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Q1) Program to illustrate formatted input and output concept

```
#include<stdio.h>
#include<conio.h>
void main()
{
int x=12345;
long y=987654;
clrscr();
printf("%-10d",x);
printf("\n%10d",x);
printf("\n%010d",x);
printf("\n%-10d",x);
printf("\n%10ld",y);
printf("\n%-10ld",-y);
getch(); }
```

OUTPUT:

Q2) Program using operators and expressions

```
#include <stdio.h>
#include<conio.h>
void main()
{
clrscr();
   int a = 9,b = 4, c;
   c = a+b;
   printf("a+b = %d \n",c);
   c = a-b;
   printf("a-b = %d \n",c);
   c = a*b;
   printf("a*b = %d \n",c);
   c=a/b;
   printf("a/b = %d \n",c);
   c=a%b;
   printf("Remainder when a divided by b = %d \n",c);
   //increment-decrement operators
   int x = 10, y = 100;
   float z = 10.5, d = 100.5;
   printf("++x = %d \n", ++x);
   printf("--y = %d \n", --y);
   printf("++z = %f \n", ++z);
   printf("--d = %f \n", --d);
  //assignment operators
  int m = 5, n;
   n = m;
   printf("c = %d \n", c);
```

```
    n += m; // n = n+m
    printf("n = %d \n", n);
    n -= m; // n = m-a
    printf("n = %d \n", n);
    n *= m; // n = m*a
    printf("n = %d \n", n);
    n /= m; // n = m/a
    printf("n = %d \n", n);
    n %= m; // n = n%m
    printf("n = %d \n", n);
    getch();
}
```

OUTPUT:

Q3) Program to swap 2 numbers

```
#include<stdio.h>

#include<conio.h>

void main()

{

int a,b,temp;

clrscr();

printf("Enter two numbers:");

scanf("%d%d",&a,&b);

printf("\nNumber 1: %d\nNumber 2: %d",a,b);

temp=a;

a=b;

b=temp;

printf("\n\nNumbers are swapped!\nNumber 1: %d \nNumber 2: %d",a,b);

getch(); }
```

OUTPUT:

Q4) Program to find even and odd numbers.

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
int a;
printf("Enter a number : ");
scanf("%d",&a);
if(a%2==0)
printf("\nThe number is even ");
else
printf("\nThe number is odd ");
getch();
}
```

OUTPUT:

Q5) Program to find whether a character is vowel or consonant.

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
char ch;
printf("\n Enter a character: ");
scanf("%c",&ch);
switch(ch)
{
case 'a':
case 'A':
case 'e':
case 'E':
case 'i':
case 'I':
case 'o':
case 'O':
case 'u':
case 'U':printf("\nIt is a Vowel.");
        break;
default:printf("\n It is a consonant.");
}
getch();
}
```

OUTPUT:

Q6) Program to find largest of 3 numbers

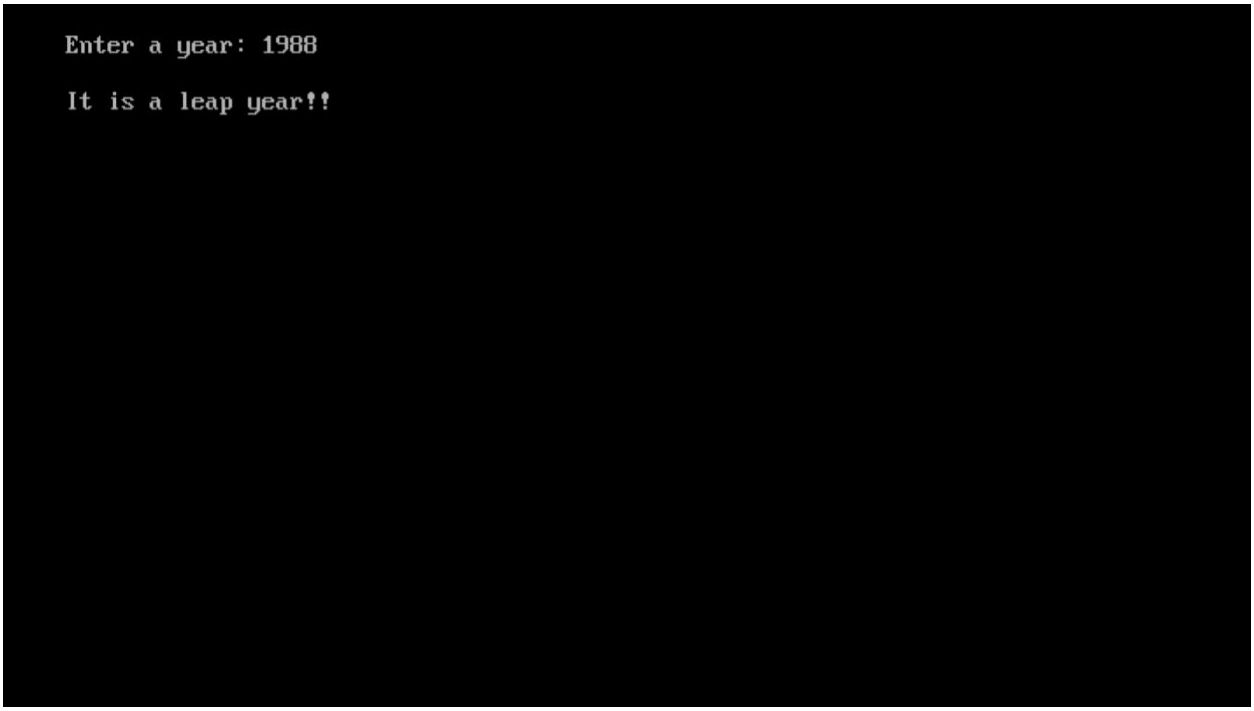
```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,c;
clrscr();
printf("Enter three numbers : ");
scanf("%d%d%d",&a,&b,&c);
if(a>b&&a>c)
printf("%d is the greatest integer",a);
else if(b>c&&b>a)
printf("%d is the greatest integer",b);
else
printf("%d is the greatest integer",c);
getch(); }
```

OUTPUT:

Q7) Program to check leap year.

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
int y;
printf("\nEnter a year: ");
scanf("%d",&y);
if(y%4==0)
{
if(y%100==0)
{
        if(y%400==0)
        printf("\nIt is a leap year!!");
        else
        printf("\nIt is not a leap year!!");
}
else
printf("\nIt is a leap year!!");
}
else
printf("\nIt is not a leap year!!");
getch();
}
```

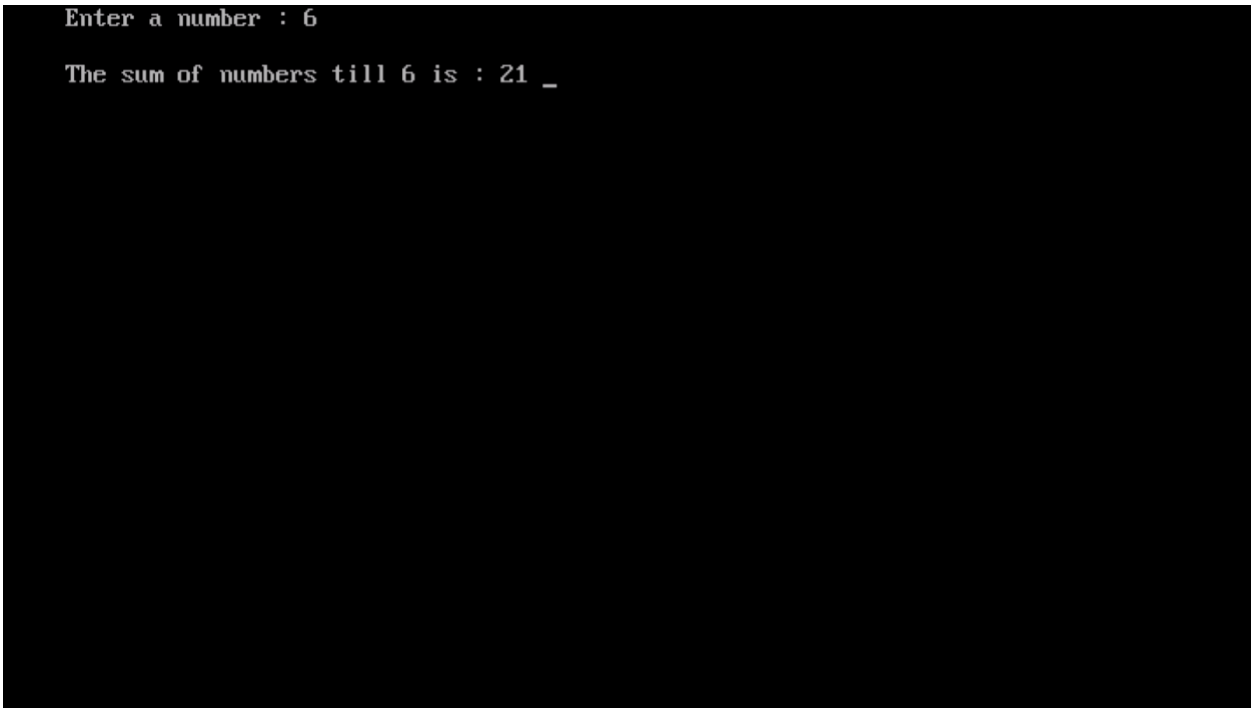
OUTPUT:



Q8) Program to calculate sum of all natural numbers

