

# **JIGANASA STUDENT'S STUDY PROJECT REPORT**

**ON**

## **FACE IDENTIFICATION SYSTEM**



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**KAKATIYA GOVERNMENT COLLEGE,  
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(Affiliated to Kakatiya University)**

**CERTIFICATE**

This is to certify that the Project Report entitled “**FACE IDENTIFICATION SYSTEM**”, submitted to the Commissioner of Collegiate Education Hyderabad, for the Best student Project award in **JIGNASA** Competition, was carried out by the following students under m guidance.

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**Attested by**

## **DECLARATION**

We, hereby declare that the project report entitled “**FACE IDENTIFICATION SYSTEM**” submitted to the Commissioner of Collegiate Education Hyderabad, for the Best student Project award in **JIGNASA** Competition is a Bonafied work under taken by us and it is not submitted to any other University or Institution for the award of any Degree/ Diploma certificate on any time before.

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# 1. INTRODUCTION

## **PURPOSE OF THE PROJECT:**

This project is aimed to identify the criminals in any investigation department. Here the technique is images of the criminals stored in the database along with their details and that images are segmented into many slices say eyes, hairs, lips, nose, etc. These images are again stored in another database record so to identify any criminals; eyewitnesses will see the images or slices that appear on the screen by using it we develop the face, which may or may not be matched with our images. If any image is matched up to 99% then we predict that he is only the criminal. Thus using this project it provides a very friendly environment for both operator and eyewitness to easily design any face can identify criminals very easy.

## **PROJECT OBJECTIVE:**

This project is intended to identify a person using the images previously taken. The identification will be done according the previous images of different persons.

## **PROJECT SCOPE:**

The scope of the project is confined to store the image and store in the database. When a person has to be identified the images stored in the database are compared with the existing details

# 2. SYSTEM ANALYSIS

## **a) Existing System:**

This system is manual system only. Here, have a facility to store the criminal images. If you want to compare the criminal images with the existing images it is manual process. This process is very slow to give the result. It is very critical to find the criminal images.

## **b) Proposed System:**

To overcome the drawbacks that were in the existing system we develop a system that will be very useful for any investigation department. Here the program keeps track of the record number of each slice during the construction of identifiable human face and calculate maximum number of slices of the similar record number. Based on this record number the program retrieves the personal record of the suspect (whose slice constituted the major parts of the constructed human face) on exercising the “locate” option.

## **Advantages:**

- Very fast and accurate.

- No need of any extra manual effort.
- No fever of data loss.
- Just need a little knowledge to operate the system.
- Doesn't require any extra hardware device.
- At last very easy to find the criminals

**Overview:**

Addition, Clipping, Construction and updating of the criminal record and face. Comparing the image with the faces that are there in our database. If any new images are found then it should be entered into our database by add image module and then it should be segmented into different slices.

### 3. FEASIBILITY REPORT

#### Feasibility Study

A feasibility study is a high-level capsule version of the entire System analysis and Design Process. The study begins by classifying the problem definition. Feasibility is to determine if it's worth doing. Once an acceptance problem definition has been generated, the analyst develops a logical model of the system. A search for alternatives is analyzed carefully. There are 3 parts in feasibility study.

**a) Operational Feasibility:**

Question that going to be asked are

- Will the system be used if it developed and implemented.
- If there was sufficient support for the project from the management and from the users.
- Have the users been involved in planning and development of the Project.
- Will the system produce poorer result in any respect or area?

This system can be implemented in the organization because there is adequate support from management and users. Being developed in Java so that the necessary operations are carried out automatically.

**b) Technical feasibility:**

- Does the necessary technology exist to do what is been suggested
- Does the proposed equipment have the technical capacity for using the new system?

- Are there technical guarantees of accuracy, reliability and data security?
- The project is developed on Pentium IV with 256 MB RAM.
- The environment required in the development of system is any windows platform
- The observer pattern along with factory pattern will update the results eventually
- The language used in the development is JAVA 1.5 & Windows Environment

**c) Financial and Economical Feasibility:**

The system developed and installed will be good benefit to the organization. The system will be developed and operated in the existing hardware and software infrastructure. So there is no need of additional hardware and software for the system.

## **4. SYSTEM REQUIREMENT SPECIFICATION**

**Functional Requirements:**

By conducting the requirements analysis we listed out the requirements that are useful to restate the problem definition.

- Insert the image into database
- Split the image into no of parts.
- Merge the parts.
- Identify the image.
- Draw image manually.
- Maintain separate login for admin and operator.
- Maintain information about each criminal

**a) Module Description**

Well structured designs improve the maintainability of a system. A structured system is one that is developed from the top down and modular, that is, broken down into manageable components. In this project we modularized the system so that they have minimal effect on each other.

This application is designed into five independent modules which take care of different tasks efficiently.

- 1. User Interface Module.**
- 2. Admin Module.**
- 3. Client Module.**
- 4. Database Operations Module.**

## 5. Splitting and Merging Module.

## 6. Identify Module.

### User Interface Module:

Actually every application has one user interface for accessing the entire application. In this application also we are providing one user interface for accessing this application. The user interface designed completely based on the end users. It is provide friendly accessing to the users. This user interface has attractive look and feel. Technically I am using the swings in core java for preparing this user interface.

### Admin Module:

User requirements	Elaboration	Further Elaboration
Create	Assign new user id & password for an employee.	
Delete	Administrator can delete the user id & password of unwanted employee.	
Update	First the details of employees are to be obtained by using user id & password.	After obtaining the original details the updated details are submitted.

### Client Module:

User requirements	Elaboration	Further Elaboration
Login	Employee log in to home page by entering id & password.	
Adding details	Personal details of criminal store in to data base	Images are cropped and saved in database.
Update process	Enter criminal id and obtain his details	Update the details and images of existing criminal
Delete process	Enter criminal id	Delete the details and image of unwanted criminal



<b>User requirements</b>	<b>Elaboration</b>	<b>Further Elaboration</b>
Login	Employee log in to home page by entering id & password.	
Logout	Logout in to the home page	

**Splitting and Merging Module:**

<b>Requirements</b>	<b>Elaboration</b>	<b>Further Elaboration</b>
View clippings	View all clips and select the clip shown by eyewitness	Compare the clippings with images of criminals
Construction	Construct the face of criminal by clubbing all freezed clippings	

### **Database Operations Module:**

**ADD MODULE:** The add module is helpful in adding the details of the criminals along with the details of the criminal photo. While adding the details of the criminal, we crop the image of the criminal and store those cropped parts in a separate database.

