the development of rural India. The government integrated these banks into the State Bank of India system to expand its rural outreach. In 1963 SBI merged State Bank of Jaipur (est. 1943) and State Bank of Bikaner (est.1944).

SBI has acquired local banks in rescues. The first was the Bank of Bihar (est. 1911), which SBI acquired in 1969, together with its 28 branches. The next year SBI acquired National Bank of Lahore (est. 1942), which had 24 branches. Five years later, in 1975, SBI acquired Krishnaram Baldeo Bank, which had been established in 1916 in Gwalior State, under the patronage of Maharaja Madho Rao Scindia. The bank had been the *Dukan Pichadi*, a small moneylender, owned by the Maharaja. The new bank's first manager was Jall N. Broacha, a Parsi. In 1985, SBI acquired the Bank of Cochin in Kerala, which had 120 branches. SBI was the acquirer as its affiliate, the State Bank of Travancore, already had an extensive network in Kerala.

There was, even before it actually happened, a proposal to merge all the associate banks into SBI to create a single very large bank and streamline operations.[12]

The first step towards unification occurred on 13 August 2008 when State Bank of Saurashtra merged with SBI, reducing the number of associate state banks from seven to six. On 19 June 2009, the SBI board approved the absorption of State Bank of Indore, in which SBI held 98.3%. (Individuals who held the shares prior to its takeover by the government held the balance of 1.7%.)[13]

The acquisition of State Bank of Indore added 470 branches to SBI's existing network of branches. Also, following the acquisition, SBI's total assets approached ☐ 10 trillion. The total assets of SBI and the State Bank of Indore were ☐ 9,981,190 million as of March 2009. The process of merging of State Bank of Indore was completed by April 2010, and the SBIndore branches started functioning as SBI branches on 26 August 2010.[14]

On 7 October 2013, Arundhati Bhattacharya became the first woman to be appointed Chairperson of the bank.[15] Mrs. Bhattacharya received an extension of two years of service to merge into SBI the five remaining associate banks.

Subsidiaries

SBI provides a range of banking products through its network of branches in India and overseas, including products aimed at non-resident Indians (NRIs). SBI has 16 regional hubs and 57 zonal offices that are located at important cities throughout India.

Domestic

Samriddhi Bhavan, Kolkata

SBI has over 24000 branches in India.[16] In the financial year 2012–13, its revenue was ☐2.005 trillion (US$28 billion), out of which domestic operations contributed to 95.35% of revenue. Similarly, domestic operations contributed to 88.37% of total profits for the same financial year.[16]

Under the Pradhan Mantri Jan Dhan Yojana of financial inclusion launched by Government in August 2014, SBI held 11,300 camps and opened over 3 million accounts by September, which included 2.1 million accounts in rural areas and 1.57 million accounts in urban areas.[17]

International

As of 2014–15, the bank had 191 overseas offices spread over 36 countries having the largest presence in foreign markets among Indian banks.[18]

SBI Australia[19]

SBI Bangladesh[20]

SBI Behrain

SBI Botswana

The company was registered in Botswana as a limited liability company, on 27 January 2006. On 29 July 2013, State Bank of India (Botswana) Limited, was granted a banking licence by the Bank of Botswana.

SBI Canada Bank[21] was incorporated in 1982 as a subsidiary of the State Bank of India. SBI Canada Bank is a Schedule II Canadian Bank listed under the Bank Act and is a member of Canada Deposit Insurance Corporation.

SBI China[22]

SBI (Mauritius) Ltd SBI established an offshore bank in 1989, State Bank of India International (Mauritius) Ltd. This then amalgamated with The Indian Ocean International Bank (which had been doing retail banking in Mauritius since 1979) to form SBI (Mauritius) Ltd. Today, SBI (Mauritius) Ltd has 14 branches – 13 retail branches and 1 global business branch at Ebene in Mauritius.[23]

Nepal SBI Bank Limited

In Nepal, SBI owns 55% of share. (The state-owned Employees Provident Fund of Nepal owns 15% and the general public owns the remaining 30%.) Nepal SBI Bank Limited has branches throughout the country.

SBI Sri Lanka[24] now has three branches located in Colombo, Kandy and Jaffna. The Jaffna branch was opened on 9 September 2013. SBI Sri Lanka is the oldest bank in Sri Lanka; it was founded in 1864.

In Nigeria, SBI operates as INMB Bank. This bank began in 1981 as the Indo–Nigerian Merchant Bank and received permission in 2002 to commence retail banking. It now has five branches in Nigeria.

In Moscow, SBI owns 60% of Commercial Bank of India, with Canara Bank owning the rest. In Indonesia, it owns 76% of PT Bank Indo Monex. State Bank of India already has a branch in Shanghai and plans to open one in Tianjin.[25]

In Kenya, State Bank of India owns 76% of Giro Commercial Bank, which it acquired for US$8 million in October 2005.[26]

SBI South Korea In January 2016, SBI opened its first branch in Seoul, South Korea.

SBI South Africa

SBI UK Ltd[27]

State Bank of India branch at Southall, United Kingdom

SBI USA In 1982, the bank established a subsidiary, State Bank of India, which now has ten branches—nine branches in the state of California and one in Washington, D.C. The 10th branch was opened in Fremont, California on 28 March 2011. The other eight branches in California are located in Los Angeles, Artesia, San Jose, Canoga Park, Fresno, San Diego, Tustin and Bakersfield.

Former Associate Banks

Main Branch of SBI in Mumbai

SBI acquired the control of seven banks in 1960. They were the seven regional banks of former Indian princely states. They were renamed, prefixing them with 'State Bank of'. These seven banks were State Bank of Bikaner and Jaipur (SBBJ), State Bank of Hyderabad (SBH), State Bank of Indore (SBN), State Bank of Mysore (SBM), State Bank of Patiala (SBP), State Bank of Saurashtra (SBS) and State Bank of Travancore (SBT). All these banks were given the same logo as the parent bank, SBI. State Bank of India and all its associate banks used the same blue *Keyhole* logo said to have been inspired by Ahmedabad's Kankaria Lake. The State Bank of India wordmark usually had one standard typeface, but also utilised other typefaces. The wordmark now has the keyhole logo followed by "SBI".

The plans for making SBI a single very large bank by merging the associate banks started in 2008, and in September the same year, SBS merged with SBI. The very next year, State Bank of Indore (SBN) also merged.

Following a merger process, the merger of the 5 remaining associate banks, (viz. State Bank of Bikaner and Jaipur, State Bank of Hyderabad, State Bank of Mysore, State Bank of Patiala, State Bank of Travancore); and the Bharatiya Mahila

[Bank](#)) with the SBI was given an in-principle approval by the Union Cabinet on 15 June 2016.[51] This came a month after the SBI board had, on 17 May 2016, cleared a proposal to merge its five associate banks and Bharatiya Mahila Bank with itself.[52]

On 15 February 2017, the Union Cabinet approved the merger of five associate banks with SBI.[53] An analyst foresaw an initial negative impact as a result of different pension liability provisions and accounting policies for bad loans.[54][55] The merger went into effect from 1 April 2017.[56]

State Bank of India *Mumbai* LHO

Non-banking subsidiaries

Apart from five of its associate banks (merged with SBI since 1 April 2017), SBI's non-banking subsidiaries include:

- [SBI Capital Markets](#) Ltd
- [SBI Cards](#) & Payments Services Pvt. Ltd. (SBICPSL)
- [SBI Life Insurance Company Limited](#)
- [SBI Mutual Fund](#)

In March 2001, SBI (with 74% of the total capital), joined with [BNP Paribas](#) (with 26% of the remaining capital), to form a joint venture life insurance company named SBI Life Insurance company Ltd.

Other SBI service points

As of 31 March 2017, the SBI group had 59,291 ATMs.[57] Since November 2017, SBI also offers an integrated digital banking platform named [YONO](#).

[Yes Bank](#) Investment

State Bank of India acquired 48.2% of the shares of [Yes Bank](#) as part of RBI directed rescue deal in March 2020.

Listings and shareholding

As on 31 March 2017,[57] Government of India held around 61.23% equity shares in SBI. The [Life Insurance Corporation of India](#), itself state-owned, is the largest non-promoter shareholder in the company with 8.82% shareholding.[58]

Shareholders	Shareholding
Promoters: Government of India	56.92%
FIIs/GDRs/OCBs/NRIs	10.94%
Banks & Insurance Companies	10.63%
Mutual Funds & UTI	13.72%
Others	07.79%
Total	100.0%

The equity shares of SBI are listed on the [Bombay Stock Exchange](#),[38] where it is a constituent of the [BSE SENSEX](#) index,[40] and the [National Stock Exchange of India](#),[41] where it is a constituent of the [CNX Nifty](#).[42] Its [Global Depository Receipts](#) (GDRs) are listed on the [London Stock Exchange](#).[43]

Employees

SBI is one of the largest employers in the world with 245,652 employees as on 31 March 2021. Out of the total workforce, the representation of women employees is nearly 26%. The percentage of Officers, Associates and Subordinate staffs was 44.28%, 41.03% and 14.69% respectively on the same date. Each employee contributed a net profit of □828,350 (US$12,000) during FY 2020–21.[2]
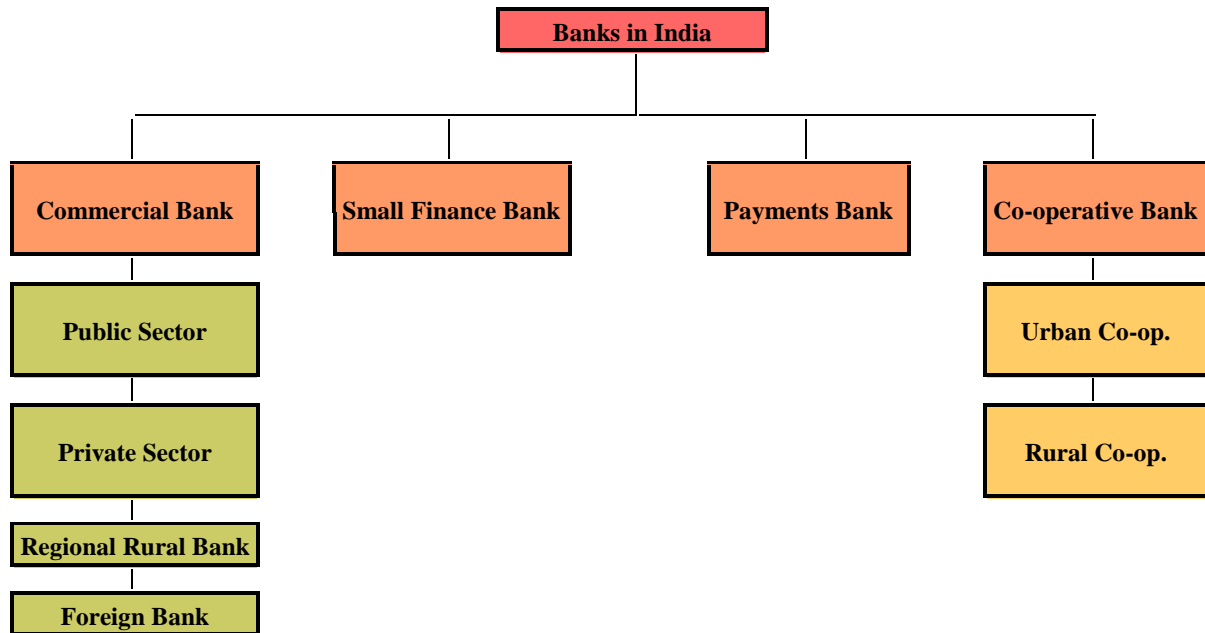
Private Banks In India

List of banks in India

Banks in India are classified into 4 categories –

- [Commercial banks](#)
- [Small finance banks](#)

- [Payments banks](#)
- [Co-operative banks](#)

Private Banks:

Bank is a financial intermediary that accepts deposits and channels those deposits into lending activities, either directly by loaning or indirectly through

capital markets. A bank links together customers that have capital deficits and customers with capital surpluses.

Modern banking practice, including fractional reserve banking and the issue of banknotes, emerged in the 17th and 18th centuries. The Bank of England was the first to begin the permanent issue of banknotes in 1695. Banks provide different payment services, and a bank account is considered indispensable by most businesses and individuals.

Banks can create new money when they make a loan. New loans throughout the banking system generate new deposits elsewhere in the system. Bank can generate revenue in a variety of different ways including interest, transaction fees and financial advice.

The global Private Banking industry can look back on five very prosperous years, having capitalised on both unprecedented growth in Assets under Management and favourable business economics, such as stable revenue streams and low capital requirements.

Despite the recent market turmoil, it believe that wealth pools will continue to expand across all regions, particularly in new markets such as Asia Pacific, the Middle East, and Latin America. The exceptional growth experienced during the past five years is not sustainable.

In the current global order, where the world has become a big village, consumers take a global look at the products and services in terms of price, quality, delivery and after-sale services. This trend has sown the seeds of competition in every sector of economy and banking sector is no exception to this event.

Banking, the world over, has been changing at a spectacular pace. This change is due to multifarious factors like the need to be efficient in functions, thirst for becoming finance superpowers than mere banks, growing importance of private banking, the rise in high net worth individuals, etc. the decade of 90s has witnessed a sea change in the way banking is done in India.

Private Banks are banks owned by either an individual or a general partner(s) with limited partner(s). Private Banks are not incorporated. In any such case, the creditors can look to both the "entirety of the bank's assets" as well as the entirety of the sole- proprietor's/general-partners' assets. Private Banks can refer to non-government owned banks in general, in contrast to government-owned banks, which were prevalent in communist, socialist and some social democratic states in the 20th century.

Private Banks in India are the banks which, like the public sector banks, do not have any government stake. The Indian private banks may be listed publicly. Those can be traded on stock exchanges as well. Private sector banks in India hold 18.2 percent of the total assets of Indian banking industry.

Significance of Private Banks:
The importance of private sector in Indian economy over the last 15 years has been tremendous. The opening up of Indian economy has led to free inflow of foreign direct investment along with modern cutting edge technology, which increased the importance of private sector in Indian economy considerably. The importance of private sector in Indian economy can be witnessed from the tremendous growth of Indian BPOs, Indian software companies, Indian private banks and financial service companies.

The manufacturing industry of India is flooded with private Indian companies and in fact they dominate the said industry. Manufacturing companies covering sectors like automobile, chemicals, textiles, agri-foods, computer hardware, telecommunication equipment, and petrochemical products were the main driver of growth.

Private Banks are creating more employment opportunity of the people. It also are investing huge fund for development of the nation.

Private Bank in India:

The private-sector banks in India represent part of the Indian banking sector that is made up of both private and public sector banks. The private-sector banks are banks where greater parts of stake or equity are held by the private shareholders and not by government. The private sector banks are split into two groups by financial regulators in India, old and new.

The old private sector banks existed prior to the nationalisation in 1969 and kept their independence because they were either too small or specialist to be included in nationalisation. The new private sector banks are those that have gained their banking license since the liberalisation in the 1990s.

The banks, which were not nationalized at the time of bank nationalisation that took place during 1969 and 1980, are known to be the old private-sector banks. These were not nationalised, because of their small size and regional focus.

Let us discuss some of the leading private bank in India:
1. City Union Bank:
City Union Bank is an Indian bank. The Kumbakonam Bank Limited was incorporated as a limited company on 31 October 1904. The bank initially preferred the role of a regional bank in the Thanjavur District, Tamil Nadu. The bank in the beginning preferred the role of a regional bank and slowly but steadily built for itself a place in the Delta District Thanjavur.

The first Branch of the Bank was opened at Mannargudi on 24th January 1930. Branches were opened at Nagapattinam, Sannanallur, Ayyampet, Tirukattupalli, Tiruvarur, Manapparai, Mayuram and Porayar within a span of twenty five years. The Bank was included in the Second Schedule of Reserve Bank of India Act, 1934, on 22nd March 1945.

In 1957, the bank took over the assets and liabilities of the Common Wealth Bank Limited and in the process annexed to it the five Branches of Common Wealth Bank Limited at Aduthurai, Kodavasal, Valangaiman, Jayankondacholopuram and Ariyalu.

2. Dhanlaxmi Bank:

It is an old private sector bank headquartered in Thrissur City, Kerala. The bank was focusing mostly on Southern states like Karnataka, Tamil Nadu, Andhra Pradesh and Kerala but it is looking for a pan-India presence since the last few years. Dhanalakshmi Bank Ltd was incorporated on 14 November 1927 at Thrissur city, Kerala with a capital of 1,000 and 7 employees. It became a Scheduled Commercial Bank in the year 1977. Today it has 275 branches. The bank has changed its name from Dhanalakshmi Bank to Dhanlaxmi Bank on 10 August 2010.