```
#include<stdio.h>
#include<conio.h>
void main()
{
//while loop prg
clrscr();
int sum=0,n,i=0;
printf("Enter a number : ");
scanf("%d",&n);
while(i<=n)
{ sum+=i;
i++; }
printf("\nThe sum of numbers till %d is : %d ",n,sum);
getch(); }
```

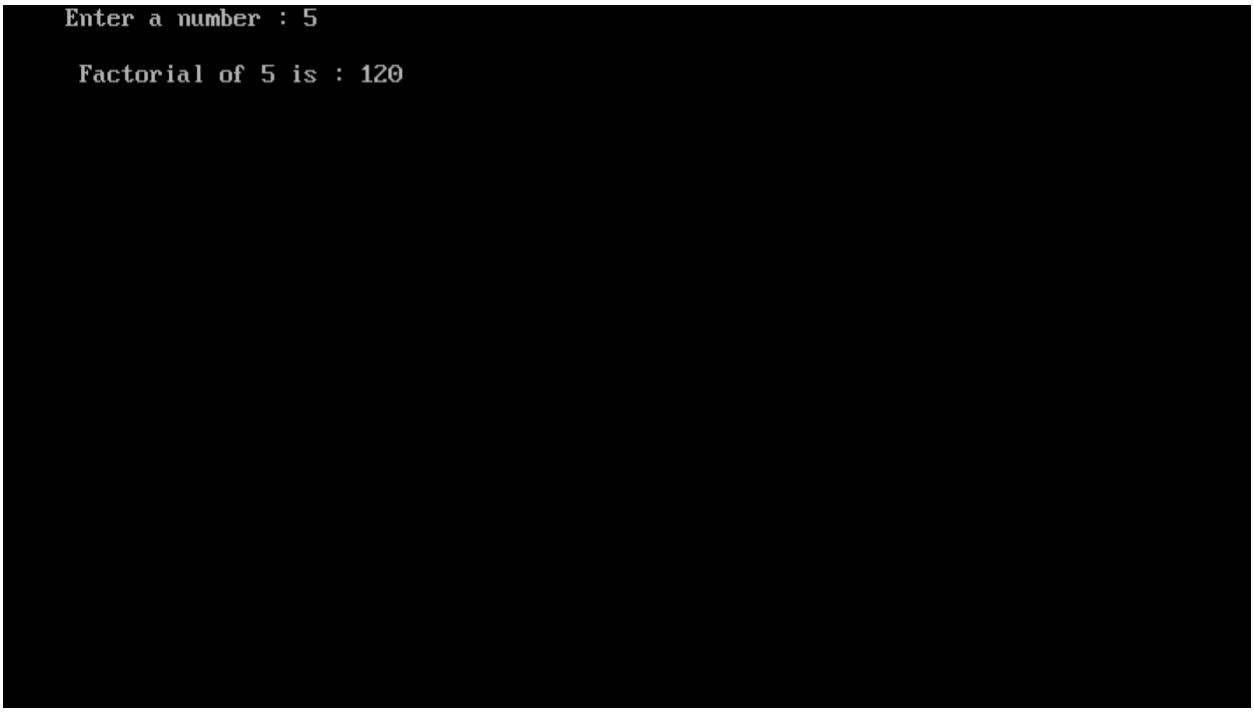
OUTPUT:



Q9) Program to find factorial of a number

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
int n,f=1;
printf("Enter a number : ");
scanf("%d",&n);
for(int i=n;i>0;i--)
{
f*=i;
}
printf("\n Factorial of %d is : %d",n,f);
getch(); }
```

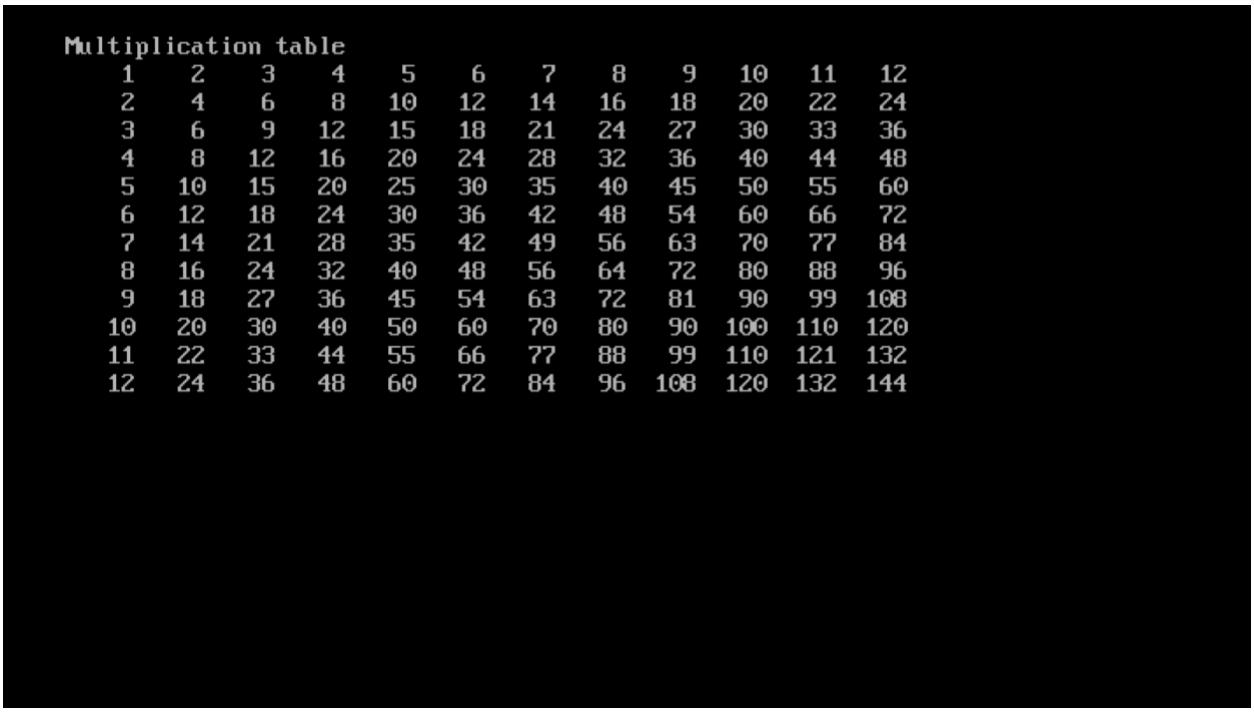
OUTPUT:



Q10) Program to generate a multiplication table.

```
#include<stdio.h>

#include<conio.h>

void main()

{

clrscr();

int n=12,m=12;

printf("\nMultiplication table\n");

for(int i=1;i<=n;i++)

{

for(int j=1;j<=m;j++)

 printf(" %4d",i*j);

printf("\n");

}

getch(); }
```

OUTPUT:



Q11)Program to print fibonacci series

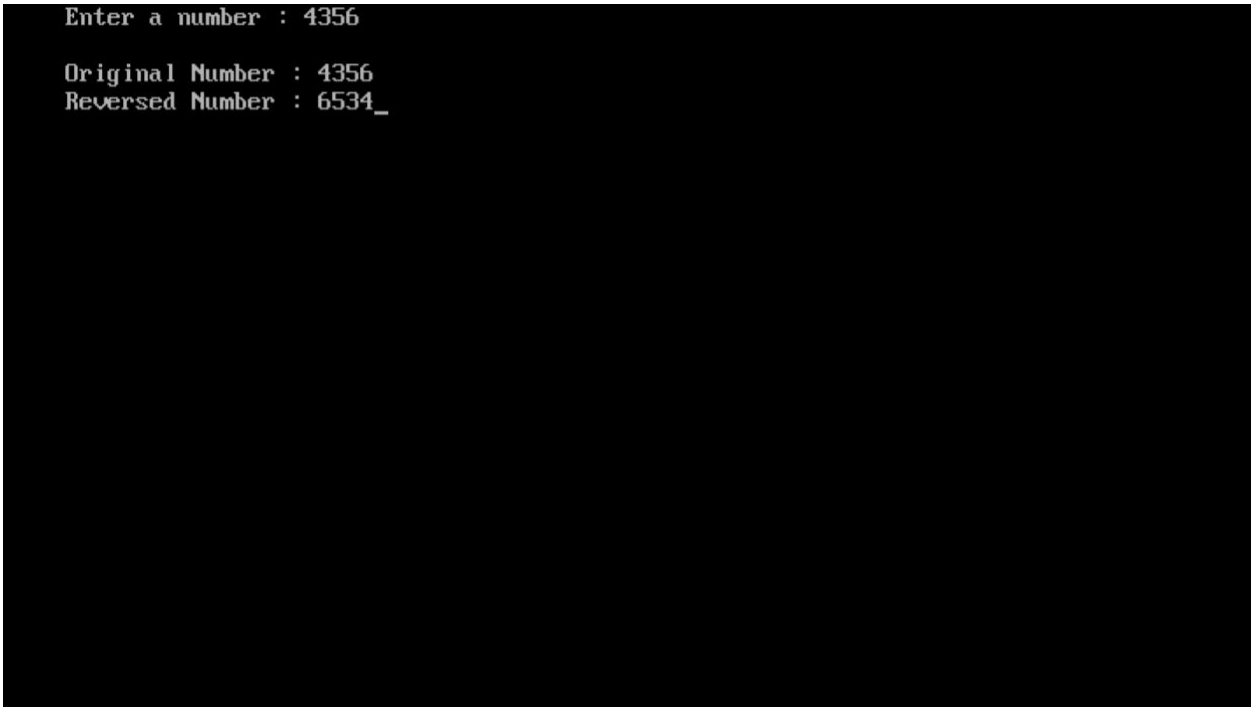
```
#include<stdio.h>
#include<conio.h>
void main()
{  clrscr();
int x=0,y=1,z,n;
printf("Enter the number of terms required : ");
scanf("%d",&n);
printf("\n Fibonacci Series : \n");
printf(" %d %d",x,y);
for(int i=2;i<n;i++)
{  z=x+y;
printf(" %d",z);
x++;
y++;  }
getch();  }
```

OUTPUT:

Q12) Program to find reverse of a number

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
int x,y=0,n;
printf("Enter a number : ");
scanf("%d",&n);
x=n;
while(x>0)
{
y=(y*10)+(x%10);
x=x/10;  }
printf("\nOriginal Number : %d\nReversed Number : %d",n,y);
getch();  }
```

OUTPUT:



Q13) Program to find whether a number is palindrome or not

```
#include<stdio.h>

#include<conio.h>

void main()

{

clrscr();

int n,x,y=0;

printf("Enter a number : ");

scanf("%d",&n);

x=n;

while(x>0)

{

 y+=x%10;

x=x/10;

if(x>0)

y*=10;

}

if(y==n)

printf("\nThe number is a Palindrome!");

else

printf("\nThe number is not a Palindrome");

getch();

}
```

OUTPUT:

Q14) Program print half and full pyramid

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
int i,j,space, rows, k=0;
for(i=1;i<=6;i++)
{
 for(j=1;j<=i;j++)
 printf("%3d",i);
 printf("\n");
 }
 printf("\nEnter number of rows: ");
 scanf("%d",&rows);
 for(i=1; i<=rows; ++i, k=0)
 {
            for(space=1; space<=rows-i; ++space)
            {
               printf("  ");
            }
            while(k != 2*i-1)
            {
               printf("* ");
               ++k;
            }
            printf("\n");

}
getch();   }
```