**DELETE MODULE :** This module deletes the criminal details along with the photo. The operator first submits the criminal id and searches for the availability of the id in the database. If that id is available in the database, then the operator may delete the record of that particular criminal.

**UPDATE MODULE :** The operator first enters the criminal id and searches for the availability of that id .If that id is available in the database , then the details of that criminal are retrieved and the operator can update the details of that criminal and that updated details of the criminal are stored in the database again for future retrieval.

### **Identify Module:**

The cropped parts of the criminals, along with the criminal Id are viewed by the eyewitness .The eyewitness selects particular cropped part of the criminal and it is freeze by the operator., then complete face of the criminal is constructed and the details of the criminal is retrieved.

### **b) SDLC METHDOLOGIES**

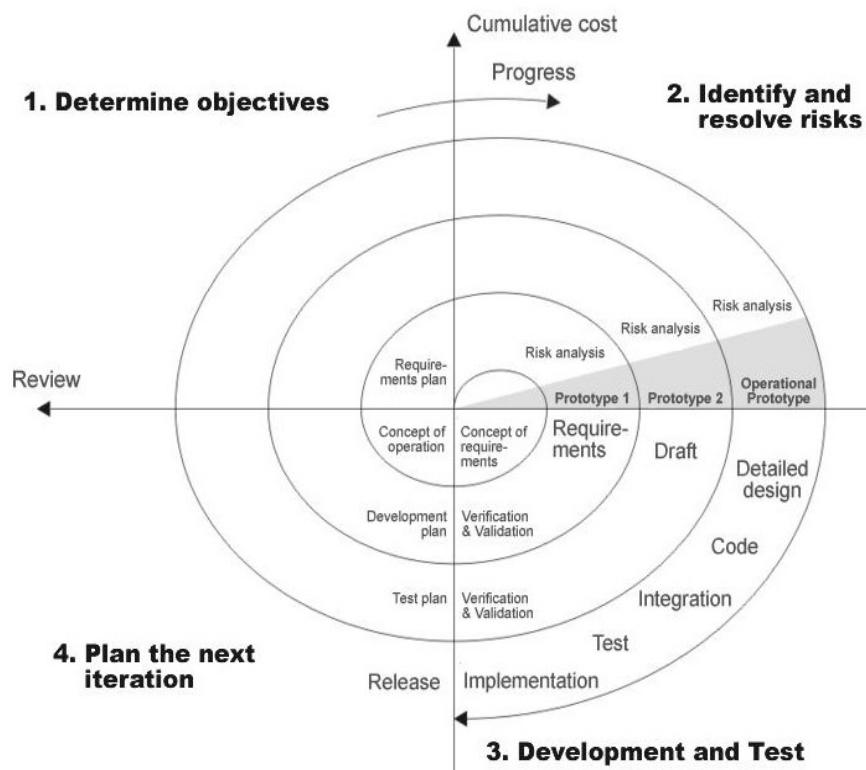
This document play a vital role in the development of life cycle (SDLC) as it describes the complete requirement of the system. It means for use by developers and will be the basic during testing phase. Any changes made to the requirements in the future will have to go through formal change approval process.

SPIRAL MODEL was defined by Barry Boehm in his 1988 article, “A spiral Model of Software Development and Enhancement.

The steps for Spiral Model can be generalized as follows:

- The new system requirements are defined in as much details as possible. This usually involves interviewing a number of users representing all the external or internal users and other aspects of the existing system.
- A preliminary design is created for the new system.
- A first prototype of the new system is constructed from the preliminary design. This is usually a scaled-down system, and represents an approximation of the characteristics of the final product.
- A second prototype is evolved by a fourfold procedure:

1. Evaluating the first prototype in terms of its strengths, weakness, and risks.
  2. Defining the requirements of the second prototype.
  3. Planning and designing the second prototype.
  4. Constructing and testing the second prototype.
- At the customer option, the entire project can be aborted if the risk is deemed too great. Risk factors might involve development cost overruns, operating-cost miscalculation, or any other factor that could, in the customer's judgment, result in a less-than-satisfactory final product.
  - The existing prototype is evaluated in the same manner as was the previous prototype, and if necessary, another prototype is developed from it according to the fourfold procedure outlined above.
  - The preceding steps are iterated until the customer is satisfied that the refined prototype represents the final product desired.
  - The final system is constructed, based on the refined prototype.
- The final system is thoroughly evaluated and tested. Routine maintenance is carried on a continuing basis to prevent large scale failures and to minimize down time.



**ADVANTAGES:**

- Estimates(i.e. budget, schedule etc .) become more realistic as work progresses, because important issues discovered earlier .
- It is more able to cope with the changes that are software development generally entails.
- Software engineers can get their hands in and start working on the core of a project earlier.

### c) SOFTWARE REQUIREMENT

#### Software Requirements:

Operating System	:	Windows
Graphical User Interface	:	Java Swing, AWT.
Application Logic	:	Java 7.
Database	:	Oracle 10g

### d) HARDWARE REQUIREMENT

#### Hardware Requirements:

- **System Configuration**

Processor	:	Pentium III – 900 MHz
Hard Disk	:	20 GB
RAM	:	128 MB

## 5. SYSTEM DESIGN

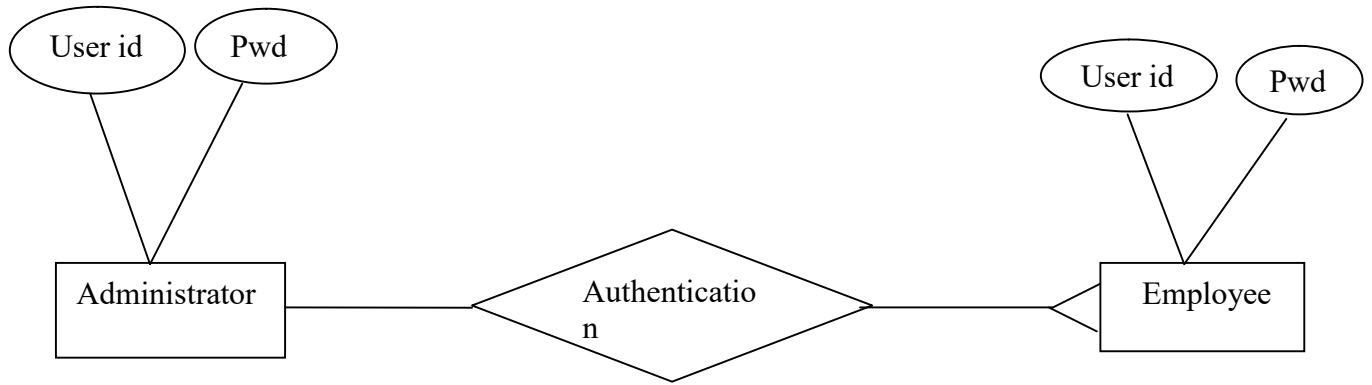
System design is the first design stage in which the basic approach to solving the problem is selected. During system design, the overall structure and style are decided. The system architecture is the overall organization of the system into components called subsystems.

