

GDC MEMORIAL COLLEGE

BAHAL (BHIWANI)-127028



Lab Manual

PROGRAMMING IN C (B.Sc.(cs) 1st year)

Department of Computer Science

B.SC.(C. SC.) SEM II

LIST OF PROGRAMS

Program 1: Temperature of a city in Fahrenheit degrees is input through keyboard. Write a program to convert this temperature into Centigrade degrees.

Program 2: WAP to calculate Simple Interest and Compound Interest.

Program 3: WAP to find largest number among three numbers.

Program 4: WAP to count number of digits, reverse the digit and sum of digits of a given number.

Program 5: WAP to find factorial of a number.

Program 6: WAP to check whether a given number is prime or not.

Program 7: WAP to check whether a given year is leap year or not.

Program 8: WAP to search for a given number in an array.

Program 9: WAP to find the smallest and largest element in an array.

Program 10: WAP to add and multiply two matrices.

Program 11: WAP to swap two numbers using call by value and call by reference.

Program 12: WAP to count number of words, characters and blanks in a string.

Program 13: WAP to illustrate the usage of structure in processing of student record.

Program 14: WAP to illustrate encryption/decryption of a string.

Program 15: WAP to illustrate pointer arithmetic.

**/* Program #1: Temperature of a city in Fahrenheit degrees is input through keyboard.
Write a program to convert this temperature into Centigrade degrees. */**

```
#include<stdio.h>
#include<conio.h>
void main()
{
float fr,cs;
clrscr();
printf("\n Enter the temperature in fahrenheit: ");
scanf("%f",&fr);
cs=(fr-32)*1.8;
printf("\n Temperature in centigrade:%f",cs);
getch();
}
```

/* Program #2:WAP to calculate Simple Interest and Compound Interest.*/

```
#include<math.h>
#include<stdio.h>
#include<conio.h>
float s_i(int,int,float);
float c_i(int,int,float);
void main()
{
int pa,t;
float r,si=0,ci;
clrscr();
```

```
printf("\n Enter the principal amount, rate and time: ");
```

```
scanf("\n %d%f%d",&pa,&r,&t);
```

```
si=pa*r*t/100;
```

```
si=s_i(pa,t,r);
```

```
printf("\n Simple interest:%f",si);
```

```
ci=c_i(pa,t,r);
```

```
ci=ci-pa;
```

```
printf("\n Compound interest:%f",ci);
```

```
getch();
```

```
}
```

```
float s_i(int p,int t,float r)
```

```
{
```

```
float temp;
```

```
temp=(p*r*t)/100;
```

```
return temp;
```

```
}
```

```
float c_i(int p,int t,float r)
```

```
{
```

```
float temp;
```

```
temp=p*pow((1+r/100),t);
```

```
return temp;
```

```
}
```

```
/*Program #3: WAP to find largest number among three numbers.*/
```

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

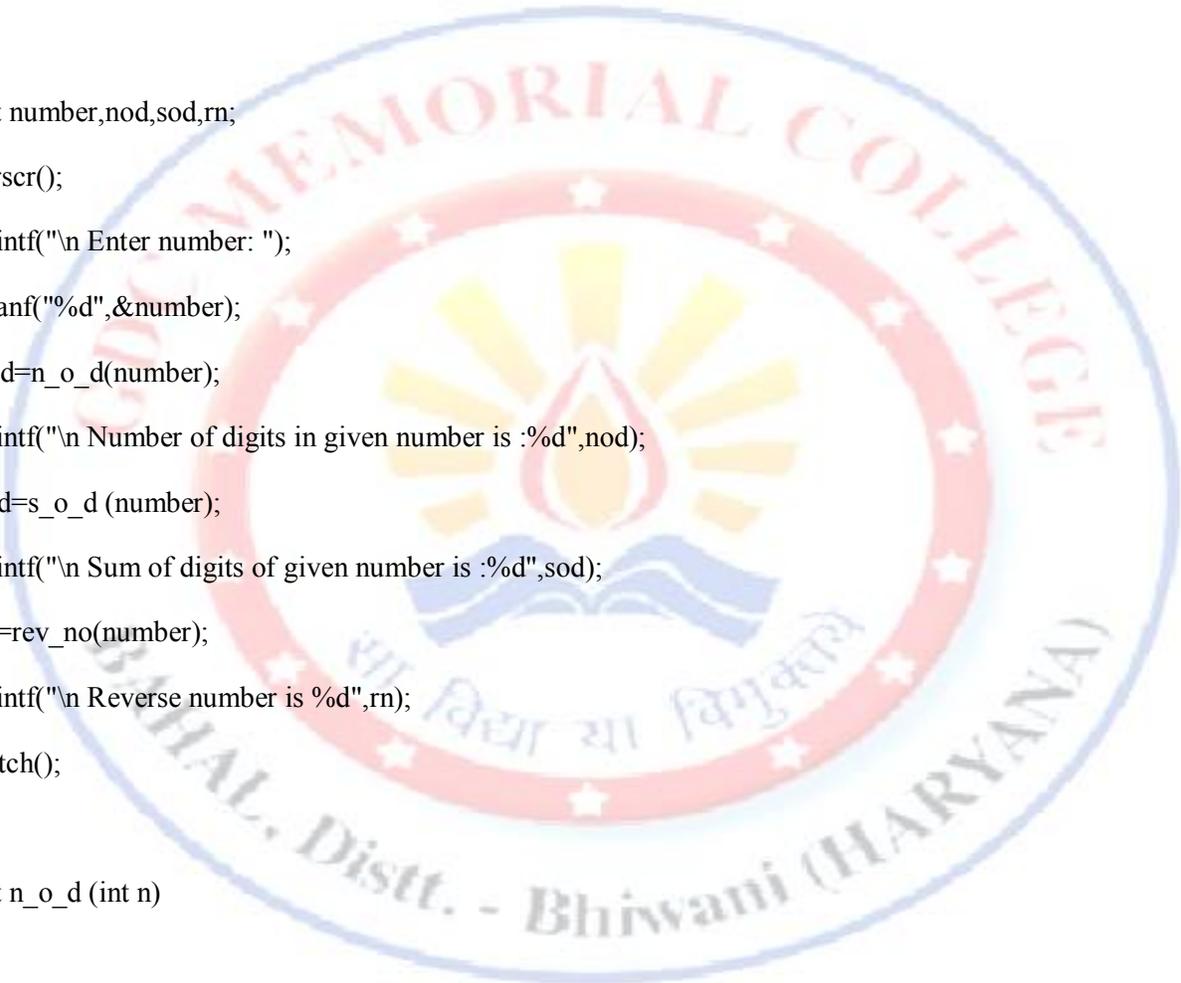
```
#include<conio.h>

void main()
{
int a,b,c,largest;
clrscr();
printf("\n Enter three numbers:");
scanf("%d%d%d",&a,&b,&c);
if(a>b)
{
if(a>c)
largest=a;
else
largest=c;
}
else
{
if(b>c)
largest=b;
else
largest=c;
}
printf("\n Largest among three numbers is :%d",largest);
getch();
}
```