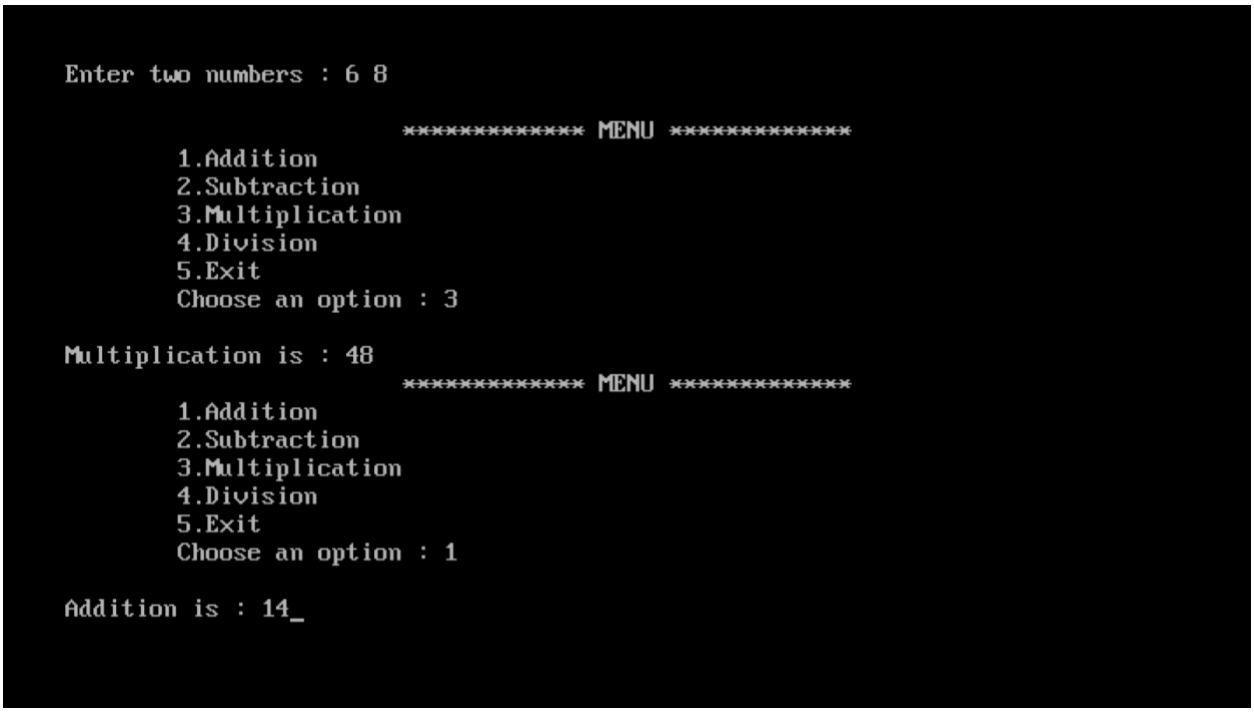
OUTPUT:

Q15) Program for a Simple Calculator

```
#include<stdio.h>

#include<conio.h>

void main()

{

int ch,sum,dif,mul,a,b;

float div;

clrscr();

printf("\n\nEnter two numbers : ");

scanf("%d %d",&a,&b);

do

{

clrscr();

printf("\n\t\t\t********** MENU
**********\n\t1.Addition\n\t2.Subtraction\n\t3.Multiplication\n\t4.Division\n\t5.Exit");

printf("\n\tChoose an option : ");

scanf("%d",&ch);

switch(ch)

{

case 1: sum=a+b;

        printf("\nAddition is : %d",sum);

        getch();

        break;

case 2: dif=a-b;

        printf("\nDifference is : %d",dif);

        getch();

        break;

case 3: mul=a*b;

        printf("\nMultiplication is : %d",mul);
```

```
        getch();
        break;
case 4: div=(float)a/b;
        printf("\nDivision is : %f",div);
        getch();
        break;
case 5: break;
default: printf("\n\tWRONG OPTION!! ENTER AGAIN!");
}
}
while(ch!=5);
getch();
}
```

OUTPUT:



Q16) A simple program using Array

```
#include<stdio.h>

#include<conio.h>

void main()

{

clrscr();

int a[10],sum=0;

printf("Enter 5 numbers : ");

for(int i=0;i<5;i++)

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

for(int j=0;j<5;j++)

sum+=a[j];

printf("\nSum of 5 numbers is : %d",sum);

getch();

}
```

OUTPUT:

Q17) Program to find largest element from an array

```
#include<stdio.h>

#include<conio.h>

void main()

{

clrscr();

int a[50],b=0,n;

printf("Enter no. of elements in array : ");

scanf("%d",&n);

printf("Enter %d numbers \n",n);

for(int c=0;c<n;c++)

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

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

{

if(b<a[i])

b=a[i];

}

printf("\nGreatest Integer is : %d",b);

getch();

}
```

OUTPUT:

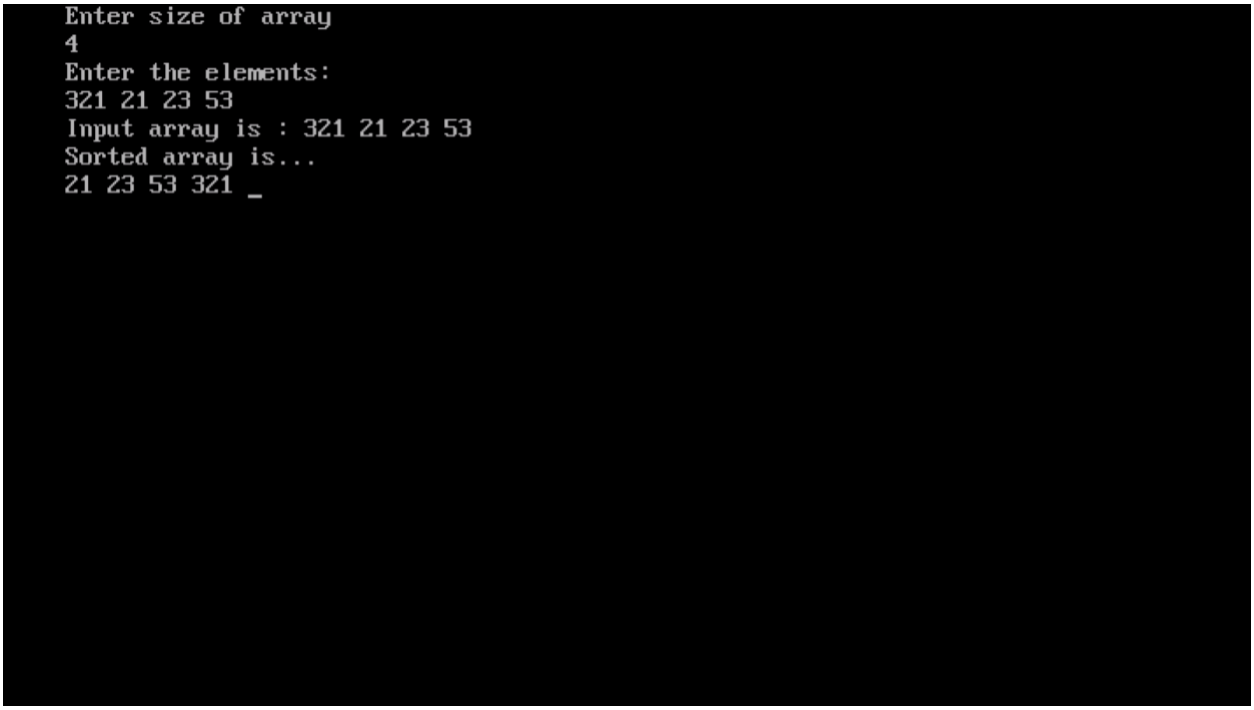

Enter no. of elements in array : 5
Enter 5 numbers
38 21 53 12 9
Greatest Integer is : 53

Q18) Program to sort an array

```
#include<stdio.h>
#include<conio.h>
void main()
{
   clrscr();
   int array[10];
   int i, j, num, temp;
   printf("Enter size of array \n");
   scanf("%d", &num);
   printf("Enter the elements: \n");
   for (i = 0; i < num; i++)
   {
         scanf("%d", &array[i]);
   }
   printf("Input array is : \n");
   for (i = 0; i < num; i++)
   {
         printf("%d ", array[i]);
   }
   for (i = 0; i < num; i++)
   {
         for (j = 0; j < (num - i - 1); j++)
         {
            if (array[j] > array[j + 1])
            {
                  temp = array[j];
                  array[j] = array[j + 1];
                  array[j + 1] = temp;
            }
```

```
        }
    }
    printf("\nSorted array is...\n");
    for (i = 0; i < num; i++)
    {
        printf("%d ", array[i]);
    }
    getch();
}
```

OUTPUT:



Q19) A simple program using 2D arrays

```
#include<stdio.h>

#include<conio.h>

void main()

{

clrscr();

int a[10][10],n,m,i,j;

printf("Enter no. of rows and coloums of 2D matrix : ");

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

printf("\nEnter elements of matrix : ");

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

for(j=0;j<n;j++)

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

printf("\nThe Matrix is : \n");

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

{

for(j=0;j<n;j++)

printf("%4d",a[i][j]);

printf("\n");

}

getch();

}
```

OUTPUT:

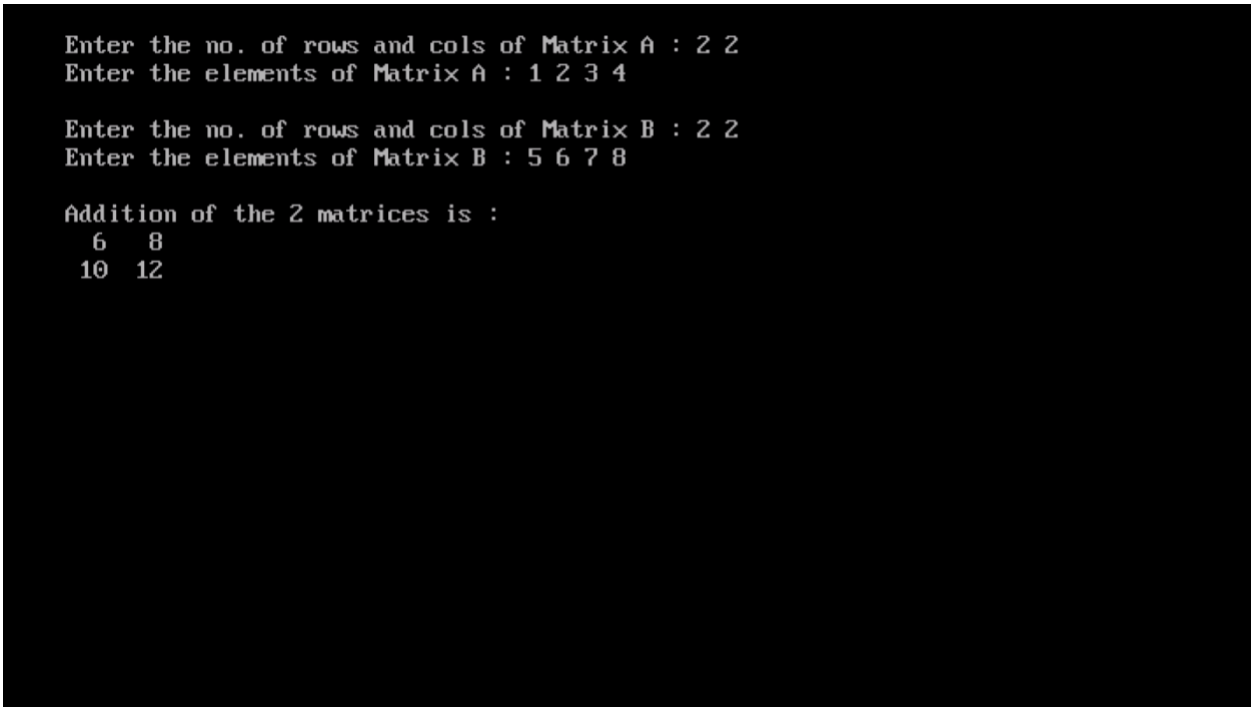

Enter no. of rows and coloums of 2D matrix : 2 2
Enter elements of matrix : 1 2 3 4
The Matrix is :
1 2
3 4