The system designer must make the following decisions:

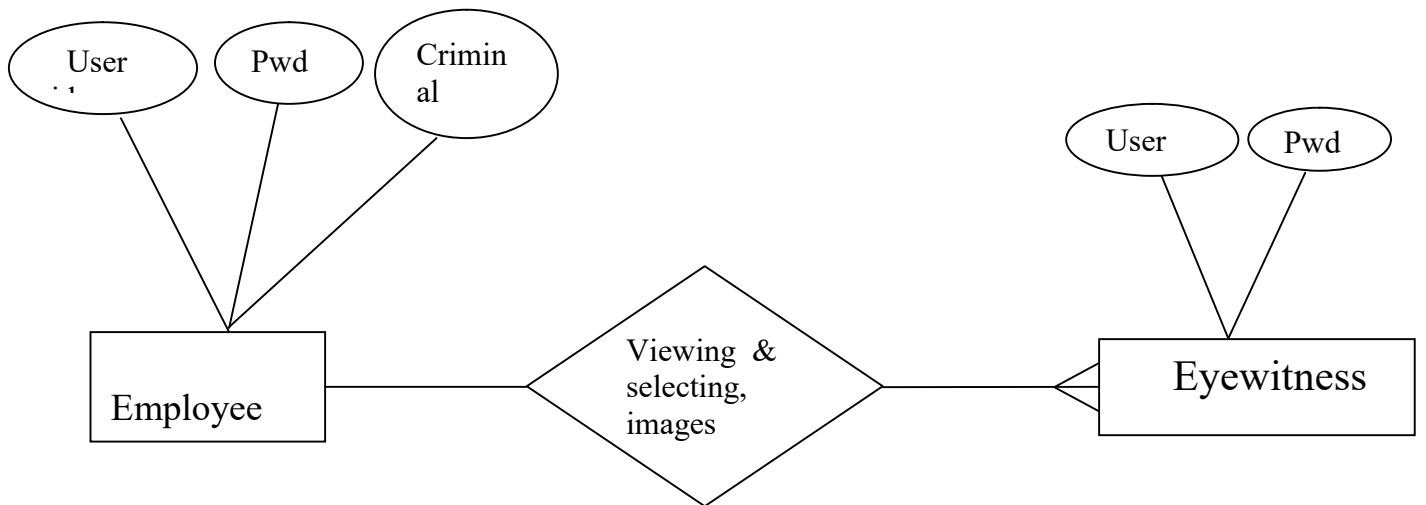
- Organize the system into subsystems.
- Identify the concurrency inherent in the problem.
- Allocate subsystems to processors and tasks.
- Choose an approach for management of data stores.
- Handle access to global resources.
- Choose the implementation of control in software.
- Handle boundary conditions.
- Set trade-off priorities.

### a) E-R Diagrams

#### E-RDIAGRAMS BETWEEN ADMINISTRATOR AND EMPLOYEE:



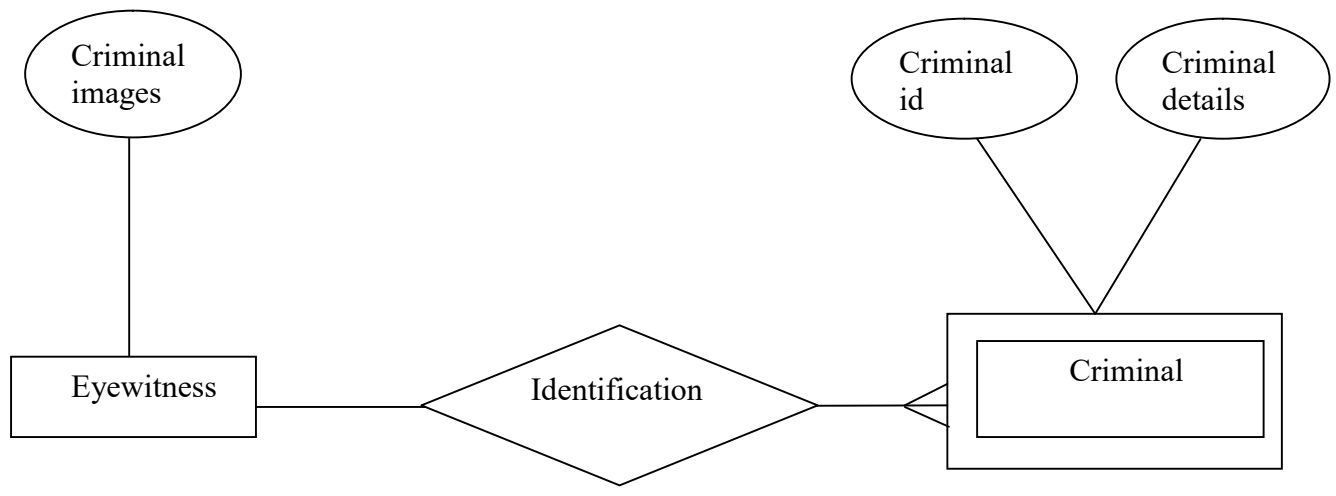
**E-R DIAGRAMS BETWEEN EMPLOYEE AND EYEWITNESS:**



