

## B.Sc. I Semester-Computer Science PRACTICAL PROGRAMS

1. Write a program to Find the largest two (three) numbers using if and conditional operator

### Biggest of Three Using Conditional Operator

```
# include <stdio.h>
# include <conio.h>
void main()
{
int a, b, c, big ;
clrscr();
printf("Enter three numbers : ");
scanf("%d %d %d", &a, &b, &c);
big = a > b ? (a > c ? a : c) : (b > c ? b : c);
printf("\nThe biggest number is:%d", big);
}
```

#### Output:

```
Enter three numbers: 33 66 22
The biggest number is:66
```

### Biggest of Two Using Conditional Operator

```
# include <stdio.h>
# include <conio.h>
void main()
{
int a, b, big ;
clrscr();
printf("Enter two numbers : ");
scanf("%d %d ", &a, &b);
big = a > b ? a : b;
printf("\nThe biggest number is:%d", big);
}
```

#### Output:

```
Enter two numbers: 33 66
The biggest number is:66
```

### Biggest of Two Using If Statement

```
#include <stdio.h>
void main()
{
int a, b;
printf("Please Enter Two different values\n");
scanf("%d %d", &a, &b);
if(a > b)
{
printf("%d is Largest\n", a);
}
else if (b > a)
{
printf("%d is Largest\n", b);
}
else
{
}
```

```

        printf("Both are Equal\n");
    }
}

```

**OUTPUT:**

Please Enter Two different values 33 66  
66 is Largest.

**Biggest of Three Using If Statement:**

```

#include <stdio.h>
void main()
{
    int a, b, c;
    printf("Please Enter three different values\n");
    scanf("%d %d %d", &a, &b, &c);
    if (a > b && a > c)
    {
        printf("\n%d is Greater Than both %d and %d", a, b, c);
    }
    else if (b > a && b > c)
    {
        printf("\n%d is Greater Than both %d and %d", b, a, c);
    }
    else if (c > a && c > b)
    {
        printf("\n%d is Greater Than both %d and %d", c, a, b);
    }
    else
    {
        printf("\nEither any two values or all the three values are equal");
    }
}

```

**OUTPUT:**

Please Enter three different values 33 66 22  
66 is Greater Than both 33 and 22

2. Write a program to print the reverse of a given number.

```

#include<stdio.h>
#include<conio.h>
void main()
{
    int n,r;
    clrscr();
    printf("Enter a number: ");
    scanf("%d",&n);
    while(n!=0)
    {
        r=n%10;
        printf("%d",r);
        n=n/10;
    }
}

```

**Output:**

Enter a number 4567  
7654

3. Write a program to Print the prime number from 2 to n where n is given by user.

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n,c=0,i,j;
clrscr();
printf("\n Enter n value:");
scanf("%d",&n);
for(i=2;i<=n;i++)
{
c=0;
for(j=1;j<=i;j++)
if(i%j==0)
c++;
if(c==2)
printf("\t %d ",i);
}
}
```

**Output:**

Enter n value:20

2    3    5    7    11    13    17    19

4. Write a program to find the roots of a quadratic equation using switch statement.

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
float a,b,c,d,r1,r2,real,img;
int op;
clrscr();
printf("\n Enter a,b,c values:");
scanf("%f%f%f", &a,&b,&c);
d=(b*b)-4*a*c;
if(d>0)
op=1;
if(d==0)
op=2;
if(d<0)
op=3;
Switch op
{
Case 1:
{
printf("\n Roots are Real and Unequal");
r1=(-b+sqrt(d))/(2*a);
r2=(-b-sqrt(d))/(2*a);
printf("\n root1= %f, \t root2= %f",r1,r2);
}
}
```

```

break;
case 2:
{
printf("\n Roots are Real and Equal");
r1=-b/(2*a);
printf("\n root1= root2= %f",r1);
}
break;
case 3:
{
d=abs(d);
printf("\n Roots are Imaginary");
real=-b/(2*a);
img=sqrt(d)/(2*a);
printf("\n root1= %f+i%f",real,img);
printf("\n root2= %f-i%f",real,img);
}}

```

Output:

```

enter a,b,c values:1 5 6
roots are real and unequal
root1= -2.000000,      root2= -3.000000_

```

5. Write a program to print a triangle stars as follows (take number of lines from user):

```

*
***
*****
*****
*****

```

```

#include<stdio.h>
void main()
{
int i,j,k,n;
printf("Enter number of rows of the triangle: \n");
scanf("%d",&n);
for(i=1;i<=n;i++)
{
for(j=1;j<=n-i;j++)
{
printf(" ");
}

for(k=1;k<=(2*i)-1;k++)
{
printf("*");
}
printf("\n");
}
getch();
}

```

Output:

```

Enter number of rows of the triangle
8
      *
     ***
    *****
   *********
  ***********
 *****
*****
*****
*****
*****
*****

```

6. Write a program to find largest and smallest elements in a given list of numbers.

```

#include<stdio.h>
#include<conio.h>
void main()
{
int a[10],n,min,max,i;
clrscr();
printf("Enter the no. of elements you want in list:");
scanf("%d",&n);
printf("\n Enter %d elements:",n);
for(i=0;i<n;i++)
scanf("%d",&a[i]);
/* finding min. element of an array */
min=a[0];
for(i=1;i<n;i++)
if(a[i]<min)
min=a[i];
/* finding max. element of an array */
max=a[0];
for(i=1;i<n;i++)
if(a[i]>max)
max=a[i];
printf("\n Min. element is= %d",min);
printf("\n Max. element is= %d", max);
}

```

**Output:**

```

Enter the no. of elements you want in list: 8
Enter 8 elements: 101    13    84    56    90    47    33
Min. element is=13
Max. element is=101

```

7. Write a program to find the product of two matrices

```

#include<stdio.h>
#include<conio.h>
void read_mat(int a[][5],int m, int n);
void disp_mat(int a[][5],int m, int n);
void find_mul(int a[][5],int b[][5],int c[][5],int m, int n,int q);
void main()
{
int a[5][5],b[5][5],c[5][5];
int m,n,p,q;
clrscr();

```

```

printf("enter the dimensions of first matrix");
scanf("%d%d",&m,&n);
printf("\nenter the dimensions of second matrix");
scanf("%d%d",&p,&q);
if(n==p)
{
printf("\nenter matrix A of dimensions %d X %d",m,n);
read_mat(a,m,n);
printf("\nenter matrix B of dimensions %d X %d",p,q);
read_mat(b,p,q);
find_mul(a,b,c,m,n,q);
printf("\n the matrix A is : \n");
disp_mat(a,m,n);
printf("\n the matrix B is : \n");
disp_mat(b,p,q);
printf("\n the result of A*B (matrix C) is : \n");
disp_mat(c,m,q);
}
else
printf("multiplication is not possible");
}
void read_mat(int a[][5], int m, int n)
{
int i,j;
for(i=0;i<m;i++)
for(j=0;j<n;j++)
scanf("%d",&a[i][j]);
}
void disp_mat(int a[][5], int m, int n)
{
int i,j;
for(i=0;i<m;i++)
{
for(j=0;j<n;j++)
printf("\t%d",a[i][j]);
printf("\n");
}
}
void find_mul(int a[][5], int b[][5],int c[][5],int m, int n,int q)
{
int i,j,k;
for(i=0;i<m;i++)
for(j=0;j<q;j++)
{
c[i][j]=0;
for(k=0;k<n;k++)
c[i][j]=c[i][j]+a[i][k]*b[k][j];
}
}
}

```

**Output:**

```

enter the dimensions of first matrix
2 2

enter the dimensions of second matrix
2 2

enter matrix A of dimensions 2 X 2
1 2 3 4

enter matrix B of dimensions 2 X 2
1 0 0 1

the matrix A is :
    1    2
    3    4

the matrix B is :
    1    0
    0    1

the result of A*B (matrix C) is :
    1    2
    3    4

```

8. Write a program to find the GCD of two numbers using iteration and recursion

<pre> (Recursive Version) #include&lt;stdio.h&gt; #include&lt;conio.h&gt; void main() {     int n1,n2,gcd;     printf("\nEnter two numbers: ");     scanf("%d %d",&amp;n1,&amp;n2);     gcd=findgcd(n1,n2);     printf("\nGCD of %d and %d is: %d",n1,n2,gcd); } int findgcd(int x,int y) {     while(x!=y)     {         if(x&gt;y)             return findgcd(x-y,y);         else             return findgcd(x,y-x);     }     return x; } </pre>	<pre> (iterative version) #include&lt;stdio.h&gt; #include&lt;conio.h&gt; void main() {     int x,y,m,i;     clrscr();     printf("Insert any two numbers: ");     scanf("%d%d",&amp;x,&amp;y);     if(x&gt;y)         m=y;     else         m=x;     for(i=m;i&gt;=1;i--)     {         if(x%i==0&amp;&amp;y%i==0)         {             printf("\nGCD of two number is : %d",i);             break;         }     } } </pre>
--	--