Q20) Program to perform matrix addition

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[20][20],b[20][20],c[20][20],n,m,x,y,i,j;
clrscr();
printf("\nEnter the no. of rows and cols of Matrix A : ");
scanf("%d %d",&n,&m);
printf("Enter the elements of Matrix A : ");
for(i=0;i<n;i++)
{
for(j=0;j<m;j++)
scanf("%d",&a[i][j]);
}
printf("\nEnter the no. of rows and cols of Matrix B : ");
scanf("%d %d",&x,&y);
printf("Enter the elements of Matrix B : ");
for(i=0;i<x;i++)
for(j=0;j<y;j++)
scanf("%d",&b[i][j]);
if(x==n&&y==m)
{
for(i=0;i<n;i++)
for(j=0;j<m;j++)
c[i][j]=a[i][j]+b[i][j];
}
else
printf("\nOrder of Matrices are not equal!!");
```

```
printf("\nAddition of the 2 matrices is : \n");

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

{

for(j=0;j<m;j++)

printf("%d ",c[i][j]);

printf("\n");

}

getch();

}
```

OUTPUT:



Q21) Program to perform matrix multiplication

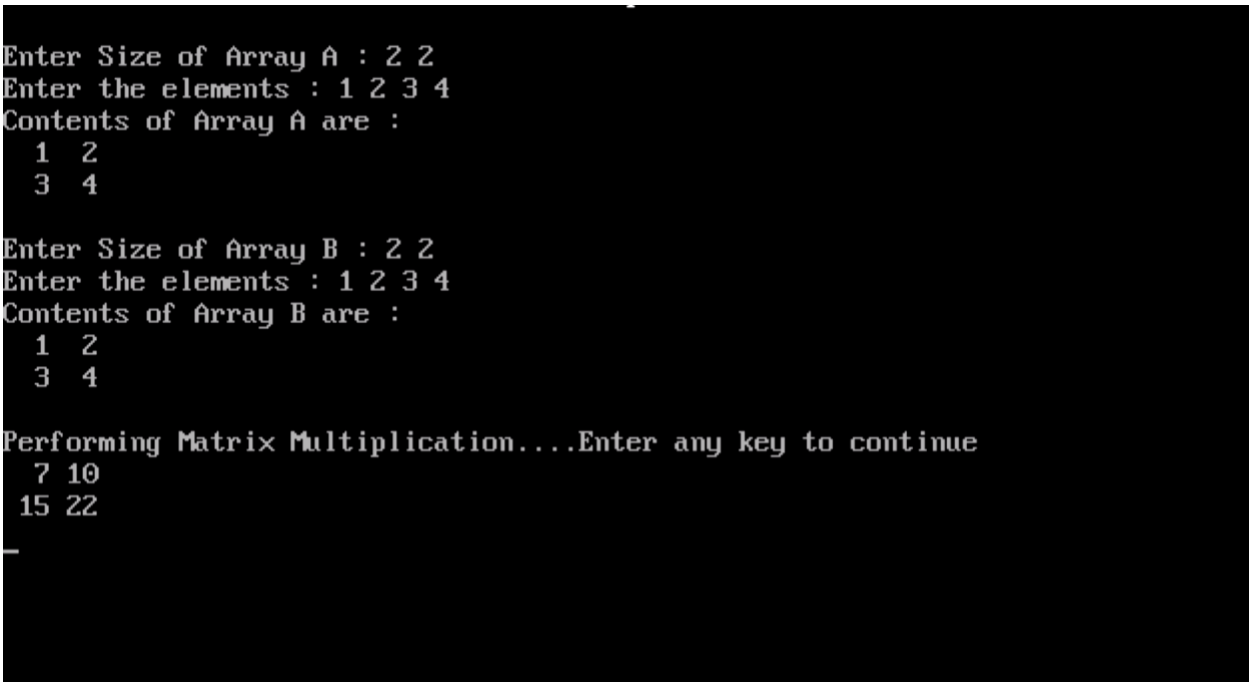
```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
int a[10][10],b[10][10],c[10][10],n,m,x,y,i,j,k,s;
printf("\nEnter Size of Array A : ");
scanf("%d %d",&m,&n);
printf("Enter the elements : ");
for(i=0;i<m;i++)
 for(j=0;j<n;j++)
  scanf("%d",&a[i][j]);
printf("Contents of Array A are : \n");
for(i=0;i<m;i++)
{
 for(j=0;j<n;j++)
 {
  printf("%3d",a[i][j]);
 }
 printf("\n");
}
printf("\nEnter Size of Array B : ");
scanf("%d %d",&x,&y);
printf("Enter the elements : ");
for(i=0;i<x;i++)
 for(j=0;j<y;j++)
  scanf("%d",&b[i][j]);
printf("Contents of Array B are : \n");
for(i=0;i<x;i++)
```

```
{
 for(j=0;j<y;j++)
 {
  printf("%3d",b[i][j]);
 }
 printf("\n");
}
if(m==y)
{
printf("\nPerforming Matrix Multiplication....Enter any key to continue\n");
getch();
for(i=0;i<m;i++)
{
 for(j=0;j<y;j++)
 {
  c[i][j]=0;
  for(k=0;k<m;k++)
  c[i][j]+=a[i][k]*b[k][j];
  }
 }
}
for(i=0;i<m;i++)
{
 for(j=0;j<y;j++)
 {
  printf("%3d",c[i][j]);
  }
 printf("\n");
}
```

getch();

}

OUTPUT:



Q22) Program to find transpose of a matrix

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
int a[10][10],n,m,i,j;
printf("Enter no. of rows and coloums of 2D matrix : ");
scanf("%d %d",&n,&m);
printf("\nEnter elements of matrix : ");
for(i=0;i<n;i++)
for(j=0;j<n;j++)
scanf("%d",&a[i][j]);
printf("\nThe Matrix is : \n");
for(i=0;i<n;i++)
{
for(j=0;j<n;j++)
printf("%d ",a[i][j]);
printf("\n");
}
printf("Transpose is : \n");
for(i=0;i<n;i++)
{
for(j=0;j<n;j++)
printf("%d ",a[j][i]);
printf("\n");
}
getch();
}
```

OUTPUT:


Enter no. of rows and coloums of 2D matrix : 3 3
Enter elements of matrix : 1 2 3 4 5 6 7 8 9
The Matrix is :
1 2 3
4 5 6
7 8 9
Transpose is :
1 4 7
2 5 8
3 6 9

Q23) Program to perform length of a string

```
#include<stdio.h>

#include<conio.h>

#include<string.h>

void main()

{

clrscr();

char a[100];

printf("Enter the string : ");

gets(a);

printf("Length of string is : %d",strlen(a));

getch();

}
```

OUTPUT:

Q24) Program to concatenate two strings

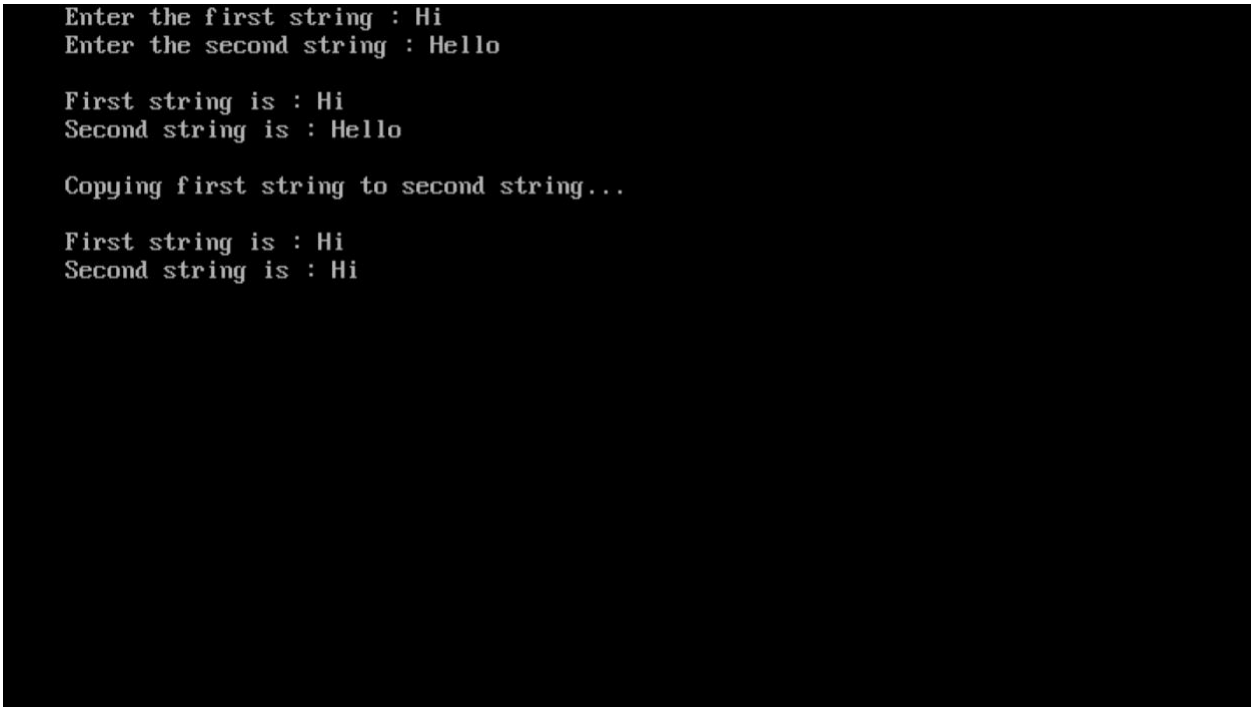
```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
clrscr();
char a[100],b[100];
printf("Enter the first string : ");
gets(a);
printf("Enter the second string : ");
gets(b);
strcat(a,b);
printf("String after concatenation : %s",a);
getch();
}
```

OUTPUT:

Q25) Program to copy two strings using strcpy()

```
#include<stdio.h>

#include<conio.h>

#include<string.h>

void main()

{

clrscr();

char a[100],b[100];

printf("Enter the first string : ");

gets(a);

printf("Enter the second string : ");

gets(b);

printf("\nFirst string is : %s ",a);

printf("\nSecond string is : %s ",b);

printf("\n\nCopying first string to second string...\n");

strcpy(b,a);

printf("\nFirst string is : %s ",a);

printf("\nSecond string is : %s ",b);

getch();

}
```

OUTPUT:


Enter the first string : Hi
Enter the second string : Hello
First string is : Hi
Second string is : Hello
Copying first string to second string...
First string is : Hi
Second string is : Hi