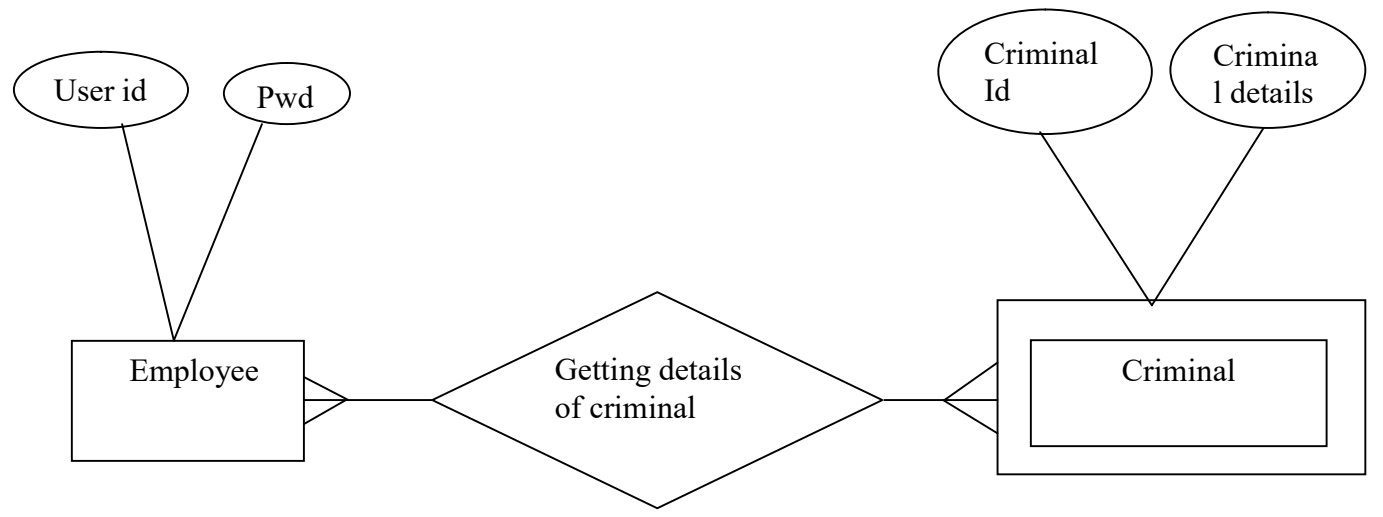
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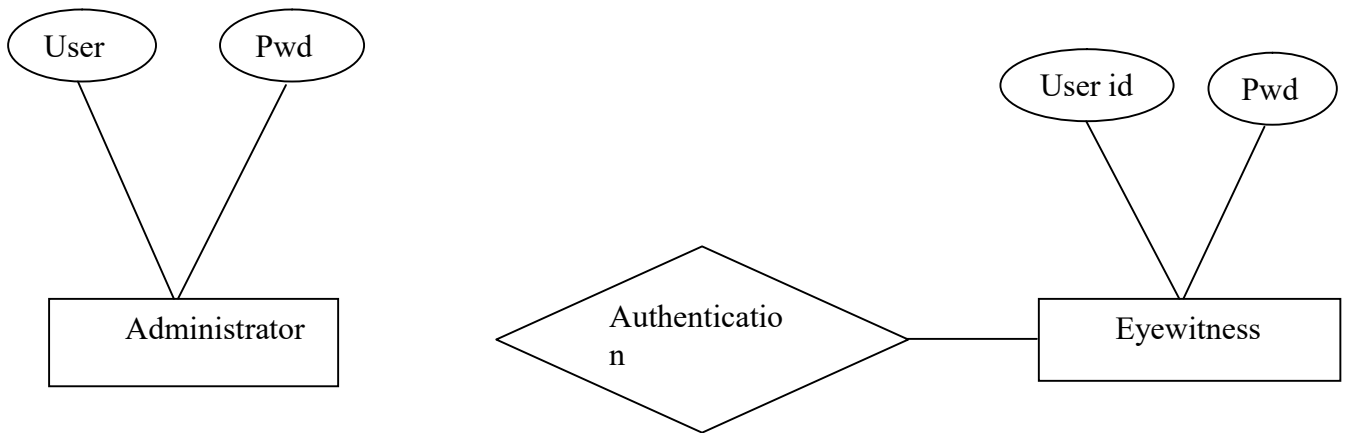
**E-R DIAGRAM BETWEEN EYEWITNESS AND CRIMINAL:**



**E-R DIAGRAM BETWEEN EMPLOYEE AND CRIMINAL:**



## E-R DIAGRAM BETWEEN EYEWITNESS AND ADMINISTTRATOR

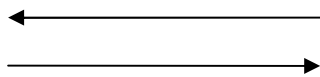


### b) DATA FLOW DIAGRAMS (DFD):

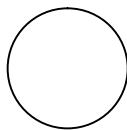
A graphical tool used to describe and analyze the moment of data through a system manual or automated including the process, stores of data, and delays in the system. Data Flow Diagrams are the central tool and the basis from which other components are developed. The transformation of data from input to output, through processes, may be described logically and independently of the physical components associated with the system. The DFD is also know as a data flow graph or a bubble chart.

The Basic Notation used to create a DFD's are as follows:

**1. Dataflow:** Data move in a specific direction from an origin to a destination.



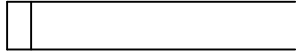
**2. Process:** People, procedures, or devices that use or produce (Transform) Data. The physical component is not identified.



**3. Source:** External sources or destination of data, which may be People, programs, organizations or other entities.



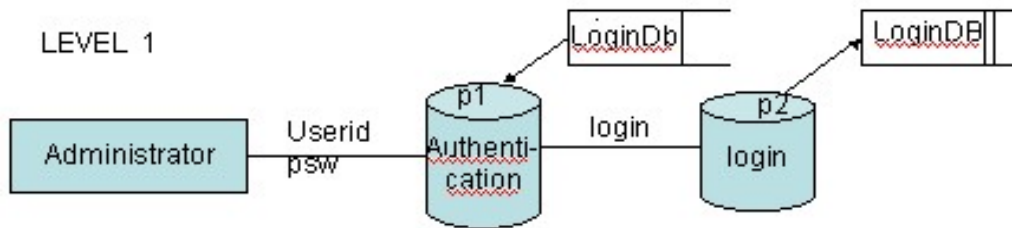
**4. Data Store:** Here data are stored or referenced by a process in the System.



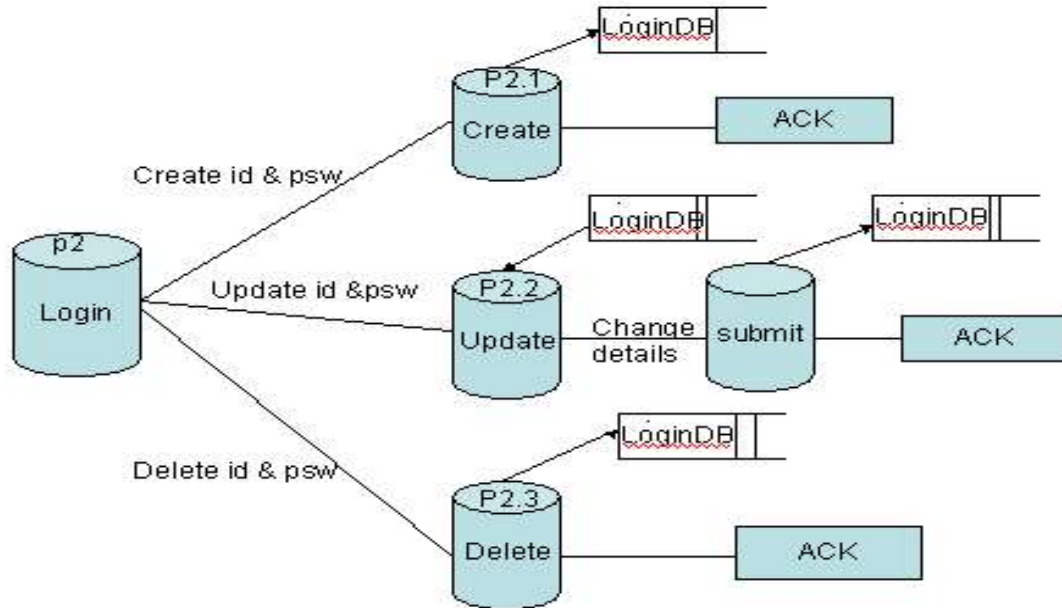


## Data Flow Diagrams:

### LEVEL 1



### LEVEL 2



## C) UML Diagrams

The Unified Modeling Language (UML) is an open method used to specify, visualize, modify, construct and document the artifacts of an object-oriented software intensive system under development. UML offers a standard way to write a system's blueprints, including conceptual components such as:

- actors,
- business processes and
- system components and activities

as well as concrete things such as:

- programming language statements,
- database schemas, and
- Reusable software components.

## Class diagram

A class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects.

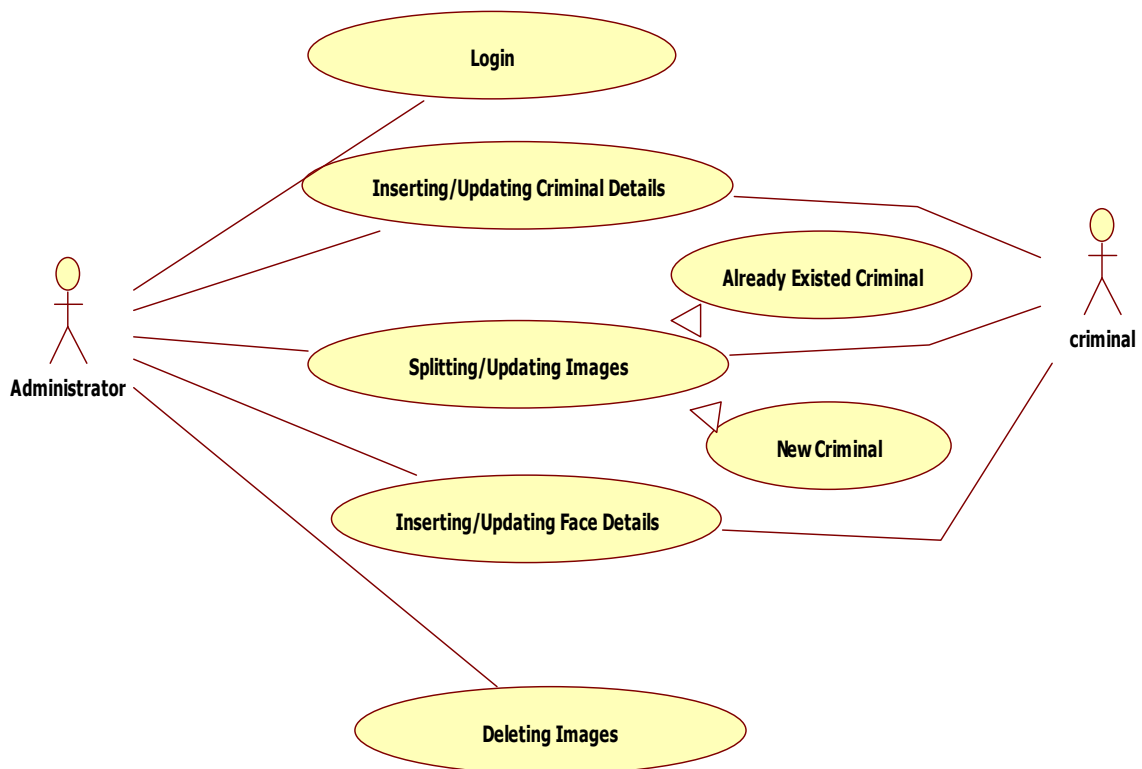
**Use case Description:**

In software engineering, a use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases.

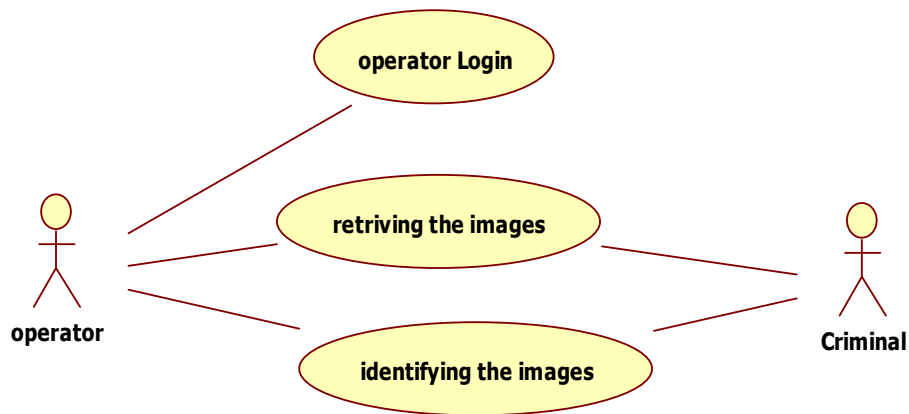
The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted.

**Use case Diagram:**

**Administrator:**



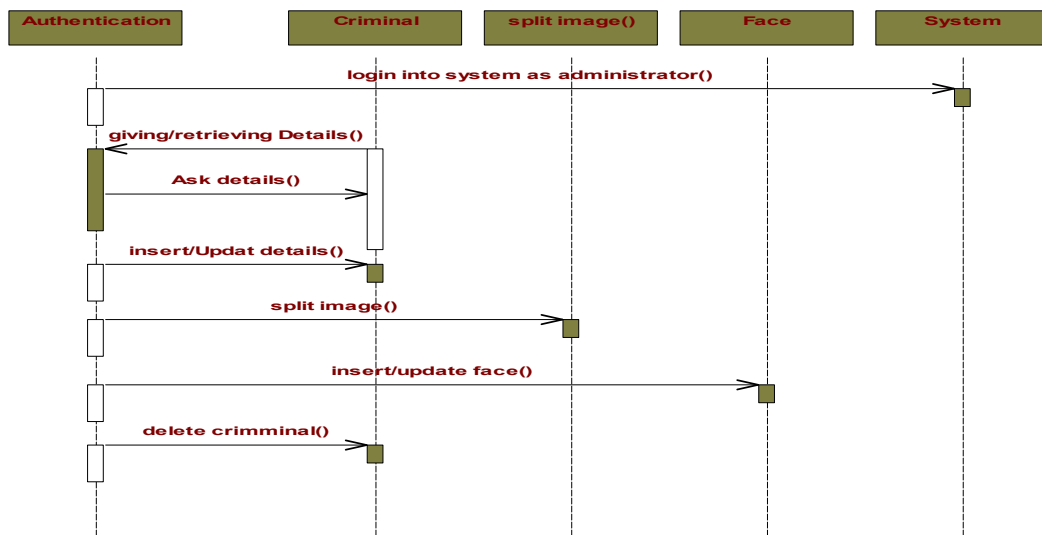
### Client (Operator):



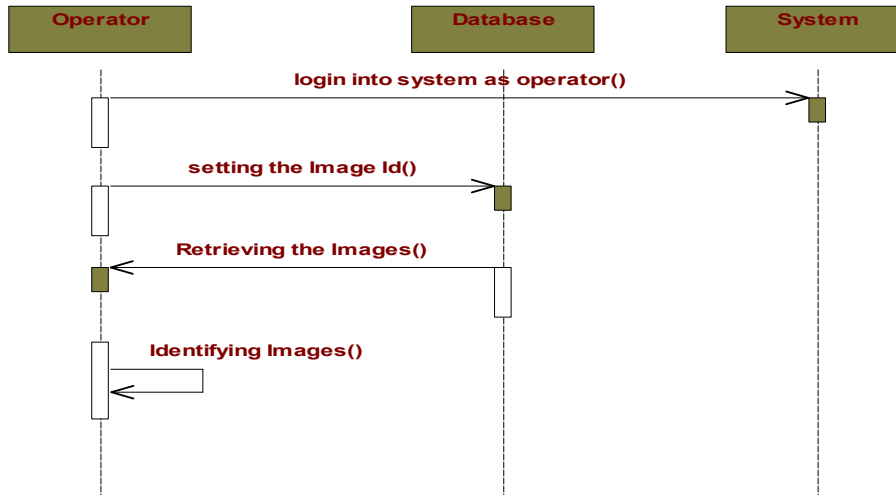
### Sequence Diagram:

A sequence diagram in Unified Modeling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. Sequence diagrams are sometimes called Event-trace diagrams, event scenarios, and timing diagrams. A sequence diagram shows, as parallel vertical lines ("lifelines"), different processes or objects that live simultaneously, and, as horizontal arrows, the messages exchanged between them, in the order in which they occur. This allows the specification of simple runtime scenarios in a graphical manner.

### Administrator:



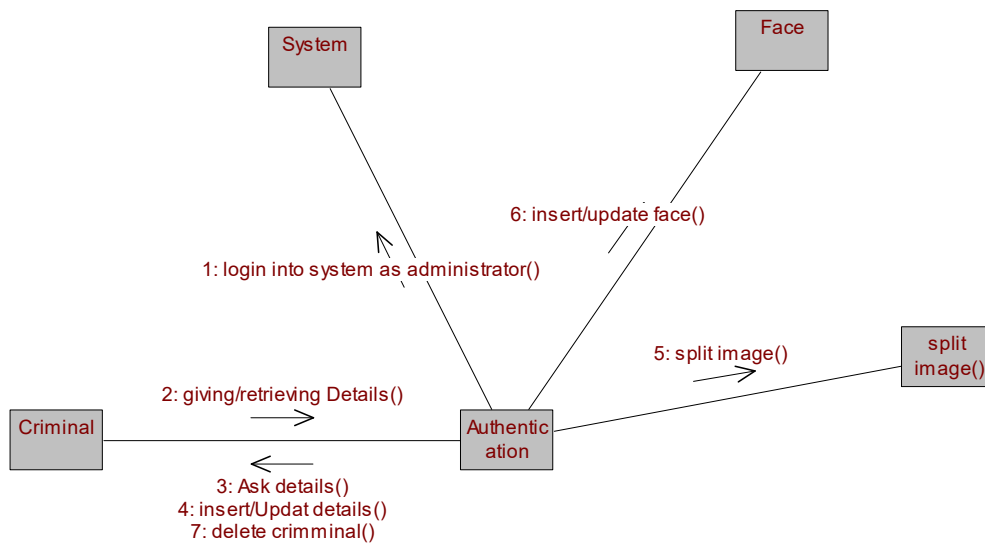
### Operator:



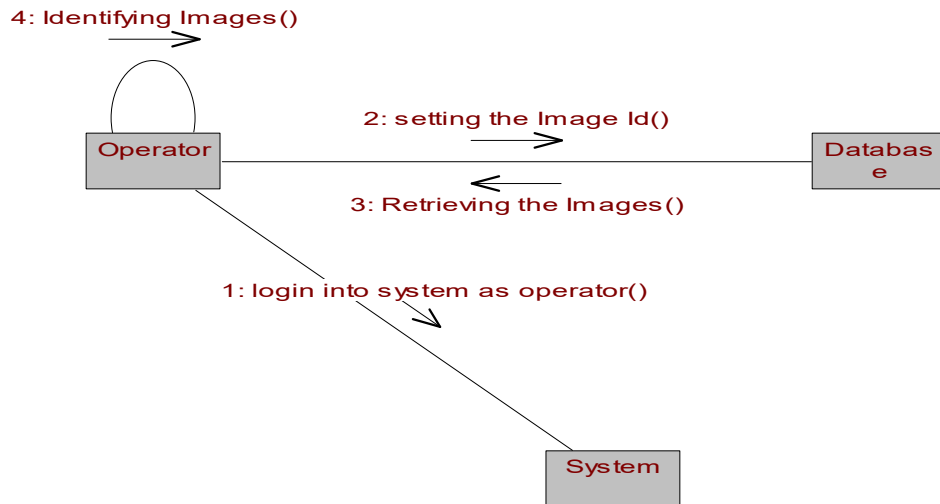
**Collaboration Diagram:**

A Communication diagram models the interactions between objects or parts in terms of sequenced messages. Communication diagrams represent a combination of information taken from Class, Sequence, and Use Case Diagrams describing both the static structure and dynamic behavior of a system.