/* Program #4: WAP to count number of digits, reverse the digit and sum of digits of a given number. */



```
#include<stdio.h>
#include<conio.h>
int n_o_d(int);
int rev_no(int);
int s_o_d(int);
void main ()
{
int number,nod,sod,rn;
clrscr();
printf("\n Enter number: ");
scanf("%d",&number);
nod=n_o_d(number);
printf("\n Number of digits in given number is :%d",nod);
sod=s_o_d (number);
printf("\n Sum of digits of given number is :%d",sod);
rn=rev_no(number);
printf("\n Reverse number is %d",rn);
getch();
}
int n_o_d (int n)
{
int count=0;
while(n!=0)
{
n=n/10;
count++;
}
```



```
}  
return(count);  
}  
int rev_no(int n)  
{  
int rev=0,temp;  
while(n!=0)  
{  
temp=n%10;  
rev=rev*10+temp;  
n=n/10;  
}  
return(rev);  
}  
int s_o_d(int n)  
{  
int sum=0, temp;  
while(n!=0)  
{  
temp=n%10;  
sum=sum+temp;  
n=n/10;  
}  
return(sum);  
}
```

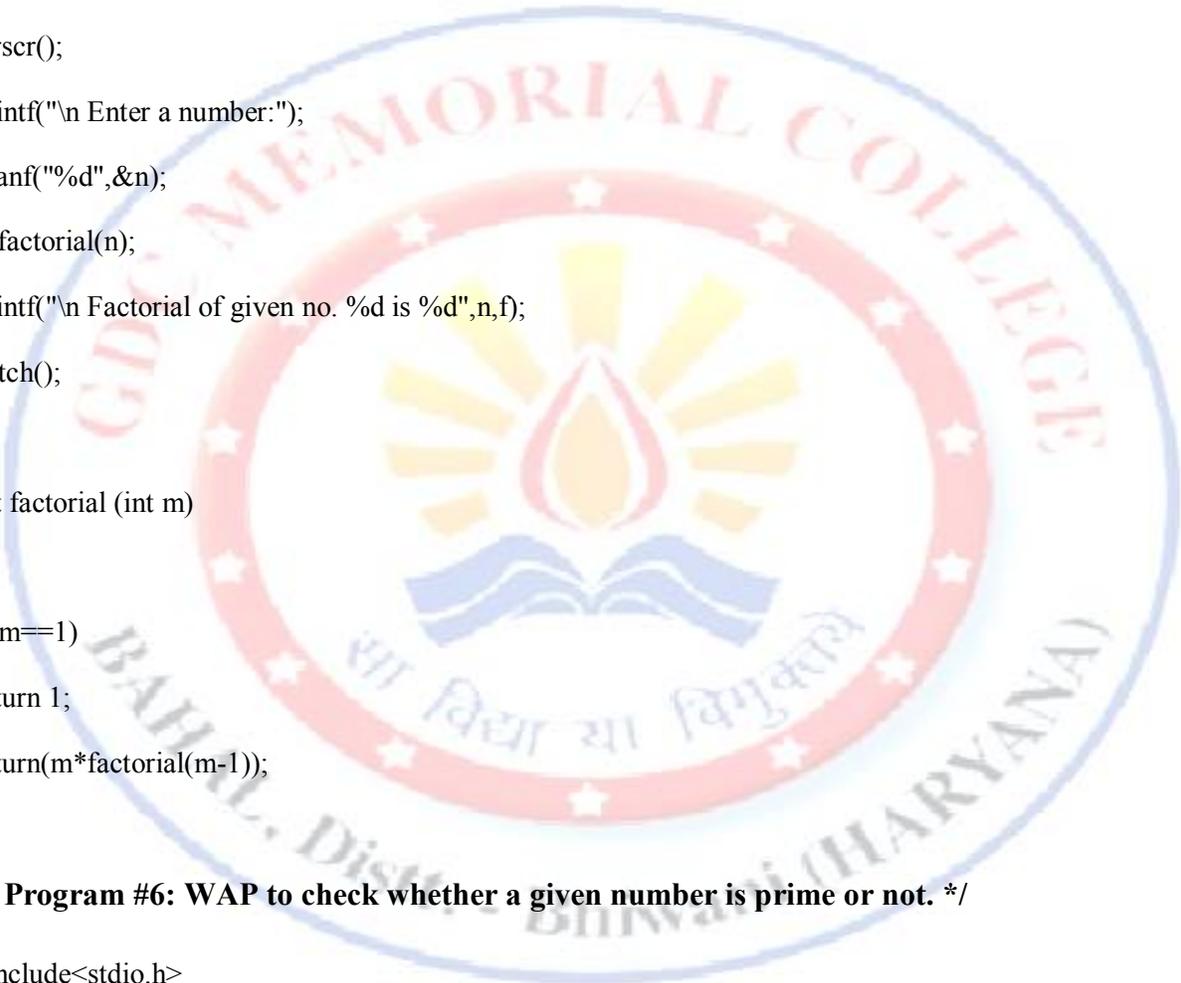
/* Program #5:WAP to find factorial of a number. */



```
#include<stdio.h>
#include<conio.h>
int factorial(int);
void main()
{
int f,n;
clrscr();
printf("\n Enter a number:");
scanf("%d",&n);
f=factorial(n);
printf("\n Factorial of given no. %d is %d",n,f);
getch();
}
int factorial (int m)
{
if(m==1)
return 1;
return(m*factorial(m-1));
}
```