3. Federal Bank:

It is a major Indian commercial bank in the private sector, headquartered at Aluva, Kochi, and Kerala. It is the fourth largest bank in India in terms of capital base. As of 9 February 2014, Federal Bank has 1150 branches spread across 24 states. In 1931, Travancore Federal Bank began operations at Pattamukkil Varattisseril house near Nedumpuram, near Thiruvalla, Kerala.

Between 1963 and 1970, Federal Bank took over Chalakudy Public Bank, Cochin Union Bank (1963) in Trichur, Alleppey Bank (1964) in Alappuzha, St. George Union Bank (1965) in Puthenpally, and Marthandam Commercial Bank (1968) in Thiruvananthapuram.

In 1970, it became a scheduled commercial bank and came out with its initial public offering in 1994. Federal Bank was the principal sponsor of Kochi Tuskers Kerala. In January 2008, Federal Bank opened its first overseas representative office in Abu Dhabi.

4. ING Vysya Bank:

It is a privately owned Indian multinational bank based in Bangalore, with retail, wholesale, and private banking platforms formed from the 2002 purchase of an equity stake in Vysya Bank by the Dutch ING Group. As of March 2013, ING Vysya is the seventh largest private sector bank in India with assets totaling 54836 crore (USS9.3 billion) and operating a pan-India network of over 1,000 outlets, including 527 branches, which service over two million customers.

Established in 1930s, Vysya Bank was formally incorporated in the city of Bangalore, Karnataka. From the 1930s through the 1950s, Vysya Bank built

its banking business organically in southern India. In 1987, Vysya Bank established two independently operating subsidiaries providing equipment leasing and home mortgaging services (Vysya Bank Leasing Ltd and Vysya Bank Housing Finance Ltd, respectively). In 1995, Vysya Bank entered into a long-term strategic alliance with Belgian bank. Bank Bruxelles Lambert (BBL).

5. Lakshmi Vilas Bank Limited:

The bank was incorporated on November 03, 1926 under the Indian Companies Act, 1913 and obtained the certificate to commence business on November 10, 1926. The Bank obtained its license from RBI in June 1958 and in August 1958 it became a Scheduled Commercial Bank. During 1961-65 LVB took over nine Banks and raised its branch network considerably.

At present, with a network of 362 branches and 8 extension counters, spread over 15 states and the union territory of Pondicherry, the Bank's focus is on customer delight, by maintaining high standards of customer service and amidst all these new challenges, the bank is progressing admirably.

6. The Nainital Bank:

It is a private Indian bank based in Nainital and later on has expanded to Uttar Pradesh. Nainital Bank was founded by Govind Ballabh Pant and a few other prominent men from the Shah/Sah community of Kumaon. In April 2004, National Insurance Company signed an agreement with Nainital Bank for distribution of its general insurance products through the bank's branches across Uttarakhand, Haryana and New Delhi states. Nainital bank is associated with Bank of Baroda, HDFC Bank, LIC, National Insurance Company Limited etc.

7. Development Credit Bank:

It is private sector scheduled commercial bank in India. DCB Bank's financial products and services range from loans for Small and medium enterprises, Wealth Management, banking for Non Resident Indians, Internet Banking, Mobile Banking, Business Finance, Home Loans. It was founded in 1930.

8. Karur Vysya Bank:

Karur Vysya Bank is a private-sector Indian bank, headquartered in Karur in Tamil Nadu. It was set up in 1916 by M. A. Venkatarama Chettiar and Athi

Krishna Chettiar. The Bank has 551 branches and 1277 ATMs covering 17 States and 2 Union Territories and during the year 2012-13 the Bank has added 100 branches and 457 ATMs.

KVB offers several deposit and loan products, tailor-made to cater to the specific needs of customers. The bank offers NRE/FCNR deposits and remittance services and "KVB Gruhapravesh" home loans to NRIs. The Bank distributes the Mutual Fund products of UTI, SBI MF, Reliance MF, Sundaram BNP Paribas MF, Birla Sun life MF, Franklin Templeton MF and LIC MF.

9. Tamilnad Mercantile Bank:

Tamilnad Mercantile Bank is a bank headquartered in Tuticorin in Tamil Nadu. TMB was founded in 1921 as the Nadar Bank, but changed its name to Tamilnad Mercantile Bank in November 1962 to widen its appeal beyond the Nadar community. The bank was originally registered on 11 May 1921 as Nadar Bank Limited under the Indian Companies Act, 1913.

M.V. Shanmugavel Nadar was elected as the first chairman on 4 November 1921. The bank adopted modernization.

Total income of private sector banks across India from financial year 2017 to 2021 (in trillion Indian rupees)
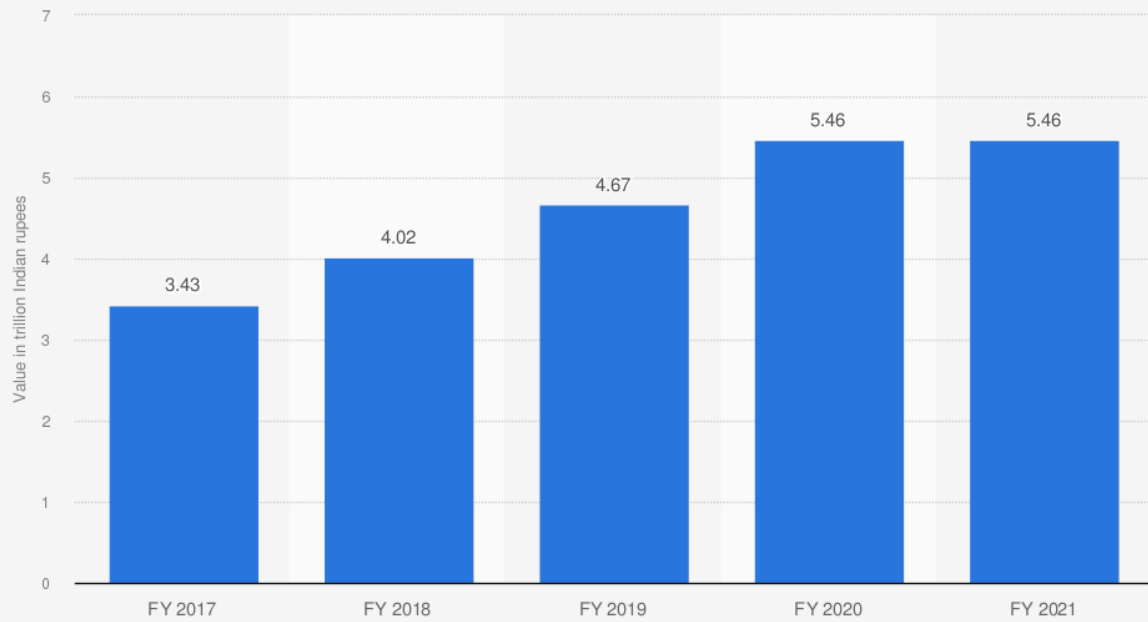
Value in trillion Indian rupees

FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
3.43	4.02	4.67	5.46	5.46

M.A.L.D. Govt. Arts & Science College, GADWAL

(Affiliated to Palamuru University, Mahabubnagar)

Department of Computers

Student study Project
Title: Software Job Skills
Team : : B.Sc(Computer Science)

1. Seema
2. Umera Tehsin
3. Sheema Sultana
4. Shireen
5. Rasheeda
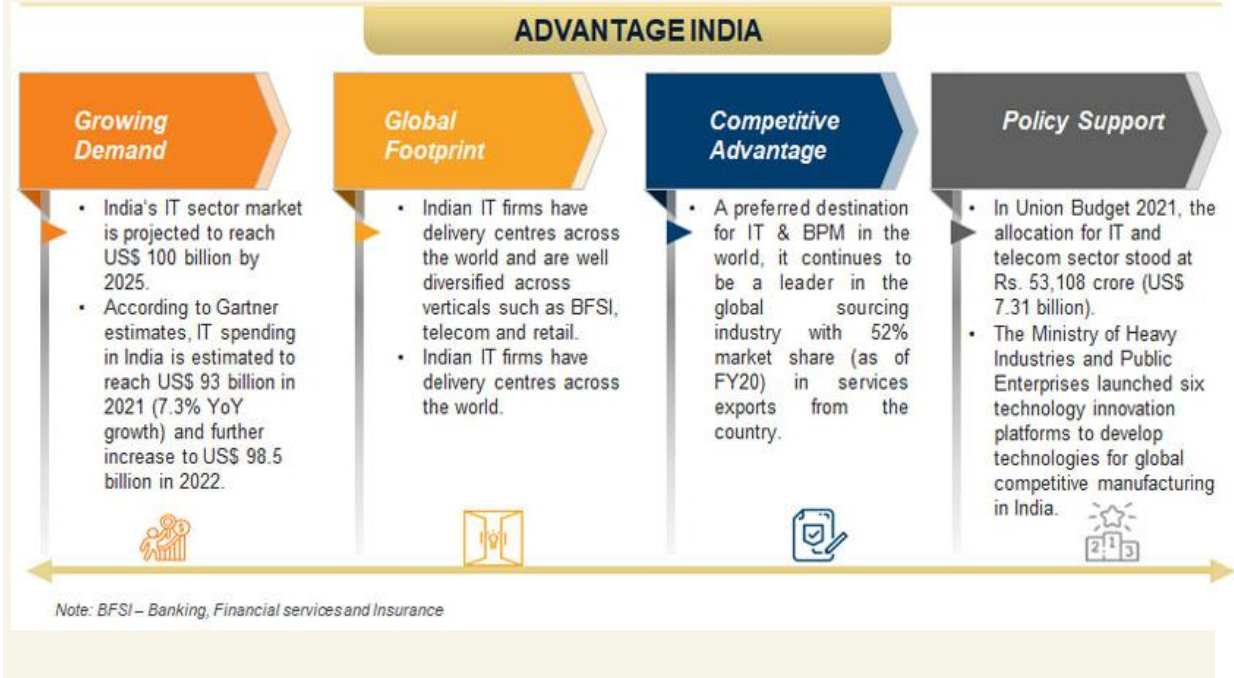
Academic Year:2018-19

Under the guidance of
D. Hari Babu

Lecturer in Mathematics
Govt. Degree College
GADWAL - 509125

PRINCIPAL
M.A.L.D. Govt. Arts & Science Colle
GADWAL - 509 125

ADVANTAGE INDIA

Growing Demand
- India's IT sector market is projected to reach US$ 100 billion by 2025.
- According to Gartner estimates, IT spending in India is estimated to reach US$ 93 billion in 2021 (7.3% YoY growth) and further increase to US$ 98.5 billion in 2022.

Global Footprint
- Indian IT firms have delivery centres across the world and are well diversified across verticals such as BFSI, telecom and retail.
- Indian IT firms have delivery centres across the world.

Competitive Advantage
- A preferred destination for IT & BPM in the world, it continues to be a leader in the global sourcing industry with 52% market share (as of FY20) in services exports from the country.

Policy Support
- In Union Budget 2021, the allocation for IT and telecom sector stood at Rs. 53,108 crore (US$ 7.31 billion).
- The Ministry of Heavy Industries and Public Enterprises launched six technology innovation platforms to develop technologies for global competitive manufacturing in India.

Note: BFSI – Banking, Financial services and Insurance

Introduction

The global sourcing market in India continues to grow at a higher pace compared to the IT-BPM industry. India is the leading sourcing destination across the world, accounting for approximately 55% market share of the US$ 200-250 billion global services sourcing business in 2019-20.

The IT industry accounted for 8% of India's GDP in 2020. Exports from the Indian IT industry are expected to increase by 1.9% to reach US$ 150 billion in FY21. In 2020, the IT industry recorded 138,000 new hires. According to STPI (Software Technology Park of India), the software exports by its registered units increased by 7% YoY to reach Rs. 5 lakh crore (US$ 67.40 billion) in FY21 from Rs. 4.66 lakh crore (US$ 62.82 billion) in FY20, driven by rapid digitization and the IT industry's timely transition to remote working environments that helped to keep up the industry's growth amid coronavirus pandemic.

Market Size

The IT & BPM industry's revenue is estimated at ~US$ 194 billion in FY21, an increase of 2.3% YoY. The domestic revenue of the IT industry is estimated at US$ 45 billion and export revenue is estimated at US$ 150 billion in FY21. According to Gartner estimates, IT spending in India is estimated to reach US$ 93 billion in 2021 (7.3% YoY growth) and further increase to US$ 98.5 billion in 2022. The BPM sector in India currently employs >1.4 million people, while IT and BPM together have >4.5 million workers, as of FY21.

Indian software product industry is expected to reach US$ 100 billion by 2025. Indian companies are focusing to invest internationally to expand global footprint and enhance their

global delivery centres. In line with this, in February 2021, Tata Consultancy Services announced to recruit ~1,500 technology employees across the UK over the next year. The development would build capabilities for TCS to deliver efficiently to the UK customers.

The data annotation market in India stood at ~ US$ 250 million in FY20, of which the US market contributed ~ 60% to the overall value. The market is expected to reach ~ US$ 7 billion by 2030 due to accelerated domestic demand for AI.

Investments/ Developments

Indian IT's core competencies and strengths have attracted significant investment from major countries. The computer software and hardware sector in India attracted cumulative foreign direct investment (FDI) inflows worth US$ 71.05 billion between April 2000 and March 2021. The sector ranked 2nd in FDI inflows as per the data released by Department for Promotion of Industry and Internal Trade (DPIIT). In FY21, computer software and hardware topped FDI investments, accounting for 44% share of the total FDI inflows of US$ 81.72 billion.

Leading Indian IT firms like Infosys, Wipro, TCS and Tech Mahindra are diversifying their offerings and showcasing leading ideas in blockchain and artificial intelligence to clients using innovation hubs and research and development centres to create differentiated offerings.

Some of the major developments in the Indian IT and ITeS sector are as follows:

➢ *In July 2021, TCS expanded its strategic partnership with Royal London, the largest mutual life insurance, pensions and investment company in the UK, to help the latter transform its pension platform estate and deliver market-leading services to members and customers.*

➢ *In July 2021, Tata Technologies partnered with Stratasys, a 3D printing technology company, to provide advanced additive manufacturing technologies to the Indian manufacturing ecosystem.*

➢ *In July 2021, Tech Mahindra Foundation and Wipro GE Healthcare have joined forced to offer skilling and upskilling courses to students and healthcare technicians.*

➢ *In July 2021, HCL announced a multi-year agreement with Fiskars Group, consisting of a family of lifestyle brands including Fiskars, Gerber, Iittala, Royal Copenhagen, Waterford and Wedgwood for digital transformation.*

➢ *In July 2021, TCS launched Jile 5.0, a key release of its Enterprise Agile, on-the-cloud services, planning and delivery tool that enables enterprises to meet the large-scale development needs of multiple distributed teams.*

➢ *In June 2021, Federal Bank expanded its strategic collaboration with Oracle and Infosys to offer an enhanced customer experience through Oracle CX (customer experience) platform.*

➢ *In June 2021, Infosys announced a collaboration with Archrock, Inc., a leading provider of natural gas compression services in the US, to integrate digital technologies and mobile tools for its field service technicians.*

- *In June 2021, Tata Consultancy Services (TCS) extended its 17-year partnership with the UK's Virgin Atlantic to help the latter embark on a new phase of 'recovery and growth'. TCS will take exclusive responsibility of the airline's end-to-end operational management and digital transformation.*
- *In June 2021, Wipro announced that it has joined the World Economic Forum's 'Partnership for New Work Standards' initiative to establish a healthy, resilient and equitable future of work.*
- *In June 2021, the International Chess Federation (FIDE) announced a new partnership with Tech Mahindra Ltd. to focus on creating together the Global Chess League, a project first proposed by Tech Mahindra Ltd.*

Government Initiatives

Some of the major initiatives taken by the Government to promote IT and ITeS sector in India are as follows:

- *On July 2, 2021, the Ministry of Heavy Industries and Public Enterprises launched six technology innovation platforms to develop technologies for globally competitive manufacturing in India. The six technology platforms have been developed by IIT Madras, Central Manufacturing Technology Institute (CMTI), International Centre for Automotive Technology (iCAT), Automotive Research Association of India (ARAI), BHEL and HMT in association with IIScBanglore.*
- *In July 2021, the Arun Jaitley National Institute of Financial Management (AJNIFM) and Microsoft have formed a strategic partnership to build AI and emerging technologies Centre of Excellence.*
- *In June 2021, the Indian government announced plans to launch Biotech-PRIDE (Promotion of Research and Innovation through Data Exchange) to deposit biological data in the country's national repository.*
- *In May 2021, MyGov, the citizen engagement platform of the Government of India, in partnership with the Department of Higher Education launched an innovation challenge to create an Indian language learning app.*
- *In order to establish an enabling environment for the IT industry, in April 2021, the Development of Advanced Computing (C-DAC) launched three innovatice technologies Automatic Parallelizing Compiler (CAPC), Cyber Security Operation Centre (CSoC) as a Service, and C-DAC's indigenous High-performance Computing software solutions—Parallel Development Environment (ParaDE).*
- *In Budget 2021, the government has allocated Rs. 53,108 crore (US$ 7.31 billion) to the IT and telecom sector.*
- *Department of Telecom, Government of India and Ministry of Communications, Government of Japan signed a MoU to enhance cooperation in areas of 5G technologies, telecom security and submarine optical fibre cable system.*
- *In 2020, the government released "Simplified Other Service Provider" (OSP) guidelines to improve the ease of doing business in the IT Industry, Business Process Outsourcing (BPO) and IT-enabled Services.*

Road Ahead

India is the topmost offshoring destination for IT companies across the world. Having proven its capabilities in delivering both on-shore and off-shore services to global clients, emerging technologies now offer an entire new gamut of opportunities for top IT firms in India. The industry is expected to grow to US$ 350 billion by 2025 and BPM is expected to account for US$ 50 55 billion of the total revenue.

Essential Software Job Skills

Though software engineers tend to have a minimum of a degree in computer science or electronic engineering, as many as 1 in 5 are self-taught coders. Software engineers, also sometimes known as software developers, apply mathematical analysis and the principles
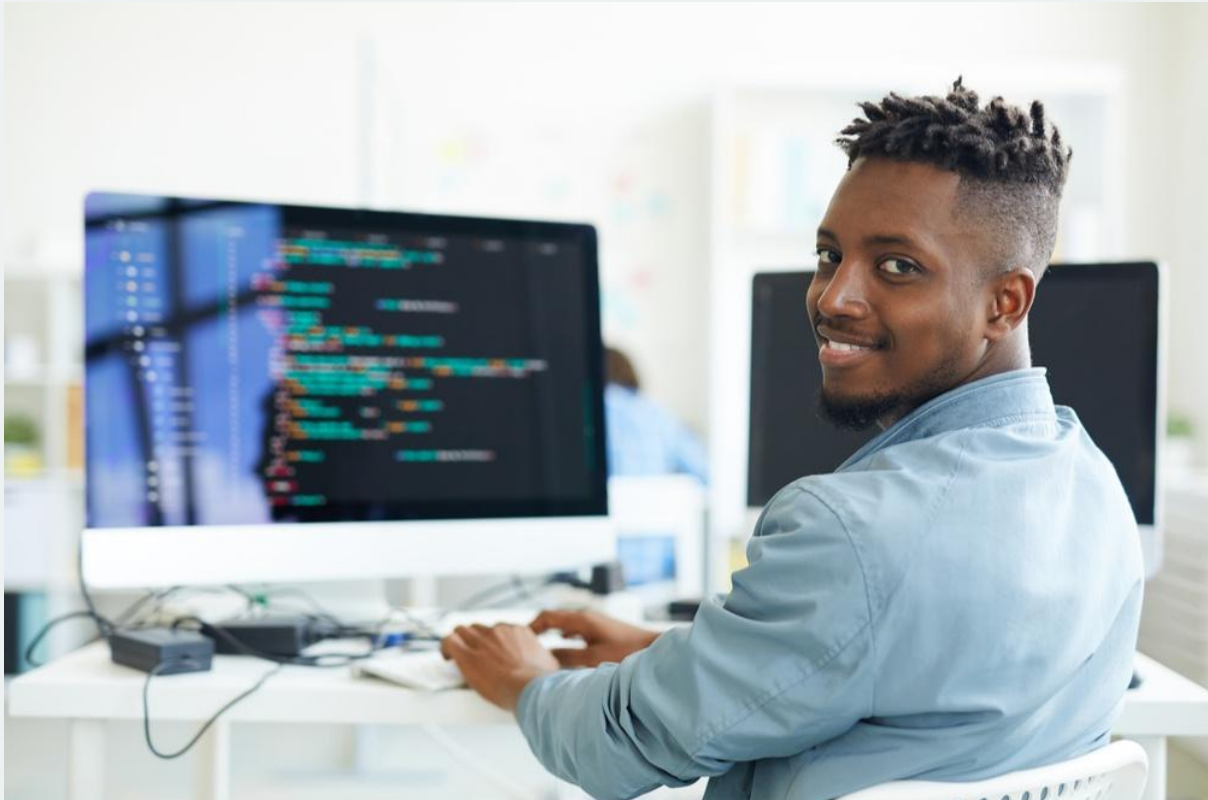
of computer science to design, develop and debug computer programs to meet a variety of business and corporate requirements using the principles of software engineering.

Software Engineers are responsible for creating the many types of software programmes or software tools, such as middleware, bare metal/firmware, embedded software, operating systems, network control, and

business applications, whereas software developers tend to use tools to build software for products such as apps.

A Software Engineer is generally involved with software development, but very few software developers are engineers. The difference between software engineering and software development is one often oversees the engineering while the other tends to focus on creating functional programs.

Despite overall recruitment activity declining during the pandemic, there is a rising demand for engineers making a software engineer career path an extremely attractive one. A software engineer will work in a constantly evolving environment with the ever-growing complexity of technology. Demand has been growing exponentially as billions of physical devices around the globe are connected to the internet (IoT).

These digitally intelligent devices collect and share data, enabling many industries to become technology-driven. Here are the five key skills you need to succeed as a software engineer.

Coding

Generally coming from a computer science background, proficiency in coding languages such as C#, C and C++ are likely to be skills outlined on many software engineers' curricula vitae. Being proficient in computer programming is essential for designing software and testing the systems built by others, meaning that software engineers tend to be fluent in at least one coding language. Professionals who stand out to employers are those who understand several languages or who are well-versed in structured programming languages which have several similarities. e.g. C++ grew from C.

Software engineers who want to diversify and build their language expertise should consider learning Python, PHP, Tcl, Java and/or JavaScript which are currently heralded as some of the best programming languages to learn. In fact, JavaScript steals the top spot with 73% of developers revealing they have knowledge of the computer programming language.

However, success in a software engineering career can require more than just a great coding ability.

Problem-solving

Problem-solving is a typical talent found in a software engineer's skill set, they tend to be investigative and inquisitive individuals. It is considered a soft skill that is inherent rather than learnt but with time senior software engineers can easily hone this talent. Though it's an essential skill for software engineers, SHRM's 2019 State of the Workplace found that it is one of the top skills that today's workforce lacks with a total of 37% failing to show evidence of it. The first step of problem-solving is to define the issue. Software engineers will draw on their scientific and mathematical knowledge to arrive at a conclusion. Combing both critical thinking and creativity, these computer scientists analyse data to identify the scope of problems and isolate invalid software models. Software engineers who

Starting Your Career as a Software Engineer: Skills You Need, Where to Work, and Salary Expectations

Everything   you   need   to   know   about   this   in-demand   profession.

Considering a career in software engineering? Whether you've already declared a major in Computer Science or just started learning how to code on your own, there are some key things to know before pursuing a career in software engineering. To help you through the journey, we've compiled a guide to the most frequently asked questions about starting your career as a software engineer, covering everything from degree requirements to top skills to salary expectations.

What does a software engineer do?

At a high level, software engineers architect applications for various systems, such as web and mobile. Software engineers write code, design programs, and implement processes to create products and solutions for businesses and government entities.

What degree do I need to have to get a job in software engineering?

Many software engineers have obtained a degree in computer science or a related field, like electrical engineering, computer engineering, or another programming intensive subject. However, a degree is not always a requirement to get a job in software engineering. Some software engineers are self-taught and some have learned the skills necessary for software engineering through a coding bootcamp.

Some large tech companies, like Google, have relaxed their degree requirements for software engineering candidates, instead choosing the focus on the skills and experiences. A degree alone won't land you a job in software engineering – your problem-solving ability and skill set

identifying bugs to fix these issues. Analytical and detail-oriented individuals tend to produce more

1. accurate programmes and code – something which is extremely important in software engineering today.

COMPANIES HIRING SOFTWARE ENGINEERS

COMPANY SIZE	"TECH" COMPANIES	NON "TECH" COMPANIES
10,001+	APPLE AMAZON GOOGLE SALESFORCE FACEBOOK	DISNEY NBC WALMART JPMORGAN CHASE GOLDMAN SACHS
5001-10,000	WAYFAIR WORKDAY	WEWORK TD AMERITRADE
1001-5000	LYFT AIRBNB ATLASSIAN DROPBOX	HEARST MAGAZINES GETTY IMAGES NFL
501-1000	ETSY PRICELINE CHEGG SQUARESPACE	GROUP NINE MEDIA LORD, ABBETT & CO ROBERT HALF
50-500	NIANTIC BIRCHBOX	EVERLANE MARVEL STUDIOS

Teamwork

Aside from having a passion for software programming, software engineers must also be able to work well in a team. The creation of software systems can be a solitary task but overcome challenges on a project and devising solutions is key. Software engineers must collaborate and communicate their thought processes. A software engineer's job is to solve problems and to create a superb product, not just to write as many amazing lines of code as possible. Though software engineering qualifications and experience using Linux are usually required, teamwork skills are what makes software engineers indispensable.

Leadership

As employees progress from junior or graduate software engineers to senior roles in an organisation, they will need to show strong delegation skills whilst ensuring that concepts, architecture, and solutions are innovative, high-quality, and cost-effective. Good leadership skills will help software engineers liaise between external customers and internal departments and ensure that the product design process is run smoothly. Evidencing this skill is key when mapping out a software engineer career path.

Find your next Software Engineer with Redline

Redline have provided exceptional professional talent for the European Technology industries since 1982. Our team includes engineers themselves and recruitment professionals with many years' experience in software engineering, meaning we're able to provide the knowledge, contacts and support you need.

We offer both contract and permanent roles and we are currently recruiting software engineers to join diverse and dynamic teams. View our current software jobs or quick send your CV to hear about our latest job opportunities.

Software Engineer top skills & proficiencies:

➢ *Software Development*
➢ *Analytical & Problem Solving Skills*
➢ *Ability to Learn Quickly*
➢ *Team Player*
➢ *Agile Development Processes and Principles*
➢ *Written and Verbal Communication*
➢ *Customer-Oriented*
➢ *Analysis*
➢ *General Programming Skills*
➢ *Software Debugging*
➢ *Software Documentation*
➢ *Software Testing*
➢ *Software Development Fundamentals and Process*
➢ *Computer Programming and Coding*

This includes a programming language like C++ or Java, essential computer science concepts like Data Structures, Algorithms and Computer Network basics,

crucial tools like Git, [Docker](#), [Kubernetes](#) and containers in general, Cloud computing concepts and platforms like [AWS](#), GCP, Microsoft Azure, and evergreen skills like SQL and UNIX, editors like [Eclipse](#) or Visual Studio Code, and text editors, like VIM and NotePad++, etc.   This list is by no means complete, but it provides you a good starting point for skills a programmer should know. If you are aiming for a career in software development and looking for a programming job, then these are things you can learn and improve to stay ahead of your competition.

Top 11 Essentials Skills for Software Developers in 2021

Without further ado, here is a list of skills which I personally believe, every programmer should know, irrespective of the job he is doing. These are essential skills and will serve you for a long time. Any investment made into this in terms of time, money, and effort will help you to reap the rewards throughout your career.

1. Cloud Computing Skills (AWS, GCP, or Azure)

Apart from containers, Cloud is another thing that I think every Software developer and Data Scientist should learn in 2021. Companies of all sizes and domains are now shifting their environments into Cloud for cost-saving and better scalability, which means sooner or later, you need to work with cloud-native applications.

They are also essential for all the sunrise development in the field of [Data Science](#), Machine Learning, and Artificial intelligence because the only cloud can provide the computing power needed by those resource-hungry models.

Learning Cloud platforms like Amazon Web Service (AWS), Google Cloud Platform (GCP) or Microsoft Azure will take you one step ahead of your competitors not only in your current job but also in the next post. You don't need to learn all of them, and in fact, learning one means you will have a fair idea about others.

*To start with, I suggest you learn AWS as it is the most popular and most mature cloud platform and there is a strong demand of developers and system admins with AWS knowledge if you need a resource then I recommend the [**Ultimate AWS Certified Solutions Architect Associate**](#) course by [Stéphane Maarek](#)*

, the Cloud Guru. It will not only help you learn AWS in-depth but also prepare you for AWS certification.
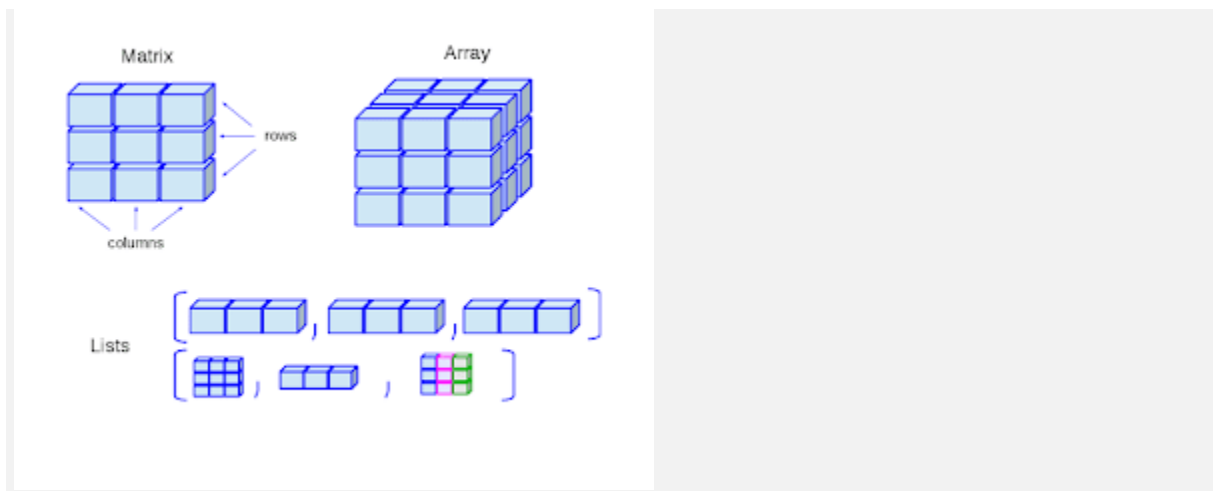
2. Data Structure and Algorithms

If you want to become a programmer, then you ought to know Data Structure and Algorithms well; there is no escape. This is one of the important topics of any programming job interview, and without you knowing basic data structures, like an [array](#), [linked list](#), [map](#), set, it's not possible to write a real-world application.

That's why every programmer should put a serious effort into learning the Data structure and Algorithm during their computer science course.

*If you are a self-taught programmer, then also you must know Data structure and algorithm; in fact, many programming bootcamp will teach you Data structure and algorithm as the first thing. If you need a course then I highly recommend checking out **[Data Structures and Algorithms: Deep Dive Using Java](#)** course by Tim Buchalaka on Udemy.*

And, if you need free resources to learn Data Structure and Algorithms then you can check these *free Algorithms courses* on Medium.

3. Git and Github

Source control is used to store code, and if you want to become a coder or software developer, you must know version control tools like Git and SVN.

Thankfully Git and Github have streamlined the market, and now more than 70% organization uses Git; hence you can get away by just learning Git.

Btw, you should put some effort into learning Git well, like you should be comfortable with advanced version control concepts like branching and merging as well as the tool itself, I mean, both on the command line and using GUI. For beginners, **The GitHub Ultimate: Master Git and GitHub** is the right place to start with.

And, If you need a free online course to learn Git, check out these [free Git courses](#) on Medium.

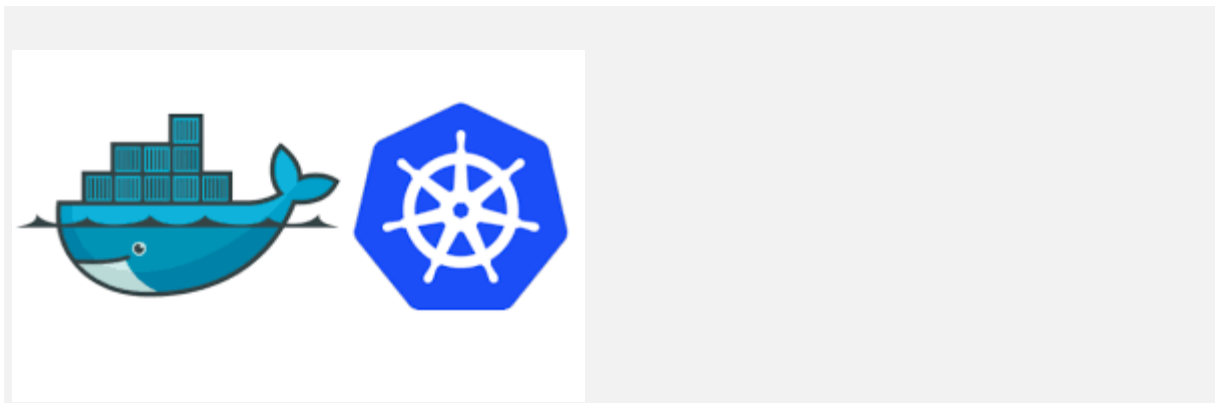### 4. Containers (Docker and Kubernetes)

In 2021, I believe every programmer, software engineer, data scientist, and even project manager should know about containers and tools like Docker and Kubernetes.

It's proven now that containers like Docker not only help developers to test their application in a unified environment but also they simplify the deployment process.

*With the help of **Docker**, you can quickly deploy your application with all of its dependency in one shot, it also provides you process isolation. Similarly, Kubernetes, which is a container orchestration tool, takes it to the next level and can manage containers for you.*

*This means you no need to worry about the Scalability of your application, and **Kubernetes** or K8s can do that for you automatically. If you want to learn a new skill in 2021, I suggest you learn Docker and Kubernetes, it will not only help in your current job but also in the next post as they are also the most sought after skill by companies of all sizes.*

*And, if you have already realized the importance of containers and looking for a resource to learn Docker and Kubernetes, I suggest you join Stephen Grider's best-selling course — **[Docker and Kubernetes: The Complete Guide](#)**, one of the best course to learn these two essential skills.*

And, if you need some free course materials then I also suggest you check out these [free Docker courses](#) to start with.

5. VIM

There is not a single day when I have not used a text editor while working as programmers. It's one of the essential tools even for non-programmers and anyone who works with computers.

I have mostly used NotePad on Windows and VIM in Linux, but nowadays, you have a lot of choices available in terms of advanced editors like Sublime and NotePad++, which provides IDE like functionalities.

I suggest you to spend some time learning your favorite Editor and keyboard shortcuts, productivity tips are something you can learn. If you like VIM, then go ahead and learn VIM, you will not regret your decision. If you need a recommendation then [VIM MasterClass](#) by [Jason Cannon](#) is an excellent course to learn such skills.

And, if you need more choices, check out my article on [best VIM courses](#) which has a few more options to learn VIM in depth.

6. IDEs (VSCode or IntelliJIDEA)

The modern IDES like Eclipse or Visual Studio Code is the most critical tool for any programmers. For C, C++, and C# programmer, the choice is clear, the Visual Studio and for Python developers, Jupiter Notebook is getting better and better every day.

*If you want to learn VS Code, I suggest you join **Learn Visual Studio Code** by James Quick*
 on Udemy.

For Java Programmers, there are three primary IDE to choose, like Eclipse, NetBeans, and IntelliJ, while Eclipse is my favorite, IntelliJIDEA is not bad at all.

*If you want to learn IDEA better than you can also check out **IntelliJIDEA Tricks to boost Productivity** course by*
TAO W
 *and*
James Lee

7. Database and SQL

SQL is a classic, it's been around for more than 30 years, and I think it will be around for another 30 years. Given the omnipresence of the database, it's expected from a programmer that he is familiar with essential database concepts like normalization and table design along with SQL.

There are many databases, like Oracle, [MySQL](#), Microsoft SQL Server, PostgreSQL, etc. but knowing just one is enough. The critical point is that you should be familiar with the database. You should know how to insert/update/delete data and write SQL queries to retrieve it.

*Knowledge of advanced concepts like join an aggregate function is a big bonus, and if you want to get that, then **[The Complete SQL BootCamp](#)** by [Jose Marcial Portilla](#)*
is a great course to start with.
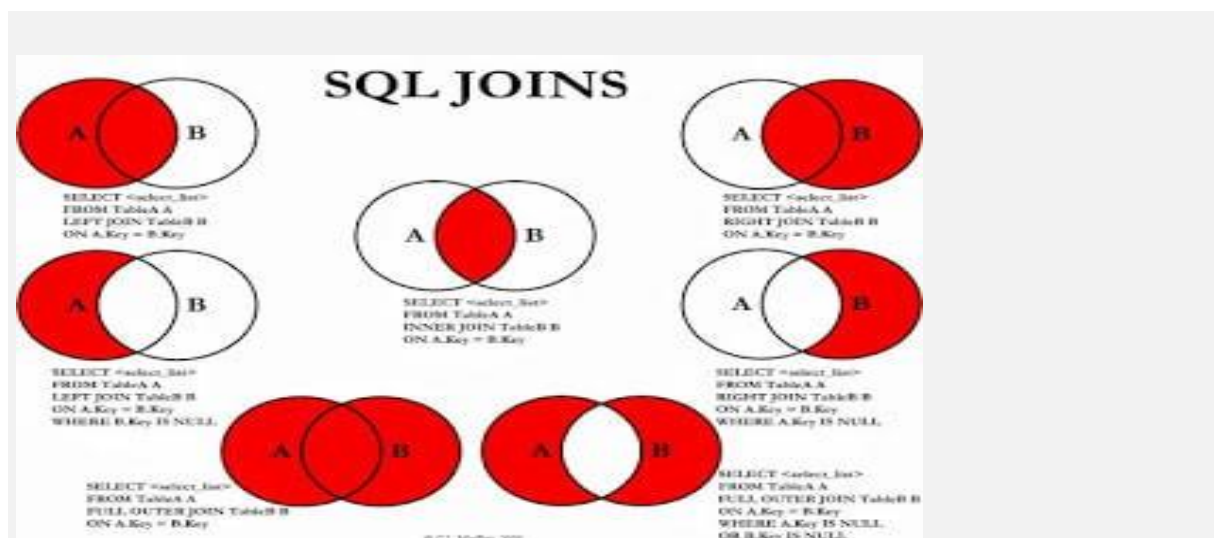
And, if you need free resources then these [free SQL courses](#) on Medium are a great place to start with.

8. Linux (UNIX)

Like SQL, UNIX also has withstood the test of time. It's also been around for more than 30 years, and I hope it will there for many more coming years. Since most of the time, programmers have to work in the UNIX machine, like Linux servers, good knowledge of the Linx command line goes a long way.

It allows you to work effectively. You can search files, know what's going on with the system by checking its CPU and memory usage, and perform basic and advanced tasks.

*If you want to learn Linux commands, I suggest to go through **[Learn Linux in 5 Days and Level Up Your Career](#)** course on Udemy*

And, if you need some free resources to start with then you can also check out these *free Linux courses* on Medium.

9. Object-Oriented Programming

As a programmer, you must know a programming language like C++ or Java or maybe Python or JavaScript. You can choose whatever you want to, but my personal suggestion is that you should at least know Java.

It's straightforward to start with, and that's why the right choice for beginners. It's also immensely powerful and allows you to virtually anything.

*It has got libraries from doing basic stuff, like web development to Big Data and so on. If you decide to learn Java, then **The Complete Java MasterClass** is probably the best place to start with.*

And, if you need some free alternatives to learn Java, then these *free Java courses* are probably the best place to start with.

10. Computer Networks

Today's world is an interconnected world, and anywhere you go, you will find computer networks, starting from home where you are using WIFI across many devices to school, college, and offices, which uses Local Area Network (LAN) to the Internet.

Most of the applications you will write will also not be standalone, but the client-server kind of use where the request will go through the network to a server. Clients will access your application from anywhere in the world.

The bottom line is that you must understand the networking basics to understand, develop, and support your application.

If you want to learn more, then I suggest you join **The Complete Networking Fundamentals** course on Udemy. A good starting point for beginners.
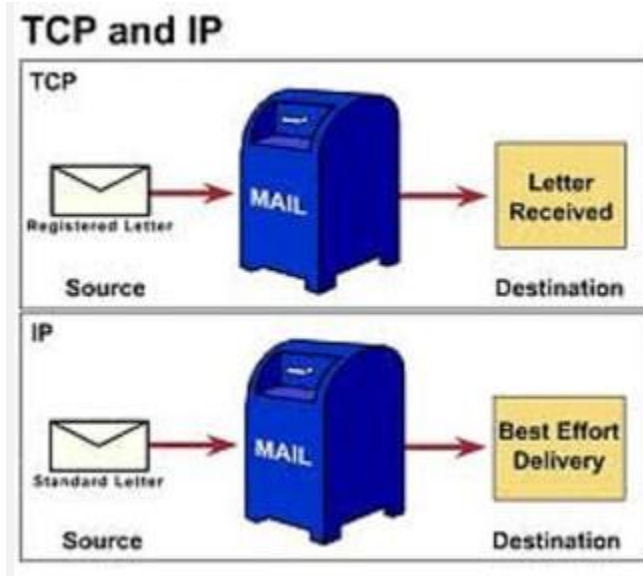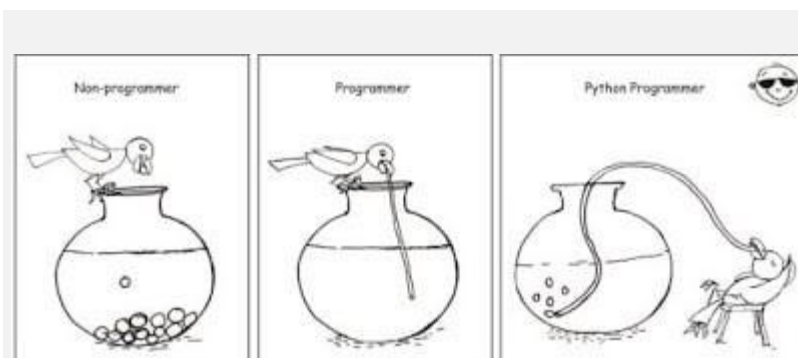
11. Scripting

In point # 8, I have asked you to learn a Programming language, and here I am asking you to learn a scripting language? Why? Can the same programming language not be used as a scripting language?

Well, there is undoubtedly some language which is suitable for both OOP coding and scripting like [Python](#), and that's why I asked you to learn it at least, but if you happen to learn C/C++ or Java, then you can't whip out something as quickly as a Python or Perl developer can do.

If you want to learn Python and need a course, **[The Complete Python Bootcamp](#)** *is a great course to start with.*

The scripting language makes it easy to create tools and scripts to solve common problems in the programming world. If you have a good command over a scripting language, like Python, then you can automate mundane stuff easily.

Once again, I suggest you to learn Python to kill two birds in one stone, and if you need some more resources, this list of **free Python tutorials** from Microsoft and Google is also beneficial.

That's all about **11 skills every Programmer should learn**. Computer science graduates and people who aspire to become programmers can use this list to find out about things like tools and skills to become a successful programmer.

Btw, if you are interested to learn more about things programmers should know, there is a lot of guidance available in terms of essential stuff for programmers, and you can find man great advice on the internet like **97 Things Programmer should know**, a must-read for every serious programmer.

Other **Programming articles** you may like
10 Algorithm Books Every Programmer Should Read
10 Tools Every Software Engineer should know
The 2021 Java Developer RoadMap
10 High Paying Career Options for Programmers and developers
10 Tips to become a better Java developer
The Complete Web Developer RoadMap
10 Tips to Improve your Programming Skill
10 OOP Design Principles Every Programmer Should Know
100+ Data Structure and Algorithm Questions for Programmers
10 Unit testing tools for Java Programmers

Thanks for reading this article so far. If you find this article useful, then please share it with your friends and colleagues. If you have any questions or feedback, then please drop a note.

What are the top software developer skills in 2020 and in high demand in the global job market?

During the past 10 years, the Software Engineering industry has been undergoing significantly rapid changes.

According to [EDC](#), in 2019, 26.4 million people globally were engaged in programming, and by 2023 it is expected that the number of software developers will exceed 27.7 million people.

In this article, we will cover the latest job market news in Software Development and how it affects trends in hard and soft skills that are requested in this industry.

Essential skills types in Software Development career

In general, each software developer needs to have 3 main directions of the skillset:

 Some fundamental knowledge related to the professional field. For example, to become a machine learning engineer, you must have strong math skills.

 Basic skills in related fields. For example, Design, UX, Back-end development, project management for Front-end Web Developer. This kind of knowledge helps you communicate effectively with colleagues.

 Personal qualities (soft skills) in areas such as leadership, emotional intelligence, self-control, mentoring, etc. They are necessary to be able to express your ideas and work results clearly, build trusting relationships with your teammates, managers, and subordinates. Soft skills also help to cope with your own and team failures and build informal relationships.

TOP software engineering jobs that companies are looking for

During the last 3 months, the trends on the job market have changed significantly. But the demand for software engineering job offers remains on a high level.

Among 19 specialties currently available on MeetFrank, **Software Engineering roles take 57% of the total**.

Besides, some of them lie in the top 10 job offers with the highest number of applicants.

Top 10 roles companies are hiring for in MeetFrank

1. Customer Success Associate
2. Video Reviewer
3. Sales Executive
4. Product Owner
5. Head of Marketing
6. .NET Software Engineer
7. Senior Full-Stack Developer
8. Customer Success Manager
9. Sales representative
10. Director of Sales

Insights by
MEETFRANK.

Based on the number of job offers and applicants in the _MeetFrank app_, **the most popular** software engineering job opening is **.NET Software Engineer** followed by **Full-Stack Developer** and **Front-End Developer**.

Top 5 software engineering job offers on MeetFrank

1. .NET Software Engineer
2. Full-Stack Developer
3. Front-End Developer
4. Backend Engineer
5. Java Developer

Insights by
MEETFRANK.
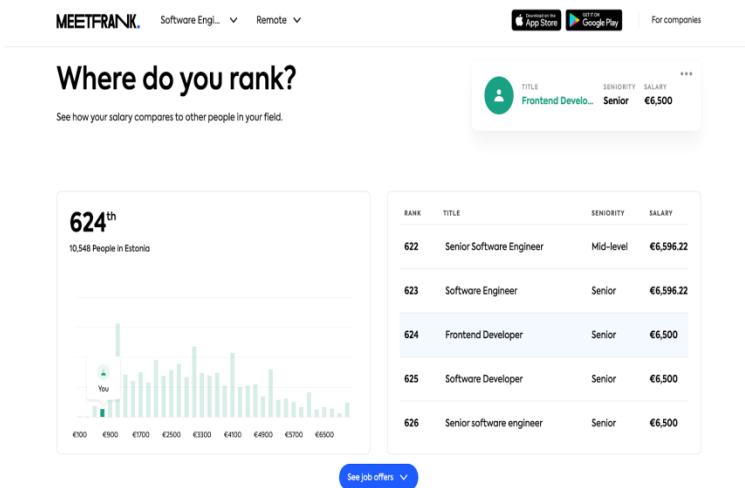
Most in-demand Software Engineering hard skills in 2020

By looking at the job market changes' speed now and beyond, it is obvious that if you want to be in a safe place, you need to maximize your marketability via pursuing a mostly demanded skill-set.

What software developer skills should you focus on now?

We analyzed the job market for programmers and prepared a list of most sought hard skills globally.