**Administrator:**



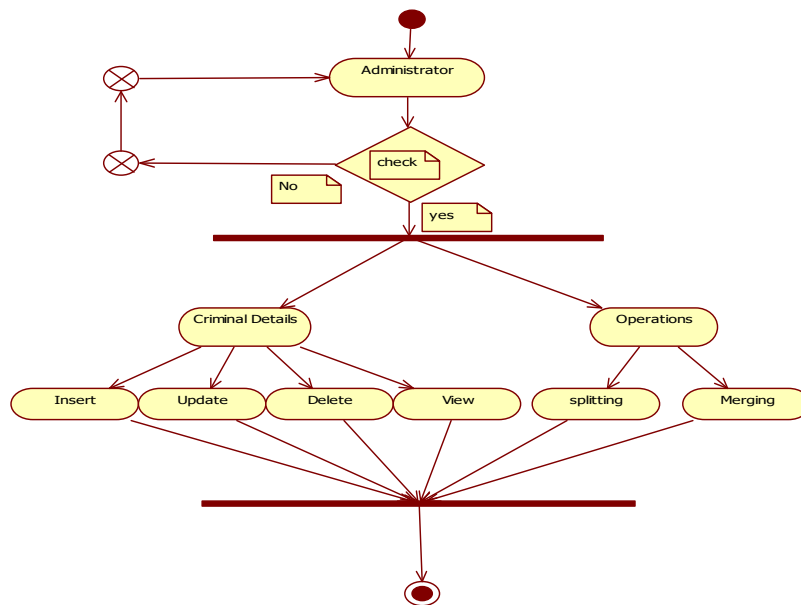
**Operator:**



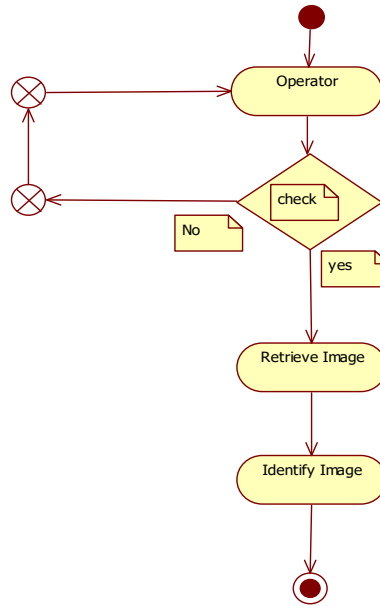
**Activity Diagram:**

Activity diagrams are a loosely defined diagram technique for showing workflows of stepwise activities and actions, with support for choice, iteration and concurrency. In the Unified Modeling Language, activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. In SysML the activity diagram has been extended to indicate flows among steps that convey physical element (e.g., gasoline) or energy (e.g., torque, pressure).

**Administrator:**

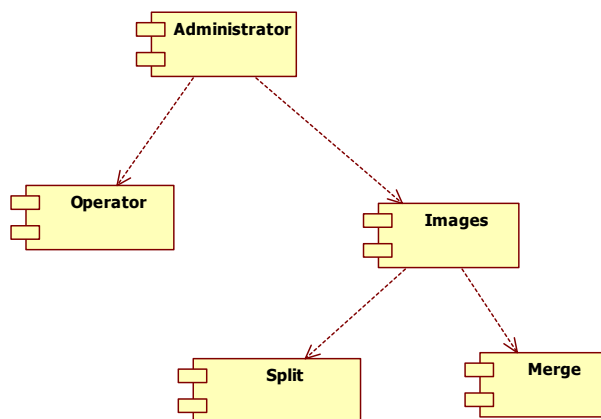


**Operator:**



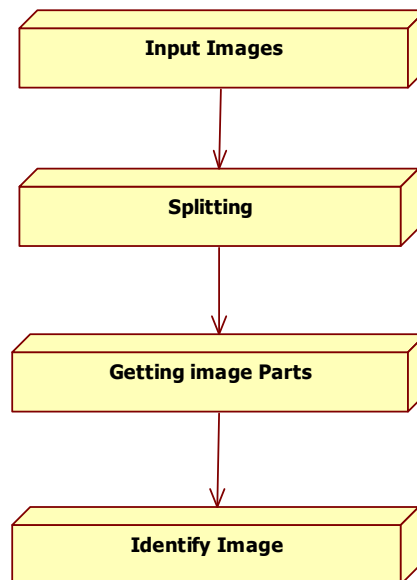
### Component Diagram:

A component diagram in the Unified Modeling Language, depicts how components are wired together to form larger components and or software systems. Components are wired together by using an assembly connector to connect the required interface of one component with the provided interface of another component. This illustrates the service consumer - service provider relationship between the two components. An assembly connector is a "connector between two components that defines that one component provides the services that another component requires. An assembly connector is a connector that is defined from a required interface or port to a provided interface or port." When using a component diagram to show the internal structure of a component, the provided and required interfaces of the encompassing component can delegate to the corresponding interfaces of the contained components.



## Deployment Diagram:

A deployment diagram in the Unified Modeling Language serves to model the physical deployment of artifacts on deployment targets. Deployment diagrams show "the allocation of Artifacts to Nodes according to the Deployments defined between them." Deployment of an artifact to a node is indicated by placing the artifact inside the node. Instances of nodes (and devices and execution environments) are used in deployment diagrams to indicate multiplicity of these nodes. For example, multiple instances of an application server execution environment may be deployed inside a single device node to represent application server clustering.



## 6. TESTING TECHNIQUES

Software testing is a critical element of software quality assurance and represents the ultimate reviews of specification, design and coding. Testing represents an interesting anomaly for the software.