9. Write a program to illustrate use of storage classes.

<p><b>Auto variable</b></p> <pre>#include &lt;stdio.h&gt; void call1(); void call2(); void main() { int v = 10; call2(); printf("\n V=%d",v); } void call1() { int v = 20; printf("\t V=%d",v); } void call2() { int v = 30; call1(); printf("\t V=%d",v); } output: V=20 V=30 V=10</pre>	<p><b>Register Variable</b></p> <pre>#include&lt;stdio.h&gt; void main() { register int m=1; for( ; m&lt;=5;m++) printf("\t %d", m); } output: 1 2 3 4 5</pre>
<p><b>Static Variable</b></p> <pre>#include &lt;stdio.h&gt; void increment(); void main() { increment(); increment(); increment(); } void increment() { int static m; m++; printf("\n m=%d",m); } <b>Output:</b> m=1 m=2 m=3</pre>	<p><b>Extern Variable</b></p> <pre>#include &lt;stdio.h&gt; int v=10; void call1(); void call2(); void main() { call1(); call2(); printf("\n In main() v = %d",v); } void call1() { printf("\n In call1() v = %d",v); } void call2() { printf("\n In call2() v = %d",v); } output: In call1() v = 10 In call2() v = 10 In main() v = 10</pre>



10. Write a program to demonstrate the call by value and the call by reference concepts

<pre> /* call by value*/ #include&lt;stdio.h&gt; #include&lt;conio.h&gt; void change(int x,int y); void main( ) { int x,y; clrscr(); printf("Enter x,y,values:"); scanf("%d%d",&amp;x,&amp;y) printf("\n\nThe values of x,y before function call:"); printf("\nx=%d,\ty=%d",x,y); change(x,y); printf("\n\nThe values of x,y after function call:"); printf("\nx=%d,\ty=%d",x,y); } void change(int x,int y) { printf("\n\nThe values of x,y in function before changing:"); printf("\nx=%d,\ty=%d",x,y); x=x+10; y=y+10; printf("\n\nThe values of x,y in function after changing:"); printf("\nx=%d,\ty=%d",x,y); }  <b>output:</b> Enter x,y values 12 10 The values of x,y before function call x=12 y=10 The values of x,y in function before changing x=12 y=10 The values of x,y in function after changing x=22 y=20 The values of x,y after function call x=12 y=10 </pre>	<pre> /* call by reference*/ #include&lt;iostream.h&gt; #include&lt;conio.h&gt; void change(int *p,int *q); main( ) { int x,y; clrscr(); printf("Enter x,y,values:"); scanf("%d%d",&amp;x,&amp;y); printf("\n\nThe values of x,y before function call:"); printf("\nx=%d,\ty=%d",x,y); change(&amp;x,&amp;y); printf("\n\nThe values of x,y after function call:"); printf("\nx=%d,\ty=%d",x,y); } void change(int *p,int *q) { printf("\n\nThe values of *p, *q in function before changing:"); printf("\n*p=%d,\t*q=%d",*p,*q); *p=*p+10; *q=*q+10; printf("\n\nThe values of *p, *q in function after changing:"); printf("\n*p=%d,\t*q=%d",*p,*q); }  <b>output:</b> Enter x,y values 12 10 The values of x,y before function call x=12 y=10 The values of *p ,*q in function before change x=12 y=10 The values of *p ,*q in function after change x=22 y=20 The values of x,y after function call x=22 y=20 </pre>
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11. Write a program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
char ch;
do{
char a[20],f=0;
int i,n,ascii;
clrscr();
printf("enter a string:");
gets(a);
strlwr(a); /* Sting convert in small letter*/
for(ascii=97;ascii<=122;ascii++)
{
n=0;
f=0;
for(i=0;a[i]!=NULL;i++)
{
if(ascii==a[i])
{
n++; /* If Checking sucessfull ..increment +1*/
f=1;
}
}
if(f==1) /* Checking f value is similar or not */
printf("\n\t%c value found %d times ",ascii,n);
}
printf("\n\t continue (y/n):");
ch=getch();
}while(ch=='y'||ch=='Y');
}
```

**Output:**

```
enter a string:satavahana University
a value found 5 times
e value found 1 times
h value found 1 times
i value found 2 times
n value found 2 times
r value found 1 times
s value found 2 times
t value found 2 times
u value found 1 times
v value found 2 times
y value found 1 times
continue <y/n>:
```

12. Write a program to illustrate use of data type enum.

```
#include<stdio.h>
#include<conio.h>
enum month {jan=1, feb,mar,apr,may,jun,jul,aug,sep,oct,nov,dec};
void main()
{
clrscr();
printf("\n jan = %d",jan);
printf("\n mar = %d",mar);
printf("\n oct = %d",oct);
printf("\n dec = %d",dec);
}
```

**Output:**

```
jan = 1
mar = 3
oct = 10
dec = 12
```

13. Write a program to demonstrate use of string functions string.h header file.

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
char str1[20],str2[20],str3[40];
int n,p;
clrscr();
puts("enter a string");
gets(str1);
n=strlen(str1);
printf("\n the length of string %s is %d:",str1,n);
puts("\n enter str2");
gets(str2);
p=strcmp(str1,str2);
if(p)
printf("\n str1 and str2 are not equal");
else
printf("\n str1 and str2 are equal");
strcat(str1,str2);
printf("\n after concatenation str1 = %s",str1);
strcpy(str3,str1);
printf("\n after copy str3 = %s",str3);
}
```

**Output:**

```
enter a string
ram

the length of string ram is 3:
enter str2
prasad

str1 and str2 are not equal
after concatenation str1 = ramprasad
after copy str3 = ramprasad_
```

14. Write a program that opens a file and counts the number of characters in a file.

```
#include<stdio.h>
#include<ctype.h>
#include<conio.h>
void main()
{
char ch;
int i=0;
FILE *fp;
clrscr();
fp=fopen("sucf.txt","r");
while((ch=getc(fp))!=EOF)
{
i++;
}
printf("\n No. of characters in the given file is : %d",i);
}
```

**Output:**

No. of characters in the given file is :58

*Note: for this program you have to create a file sucf.txt in NOTEPAD software and save it in the same location where you are saving this program.*

15. Write a program to create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.

```
#include<conio.h>
#include<stdio.h>
#include<ctype.h>

void main()
{
FILE *fp;
char *fname,ch='y';
int n=0,total=0;
struct stud
{
int roll_no;
char stud_name[20];
int sub1, sub2, sub3, total;
char group[20];
int year;
}s;
clrscr();
printf("\n enter source file name:\t");
gets(fname);
fp=fopen(fname,"w");
if(fp==NULL)
{
printf("\n unable to open");
exit(0);
}
```

```

}
while(ch=='Y' || ch=='y')
{
printf("\n enter Roll number");
scanf("%d",&s.roll_no);
printf("\n enter student name:\t");
scanf("%s",s.stud_name);
printf("\n enter Group\n");
scanf("%s",s.group);
printf("\n enter year");
scanf("%d",&s.year);
printf("\n Enter 3 subject marks");
scanf("%d%d%d",&s.sub1,&s.sub2,&s.sub3);
s.total=s.sub1+s.sub2+s.sub3;
fprintf(fp,"%d%s%s%d%d%d%d",s.roll_no,s.stud_name,s.group,s.year,s.sub1,s.sub2,s.sub3,s.total);
n++;
printf("\n do you want to add another record (Y/N)?");
fflush(stdin);
scanf("%c",&ch);
}
printf("\n%d record are store in %s file",n,fname);
fclose(fp);
getch();
}

```

**Output:**

16. Write a program that opens an existing text file and copies it to a new text file with all lowercase letters changed to capital letters and all other characters unchanged.

```

#include<stdio.h>
#include<process.h>
#include<ctype.h>
void main() {
FILE *fp1, *fp2;
char a;
clrscr();
fp1 = fopen("test.txt", "r");
if (fp1 == NULL) {
puts("cannot open this file");
exit(1);
}
fp2 = fopen("test1.txt", "w");
if (fp2 == NULL) {
puts("Not able to open this file");
fclose(fp1);
exit(1);
}

do {
a = fgetc(fp1);
if(islower(a));

```

```
a=toupper(a);  
fputc(a, fp2);  
} while (a != EOF);  
fcloseall();  
getch();  
}
```

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