Top 10 software engineering skills on MeetFrank

1. Backend Development
2. JavaScript
3. Node.js
4. Frontend Development
5. Full-Stack Development
6. HTML & CSS
7. React
8. Amazon AWS
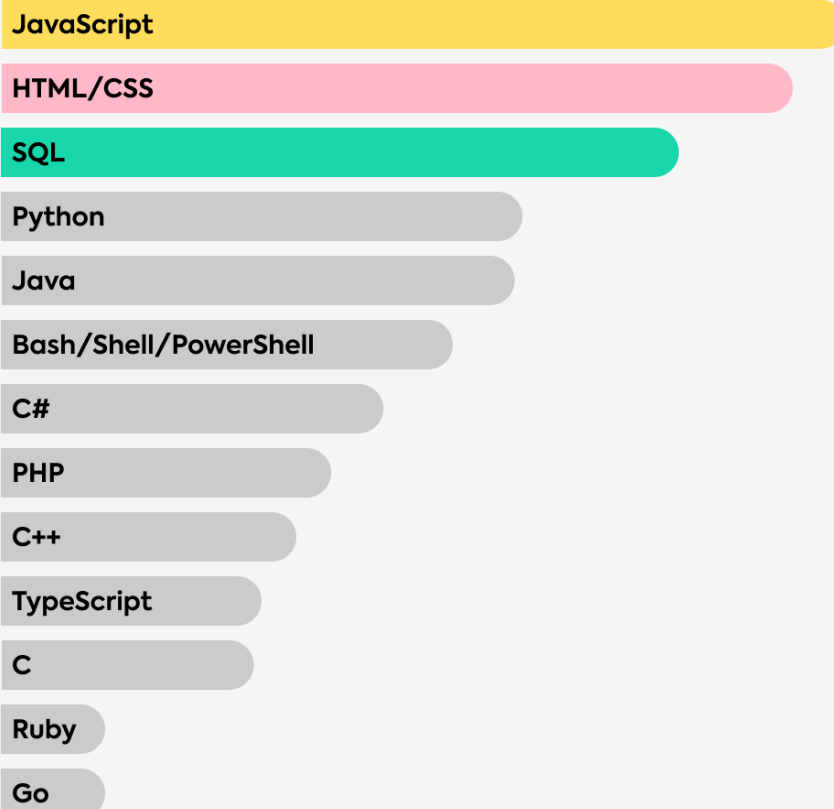9. TypeScript
10. Mobile Development

Insights by
MEETFRANK.

You can also check per-country data in MeetFrank Job Market Insights.

TOP programming languages to know in 2020
If you want to start your career in software development, one of the most common questions you may ask yourself would be "What is the top best programming language to know?".

Here is the most up to date list

Best programming language to learn in 2020

JavaScript

HTML/CSS

SQL

Python

Java

Bash/Shell/PowerShell

C#

PHP

C++

TypeScript

C

Ruby

Go

Insights by
MEETFRANK.

Despite current trends, there isn't a right or wrong programming language choice. You need to pick the one or two that suit the specific field you want to work in today. See the examples below:

What is the best programming language to know?

Front-end web development
↳ JavaScript

Back-end web development
↳ JavaScript, Python, Java, PHP, Ruby, C#

Desktop application development
↳ Java, C++, Python

Mobile application development
↳ Swift, Java, C#

Game development
↳ C++, C#

Insights by
MEETFRANK.

Soft skills as a secret weapon
Employers and recruiters have long been saying that software development professionals can no longer succeed with technical skills alone.

Today, the classic techie should have "flexible" skills. According to a [McKinsey poll](), it is high-tech industries that are most in need of them. One-third of the respondents indicated that the most problematic areas in terms of soft skills in 2021 would be data analytics, IT, mobile, web design.

Here are TOP 4 essential soft skills every software professional needs to consider in his career.

Communication
It may sound weird to you, but communication is one of the core skills in the software development world.
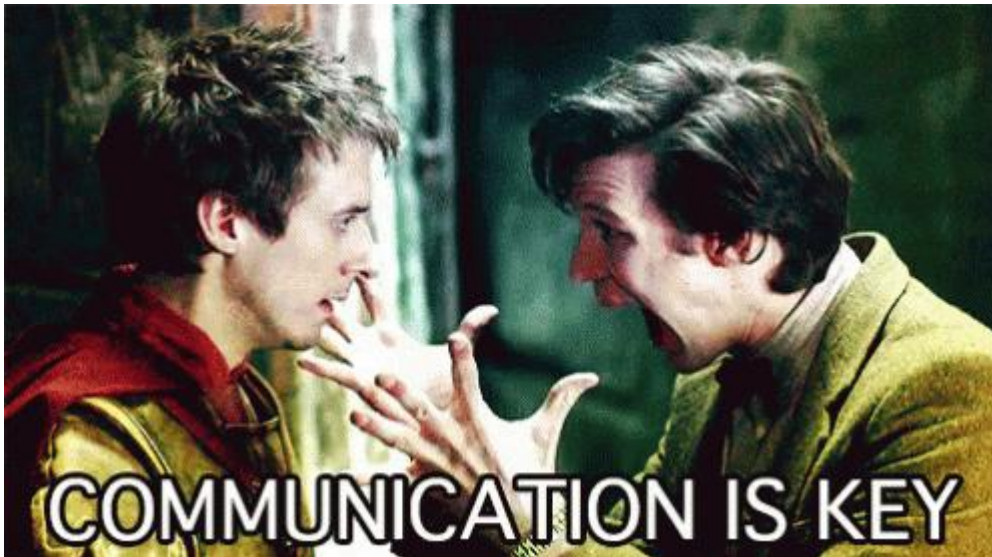
This skill is highly needed for self-presentation on interviews, writing documentation for libraries and frameworks, teamwork, and writing emails, or slack messages to coworkers. You need to be able to hear, convincingly argue, be customer-oriented, and tuned in to the result.

Self-management

This skill involves the management of emotions, stress, and energy, the ability to reflect and give feedback properly. It also includes time management.

Effective thinking

For productive work, it is essential to control the processes in the head. You should learn the systemic, creative, structural, logical, and design types of thinking. The ability to collect and analyze information to correctly conclude will not hinder as well.

Leadership

Leadership is especially important for team managers and senior roles. This skill includes an ability to plan, set tasks for employees correctly, motivate them, control, and give appropriate feedback on time. Managing people is not about making subordinates do what you want. This skill is about the ability to inspire and help others reach their highest potential. Therefore, the manager's expertise is super crucial for those planning career growth.

What does a software developer do?

There are four main types of software developer: systems developers, web developers, mobile developers and test automation developers. New entrants to the profession tend to specialise in one of these areas when they start.

A junior software developer, with experience, is likely to progress to senior software developer and later to software architect or similar. Other opportunities for promotion could include team lead or manager.

Software developers' typical duties include:

- *discussing clients' requirements and proposed solutions with a senior developer (for developers at mid-skill level and below)*
- *writing and testing code*
- *collaborating with other developers*
- *using development tools (see below)*

Development tools are used by software developers to write and test code, often as a team. Common development tools include:

- *integrated development environments (eg Eclipse, IntelliJ): for writing and editing code*
- *source control management (eg Git, SVN, Mercurial): to enable teams to work together to manage changes to source code*
- *issue management systems (eg Jira): for managing a list of issues or improvements*
- *test driven development: for writing code to test your code*
- *deployment (eg Jenkins, Hudson): for ensuring the latest software release is packaged correctly, tested and deployed to an application server*

Typical employers of software developers

- *Software development companies*
- *Financial services firms*
- *Banks*
- *Technology consultancies*
- *Telecommunications companies*
- *Public sector organisations*

13 Technical Skills You Should Have As A Developer

If you are a computer science student or doing a course to become a software engineer or a software developer, there are some technical skills you need to have to become a good programmer. Technology is vast and there are so many tools, platforms, languages coming out in the market. It doesn't matter if you are an experienced programmer or a newbie programmer, as a modern developer you should have knowledge that how to integrate the modern technologies and other technical stuff in your work to make a good product or software.

In this article, we will discuss some important technical skills you should have as a developer or if you are planning to become a good developer.

1. Data Structures and Algorithms: This skill is the topmost priority by most of the companies to check the problem solving and coding skill. You can become a good software developer if you know how data can be organized and how it can be used to

solve a real life problem. As a developer or a computer science student or a self taught programmer, you should put serious effort to learn Data Structures and Algorithms(e.g. array, linked list, tree). Data Structures and Algorithms are the heart of programming. Initially most of the developers do not realize its importance but when you will start your career in software development, you will find your code is either taking too much time or taking too much space. There you will realize the importance of organizing the data using right data structure and algorithm to solve a specific problem in less time and less space. Some of the website where you can learn and practice this skill are GeeksforGeeks, Hackerrank, Codechef, CareerCup, LeetCode, InterviewBit, HackerEarth etc.

2. Programming Languages: *In order to become a good programmer you must have command on at least one programming language in depth. When it comes to deciding which programming language you should choose, so it depends on your area of interest and in which language you love to solve the problems or you are comfortable with. Let's see the popularity of programming languages in 2019 according to Stack Overflow survey…*

Programming, Scripting, and Markup Languages

All Respondents | Professional Developers

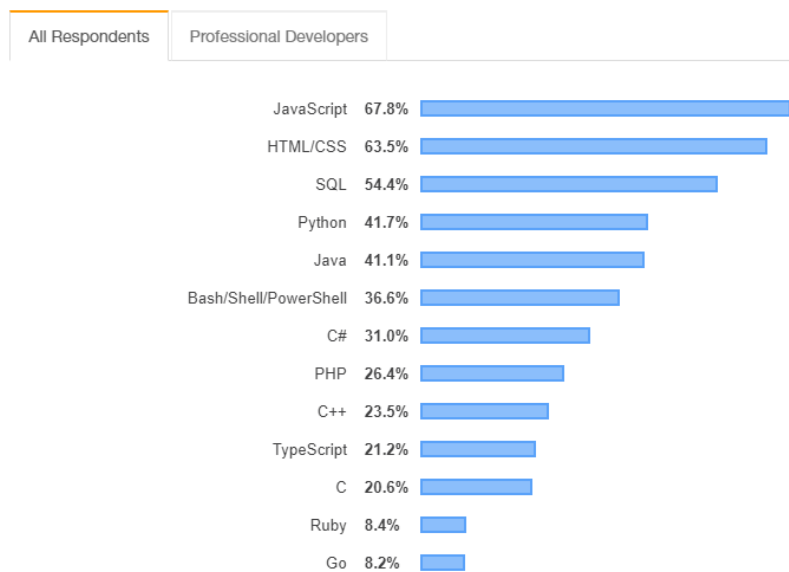| Language	Percentage
JavaScript	67.8%
HTML/CSS	63.5%
SQL	54.4%
Python	41.7%
Java	41.1%
Bash/Shell/PowerShell	36.6%
C#	31.0%
PHP	26.4%
C++	23.5%
TypeScript	21.2%
C	20.6%
Ruby	8.4%
Go	8.2%

Image Source: StackOverflow

From the above image, demand in the market and area of interest you can pick up any programming language. Refer to the article Top 10 Programming Languages of the World *to decide which programming language you should choose.*

3. Source Control: *Source control helps the developer in managing and storing their code. Today most of the organization is looking for a developer who is proficient in*

version control and collaborate with other team members. So if your plan is to become a good software developer you need to be comfortable with version control concepts and tools like Git (preferred by 70-80% organization), Mercurial, SVN, etc. Go through this article to learn more about source control [Git and Github](#)

4. Text Editors: *It doesn't matter you are a beginner, intermediate or expert level programmer. Every programmer's programming journey start from text editors. It is an essential tool of programmers daily life. Not only programmers even non-programmers also use text editors for their own purpose. There are a lot of text editors available like Notepad++, Sublime Text, Atom, Brackets, Visual code,, etc. Every programmer especially beginner should spend some time in a learning text editor and some keyboard shortcut to becoming a smart and productive developer.*

5. IDEs (Integrated Development Environment): *IDEs allows you to write, modify, compile, run and debug your code. When it comes to choosing the best development environment, different programmers have different choice for different purpose or language they are working on. Every programmer should know how to use IDEs to write, compile, run and debug their code. Using an IDE speed up their work and there are so many IDEs available for developers. For C, C++ and C# programmers most recommended choice is Visual Studio or Code::Blocks. For Python developers, PyCharm, Spyder or Jupyter notebook is also getting popularity. For Java Eclipse, NetBeans and IntelliJ IDEA is the best choice for developers.*

6. Databases: *An essential skill for developers is understanding of working with databases. Developers should know all kind of operation like how to store records, create, insert, update, delete, etc. Creating any kind of application and software is impossible for any organization without the database. When a developer work on any serious business project they also need to take care of security issue and managing the complete organization record with proper backup and that's the reason every organization expects a developer comfortable in working with databases and managing the complete records securely. There is no doubt that [SQL](#) is the most popular classic database among developers. If you want to become a good developer you need to be good in writing at least basic SQL queries. Oracle, PostgreSQL, MongoDB, Cassandra, Redis, etc. are the databases you can work with.*

7. Operating System: *A serious software developer should know the fundamentals and mechanism of the operating system. When a developer work on a project they deal with so many issues related with an operating system like memory usage, communicating with another machine, running a program very slow, tools conflicting issues, blocking issues, etc. When a developer writes code on one machine and that doesn't work on another machine then it can create a serious issue during the production level. So its good to have good knowledge of process and mechanism of the operating system you are going to work with. Most of the programmers prefer working on Linux, Windows machine or Mac. Android and iOS is the best example of mobile and tablet operating system.*

8. Networking Basics: *In 70-80% cases developers work or application is based on the client-server model, where the request goes through the network to a server and client can be based anywhere in the world to access the application. Understanding of basic networking is important for developers to develop and support an application. If the architecture wouldn't be designed properly it can create HTTP request issue over the network. In a client-server architecture, a user or a client POST request via the internet which is received by the server and after processing data request the response is sent back to the client. Today in most of the application like web-based, online games, business automation or cloud computing client-server architecture is used. So we can not deny this fact that fundamentals and basics of networking are also an essential skill for the developer before they enter into programming.*

9. Basics of Testing: *Before releasing software in the market there are so many test cases a software or an application has to pass. Testing is an important step to find out all kind of bug and to check if the software is ready to hand over to the customer or not. There are so many test methods but a developer should have knowledge of three important testing methods. First one is* [Unit Testing](#) *in which each and every individual module or class is tested properly. There are so many unit testing frameworks available like NUnit for C#, JUnit for Java, Embunit for C or C++. Another testing is* [Integration Testing](#) *where a developer has to test the interaction between different blocks or modules. This test helps to exclude the incorrect processing of data. The last testing is* [System Testing](#) *where the test is conducted on complete and integrated software. It falls under the black box testing technique where it doesn't require internal knowledge of the code.*

10. Cross-Platform Software: *When a product is designed or developed it is expected to run on multiple platforms like Windows, Mac, Linux, etc. In a simple language cross platform allows you to write code once and that is shared across different platforms. It is important for a developer to make a product which can be accepted by the maximum number of systems because today most of the users are switching to the mobile devices or smartphones to use the product or services. The number of customers can be increased eventually when the software is adapted to the maximum number of devices. If you are a beginner or experienced level programmer, you should have knowledge about working with cross-platform software for better career opportunity and growth in software development.*

11. Encryption and Cryptography: *When it comes to making a web application or software which uses sensitive information of a user, it is important for a developer to implement a secure and encrypted key to prevent all kind of attacks. Security of users sensitive information, preventing a site from hacking is the major concern for every organization when it comes to making a product or software. It is expected from a developer to know about how encryption algorithms work, how authentication works and how cryptography methods work. There are mainly two methods used for data encryption. These are* **public key** *and* **private key***. A key is established with public key encryption algorithms such as RSA or ECDSA and its depend on developer which one he/she wants*

to choose to keep in mind about the overall security of the network. Cryptography helps the developer to make a secure system, secure database and helps in transmitting secure output over the network after processing the request. It is also used in secure error handling and allows using third party libraries without worrying about the security issue.

12. SDLC (Software development life cycle): *SDLC is a step by step systematic process to develop a software ensuring its quality and correctness. If you are planning to become a software developer you should have knowledge about the proper life cycle of software from requirement analysis to maintenance of the product. There are mainly 7 phases in SDLC.*

1. *Requirement gathering and analysis*
2. *Feasibility study*
3. *Design*
4. *Implementation and Coding*
5. *Testing*
6. *Deployment*
7. *Maintenance*

When you enter programming each and every phase is important during the development of a software or an application. A developer is expected to use his brain on every stage of SDLC and follow the proper flow to make a good product. It also helps the developer to take precautions at an early stage before any kind of issue they have to deal at the next step.

13. Microsoft Excel: *A developer has to do nothing with Microsoft Excel when it comes to doing coding or implementing software, but still, it is an essential skill for them because it helps to track progress, data analysis, data quality check, maintenance of data and definitely for project planning. We can not underestimate the use of Excel. Its use is much more than spreadsheet which helps the developer to make their work easy and it also helps to speed up their work using its functions like searching, sorting, filtering or for any kind of mathematical operation. Microsoft Excel is also used widely to insert bulk data in databases. This tool is an essential part of a project for a junior level developer to a manager. So its good to spend some time learning the basic functions of Excel.*
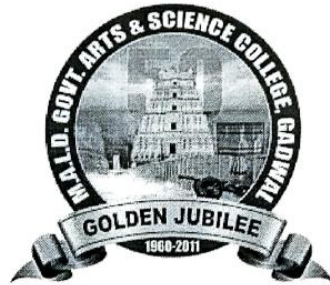
The Team

MALD GOVT ARTS &SCIENCE DEGREE COLLEGE GADWAL

(Affiliated to Palamuru University, Mahabubnagar)

DEPARTMENT OF COMPUTER SCIENCE

Student study Project

TITLE : CELLULAR TECHNOLOGIES.

TEAM MEMBERS : *B.Sc(Computer Science)*

1 . G. NAVEEN KUMAR

2. C. SUDHEER

3. B.NARASHIMA

4. S.PAVAN KUMAR

5 .D.AMARDEEP

Academic Year:2019-20

Under the guidance of

1. **Dr. P. Nageshwar**

2. **D. Hari Babu**

Lecturer in Mathematics
Govt. Degree College
GADWAL - 509125

PRINCIPAL
M.A.L.D. Govt. Arts & Science College
GADWAL - 509 125

HISTORY.

Landmarks in mobile history.

Mobile telephony has a long history that started off with experiments of communications from and to moving vehicle rather then handheld devices.

In later years, the main challenges have laid in the development of interoperable standard and coping with the explosive success and ever increasing demand for bandwidth and reliability.

1926: The first successful mobile telephony service was offered to first class passengers on the Deutsche Reichsbahn on the route between Berlin and Hamburg.

1946: The first calls were made on a car radiotelephone in Chicago. Due to the small number of radio frequencies available, the service quickly reached capacity.

1956: The first automated mobile phone system for private vehicles launched in Sweden. The device to install in the car used vacuum tube technology with rotary dial and weighed 40Kg.

It had a total of 125 subscribers between Stockholm and Gothenburg.

Photo: Ericsson

1969: The Nordic Mobile Telephone (NMT) Group was established. It included engineers representing Sweden, Denmark, Norway and Finland. Its purpose was to develop a mobile phone system that, unlike the systems being introduced in the US, focused on accessibility.

1973: Dr Martin Cooper general manager at Motorola communications system division made the first public mobile phone call on a device that weighed 1.1Kg.

1982: Engineers and administrators from eleven European countries gathered in Stockholm to consider whether a Europe wide digital cellular phone system was technically and politically possible. The group adopted the nordic model of cooperation and laid the foundation of an international standard.

1985: Comedian Ernie Wise made the first "public" mobile phone call in the UK from outside the Dicken's Pub in St Catherine's dock to Vodafone's HQ. He made the call in full Dickensian coachman's garb.

1987: The Technical specifications for the GSM standard are approved. Based on digital technology, it focused on interoperability across national boundaries and consequent different frequency bands, call quality and low costs.

1992: The world's first ever SMS message was sent in the UK. Neil Papworth, aged 22 at the time was a developer for a telecom contractor tasked with developing a messaging service for Vodafone. The text message read "Merry Christmas" and was sent to Richard Jarvis, a director at Vodafone, who was enjoying his office Christmas party.

1996/97: UK phone ownership stood at 16% of households. A decade later the figure was 80%. The explosion in growth was in part driven the launch of the first pay as you go, non-contract phone service, Vodafone Prepaid, in 1996.

1998: The first downloadable content sold to mobile phones was the ringtone, launched by Finland's Radiolinja, laying the groundwork for an industry that would eventually see the Crazy Frog ringtone rack up total earnings of half a billion dollars and beat stadium-filling sob-rockers Coldplay to the number one spot in the UK charts.

1999: Emojis were invented by Shigetaka Kurita in Japan. Unlike their all-text predecessors emoticons, emojis are pictures. The same year in the UK sees the first shots fired in a supermarket price war, with Tesco, Sainsbury's and Asda selling Pay and Go phones at discounted prices. For the first time, you could pick up a mobile phone for just under £40.

The first BlackBerry phone was also unveiled in 1999. Famous for its super-easy email service, BlackBerry handsets were seen as the ultimate business tool, allowing users to read and respond to emails

from anywhere. This led to 83% of users reading and responding to work emails while on holiday, and over half admitted to sending emails on the toilet, winning the manufacturer the nickname CrackBerry.

2000: The all-conquering Nokia 3310 crash landed on shop shelves. Naturally it was unscathed and went on to sell 126 million units. Over in Japan, the first commercially available camera phone The Sharp J-SH04, launched in November 2000 in Japan. The only snag? you could only use it in Japan. Europe wouldn't get its first camera phone until the arrival of the Nokia 6750 in 2002.

2003: The 3G standard started to be adopted worldwide, kicking off the age of mobile internet and paving the way for the rise of smartphones. Honk Kong-based Hutchinson Wampoa owned Three

2007: The iPhone debuted. Solely available on O2 at launch in the UK and priced at a then eye-watering $499, Nokia CEO confidently dismissed it as little more than a 'cool phone' that wouldn't translate column inches into market share.

2008: The first Android phone turned up, in the form of the T-Mobile G1. Now dubbed the O.G of Android phones, it was a long way from the high-end Android smartphones we use today. Not least because it retained a physical keyboard and a BlackBerry-style trackball for navigation. This year also saw the advent of both Apple's App Store and Android Market, later renamed Google Play Store, paving the way for our modern-day app culture and creating a $77 billion industry.

2009: O2 publicly announced that it had successfully demonstrated a 4G connection using six LTE masts in Slough, UK. The technology, which was supplied by Huawei, achieved a peak downlink rate of 150Mbps.

WhatsApp also launched that year, letting customers send and receive calls and messages via the internet. The messaging system now has 1.2 billion users sending more than 10 billion messages a day. Which makes it 50% more popular than traditional texting.

2010: Samsung launched its first Galaxy S smartphone. Usurping former Android giants, HTC, the Samsung Galaxy S range is still the most popular Android brand.

2012: When text messages first arrived, most people didn't think they'd catch on. Ten years later, Britons were sending a billion messages per month. In 2012, British text volume reached its highest point, with 151 billion sent in the UK alone.

2016: The Pokemon Go app launched worldwide. The free augmented reality game uses the smartphone camera and location to show Pokemon characters in the real world. The aim of the game is to travel to different locations to collect as many Pokemon as possible, leading countless gamers to walk into lamp-posts in their quest to catch 'em all.

2017: The Nokia 3310 had a revival, sporting a fresh version equipped with basic web browsing, a colourful screen and even a camera. Despite this, it still retained our favourite features from the original

3310, including the iconic design, super-long battery life and even an updated version of Snake. Needless to say, it stole the show at the Mobile World Congress (MWC) tech expo and was one of the biggest hits of the year.

Apple marked ten years in the smartphone game with the all-screen iPhone X and ditched a physical home button for the first time.

brand offered the first 3G network connection in the UK among other countries. Staying very much on-brand, Three ranged a trio of 3G handsets, namely: the Motorola A830, the NEC e606 and NEC e808.
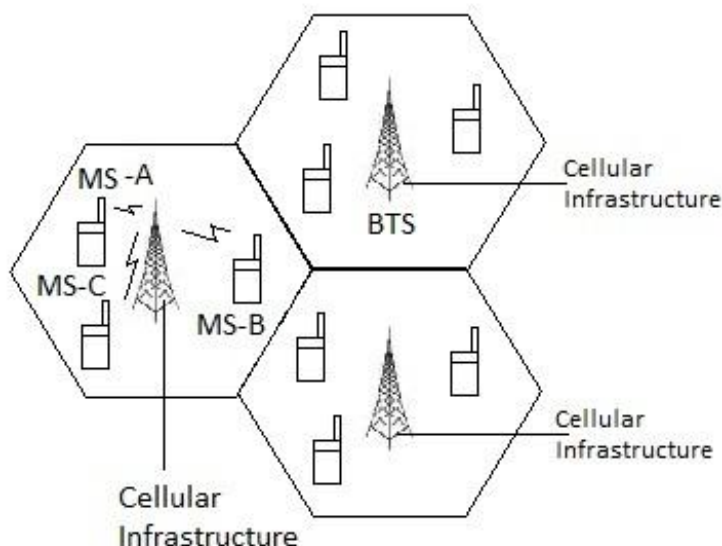
What is Cellular Network?

The Macrocell covers upto 20 Km where as Microcell covers upto 1 Km. The multiple subscribers can interface with single base station using multiple access techniques such as TDMA/FDMA/CDMA. Refer [Cellular network basics >>](#) and [cellular communication tutorial >>](#) for more information.

Benefits or advantages

Introduction:

The currently deployed wireless networks such as GSM, CDMA and LTE are known as cellular networks. In cellular network, the entire area is divided into smaller size cells to connect mobile subscribers with RF frequency to provide voice/data services. Each of these cells house one base station (i.e. BTS or eNodeB or eNB).

The base stations are interfaced together in different topologies viz. star, mesh etc. They are interfaced with MSCs, PSTN and PSDN in the backbone.

Cellular Network

0

Cellular Network.

Following are the benefits or **advantages of Cellular Network**:

➡ It provides voice/data services even while roaming.

➡ It connects both fixed and wireless telephone users.

➡ It is used in areas where cables can not be laid out due to its wireless nature.

➡ It is easy to maintain.

➡ It is easy to upgrade the equipments.

➡ The mobile and fixed subscribers are connected immediately with cellular network as soon as mobile phones are switched on. All the handshake signals between mobile and base station are automatically exchanged.

Drawbacks or disadvantages of Cellular Network

Following are the **disadvantages of Cellular Network**:

➡ It offers less data rate compare to wired networks such as fiber optics, DSL etc. The data rate varies based on wireless standards such as GSM, CDMA, LTE etc.

➡ Macro cells are affected by multipath signal loss.

➡ The capacity is lower and depends on channels/multiple access techniques employed to serve subscribers.

➡ As the communication is over the air, it has security vulnerabilities.

➡ It requires higher cost in order to setup cellular network infrastructure.

➡ The wireless communication is influenced by physical obstructions, climatic conditions and interference from other wireless devices.

➡ The installation of antennas for cellular network require space and foundation tower. This is very cumbersome and requires both time and effort.

There are different wireless standards used in cellular networks such as GSM, CDMA, LTE etc. Refer following links to know advantages and disadvantages of these technology based cellular networks.

[GSM cellular network](#)   [CDMA network](#)   [WiMAX network](#)   [LTE network](#)   [5G network](#) .

USEAGE OF GENERATIONS.

Simply, the **"G"** stands for **"GENERATION"** . While you connected to internet, the speed of your internet is depends upon the signal strength that has been shown in alphabets like 2G, 3G, 4G etc. right next to the signal bar on your home screen. Each Generation is defined as a set of telephone **network standards** , which detail the technological implementation of a particular mobile phone system. The speed increases and the technology used to achieve that speed also changes. For eg, 1G offers 2.4 kbps, 2G offers 64 Kbps and is based on GSM, 3G offers 144 kbps-2 mbps whereas 4G offers 100 Mbps - 1 Gbps and is based on **LTE technology** .

Features	1G	2G	3G	4G	5G
Start/Devlopment	1970/1984	1980/1999	1990/2002	2000/2010	2010/2015
Technology	AMPS, NMT, TACS	GSM	WCDMA	LTE, WiMax	MIMO, mm Waves
Frequency	30 KHz	1.8 Ghz	1.6 - 2 GHz	2 - 8 GHz	3 - 30 Ghz
Bandwidth	2 kbps	14.4 - 64 kbps	2 Mbps	2000 Mbps to 1 Gbps	1 Gbps and higher
AccessSystem	FDMA	TDMA/CDMA	CDMA	CDMA	OFDM/BDMA
Core Network	PSTN	PSTN	Packet Network	Internet	Internet

The aim of wireless communication is to provide high quality, reliable communication just like wired communication(optical fibre) and each **new generation** of services represents a big step(a leap rather) in that direction. This evolution journey was started in **1979** from 1G and it is still continuing to 5G. Each of the Generations has standards that must be met to officially use the G terminology. There are institutions in charge of standardizing each generation of mobile technology. Each generation has requirements that specify things like throughput, delay, etc. that need to be met to be considered part of that generation. Each

generation built upon the research and development which happened since the last generation. 1G was not used to identify **wireless technology** until 2G, or the second generation, was released. That was a major jump in the technology when the wireless networks went from **analog to digital** .

1G - First Generation

This was the first generation of **cell phone technology** . The very first generation of commercial cellular network was introduced in the late 70's with fully implemented standards being established throughout the 80's. It was introduced in 1987 by Telecom (known today as Telstra), Australia received its first cellular mobile phone network utilising a 1G analog system. 1G is an analog technology and the phones generally had poor battery life and voice quality was large without much security, and would sometimes experience **dropped calls** . These are the analog telecommunications standards that were introduced in the 1980s and continued until being replaced by 2G digital telecommunications. The maximum speed of 1G is **2.4 Kbps** .

2G - Second Generation

Cell phones received their first major **upgrade** when they went from 1G to 2G. The main difference between the two mobile telephone systems (1G and 2G), is that the **radio signals** used by 1G network are analog, while 2G networks are **digital** . Main motive of this generation was to provide secure and reliable communication channel. It implemented the concept of **CDMA** and **GSM** . Provided small data service like sms and mms. Second generation 2G cellular telecom networks were commercially launched on the GSM standard in Finland by Radiolinja (now part of Elisa Oyj) in 1991. 2G capabilities are achieved by allowing multiple users on a single channel via multiplexing. During 2G Cellular phones are used for data also along with voice. The advance in technology from 1G to 2G introduced many of the fundamental services that we still use today, such as SMS, **internal roaming** , conference calls, call hold and billing based on services e.g. charges based on long

distance calls and real time billing. The max speed of 2G with General Packet Radio Service (**GPRS**) is 50 Kbps or 1 Mbps with Enhanced Data Rates for GSM Evolution (**EDGE**). Before making the major leap from 2G to 3G wireless networks, the lesser-known 2.5G and 2.75G was an interim standard that bridged the gap.

3G - Third Generation

This generation set the standards for most of the wireless technology we have come to know and love. Web browsing, email, video downloading, picture sharing and other **Smartphone technology** were introduced in the third generation. Introduced commercially in 2001, the goals set out for third generation mobile communication were to facilitate greater voice and data capacity, support a wider range of applications, and increase data transmission at a **lower cost** .

The 3G standard utilises a new technology called **UMTS** as its core network architecture - Universal Mobile Telecommunications System. This network combines aspects of the 2G network with some new technology and protocols to deliver a significantly faster data rate. Based on a set of standards used for mobile devices and mobile telecommunications use services and networks that comply with the International Mobile Telecommunications-2000 (**IMT-2000**) specifications by the International Telecommunication Union. One of requirements set by IMT-2000 was that speed should be at least 200Kbps to call it as 3G service.

3G has Multimedia services support along with **streaming** are more popular. In 3G, Universal access and portability across different device types are made possible (Telephones, PDA's, etc.). 3G increased the efficiency of frequency spectrum by improving how audio is **compressed** during a call, so more simultaneous calls can happen in the same frequency range. The UN's International Telecommunications Union **IMT-2000** standard requires stationary speeds of 2Mbps and mobile speeds of 384kbps for a "true" 3G. The theoretical max speed for **HSPA+** is 21.6 Mbps.

Like 2G, 3G evolved into 3.5G and 3.75G as more features were introduced in order to bring about 4G. A 3G phone cannot communicate through a **4G network** , but newer generations of phones are practically always designed to be backward compatible, so a 4G phone can communicate through a 3G or even **2G network** .

4G - Fourth Generation

4G is a very different technology as compared to **3G** and was made possible practically only because of the advancements in the technology in the last 10 years. Its purpose is to provide **high speed** , high quality and high capacity to users while improving security and lower the cost of voice and data services, multimedia and internet over IP. Potential and current applications include amended mobile web access, **IP telephony** , gaming services, high-definition mobile TV, video conferencing, 3D television, and cloud computing.

The key technologies that have made this possible are **MIMO** (Multiple Input Multiple Output) and **OFDM** (Orthogonal Frequency Division Multiplexing). The two important 4G standards are WiMAX (has now fizzled out) and **LTE** (has seen widespread deployment). LTE (Long Term Evolution) is a series of upgrades to existing UMTS technology and will be rolled out on Telstra's existing 1800MHz frequency band. The max speed of a 4G network when the device is moving is 100 Mbps or **1 Gbps** for low mobility communication like when stationary or walking, latency reduced from around 300ms to less than 100ms, and significantly lower congestion. When 4G first became available, it was simply a little faster than 3G. 4G is not the same as **4G LTE** which is very close to meeting the criteria of the standards. To download a new game or stream a TV show in HD, you can do it **without buffering** .

Newer generations of phones are usually designed to be **backward-compatible** , so a 4G phone can communicate through a 3G or even 2G network. All carriers seem to agree that **OFDM** is one of the chief indicators that a service can be legitimately marketed as being 4G. OFDM is a type of digital modulation in which a signal is split into

several narrowband channels at different frequencies. There are a significant amount of infrastructure changes needed to be implemented by service providers in order to supply because voice calls in **GSM** , **UMTS** and **CDMA2000** are circuit switched, so with the adoption of LTE, carriers will have to re-engineer their voice call network. And again, we have the fractional parts: **4.5G** and **4.9G** marking the transition of LTE (in the stage called LTE-Advanced Pro) getting us more MIMO, more D2D on the way to IMT-2020 and the requirements of **5G** .

5G - Fifth Generation

CHARGES.

that's intended to improve on 4G. **5G** promises significantly faster data rates, higher connection density, much lower latency, among other improvements. Some of the plans for 5G include **device-to-device** communication, better battery consumption, and improved overall Reliance Industries 5G is a generation currently **under development** , wireless coverage. The max speed of 5G is aimed at being as fast as **35.46 Gbps** , which is over 35 times faster than 4G.

Key technologies to look out for: **Massive MIMO** , Millimeter Wave Mobile Communications etc. Massive MIMO, milimetre wave, small cells, **Li-Fi** all the new technologies from the previous decade could be used to give 10Gb/s to a user, with an unseen low latency, and allow connections for at least **100 billion devices** . Different estimations have been made for the date of commercial introduction of 5G networks. Next Generation Mobile Networks Alliance feel that 5G should be rolled out by **2020** to meet business and consumer demands.

DATA… Ltd (RIL) chairman Mukesh Ambani in conversation with Microsoft Chief Executive Satya Nadella on Monday spoke about how Jio helped the data cost come down significantly.

Speaking at the Future Decoded CEO Summit in Mumbai, Ambani told Nadella during their dialogue that the data cost has been reduced to Rs 12-14 per GB now from Rs 300-500 per GB in the pre-Jio days.

ADVERTISING…

JIO COMMUNICATIONS.

Jio shares spectrum with [Reliance Communications](). The sharing deal is for 800 MHz band across seven circles other than the 10 circles for which Jio already owns.[26]

Sep 2014 – Acquired undisclosed stake in [Airspan Networks]() for US$5 mn.[27][28] Deploys Airspan's small cells throughout the network roll out phase.[29][30]

Sep 2016 – Jio signed a pact with [BSNL]() for intra-circle roaming which would enable users of the operators to use each other's 4G and 2G spectrum in [national roaming]() mode

Feb 2017 – Jio announced a partnership with Samsung to work on LTE – Advanced Pro and 5G.

Feb 2017 – Partnered with [Ciena]() to deploy transport [SDN]() architecture. Reliance Jio also partnered with several OSS ([Operations Support Systems]()) & BSS ([Business Support System]()) companies for the deployment of services, like: [SAP](), [HP](), [IBM](), [Ericsson](), [Rancore](), Estel Technologies, [Subex]() and [Intec Telecom Systems](). However, the finalized OSS firms were Ericsson, HP and Friendly Technologies.

Sep 2020 – Partners with [Cisco Systems]() for [5G]() deployment. Sep 2020 – Announces partnership with HFCL to deploy [Fiber-optic communication]() to support the rollout of [FTTx]() services.

Summit Digitel Infrastructure

Summit Digitel Infrastructure (formerly known as Reliance Jio Infratel Private Limited) operates 136,000 telecom sites. This

division has been divested to Tower Infrastructure Trust, which is owned by Brookfield Asset Management, for a consideration of ꠰ 25,215 crore(US$3.5 billion).

Latest Mobile Phones.

Every week several smartphones are launched in the country which brings new features, specifications, and much more. The latest mobile phones in the market have evolved and embarked their way into revolution. The mobile phone price in India is not only budget-friendly, but every new mobile model also comes with an array of exciting technological upgrades. If you take a closer look at the mobile phone price list, you will realise that almost every smartphone price is budget-friendly given the array of possibilities they have to offer. This is precisely why Digit is here at your service. This list will give you every detail you need and help you decide on which phone to choose based on your budgetary requirements. You can also check out our reviews to select the best mobile suited to your needs. We bring to you the latest mobiles, with the best prices online.

CELLULAR COMPANIES.

- **Samsung.**
- **Apple.**
- **Huawei.**
- **Nokia.**
- **Sony.**
- **LG.**
  MOTROLA .

Mobile Communications (4G and 5G)

- Software Defined Networks (SDNs). The evolution path of telecommunication from the first generation to the fifth generation provides different aspects and approaches towards the current state of telecom. The onset of 4G has already revolutionized the field of telecommunication by bringing the wireless experience to a new level altogether. Further, 5G is expected to be a milestone development for the success of IoT and M2M communications. References [1] TondareS M, Panchal S D, Kushnure D T, Evolutionary steps from 1G to 4.5G, International Journal of Advanced Research in Computer and Communication Engineering, Vol. 3, Issue 4, April 2014. [2] Panagiota D. Giotopoulou, The evolution of mobile communications: Movingfrom 1G to 5G, and from human-to-human to machine-to-machine communications, Nationaland Kapodistrian Universityof Athens, School of Science, November 2015. [3] MN Bojouredi, Seidi Haghighat Shoar et al : Low

Complexity Statistically Robust Precoder/Detector Computation for Massive MIMO Systems, School of Electrical and Computer Engineering, University of Tehran, Tehran, Iran, 2017 [4] Manar Mohaisen, YuPeng Wang, KyungHi Chang:The Graduate School of Information Technology and Telecommunications, INHA University, 2009 P-8 [5] LTE OFDM, OFDMASC-FDMA & Modulation. Retrieved from http://www.radio-electronics.com/ info/cellulartelecomms/lte-long-term-evolution/lte-ofdm-ofdma-scfdma.php (Accessed on May 15, 2018). [6] Understanding 5G: Perspectives on Future Technological Advancements in Mobile, GSMA Intelligence, December 2014. [7] 5G Spectrum, Public Policy Position, November 2016, GSM Association. [8] Emerging Trends in 5G/IMT2020, Geneva Mission Briefing Series, September 2016. [9] Understanding 5G: Perspectives on Future Technological Advancements in Mobile, GSMA Intelligence, December 2014. [10] The Evolution of Mobile technologies: 1G → 2G → 3G → 4G, Qualcomm, June 2014. Published by: Telecom Regulatory Authority of India Editorial responsibility: TD Division, TRAI Contributions, comments and suggestion: sroit@trai.gov.in Disclaimer: This document is published as a part of internal academic .

The Team

M.A.L.D GOVT ARTS & SCIENCE COLLEGE, GADWAL.

(Affiliated to Palamuru University, Mahabubnagar)

Department of Computer Science

Student study Project

Title: Communication Types

Team : B.Sc(Computer Science)

1. **D.Prathyusha**
2. **Poojari Deepika**
3. **C.Vaishnavi**
4. **K.Lakshmi**
5. **K.Laxmi**

Academic Year: 2020-21

Under the guidance of

D. Hari Babu

Lecturer in Mathematics
Govt. Degree College
GADWAL - 509125

PRINCIPAL
M.A.L.D. Govt. Arts & Science College
GADWAL - 509 125

History

The **history of communication** technologies (media and appropriate inscription tools) have evolved in tandem with shifts in political and economic systems, and by extension, systems of power. Communication can range from very subtle processes of exchange, to full conversations and mass communication. The history of communication itself can be traced back since the [origin of speech](#) circa 500,000 BCE The use of technology in communication may be considered since the first use of symbols about 30,000 years BCE. Among the symbols used, there are [cave paintings](#), [petroglyphs](#), [pictograms](#) and [ideograms](#). [Writing](#) was a major innovation, as well as [printing technology](#) and, more recently, [telecommunications](#) and the [Internet](#).

Primitive times

Human communication was initiated with the [origin of speech](#) approximately 500,000 BCE. Symbols were developed about 30,000 years ago. The imperfection of speech allowed easier dissemination of ideas and eventually resulted in the creation of new forms of communications, improving both the range at which people could communicate and the longevity of the information. All of those inventions were based on the key concept of the symbol.

The oldest known symbols created for communication were [cave paintings](#), a form of [rock art](#), dating to the [Upper Paleolithic](#) age. The oldest known cave painting is located within [Chauvet Cave](#), dated to around 30,000 [BC](#).[1] These paintings contained increasing amounts of information: people may have created the first [calendar](#) as far back as 15,000 years ago.[2] The connection between drawing and writing is further shown by [linguistics](#): in [Ancient Egypt](#) and [Ancient Greece](#) the concepts and words of drawing and writing were the same

Five Types of Communication

In preparing for my Fall course: *Communications for Professionals*, I've been thinking more and more about the different types of communication. In previous years, I have outlined four types of communication, but I believe there are actually five types of communication: verbal, non-verbal, written, listening, and visual.

Verbal Communication

Verbal communication occurs when we engage in speaking with others. It can be face-to-face, over the telephone, via Skype or Zoom, etc. Some verbal engagements are informal, such as chatting with a friend over coffee or in the office kitchen, while others are more formal, such as a scheduled meeting. Regardless of the type, it is not just about the words, it is also about the caliber and complexity of those words, how we string those words together to create an overarching message, as well as the intonation (pitch, tone, cadence, etc.) used while speaking. And when occurring face-to-face, while the words are important, they cannot be separated from non-verbal communication.

Non-Verbal Communication

What we do while we speak often says more than the actual words. Non-verbal communication includes facial expressions, posture, eye contact, hand movements, and touch. For example, if you're engaged in a conversation with your boss about your cost-saving idea, it is important to pay attention to both the their words and their non-verbal communication. Your boss might be in agreement with your idea verbally, but their nonverbal cues: avoiding eye contact, sighing, scrunched up face, etc. indicate something different.

Written Communication

Whether it is an email, a memo, a report, a Facebook post, a Tweet, a contract, etc. all forms of written communication have the same goal to disseminate information in a clear and concise manner – though that objective is often not achieved. In fact, poor writing skills often lead to confusion and embarrassment, and even potential legal jeopardy. One important thing to remember about written communication, especially in the digital age, is the message lives on, perhaps in perpetuity. Thus, there are two things to remember: first, write well – poorly constructed sentences and careless errors make you look bad; and second, ensure the content of the message is something you want to promote or be associated with for the long haul.

Listening

The [act of listening](#) does not often make its way onto the list of types of communication. Active listening, however, is perhaps one of the most important types of communication because if we cannot listen to the person sitting across from us, we cannot effectively engage with them. Think about a negotiation – part of the process is to assess what the opposition wants and needs. Without listening, it is impossible to assess that, which makes it difficult to achieve a win/win outcome.

Visual Communication

We are a visual society. Think about it, televisions are running 24/7, Facebook is visual with memes, videos, images, etc., Instagram is an image-only platform, and advertisers use imagery to sell products and ideas. Think about from a personal perspective – the images we post on social media are meant to convey meaning – to communicate a message. In some cases that message might be, look at me, I'm in Italy or I just won an award. Others are carefully curated to tug on our heartstrings – injured animals, crying children, etc.

We communicate continually throughout each and every day. We do it without thinking – we operate on communication autopilot. However, I encourage you to think about how you communicate. How do you communicate verbally? What nonverbal cues do you use when you are disinterested? Excited? Nervous? Are you a good listener? Can you write a concise, clearly articulated message? Are there barriers to how you communicate effectively?

Understanding how you communicate is the first step to communicating more effectively. You can easily look online for communication courses. There are a variety of credit and non-credit course available to help you improve your communication skills, including our non-credit series.

Communicating by Email

Many people find it easier to express themselves in writing than to deal with sensitive or difficult issues in person. Because of its speed and accessibility, electronic mail, or "email", has become a convenient way to communicate with co-workers, colleagues and friends. Unfortunately, sending email messages may not be the best way to communicate if you're involved in conflict with someone. That's because when we send and receive email, we do not have facial expressions, eye contact, body language, hand gestures, tone of voice or other cues that help us to know what a person wants to convey. In the absence of such information, people can easily misinterpret the intention of the sender's message.

Are you involved in a tense relationship with a colleague or friend? Your email could be contributing to the problem! Why not take the time to sit down and talk rather than discussing the issue by email? Why not consider picking up the phone rather than airing your frustrations on facebook, twitter, mhc.chat or other electronic bulletin boards? If you absolutely must communicate by email, strive to be civil, polite, and respectful. The following tips may help you to avoid or minimize conflict in your interpersonal interactions.

Think Before Your Write

Once you send an email message, you cannot retrieve it or take it back. It can be printed, saved, forwarded, or otherwise shared by the recipient much more easily than other types of communication. Messages posted in a public forum can be read by a wide variety of people. Prior to sending email, be sure to give careful consideration to what you wish to say and how you wish to say it. When composing the message, try to imagine how the recipient will interpret your words. Always review messages before you send them to ensure that your meaning is clear and that they are conveying what you really want to say. Never write anything in an email that you would not want to have publicized widely. Never use email to convey anything that, if forwarded or overheard, could be damaging or embarrassing.

Chat

Updated: 05/16/2020 by Computer Hope

ComputerHope.com

Chat is a text-based communication that is live or in real-time. For example, when talking to someone in chat any typed text is received by other participants immediately. In contrast, other text-based communications such as e-mail are modes of correspondence that are not real-time.

There are also several million users chatting through other networks such as IRC. A good example of a chat on IRC is the Computer Hope chat.

What is a chat room?

A **chat room** is a location where multiple people can all talk at the same time. When in a chat room anything said is seen by all people

participating in the chat room. To send a message to only one person in a chat room a [PM](#) (private message) or [DM](#) (direct message) can be sent.

Chat etiquette

Below is a short list of chat [etiquette](#) that should be followed when chatting with others online.

1. Behave the same way you would when talking to someone in real-life.

2. Avoid [chat slang](#).

3. Try your best to spell all words correctly and use proper punctuation.

4. Remember no one is perfect, spelling errors and other mistakes are common in chat.

5. Do not WRITE IN ALL CAPS as it makes you appear as you're yelling.

6. Do not send other chat users private messages without asking them first.

7. Abide by the rules created by those running the chat.

8. When first joining a chat with multiple people, watch the conversation for a few minutes before chiming into someone else's conversation.

COMMUNICATION THROUGH VIDEO CALL

Video conferencing

.

A video call that involves more than two people where all the parties can hear each other and a specific number of people can be seen by the others is called a video conference. The video screen appears as a grid with a number of screens that can be viewed simultaneously. The voice of the speaker is detected to show the video of the current speaker.

The way video conferencing works is that one video stream[6] is transmitted by each participant to a Multipoint Conferencing Unit (MCU). The MCU decides which of the streams to combine to form a single video stream to send to all the participants. For the audio portion, the MCU combines the audio streams from all the participants and transmits them to the recipients as a single stream.

Another simpler form of video conferencing available is a decentralized mode, where every person can see every other person, without any central control. This is in effect like multiple video calls from each person to every other person. This offers higher quality, but utilizes higher bandwidth because it requires a separate stream from each individual to every other person in the call. Skype offers a service called group calling which uses this philosophy.

Nowadays, with the use of High Definition (HD) cameras and videoconference solutions as a cloud offering, high quality video conferencing can be used with no fixed hardware investment. The meaning of "Cloud offering "is that all the hardware/ software is placed at a central location and not at the user premises.

Video Sharing

Video Sharing is an application where a person shares what he is viewing with another person in real time during a voice call. It uses a packet data connection parallel to the connection used for the voice call. When the video is shared, the recipient's phone switches on automatically, and they can also in parallel continue the conversation. Some people also refer to an application that allows a user to upload his videos to a central location and make it available for viewing by others, for e.g. YouTube., as Video Sharing.

Communication through whatsapp

- WhatsApp is a free, multiplatform messaging app that lets you make video and voice calls, send text messages, and more — all with just a Wi-Fi connection.
- With over 2 billion active users, WhatsApp is especially popular among friends and family who live in different countries and want to stay in touch.

- WhatsApp's global popularity is due in large part to its accessibility, cross-platform functionality, and simple, straightforward features.

WhatsApp might be a little-known messaging app in the US, but in many parts of the globe, it's an essential part of everyday life. The Facebook-owned app is easily one of the most popular messaging services in the world.

To understand WhatsApp's popularity, you need to understand it was one of the first mobile apps to offer free, internet-based messaging. Instead of sending texts using cellular-data networks, where fees may apply, WhatsApp primarily relies on a Wi-Fi connection to send and receive messages and calls for free.

Not only is WhatsApp simple to use, it also offers far more features and customizations than traditional SMS messaging — all for free. If you're already familiar with the app, you may be interested in our favorite WhatsApp tips and tricks.

But if you're a newbie, you'll want to check out our guide below. From how to sign up to WhatsApp's best features, here's everything you need to know to get started.

While WhatsApp is similar to other messaging services like iMessage or Messages by Google, it still offers a few key advantages, the most significant being cross-platform functionality (between Android and iOS, for example).

At a glance, WhatsApp may seem like nothing more than a text messaging app, but it can do much more. Here's a brief rundown of WhatsApp's core features:

- **Voice and video calls:** In addition to voice calls, WhatsApp also offers video calls, including a group function, which allows up to eight participants on one call.
- **Voice messaging:** You can record and send voice messages to individual chats or group chats.
- **Secure messaging:** WhatsApp uses end-to-end encryption, a secure communication standard where only the people who are messaging can read the messages.
- **Photos and video sharing:** You can send videos, photos, and GIFs without worrying that your images will be pixelated or not downloadable, which can sometimes happen across SMS messages between different mobile platforms and wireless carriers.
- **Document sharing:** WhatsApp lets you send all kinds of documents, such as PDFs, spreadsheets, and slideshows without the hassle of email or separate document-sharing apps.

- **Desktop access:** WhatsApp offers a desktop version for Mac and for PC.
- **WhatsApp Business:** WhatsApp's dedicated business account is designed so entrepreneurs can showcase their products and connect with their customers on a platform that's convenient and familiar.

Communication through telegram

Telegram is a great messaging tool that has a ton of benefits when it comes to customer service. This app is often overshadowed by the bigger messaging apps like WhatsApp and Facebook Messenger, but it shouldn't be! Telegram is still extremely popular with 200 million monthly users and the app plans to target 1 billion users by 2022. The app is extremely popular in Iran, India, the USA, Brazil, Italy, Venezuela, Russia, Ukraine, Kenya, and Nigeria. If you have customers in these regions, then offering Telegram customer service support is a great way to go above and beyond for your customers and connect with them using an app they trust.

With Telegram set to reach new heights in the coming years, now is a great time to get your company prepared to offer this communication channel. The more communication options you offer, the more freedom your customers will have, and the better their customer experience will be. With that in mind, let's take a deep dive into Telegram and its benefits in customer service.

Why Some Users Prefer Telegram

Before we look at why Telegram is a good option for customer service, let's take a look at why it's becoming popular. Why do some consumers prefer Telegram to other digital messaging services?

- Something different – WhatsApp and Facebook Messenger are both owned by Facebook. This may be an issue for customers who want to distance themselves from Facebook or are concerned about the company's data leaks over the last few years.
- Cloud-based – All conversations are stored in the cloud, so if you switch devices you don't need to backup your chat to keep your data.
- Flexible with files – Users can send videos that are up to 1.5GB in size. This has made Telegram extremely popular for users who want to share movies with their friends. Users can even stream the video before it has finished downloading. This is a feature that the other

messaging services don't support and one of the major reasons Telegram is so popular. In fact, the most subscribed Telegram is called HINDI MOVIES and has 3.2 million subscribers.

- Draft messages – Users can save messages in draft format and access them from any device. This happens automatically if you start a message but don't send it.
- Usernames over numbers – Not everyone is comfortable sharing their phone number, especially with people they've just met or with companies they don't trust to handle their data responsibly. With Telegram, users can communicate by sharing their usernames and the other party won't know your mobile number.
- Unsend or edit messages after they are sent – Unlike WhatsApp, there's no time limit on unsending a message on Telegram. The other party in the message will also not be notified if you unsend a message.
- Fun features – Telegram also has a bunch of fun features like stickers, music players, pinned messages, video messages, and more.

Groups

You can use Telegram's groups feature to build communities and support up to 200,000 members. There are several use cases for groups in a business setting, for example:

- Gathering interest in upcoming events.
- Setting up subscribers.
- Holding contests.
- Marketing.

Telegram is powerful and highly flexible so the options are almost limitless. This is what makes it so great for businesses, especially in a modern and rapidly advancing digital world full of customers with all types of preferences.

It's a Forward-Thinking Company Move

It's such a competitive world out there for businesses in 2020! Businesses have to work harder than ever to set themselves apart from the crowd and capture the attention of consumers. The goal is to attract and excite new customers with the products you offer and the experience you provide and keep those customers happy so they stay with you. Of course, this is easier

said than done and there are hundreds of ways you can improve your company and the experience you offer. One such way is through innovation.

Consumers like forward-thinking and innovative companies. Companies that invest in the latest tech and trends are seen as the movers and shakers in the world. They inspire confidence in consumers who want to believe that the companies they buy from are here to stay. A company that moves with the times and adopts proven tech is more likely to survive than a company that relies on traditional systems and a traditional approach.

By integrating Telegram into your [customer service](#), you are signaling to your customers that you are invested in the future – you're a modern company that uses modern messaging services! You're also signaling that you care about their preferences and are proactive about providing what they want. Think about it… It's great to offer WhatsApp and Facebook Messenger Integration, or Live Chat services, but is this remarkable? You absolutely should offer these services because lots of customers will want to use them and it will take pressure away from your call staff by diversifying your customer communication options. But at the same time, it's no longer remarkable to offer these services. Consumers in 2020 are more demanding than ever. They have high expectations and they want these expectations to be met or exceeded every time. Consumers in 2020 expect to be able to contact your company on WhatsApp, Facebook, or Live Chat. To truly impress customers you need to surprise them. You need to offer more than what they expect as the new standard. Offering Telegram meets this goal. Even customers who don't use Telegram today will see it as a sign that you are committed to providing as many communication options as possible to support your customers. It's essentially free marketing for your company.

How to Get Started with Telegram

So, you've decided to offer Telegram customer service support for your customers, what next? First, you need to understand how Telegram will integrate with your current business solutions. For Telegram customer service support to be its most effective, you will want to use an omnichannel platform. Omnichannel platforms are great for customer

engagement and streamlining your business operation. Their benefits go beyond Telegram.

Telephone Communication

The transmission of speech over a distance either by electric signals propagated along conductors or by radio signals; a type of telecommunication. Telephone communication permits conversations to be carried on between people (subscribers) separated by almost any distance. The sound waves of a subscriber speaking into the transmitter of a telephone set are converted into electric signals; these signals are transmitted over communications channels and then reconverted into sound waves in the receiver of the listener's telephone set, thus reproducing speech. The switching of communications channels required to set up temporary connections between subscribers is carried out at central offices either manually, semi-automatically, or automatically.

Telephone communication is classified so as to correspond to the functional divisions of telephone networks for general use; the categories are local (urban and rural), long-distance, and international. Communication is also possible within a department or industry (*see*TRAFFIC-CONTROL COMMUNICATIONS and SELECTIVE TELEPHONE COMMUNICATIONS) and in situations where one or both parties are in motion. Parties in automobiles or aircraft or on board ship can converse with each other by means of radio communication (*see*RADIOTELEPHONE COMMUNICATIONS; RADIO STATION, LOW-LEVEL; and RADIO TRANSMITTER-RECEIVER).

Telephone communication is one of the most widespread and expeditious forms of communication; it provides for the exchange of information in all ar

eas of human endeavor, including industry, agriculture, government, science, culture, public health, and personal services.

Brief historical survey. The invention of the telephone (1876, A. G. Bell) and the development of the first telephone switchboard (1878, New Haven, Conn.) marked the beginning of telephone communication. In Russia, the first city telephone exchanges were set up in 1882 in St. Petersburg, Moscow, Odessa, and Riga. Subsequent developments in telephone communication were reflected in improvements in equipment, a growth in the number of subscribers, a greater range of communication, and a higher degree of automation. In 1889, A. B. Strowger (United States) developed the rotary stepping switch (step-by-step, or two-motion selector, switch). In 1893, M. F. Freiden-berg, working with S. M. Berdichevskii-Apostolov, built a model of an automatic switching system with rotary stepping switches, and in 1895, Freidenberg patented the concept and design of an automatic switching system incorporating preselectors. An automatic switching system was first put into operation in 1896 (Augusta, USA). During the 1940's, crossbar switching systems were developed, followed by quasi-electronic systems in the 1960's and the first models of electronic systems in the 1970's.

In 1902, in order to increase the range of telephone communication, a method was developed of artificially increasing the inductance of the telephone cable to diminish the attenuation of the signal (*see*PUPIN SYSTEM and KRARUP LOADING). In the 1920's, repeaters were first used on telephone lines to amplify the signal, devices proposed by the Russian engineer V. I. Kovalenkov (1915). The development of the equipment for telephone communication and the extension of telephone systems were accompanied by an increase in the cost of an outside plant, an increase that spurred the development of multichannel communication systems. As far back as 1880, the Russian inventor G. G. Ignat'ev had proposed one of the methods for simultaneous telegraphy and telephony. In the 1920's, M. V. Shuleikin did theoretical work on high-frequency communication. The transition from telephony using voice-frequency currents (up to 3400 hertz [Hz]) to high-frequency telephone communication (more than 16 kilohertz [kHz]) was practically complete by 1950. The invention of highly selective electric filters and modulators has made possible the creation of multichannel communication systems using frequency division of multiplexing on cable, radio relay, and satellite communication links designed to handle many channels (10,000

and more). Beginning in the 1960's, line multiplexing has also been possible through time-division multiplexing.

A striking indication of the development of telephone communication is the growth in the number of telephone sets. In 1890 there were 233,000 sets in the world, in 1928 approximately 30 million, in 1958 approximately 118 million, and in 1974 more than 330 million. In Russia in 1885, there were 1,704 telephone subscribers; by 1917 the number had increased to 223,000. The USSR had more than 1 million subscribers in 1940 and approximately 4 million in 1965; telephone sets in the USSR numbered approximately 16 million in 1974.

Quality of telephone communication; arrangement of connections. The quality of telephone communication is reflected in factors that characterize mainly the quality of speech transmission and the quality of telephone service.

The quality of speech transmission (intelligibility, naturalness, loudness) depends mainly on the technical characteristics of the telephone set, the central office, and the telephone channels. There are three requirements for high quality. The first is that all the harmonic components of the human voice (formants) in the frequency range from 300 to 3400 Hz pass through the electric circuits of the telephone system. The second is that the weakening (attenuation) of the electric signals during passage along the channels of the telephone system from one telephone set to another be limited, on the average, to ~30 decibels. The third requirement is that the noise level arising from crosstalk interference and internal interference from, for example, sparking contacts, be at least 35 decibels lower than the level of the telephone signal currents. To meet these requirements, telephone communication systems make use of high-
quality telephone sets and of multichannel transmission systems that can create standard voice-
frequency channels, the attenuation and frequency characteristics of which are practically independent of the length of the communications line. Crossbar and quasi-
electronic automatic switching systems are also used to meet the requirements for high quality. These systems set up connections with the aid of reliable, low-noise (creating little interference) contacts.

The quality of the service is dependent on the system by which subscriber connections are organized. It is determined by statistical indexes obtained f

rom an analysis of the time distribution of the intensity of telephone traffic on the basis of queuing theory.

With automatic telephone communication, a subscriber, by either dialing or pushing buttons, sends the number of the subscriber being called to the switching machine. As a result of the sequential action of the signals sent to the control equipment at the central office, an electric circuit is set up that connects the telephone set of the calling subscriber with the central office serving the subscriber being called. The called number is checked by this office for a busy condition and, if not busy, ringing is applied. The connection is completed when the called party picks up the handset of his telephone.

Since the number of subscribers making telephone calls at one time is always substantially less than the total number of subscribers, the number of channels in a telephone system, as well as the number of internal connecting paths at the central office, is considerably less than the number of subscribers served by the central office (usually by a factor of 7–
10 in local telephone systems and of 200–
250 in intercity systems). Owing to this design, a desired connection may be blocked during a period of high telephone traffic because the necessary channels and the internal connecting paths at the central office are busy. The quality of automatic telephone service can be read in the percentage of blocked, or refused, calls during the hours of heaviest traffic. For example, in the USSR, the permissible percentage is 0.2–
0.4 for local calls and 2 for intercity calls. If a telephone system is designed with the duration of telephone conversations in mind and the average duration of the conversations does not exceed the computed value, then overloading (avalanching) during the hours of heaviest traffic is unlikely, and the telephone service is considered to be of high quality.

In setting up the connections for long-
distance and international calls, automatic methods are used in conjunction with manual and semiautomatic methods. With the manual method, the co

nnection is made by an operator working in an exchange equipped with switchboards. With the semiautomatic method, the connection is made at long-distance offices with the assistance of an operator; the operator, having received a request for a call, dials the number of the called party, and the connection is then completed automatically. Manual and semiautomatic methods of setting up connections make possible different types of service. With one type, for example, requests for calls are submitted to one operator, and the calls are then put through by a second operator after an interval of time that depends on the order in which the requests are made. A second type of service provides for operator-assisted long-distance calls. Here, if a call cannot be placed, the operator will hold open the caller's line until the necessary channel is free. The quality of manual and semiautomatic telephone service is usually determined by the probability of a blocked call and the average waiting period for making a connection.

The cost of long-distance calls depends on the distance of the call and the length of the conversation and is calculated in accordance with an established system of rates. In the USSR, electronic billing equipment has been installed at long-distance offices having automatic switching systems. This equipment automatically records the caller's number and compiles detailed billing information, including the number of the rate zone, the per-minute rate for the conversation, and the duration and total cost of the conversation. The equipment also prints the billing information on a special form. In long-distance offices operated manually, registers are used for billing purposes. In many countries, the charge for local calls depends on usage, but in the USSR (1976), there is a flat rate for local service.

Present state and prospects for development in telephone communication. Modern telephone communication is characterized by a high degree of automation and by the versatility of equipment. In many countries (Federal Republic of Germany, Belgium, the Netherlands), telephone communication is completely automatic, while in others (Polish People's Republic, German Democratic Republic, Czechoslovak Socialist Republic, United States, Sweden, Italy), local telephone communication is completely automatic, but the degree of automation for intercity service varies between 70 and 99 percent. In the USSR, local service is 92 percent automatic, and intercity service 34 percent (including semiautomatic connections). In central offices with automatic switching systems, the crossbar system is the most common. Offices with quasi-

electronic and electronic switching systems hold the greatest promise; here, switching functions and the distribution of telephone traffic will be subject to programmed control. Telephone systems in which the central offices have automatic switching equipment under programmed control make possible the introduction of a new range of services. These services include abbreviated dialing for frequently called numbers, putting a telephone set on "hold" if the number of the called party is busy, notifying a subscriber during a conversation of an incoming call, transferring a connection to another telephone set, setting up interconnections between more than two telephone sets for group conversations (conference communications), and providing priority access to connections for a limited number of subscribers.

The signals in telephone communication are transmitted through aerial wires, cables, radio relay systems, and satellites. Multichannel telephone systems often include a combination of the above and are therefore quite complex. For example, on certain intercity cables (*see*TRUNK CABLES), the number of repeaters may reach several thousand. A combined type of electrical communication—video-telephone service (*see*VIDEOTELEPHONE)—is possible using high-frequency cables and radio relay systems. For long-range communication, such as intercontinental communication, artificial earth satellites (*see*SPACE COMMUNICATIONS) are becoming increasingly common.

Telephone communication in the USSR has developed from the technological base of the state-run telephone system. The technology has also been designed with the requirements of the Integrated Automatic Communications System in mind. In order to provide automatic telephone communication for the country's subscribers, a unified numbering system has been gradually introduced. For example, in making an intercity call, a caller will first dial the one-digit intercity access code, followed by a three-digit area code, a two-digit number for the group of 100,000 subscribers to which the called party belongs, and the called party's five-digit number within that group. Local calls are made with five-, six-, or seven-digit numbers. In theory, seven-digit numbers permit the formation of areas encompassing as many as 10 million subscribers. However, since the numbers "8" (intercity access code) and "0" (information, special services) are not used, areas usually encompass only 8 million subscribers.

Production of telephone equipment constitutes one of the most rapidly developing branches of industry. During the years 1965–75, the average rate of growth in the number of telephone sets in the world (and, correspondingly, in the number of telephone calls) was 7.5 percent a year. Telephone communication systems are generally state-run, but in several capitalist countries, for example, the United States, systems are operated by private companies.

The Team