The various types of testing done on the system are:

- Integration testing
- Validation testing
- Unit testing

### Unit testing:

Unit testing focuses on verification effort on the smallest unit of software design module. Using the unit test plans prepared in the design phase of the system development as a

guide, important control paths are tested to uncover errors within the boundary of the modules.

**Integration Testing:**

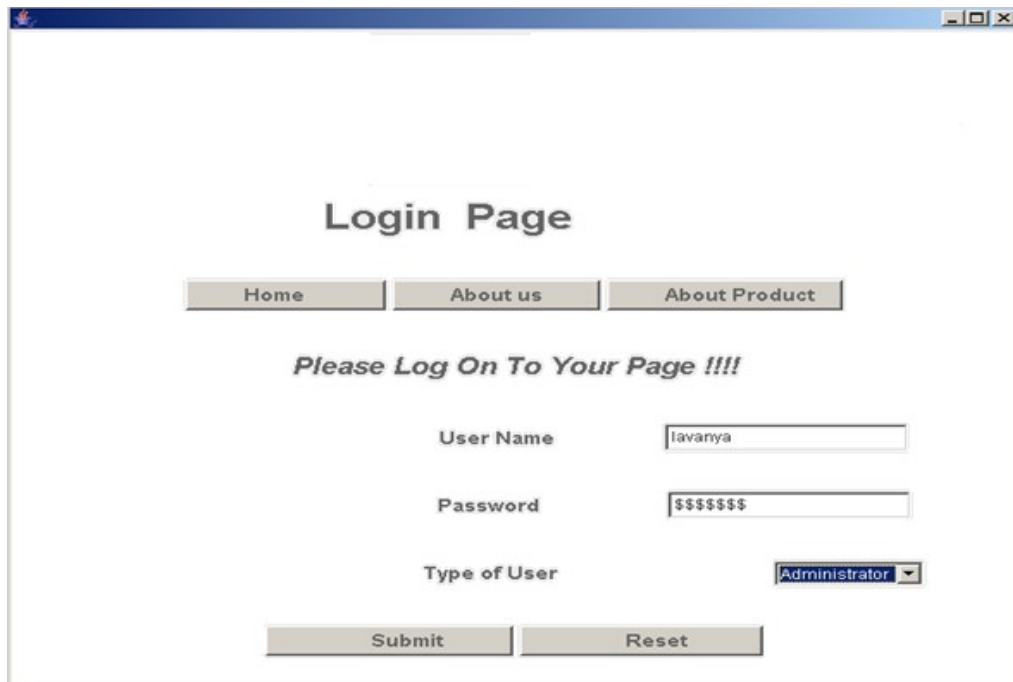
Integration testing is a systematic technique for the program structure while at the same time concluding tests to uncover errors associated with interface.

**Validation Testing:**

At the culmination of the integration testing, the software is completely assembled as a package, interfacing errors have been uncovered and corrected, and a final series of software validation testing began. Here we test if the system functions in a manner that can be reasonably expected by the customer. The system is tested against the system requirement specification



## 7. OUTPUT SCREENS



The screenshot shows a web browser window titled "Login Page". At the top, there are three navigation buttons: "Home", "About us", and "About Product". Below these is a prompt: "Please Log On To Your Page !!!!". The login form includes three fields: "User Name" with the value "lavanya", "Password" with masked characters "\$\$\$\$\$\$", and "Type of User" with a dropdown menu set to "Administrator". At the bottom of the form are "Submit" and "Reset" buttons.

**Login Page**

Home About us About Product

*Please Log On To Your Page !!!!*

User Name lavanya

Password \$\$\$\$\$\$

Type of User Administrator

Submit Reset



The screenshot shows a web browser window titled "Criminal Information". It features three navigation buttons: "Home", "About us", and "About Product". The form contains several input fields: "Criminal Id", "First Name", "Last Name", "Alias Name", "Date of Birth", "Age", "Criminal\_Address" (with a vertical scrollbar), "City", "State", and "Date of Arrest". There is also a "Gender" dropdown menu currently set to "Male".

**Criminal Information**

Home About us About Product

Criminal Id

First Name

Last Name

Alias Name

Date of Birth

Gender Male

Age

Criminal\_Address

City

State

Date of Arrest

Criminal Information Form

Criminal Id   
 First Name   
 Last Name   
 Alias Name   
 Date of Birth   
 Gender    
 Age   
 Criminal\_Address    
 City   
 State   
 Date of Arrest   
 Crime Involved in   
 Eyewitness Id   
 Name   
 Address    
 Complaint Id

**Criminal Information Tabel**

Enter The Criminal Id

Criminal Id   
 First Name   
 Last Name   
 Alias Name   
 Date of Birth   
 Gender   
 Age   
 Criminal\_Address    
 City   
 State   
 Date of Arrest

First Name

Last Name

Alias Name

Date of Birth

Gender

Age

Criminal\_Address

City

State

Date of Arrest

Crime Involved in

Eyewitness Id

Name

Address

Complaint Id

### Insertion Of Images

**Please Fill Details & Insert the Image !!!!**

Enter Criminal Id

Enter a Image Id

Image Name

Insert the Image

(Upload image)

Image Details

**Retrieving Of Images**

[Home](#) [About us](#) [About Product](#)

**Plz submit the Criminal ID**

Enter Criminal Id

Criminal Id

Image Id

Image Name

Image

Image details

**Criminal Face Table**

[Home](#) [About us](#) [About Product](#)

Criminal Id

Hair

Fore Head

Eyes

Nose

Lips

Chin

Cheeks

**Deletion Of Images**

[Home](#) [About us](#) [About Product](#)

**Please Enter the Details !!!!**

Criminal Id

Image Id

**Retrieving Of Images**

[Home](#) [About us](#) [About Product](#)

**Plz submit the Criminal ID**

Enter Criminal Id

Criminal Id

Image Id

Image Name

Image

Image details

**Matching Of Images**

Home About us About Product

Enter Criminal Original Name

Enter Criminal Date of Birth

Enter Criminal Hair Color

Enter Criminal Eyes Color

Enter Criminal Nose Color

Submit Cancel

**Matching Of Images**

Home About us About Product

**Image is Matched Successfully**

With a Criminal Id of :1001

With an Image Id of :1001

Ok

## 8. FUTURE ENHANCEMENTS

The Future enhancements of this project include the following:

- The criminal photos may be of any size.

- By selecting any one cropped part of the criminal, we can get the full image of the criminals along with details.
- New face constructed by different cropped parts can be saved.

## **9. BIBLIOGRAPHY**

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