Q26) A simple program using functions

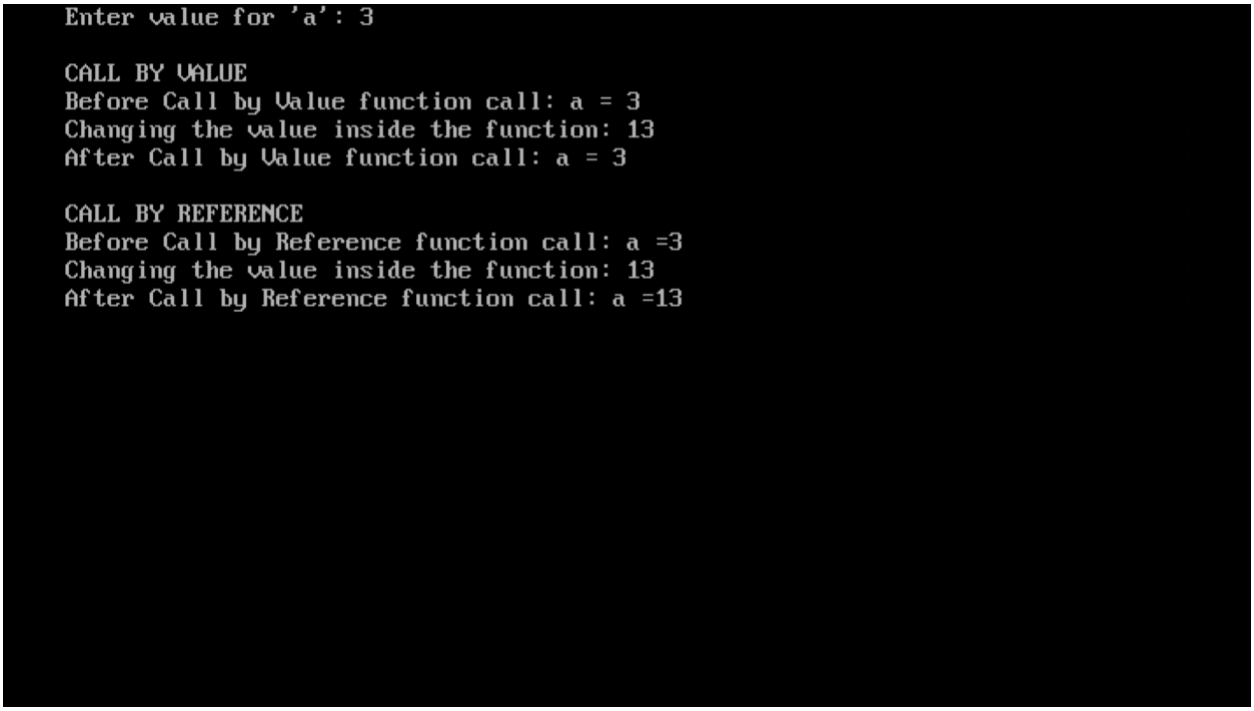
```
#include<stdio.h>

#include<conio.h>

int sub(int a,int b)

{

int c;

if(a>b)

c=a-b;

else

c=b-a;

return c;

}

void main()

{

clrscr();

int x,y;

printf("\nEnter two numbers : ");

scanf("%d %d",&x,&y);

printf("Difference is : %d",sub(x,y));

getch();

}
```

OUTPUT:

Q27) Program to illustrate call by value and call by reference

```
#include<stdio.h>
#include<conio.h>
void ref(int *x)
{
   *x+=10;
   printf("\nChanging the value inside the function: %d",*x);
}
void val(int y)
{
   printf("\nChanging the value inside the function: %d",y+10);
}
void main()
{   clrscr();
   int a;
   printf("Enter value for 'a': ");
   scanf("%d",&a);
   printf("\nCALL BY VALUE");
   printf("\nBefore Call by Value function call: a = %d",a);
   val(a);
   printf("\nAfter Call by Value function call: a = %d",a);
   printf("\n\nCALL BY REFERENCE");
   printf("\nBefore Call by Reference function call: a =%d",a);
   ref(&a);
   printf("\nAfter Call by Reference function call: a =%d",a);
   getch();
}
```

OUTPUT:

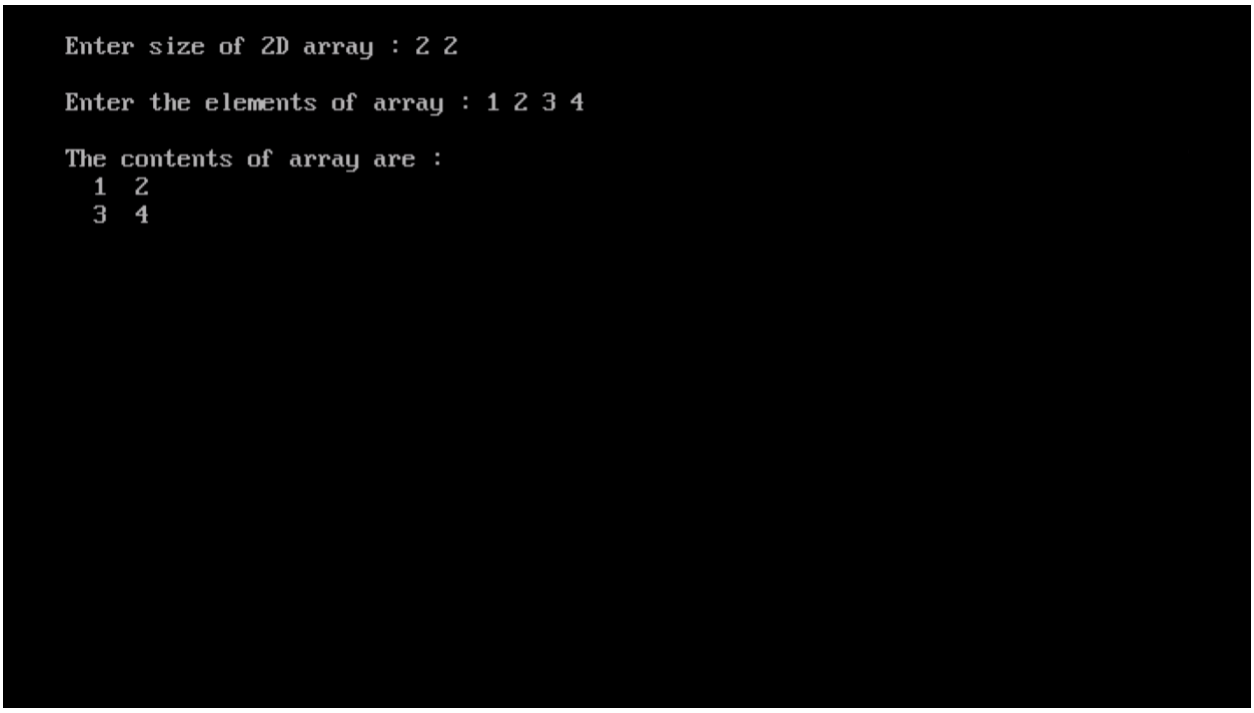

Enter value for 'a': 3
CALL BY VALUE
Before Call by Value function call: a = 3
Changing the value inside the function: 13
After Call by Value function call: a = 3
CALL BY REFERENCE
Before Call by Reference function call: a =3
Changing the value inside the function: 13
After Call by Reference function call: a =13

Q28) Program to pass arrays to function as an argument

```
#include<stdio.h>
#include<conio.h>
void read(int x[10][10],int y,int z);
void display(int x[10][10],int y,int z);
void main()
{
clrscr();
int a[10][10],n,m;
printf("\nEnter size of 2D array : ");
scanf("%d %d",&n,&m);
read(a,n,m);
display(a,n,m);
getch();
}
void read(int x[10][10],int y,int z)
{
printf("\nEnter the elements of array : ");
for(int i=0;i<y;i++)
 for(int j=0;j<z;j++)
  scanf("%d",&x[i][j]);
}
void display(int x[10][10],int y,int z)
{
printf("\nThe contents of array are : \n");
for(int i=0;i<y;i++)
 {
  for(int j=0;j<z;j++)
  {
```

```
   printf("%3d",x[i][j]);
  }
  printf("\n");
 }
}
```

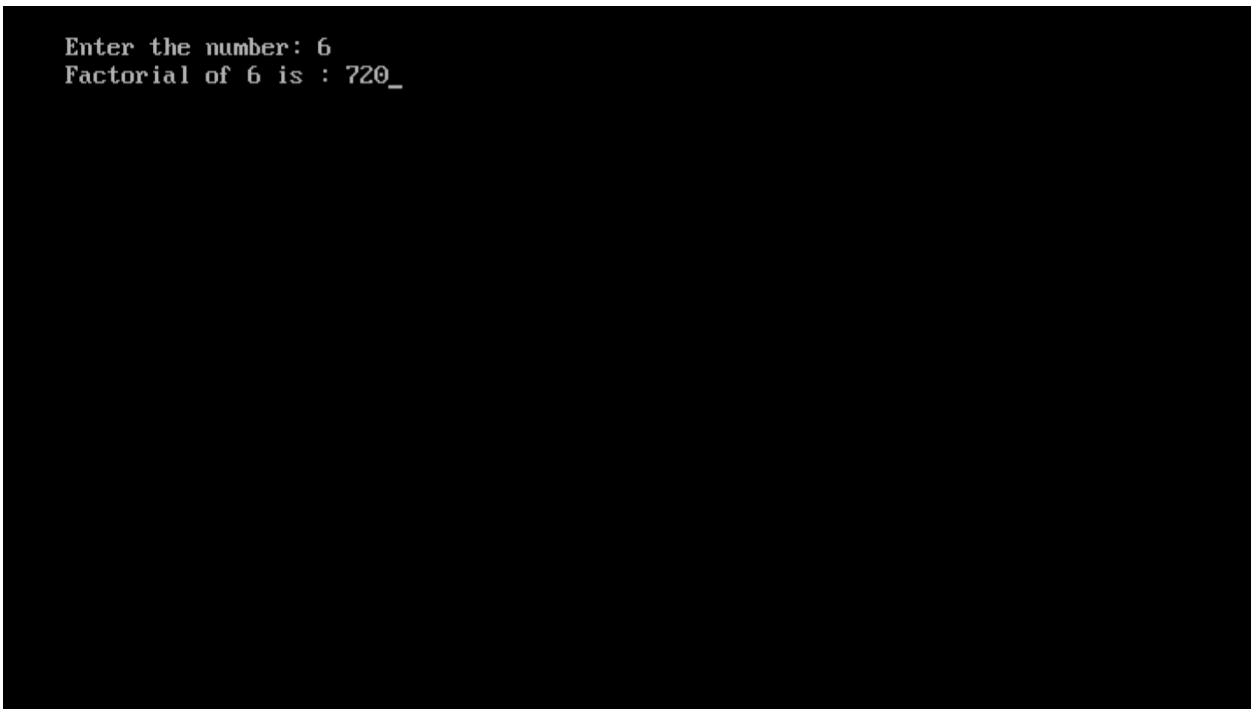
OUTPUT:



Q29) Program to find factorial using recursion

```
#include<stdio.h>
#include<conio.h>
int factorial(int x)
{
int fact;
if(x==1)
return 1;
else
fact=x*factorial(x-1);
return fact;
}
void main()
{
clrscr();
int n;
printf("\nEnter the number: ");
scanf("%d",&n);
printf("Factorial of %d is : %d",n,factorial(n));
getch();
}
```

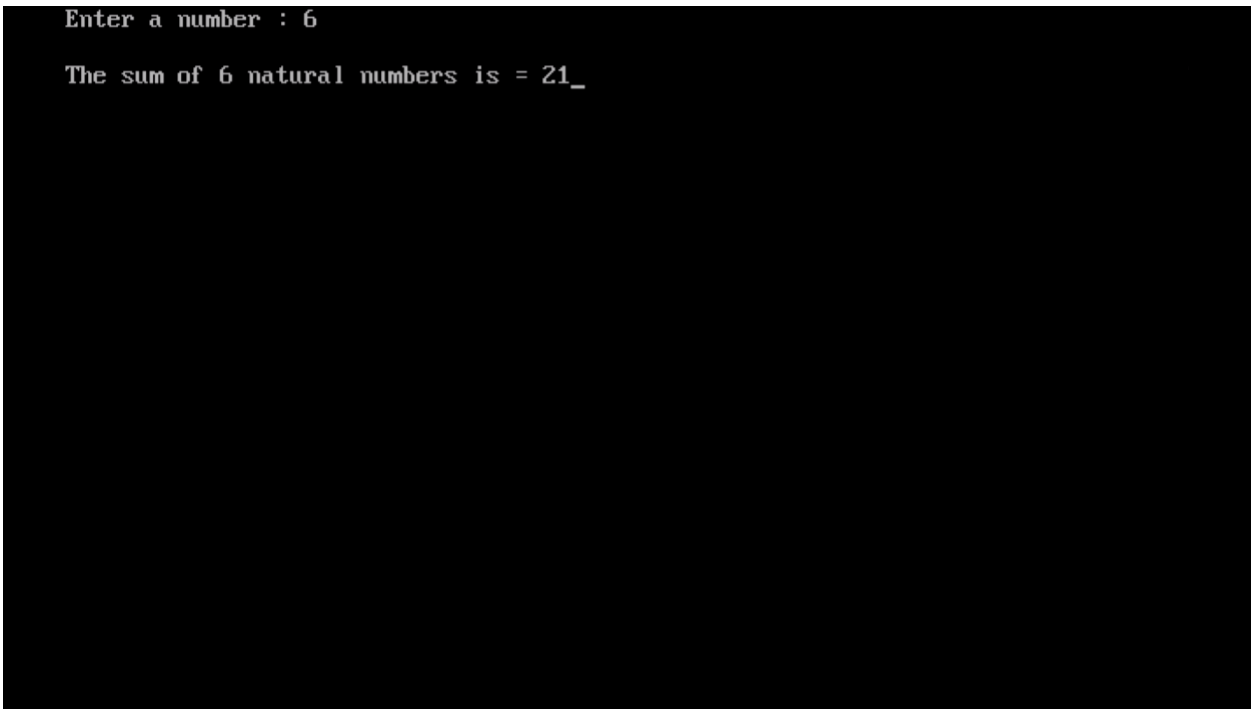
OUTPUT:



Q30) Program to find sum of natural numbers using recursion

```
#include<stdio.h>

#include<conio.h>

int sum(int x)

{

int s;

if(x==1)

return 1;

else

s=x+sum(x-1);

return s;

}

void main()

{

clrscr();

int a;

printf("Enter a number : ");

scanf("%d",&a);

printf("\nThe sum of %d natural numbers is = %d",a,sum(a));

getch();

}
```

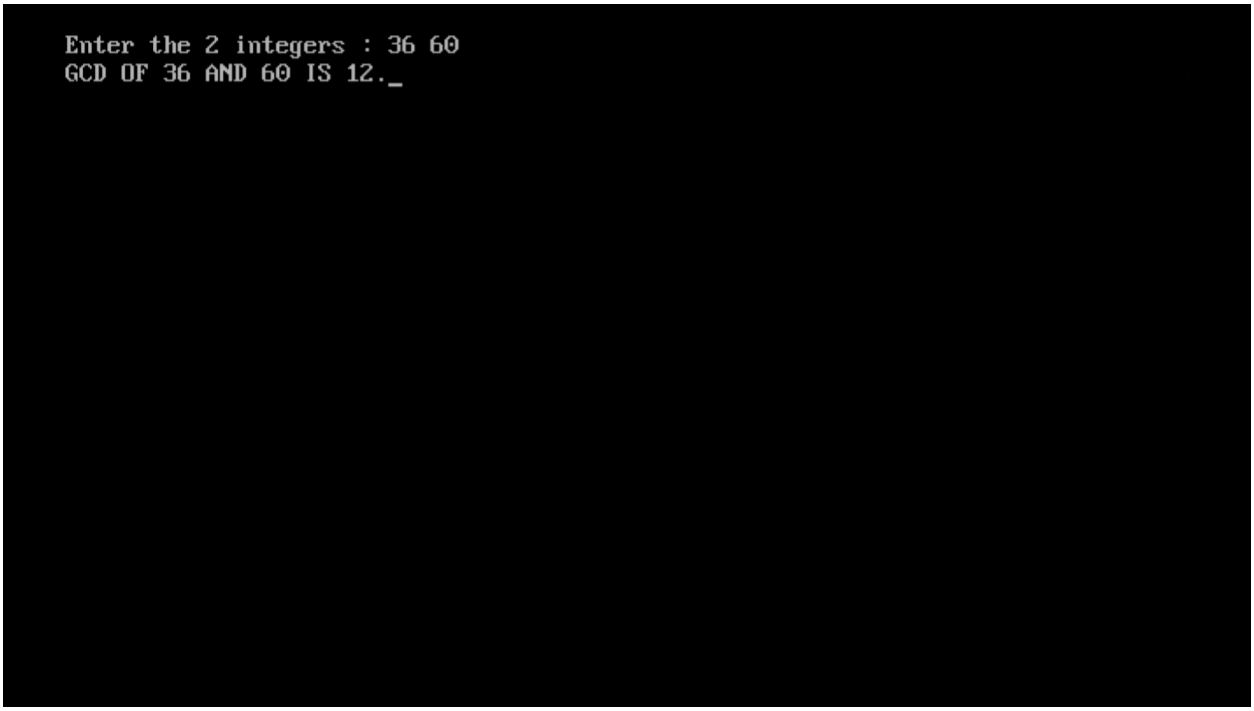
OUTPUT:



Q31) Program to find GCD of two numbers using recursion

```
#include<stdio.h>
#include<conio.h>
int gcd(int a,int b);
void main()
{ clrscr();
 int x,y;
 printf("\nEnter the 2 integers : ");
 scanf("%d %d",&x,&y);
 gcd(x,y);
 printf("GCD OF %d AND %d IS %d.",x,y,gcd(x,y));
 getch();
}
int gcd(int a,int b)
{ if(b!=0)
 return gcd(b,a%b);
 else
 return a;
}
```

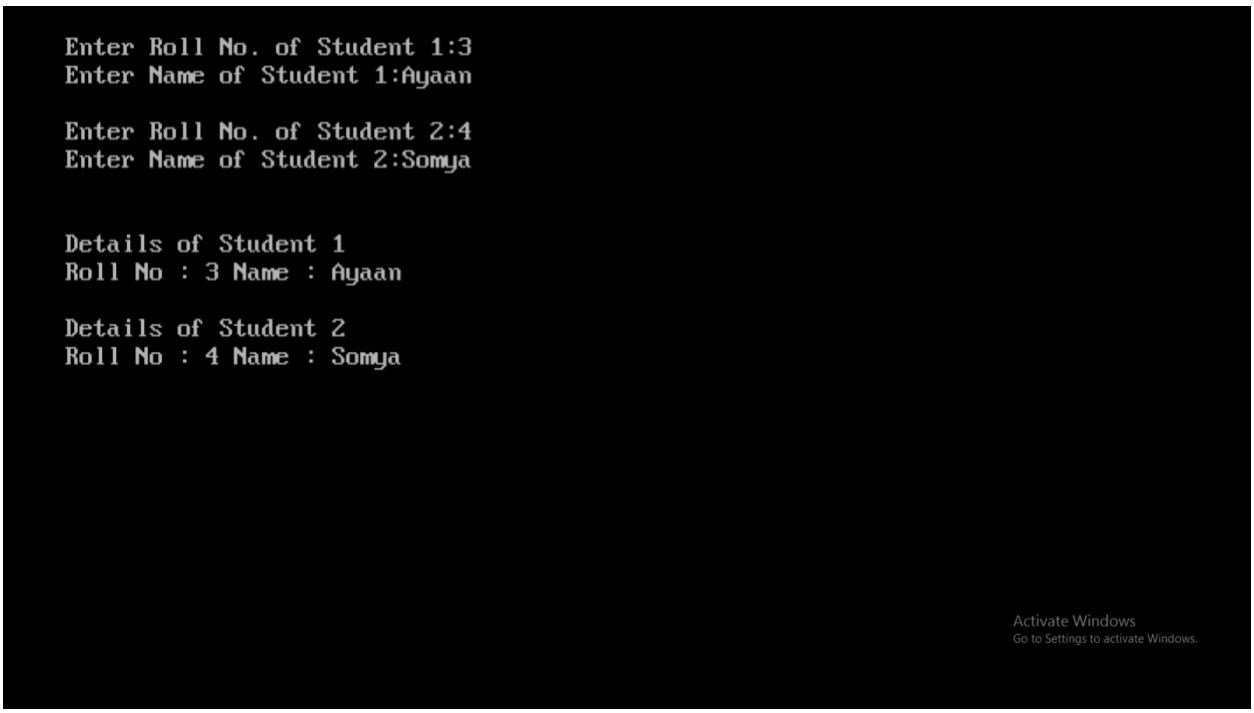
OUTPUT:



Q32) Program to store information of students using structures

```
#include<stdio.h>
#include<conio.h>
struct student
{
int roll;
char name[20];
};
void main()
{
clrscr();
struct student s1,s2;
printf("\nEnter Roll No. of Student 1:");
scanf("%d",&s1.roll);
printf("Enter Name of Student 1:");
scanf("%s",s1.name);
printf("\nEnter Roll No. of Student 2:");
scanf("%d",&s2.roll);
printf("Enter Name of Student 2:");
scanf("%s",s2.name);
printf("\n\nDetails of Student 1\nRoll No : %d Name : %s",s1.roll,s1.name);
printf("\n\nDetails of Student 2\nRoll No : %d Name : %s",s2.roll,s2.name);
getch();
}
```

OUTPUT:


Enter Roll No. of Student 1:3
Enter Name of Student 1:Ayaan
Enter Roll No. of Student 2:4
Enter Name of Student 2:Somya
Details of Student 1
Roll No : 3 Name : Ayaan
Details of Student 2
Roll No : 4 Name : Somya
Activate Windows
Go to Settings to activate Windows.