/* Program #6: WAP to check whether a given number is prime or not. */

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
int div,n;
```



```
clrscr();

printf("\n Enter the number:");

scanf("%d",&n);

div=2;

while(div<n/2)

{

if(n%div==0)

{

printf("\n %d is not prime",n);

goto end;

//break;

}

div++;

}

printf("\n %d is prime",n);

end:

getch();

}
```

/* Program #7: WAP to check whether a given year is leap year or not.*/

```
#include<stdio.h>

#include<conio.h>

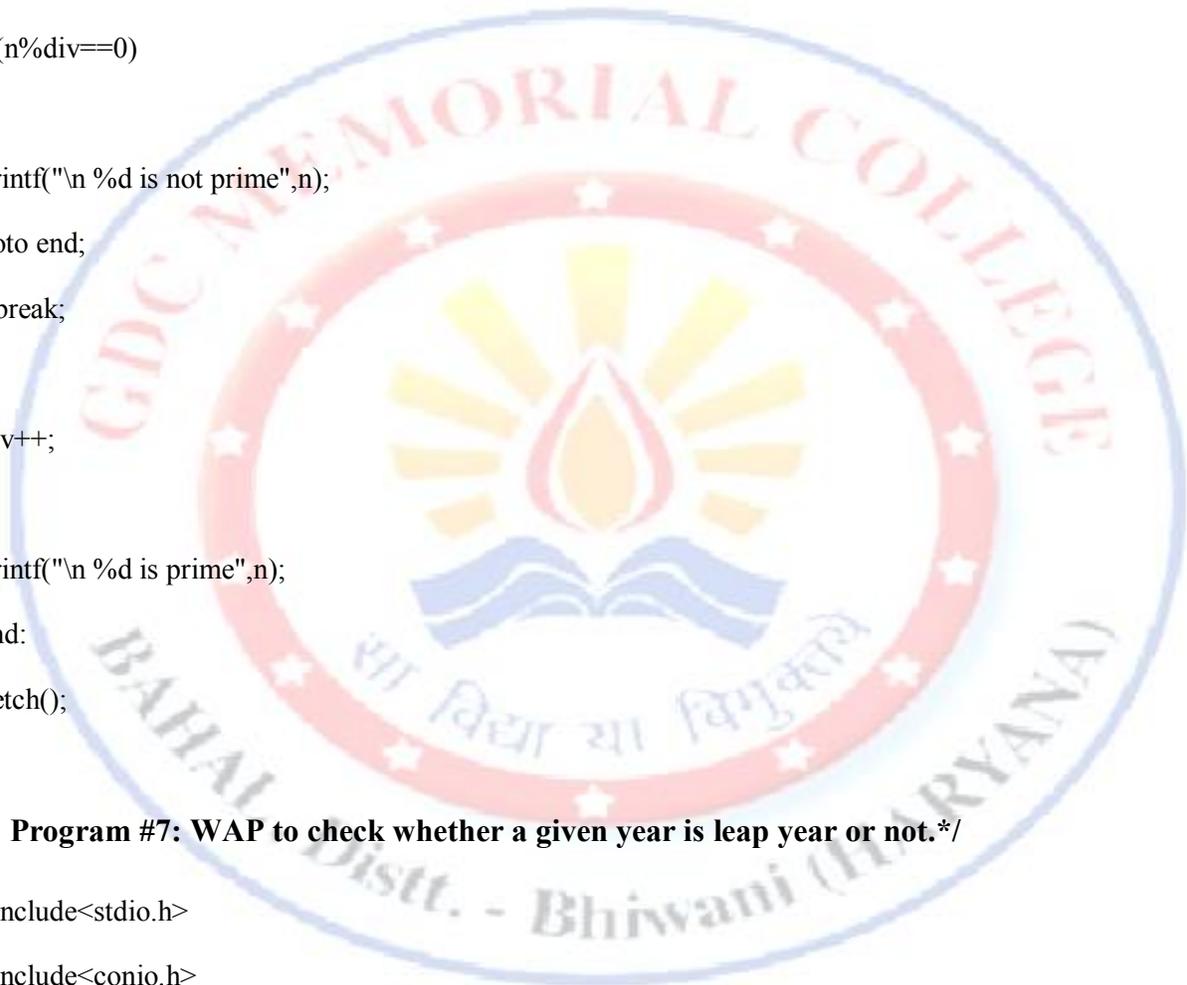
void main()

{

int yr;

clrscr();

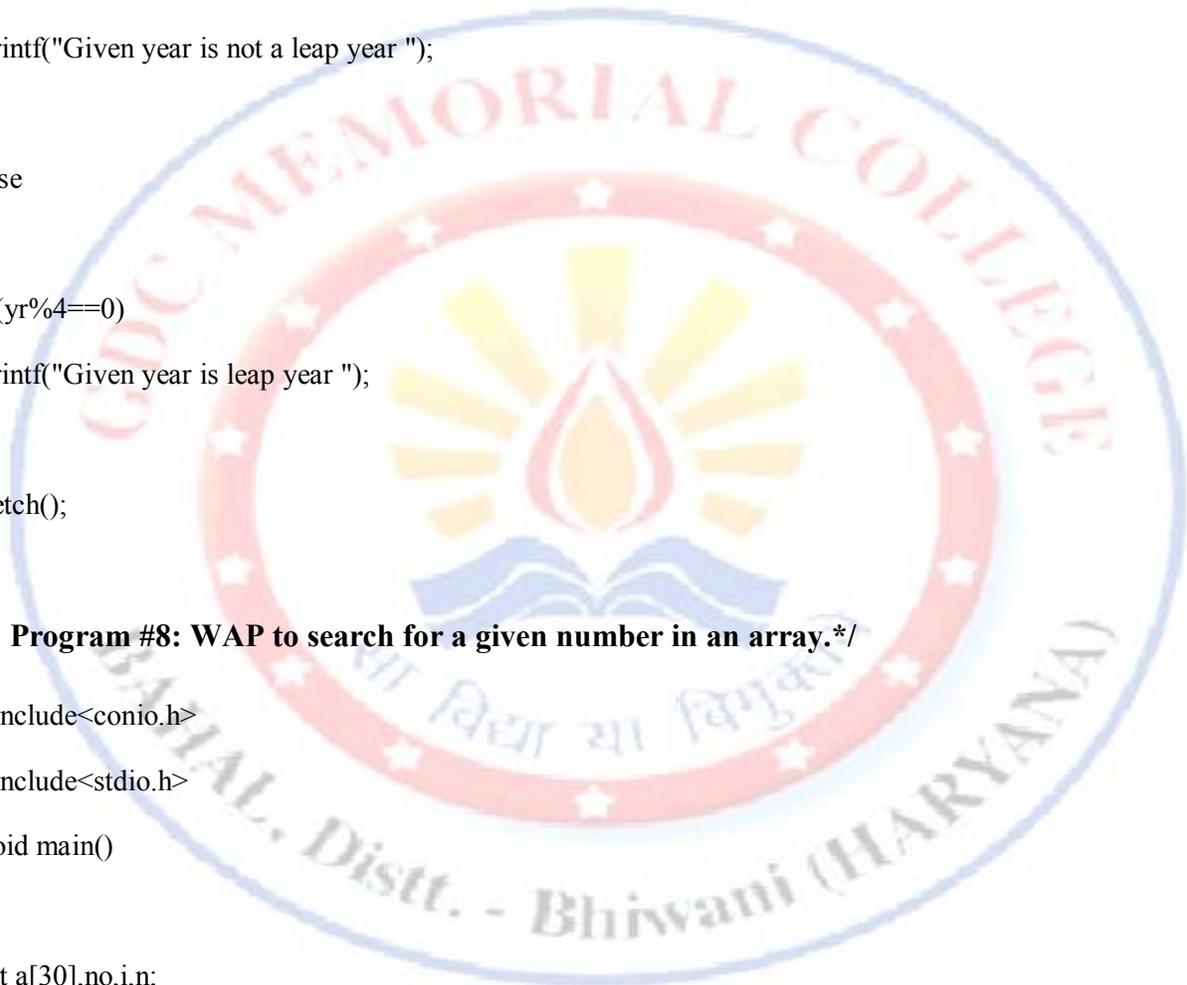
printf("\n Enter the year:");
```



```

scanf("%d",& yr);
if(yr%100==0)
{
if(yr%400==0)
printf("Given year is leap year");
else
printf("Given year is not a leap year ");
}
else
{
if(yr%4==0)
printf("Given year is leap year ");
}
getch();
}
/* Program #8: WAP to search for a given number in an array.*/
#include<conio.h>
#include<stdio.h>
void main()
{
int a[30],no,i,n;
clrscr();
printf("\n Enter the number of elements in the array:");
scanf("%d",&n);
printf("\n Enter the array elements");
for(i=0;i<n;i++)

```



```

scanf("%d",&a[i]);

printf("\n Enter the element to be searched");

scanf("%d",&no);

for(i=0;i<n;i++)
{
if(a[i]==no)
{
printf("\n Element found at location %d",i+1);
goto end;
}
else
{
printf("\n Element not found");
goto end;
}
}
end:
getch();
}

```

/* Program #9: WAP to find the smallest and largest element in an array. */

```

#include<stdio.h>

#include<conio.h>

void main()

{

int a[30],i,min,max,n;

clrscr();

```

```
printf("\n Enter the no. of elements in the array:");
```

```
scanf("%d",&n);
```

```
printf("\n Enter the array elements:");
```

```
for(i=0;i<n;i++)
```

```
scanf("%d",&a[i]);
```

```
min=a[0];
```

```
max=a[0];
```

```
for(i=0;i<n;i++)
```

```
{
```

```
if(min>a[i])
```

```
min=a[i];
```

```
if(max<a[i])
```

```
max=a[i];
```

```
}
```

```
printf("\n Largest element in array is: %d\n",max);
```

```
printf("\n Smallest elements in array: %d",min);
```

```
getch();
```

```
}
```

```
/* Program #10: WAP to add and multiply two matrices. */
```

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

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

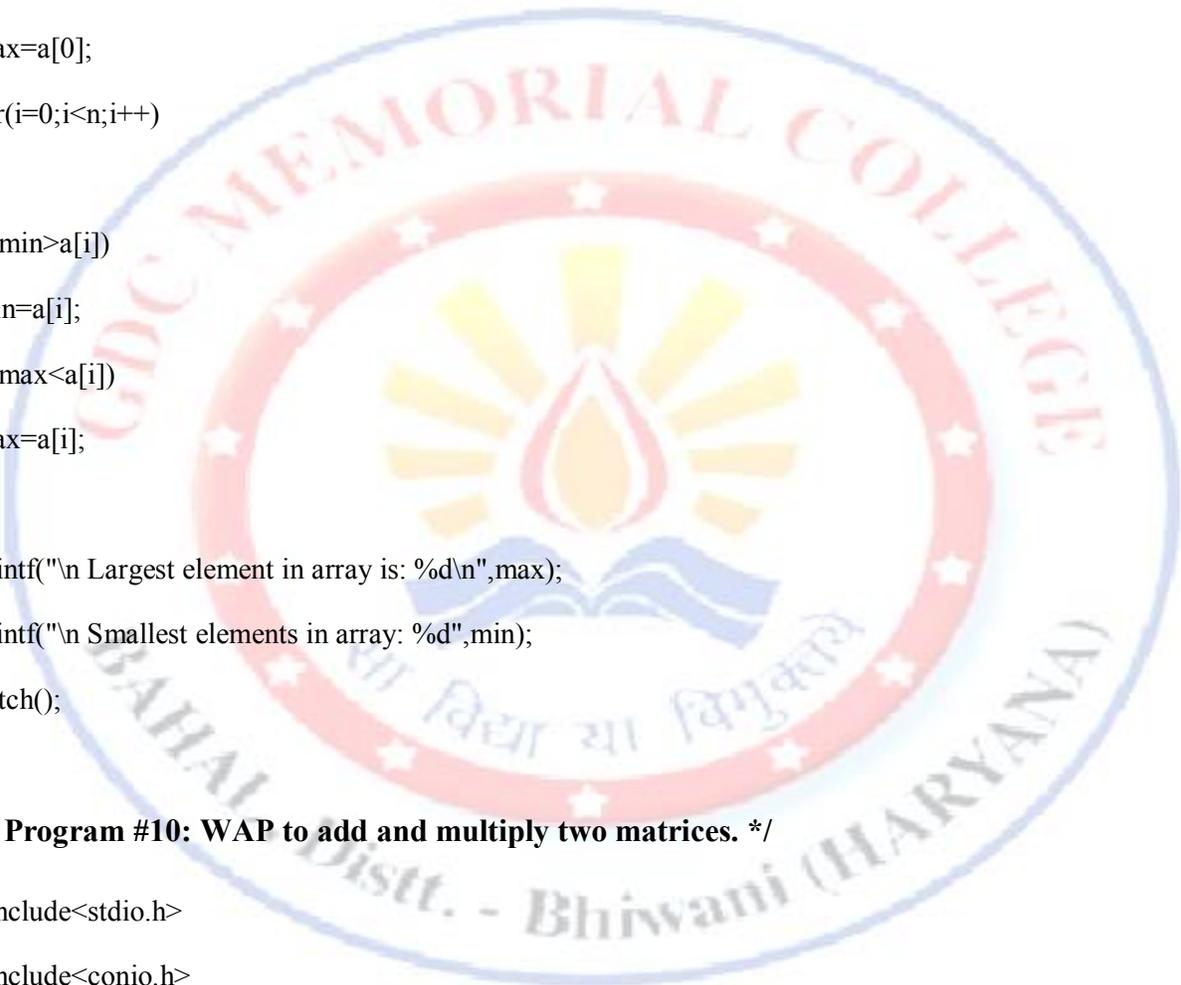
```
void main()
```

```
{
```

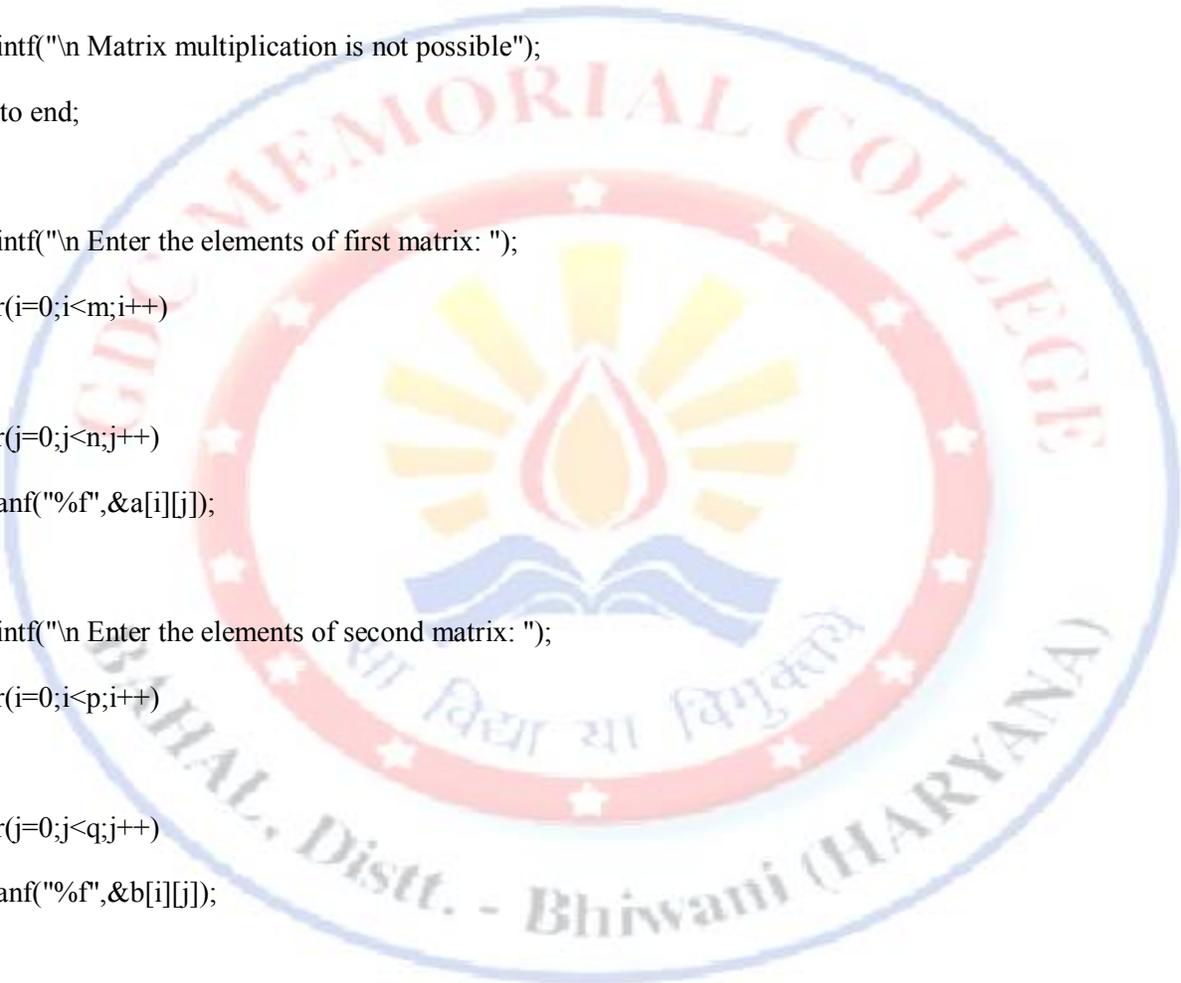
```
int i,j,m,n,p,q,k;
```

```
float a[10][10],b[10][10],c[10][10];
```

```
clrscr();
```



```
printf("\n Enter the order of first matrix:");
scanf("%d%d",&m,&n);
printf("\n Enter the order of second matrix:");
scanf("%d%d",&p,&q);
if(n!=p)
{
printf("\n Matrix multiplication is not possible");
goto end;
}
printf("\n Enter the elements of first matrix: ");
for(i=0;i<m;i++)
{
for(j=0;j<n;j++)
scanf("%f",&a[i][j]);
}
printf("\n Enter the elements of second matrix: ");
for(i=0;i<p;i++)
{
for(j=0;j<q;j++)
scanf("%f",&b[i][j]);
}
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];
}
}
printf("\n Resultant matrix is\n ");
for(i=0;i<m;i++)
{
for(j=0;j<q;j++)
printf("%f\t",c[i][j]);
printf("\n");
}
end:
getch();
}
```

/* Program #11: WAP to swap two numbers using call by value and call by reference.*/

```
#include<stdio.h>
#include<conio.h>
void swap(int,int);
void swap_ref(int*,int*);
void main()
{
int a,b;
clrscr();
printf("\n Enter the numbers:");
scanf("%d%d",&a,&b);
printf("\n Swapping of numbers using call by values");
```

```
swap(a,b);  
  
printf("\n Swapping of numbers using call by reference");  
  
printf("\n Values before swap:%d\t%d",a,b);  
  
swap_ref(&a,&b);  
  
printf("\n Values after swap:%d\t%d",a,b);  
  
getch();
```

```
}  
  
void swap(int x,int y)  
{  
int temp;  
printf("\n Values before swap:%d\t%d",x,y);  
temp=x;  
x=y;  
y=temp;  
printf("\n Values after swap:%d\t%d",x,y);  
}
```

```
void swap_ref(int*x,int*y)  
{  
int temp;  
temp=*x;  
*x=*y;  
*y=temp;  
}
```

/* Program #12: WAP to count number of words, characters and blanks in a string.*/

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

```
#include<string.h>

void main()
{
char string[100];
int c,noc=0,noblanks=0,i,len=0,nowords=0;
clrscr();
printf("\n Enter text :");
gets(string);
puts(string);
len=strlen(string);
for(i=0;i<len;i++)
noc++;
for(i=0;i<len;i++)
{
if(string[i]=='\t'||string[i]==' '||string[i]=='\n')
noblanks++;
}

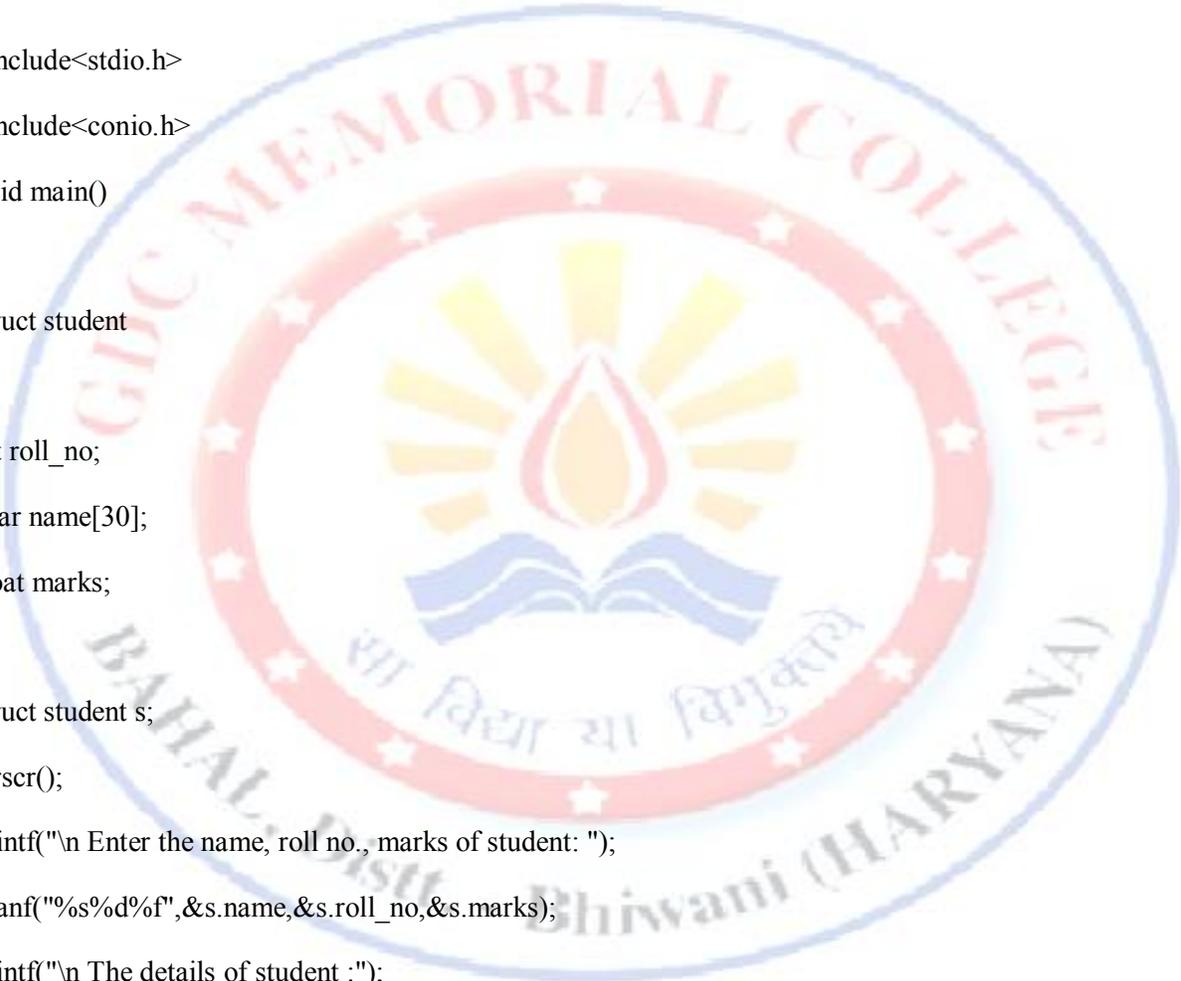
for(i=0;i<len;i++)
{
if(string[i]!=' ')
{
nowords++;
}
}
}
noc=noc-noblanks;
```



```
printf("\nNo. of characters %d", noc);
printf("\n No. of blanks: %d",noblanks);
printf("\nNo. of words:%d",nowords+1);
getch();
}
```

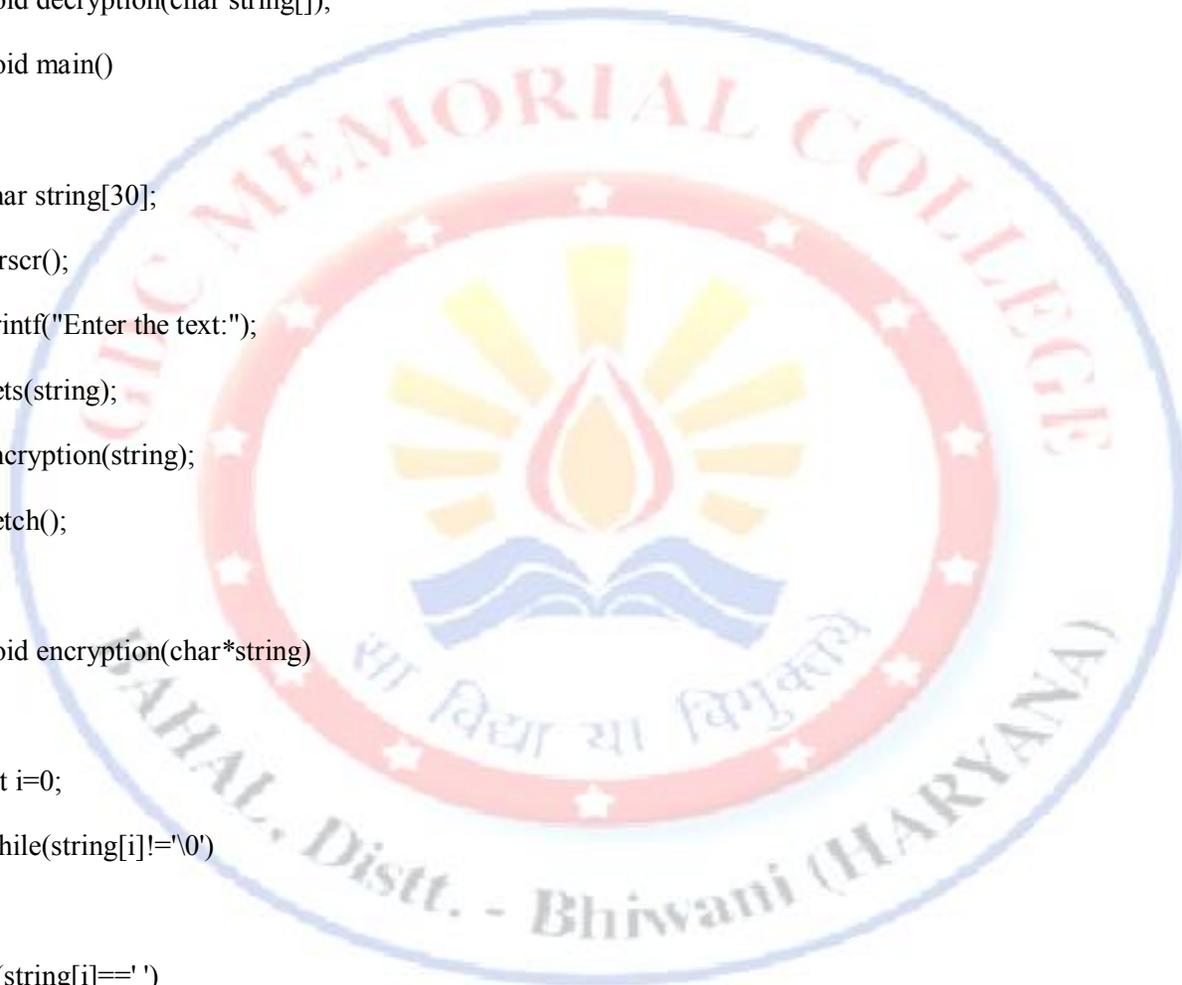
/* Program #13: WAP to illustrate the usage of structure in processing of student record.*/

```
#include<stdio.h>
#include<conio.h>
void main()
{
struct student
{
int roll_no;
char name[30];
float marks;
};
struct student s;
clrscr();
printf("\n Enter the name, roll no., marks of student: ");
scanf("%s%d%f",&s.name,&s.roll_no,&s.marks);
printf("\n The details of student :");
printf("\n Name:%s",s.name);
printf("\n Roll No.:%d",s.roll_no);
printf("\n Marks:%f",s.marks);
getch();
}
```



/* Program #14: WAP to illustrate encryption/decryption of a string.*/

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void encryption (char string[]);
void decryption(char string[]);
void main()
{
char string[30];
clrscr();
printf("Enter the text:");
gets(string);
encryption(string);
getch();
}
void encryption(char*string)
{
int i=0;
while(string[i]!='\0')
{
if(string[i]==' ')
goto jump1;
else if(string[i] >=97)
string[i]=(string[i]-94)%26+97;
else
string[i]=(string[i]-62)%26+65;
```



```

jump1:
i++;
}
printf("The encrypted text is:");
puts(String);
decryption(string);
}
void decryption(char*string)
{
int i=0;
while(string[i]!='\0')
{
if(string[i]==' ')
goto jump2;
else if((string[i] >= 68 && string[i] <= 90) || \ (string[i] >= 100 && string[i] <= 122))
string[i]-=3;
else
string[i]+=23;
jump2:
i++;
}
printf("The decrypted text is:");
puts(string);
}

```

/* Program #15: WAP to illustrate pointer arithmetic.*/

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

```
#include<conio.h>

void main()
{
int i,*x;
float j,*y;
char k='a',*z;

clrscr();

printf("\n Enter the values of i, j: ");
scanf("%d%f",&i,&j);
printf("\n Value of i=%d",i);
printf("\n Value of j=%f",j);
printf("\n Value of k=%c",k);
x=&i;
y=&j;
z=&k;

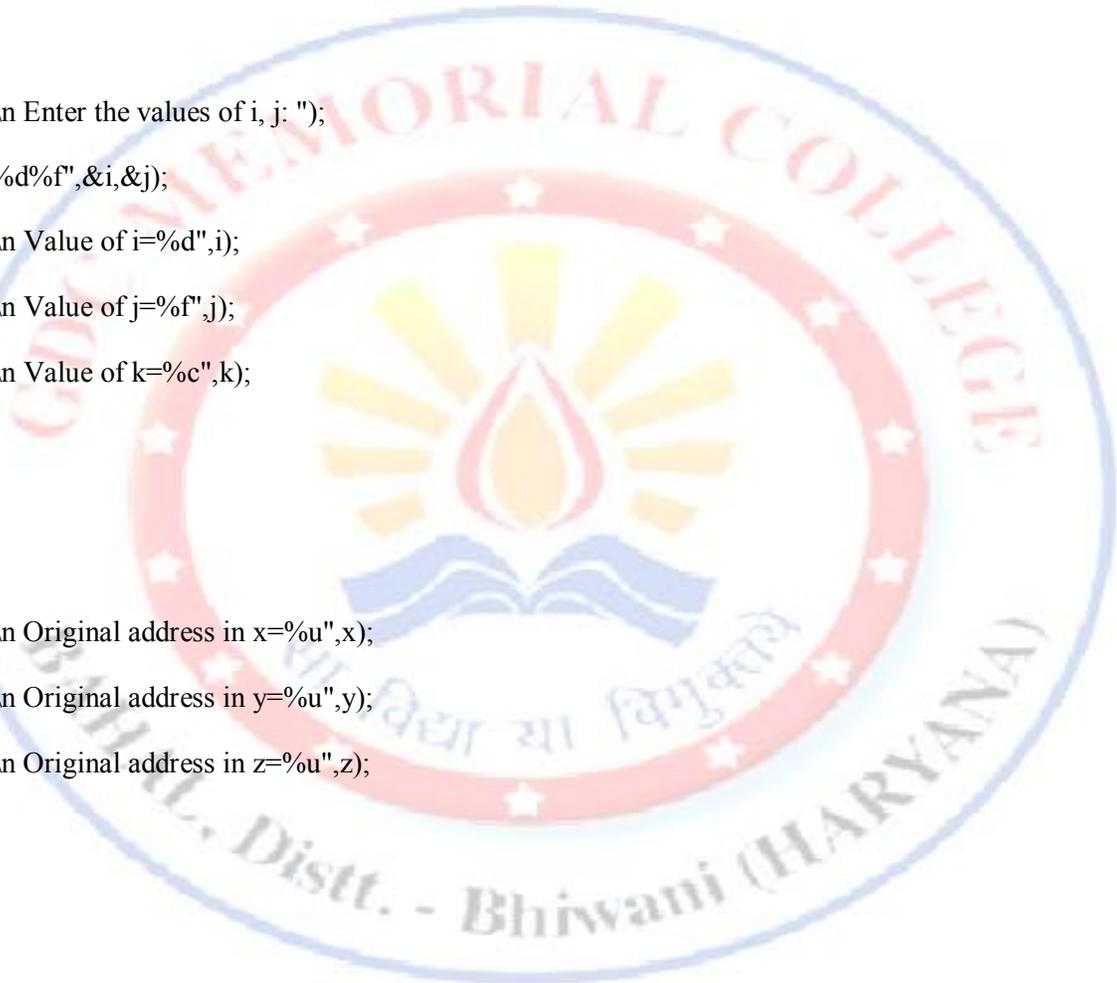
printf("\n Original address in x=%u",x);
printf("\n Original address in y=%u",y);
printf("\n Original address in z=%u",z);

x++;
y++;
z++;

printf("\n After incrementing x, y, z:\n")

printf("\n New address in x=%u",x);
printf("\n New address in y=%u",y);
printf("\n New address in z=%u",z);

x=x-7;
```



```
y=y-5;  
z=z-2;  
printf("\n After subtracting some number:\n")  
printf("\n New address in x=%u",x);  
printf("\n New address in y=%u",y);  
printf("\n New address in z=%u",z);  
getch();  
}
```