Q33) Program using array of structures

```
#include<stdio.h>

#include<conio.h>

struct Book

{

char title[20];

char author[20];

int pages, price;

};

void main()

{

struct Book x[20];

clrscr();

int n,i;

printf("\nEnter number of Books : ");

scanf("%d",&n);

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

{

printf("\nEnter details for Book %d",i+1);

scanf("%s %s %d %d",x[i].title,x[i].author,&x[i].pages,&x[i].price);

}

printf("\nThe records are :\n");

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

printf("\nBook %d : \nTitle: %s Author: %s Pages: %d Price:
%d",i+1,x[i].title,x[i].author,x[i].pages,x[i].price);

getch();

}
```

OUTPUT:

```
Enter number of Books : 3

Enter details for Book 1
Math Shraddha 500 700

Enter details for Book 2
Chemistry Chaitanya 400 600

Enter details for Book 3
Java Ayaan 600 800

The records are :

Book 1 :
Title: Math Author: AShraddha Pages: 500 Price: 700
Book 2 :
Title: Chemistry Author: Chaitanya Pages: 400 Price: 600
Book 3 :
Title: Java Author: Ayaan Pages: 600 Price: 800
```

Q34) Program using pointer to array

```
#include<stdio.h>

#include<conio.h>

void main()

{

clrscr();

int x[5]={5,4,3,2,1};

int *ptr;

ptr=x;

for(int i=0;i<5;i++)

{

printf("%d\t%u\n",*ptr,ptr);

ptr++;

}

getch();

}
```

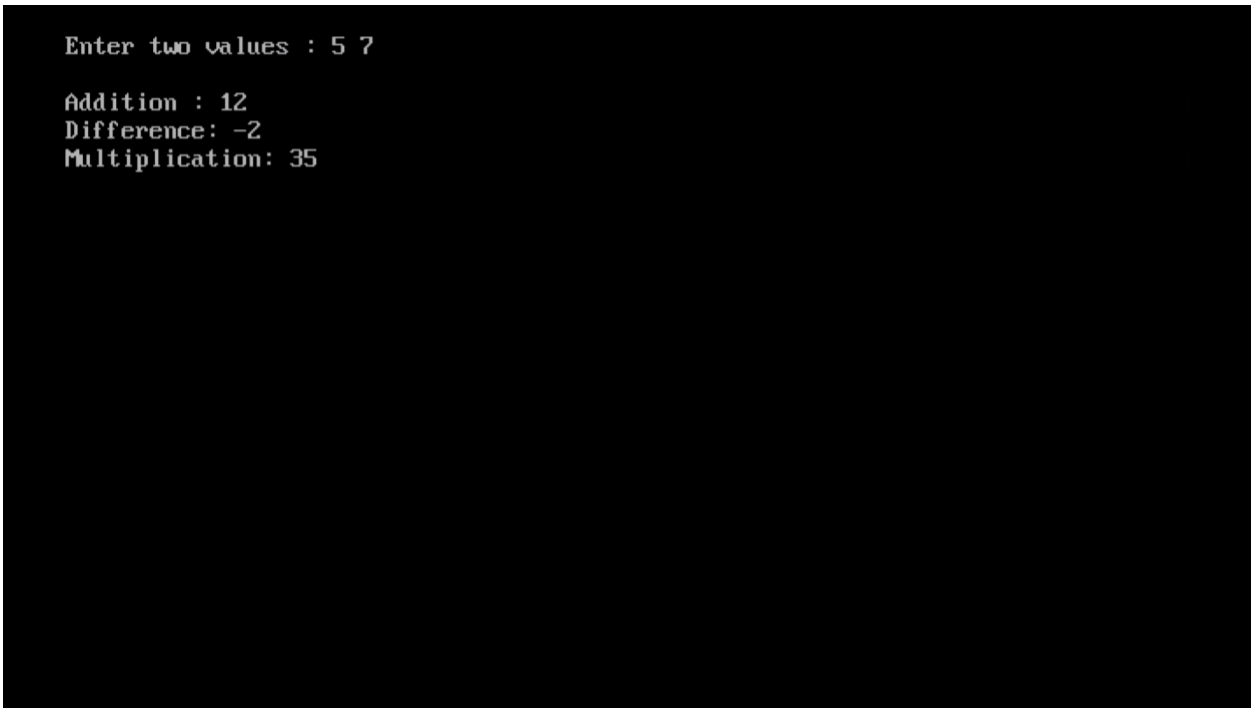
OUTPUT:

Q35) Program to perform arithmetic operations using pointers

```
#include<stdio.h>
#include<conio.h>
int add(int *x,int *y)
{
int z=*x+*y;
return z;
}
int diff(int *x,int *y)
{
int z=*x-*y;
return z;
}
int mul(int *x,int *y)
{
int z=*x**y;
return z;
}
void main()
{
clrscr();
int a,b,res;
printf("\nEnter two values : ");
scanf("%d %d",&a,&b);
res=add(&a,&b);
printf("\nAddition : %d",res);
res=diff(&a,&b);
printf("\nDifference: %d",res);
res=mul(&a,&b);
```

```
printf("\nMultiplication: %d",res);

getch();

}
```

OUTPUT:

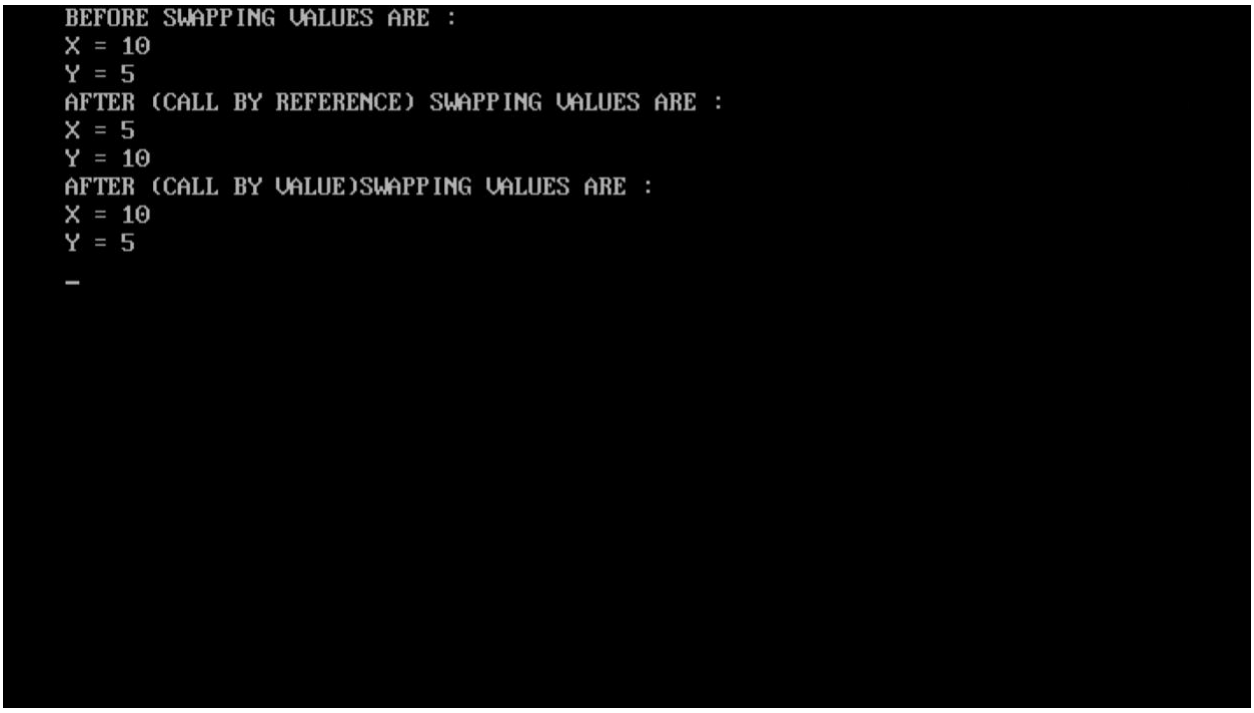


Q36) Program using pointers for call by reference and call by value

```
#include<stdio.h>
#include<conio.h>
void swap(int *a, int*b)
{
  int temp;
  temp=*a;
  *a=*b;
  *b=temp;
  printf("AFTER (CALL BY REFERENCE) SWAPPING VALUES ARE :\n");
 printf("X = %d\n",*a);
 printf("Y = %d\n",*b);
}
void swap(int a, int b)
{
int temp;
temp=a;
a=b;
b=temp;
printf("AFTER (CALL BY VALUE)SWAPPING VALUES ARE :\n");
 printf("X = %d\n",a);
 printf("Y = %d\n",b);
}
void main()
{
clrscr();
 int x=10,y=5;
 printf("BEFORE SWAPPING VALUES ARE :\n");
 printf("X = %d\n",x);
```

```
printf("Y = %d\n",y);

swap(&x,&y);

swap(x,y);

getch();

}
```

OUTPUT:

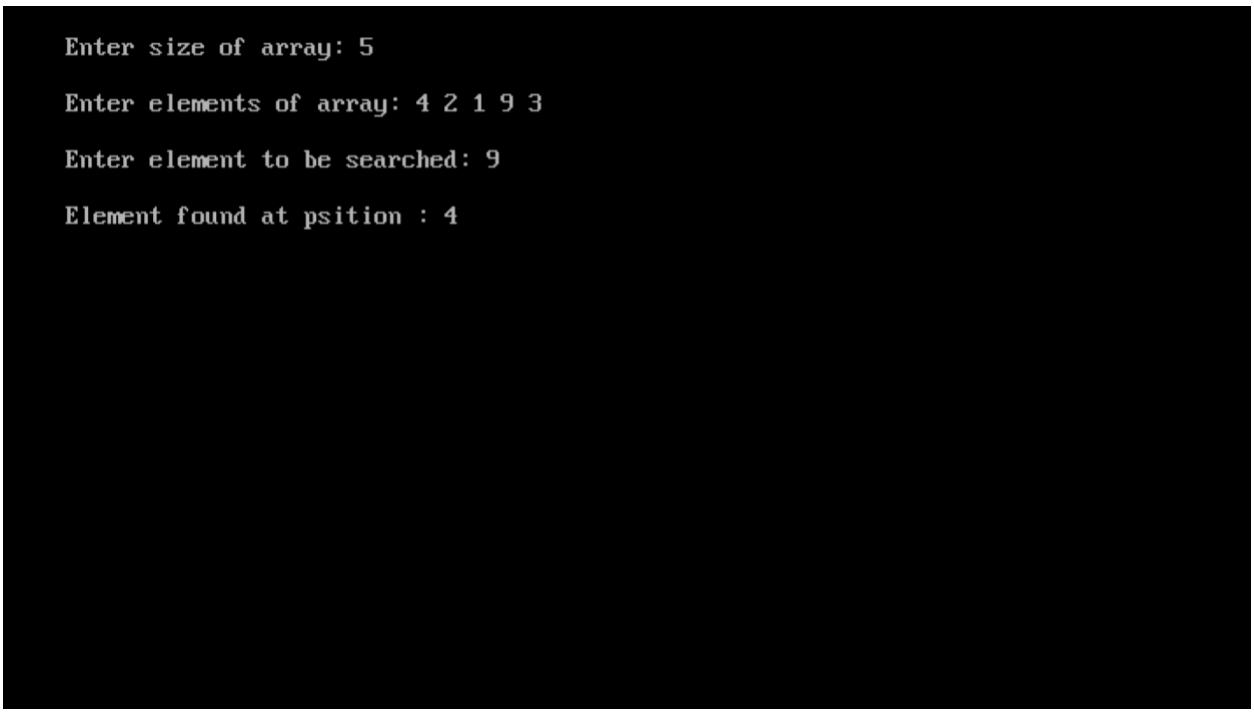


Q37) Program to search an element in an array

```
#include<stdio.h>
#include<conio.h>
void search(int [],int, int);
void main()
{
clrscr();
int n[50],m,x,item;
printf("\nEnter size of array: ");
scanf("%d",&m);
printf("\nEnter elements of array: ");
for(int i=0;i<m;i++)
{
scanf("%d",&n[i]);
}
printf("\nEnter element to be searched: ");
scanf("%d",&item);
search(n,m,item);
getch();
}
void search(int n[50],int m,int item)
{
int f=0,l=m-1;
int mid,k;
while(f<=l)
{
        mid=(f+l)/2;
        if(item==n[mid])
        {
```

```
        k=1;
        break;
        }
        else
        {
        if(item>n[mid])
        f=mid+1;
        else
        l=mid-1;
        }
}
if(k==1)
printf("\nElement found at psition : %d ",mid+1);
else
printf("\nElement not found!!");
}
```

OUTPUT:

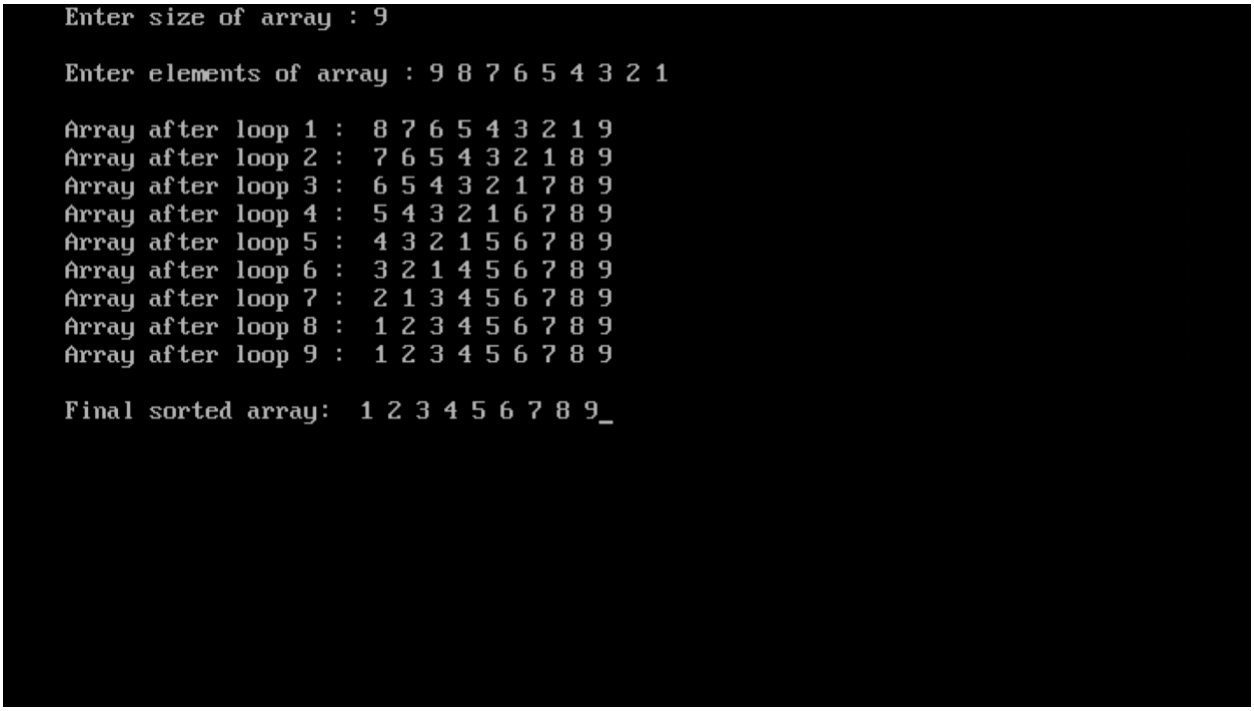


Q38) Program for bubble sort

```
#include<stdio.h>
#include<conio.h>
int a[25],n;
void bsort(int [],int );
void main()
{
 clrscr();
 printf("Enter size of array : ");
 scanf("%d",&n);
 printf("\nEnter elements of array : ");
 for(int i=0;i<n;i++)
 scanf("%d",&a[i]);
 bsort(a,n);
 printf("\n\nFinal sorted array: ");
 for(i=0;i<n;i++)
 printf(" %d",a[i]);
 getch();
}
void bsort(int a[],int n)
{
int temp;
for(int i=0;i<n;i++)
{
```

```
 for (int j=0;j<n-1;j++)

{

 if(a[j]>a[j+1])

 {

  temp=a[j];

  a[j]=a[j+1];

  a[j+1]=temp;  }

 }

 printf("\nArray after loop %d : ",i+1);

 for(int k=0;k<n;k++)

 printf(" %d",a[k]);

} }
```

OUTPUT:

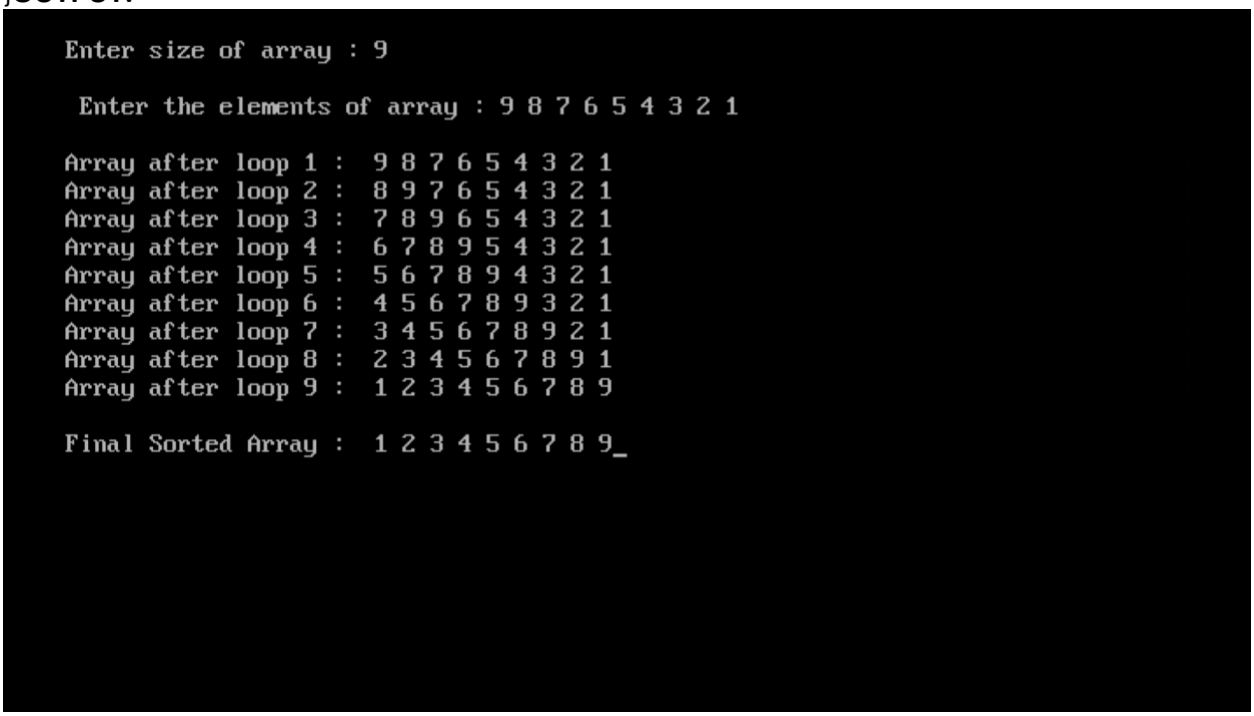


Q39) Program for insertion sort

```
#include<stdio.h>
#include<conio.h>
void isort();
void display(int a[],int n);
int a[25],n;
void main()
{
 clrscr();
 printf("\nEnter size of array : ");
 scanf("%d",&n);
 printf("\n Enter the elements of array : ");
 for(int i=0;i<n;i++)
 scanf("%d",&a[i]);
 isort();
 printf("\n\nFinal Sorted Array : ");
 for(i=0;i<n;i++)
 printf(" %d",a[i]);
 getch();
}
void isort()
{
int i,j,temp;
for(i=1;i<n;i++)
```

```
{
 temp=a[i];
 j=i-1;
 while(j>=0&&a[j]>temp)
  {
  a[j+1]=a[j];
  j=j-1;
  }
 a[j+1]=temp;
 printf("\nArray after loop %d : ",i+1);
 for(int k=0;k<n;k++)
 printf(" %d",a[k]);
 }
```

}**OUTPUT:**



Q40) Program for selection sort

```
#include<stdio.h>
#include<conio.h>
void ssort();
int a[25],n;
void main()
{
 clrscr();
 printf("\n\tt\t*****SELECTION SORT*****");
 printf("\nEnter size of array : ");
 scanf("%d",&n);
 printf("\n Enter the elements of array : ");
 for(int i=0;i<n;i++)
 scanf("%d",&a[i]);
 ssort();
 printf("\n\nFinal Sorted Array : ");
 for(i=0;i<n;i++)
 printf(" %d",a[i]);
 getch();
}
void ssort()
{
int i,j,min,temp;
 for(i=0;i<n;i++)
 {
  min=i;
  for(j=i+1;j<n;j++)
  {
   if(a[j]<a[min])
```

```
  min=j;
  }
 temp=a[min];
 a[min]=a[i];
 a[i]=temp;
 printf("\nArray after loop %d : ",i+1);
 for(int k=0;k<n;k++)
 printf(" %d",a[k]);
 }
}
```

OUTPUT: