

Sample List of Questions for Lab Work Computer Science

1. Input the three coefficients of a quadratic equation and find the roots.

```
#include<iostream>
#include<cmath>
#include<cstdlib>
using namespace std;
int main( )
{
float a,b,c,r1,r2,d;
cout<<"Enter value of a:";
cin>>a;
cout<<"Enter value of b:";
cin>>b;
cout<<"Enter value of c:";
cin>>c;
if (a==0)
{
cout<<"Invalid Input";

exit(0);
}
d =pow(b,2)-(4*a*c);
if(d==0)
{
cout<<"Two equal roots."<<endl;
r1=r2=-b/(2*a);
cout<<"Root1="<<r1<<"\n"<<"Root2="<<r2;

}
else if(d>0)
{
cout<<"The equation are two real & different roots."<<endl;
r1=-b+sqrt(d)/(2*a);
r2=-b-sqrt(d)/(2*a);
cout<<"Root1="<<r1<<"\n"<<"Root2="<<r2;
```

```
}  
else  
{  
cout<<"Complex & Imaginary Roots"<<endl;  
}  
}
```

Output:-

Enter value of a: 1

Enter value of b:2

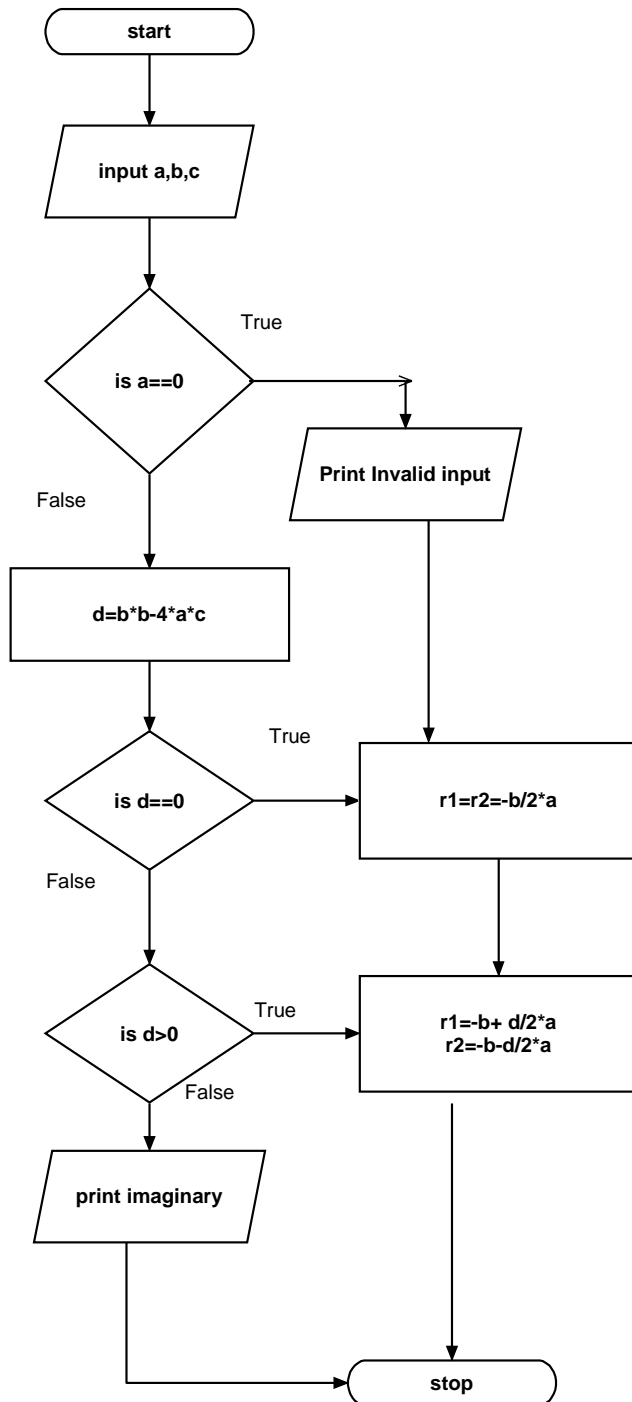
Enter value of c:1

Two equal roots

Root 1 = -1

Root 2= -1

Flowchart:-



2 .Find area of a rectangle, a circle and a triangle. Use switch statement for selecting an option from a menu.

```
#include<iostream>

using namespace std;

int main()
{
int ch,l,w,area,r,b,h;

cout<<"1.Area of Rectangle"<<"\n";
cout<<"2.Area of Circle"<<"\n";
cout<<"3.Area of Triangle"<<"\n";
cout<<"Enter your choice";
cin>>ch;
switch(ch)
{
case 1:cout<<"Enter the Length and Width";
        cin>>l>>w;
        area=l*w;
        cout<<"Area of Rectangle="<<area;
        break;

case 2:cout<<"Enter the radius";
        cin>>r;
        area=3.14*r*r;
        cout<<"Area of Circle="<<area;
```

```

        break;
    case 3:cout<<"Enter the base and height";
        cin>>b>>h;
        area=0.5*b*h;
        cout<<"Area of Triangle="<<area;
        break;
    default :cout<<"Invalid Input";
}
return 0;
}

```

Output:-

1.Area of Rectangle

2.Area of Circle

3.Area of Triangle

Enter your choice 1

Enter the Length and Width 10 2

Area of Rectangle=20

Enter your choice 2

Enter the radius 4.5

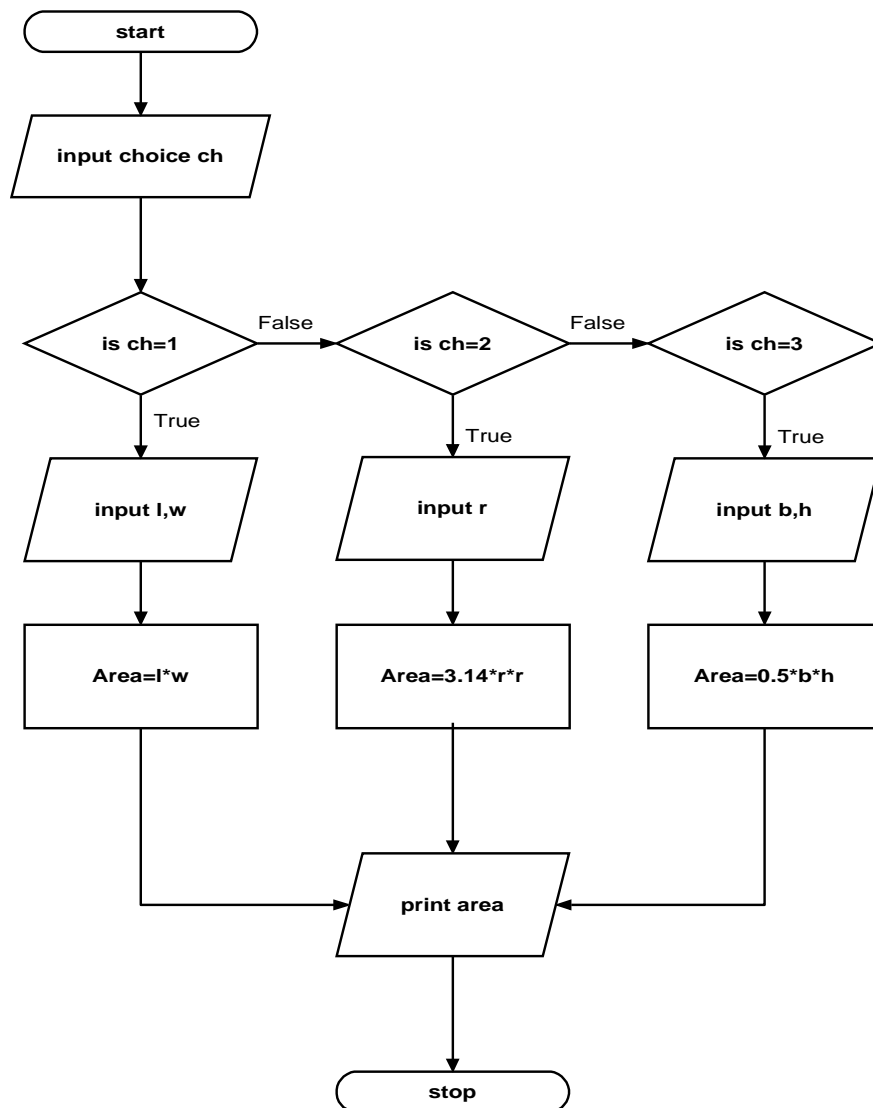
Area of Circle=50

Enter your choice 3

Enter the base and height 5 6

Area of triangle=15

Flowchart:-



3)Find the sum of the digits of an integer number.

```
#include<iostream>

using namespace std;

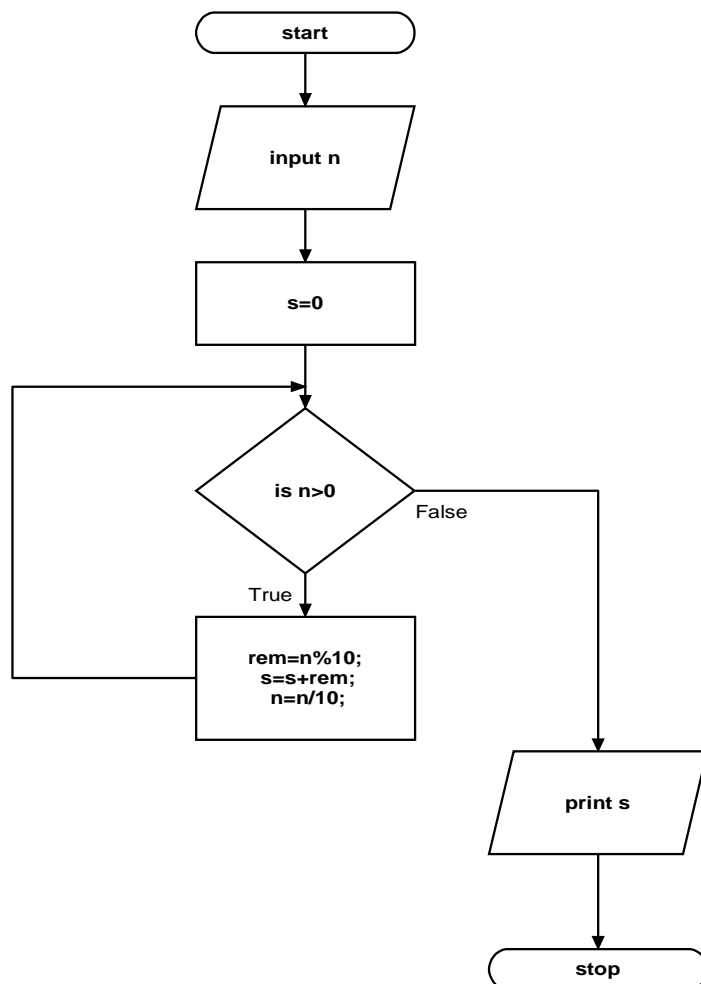
int main()
{
    int n,rem,s=0;
    cout<<"Enter a digit";
    cin>>n;
    while(n>0)
    {
        rem=n%10;
        s=s+rem;
        n=n/10;
    }
    cout<<"Sum of digits="<<s;
}
```

Output:-

Enter a digit 123

Sum of digits=6

Flowchart:-



4. Find the sum of the squares of the first N natural numbers.

```
#include<iostream>

using namespace std;

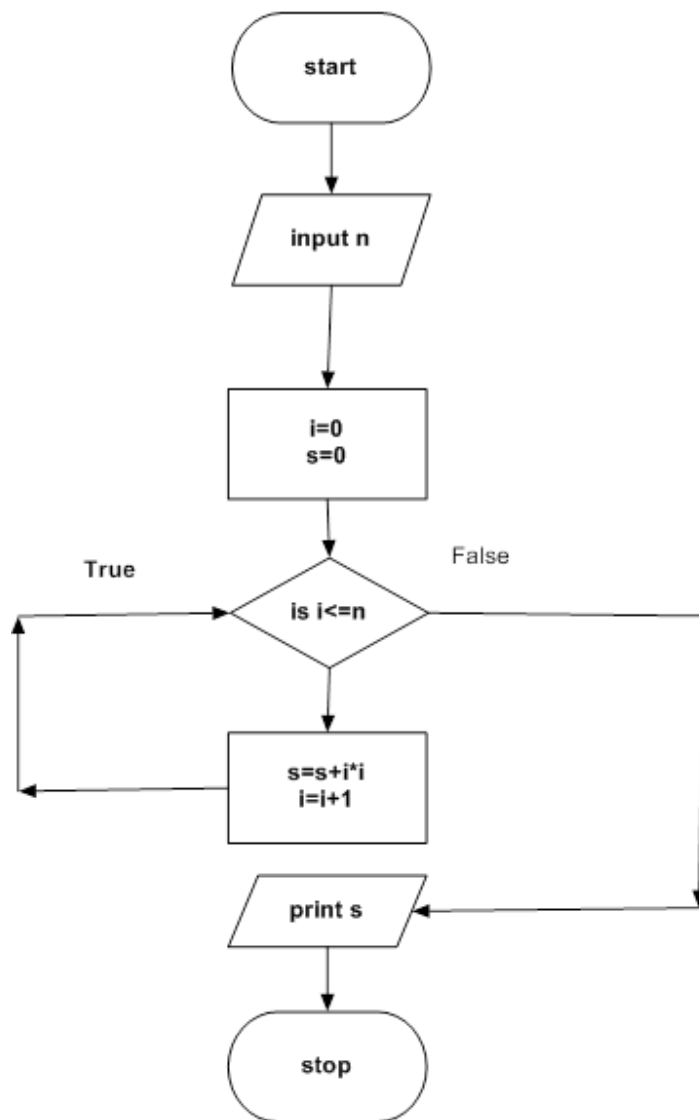
int main()
{
    int n,s=0,i;
    cout<<"Enter a Limit";
    cin>>n;
    for(i=0;i<=n;i++)
    {
        s=s+i*i;
    }
    cout<<"Sum of the squares ="<<s;
}
```

Output:-

Enter a Limit 10

Sum of the squares=385

Flowchart:-



5. Find the length of a string without using strlen() function.

```
#include<iostream>

using namespace std;

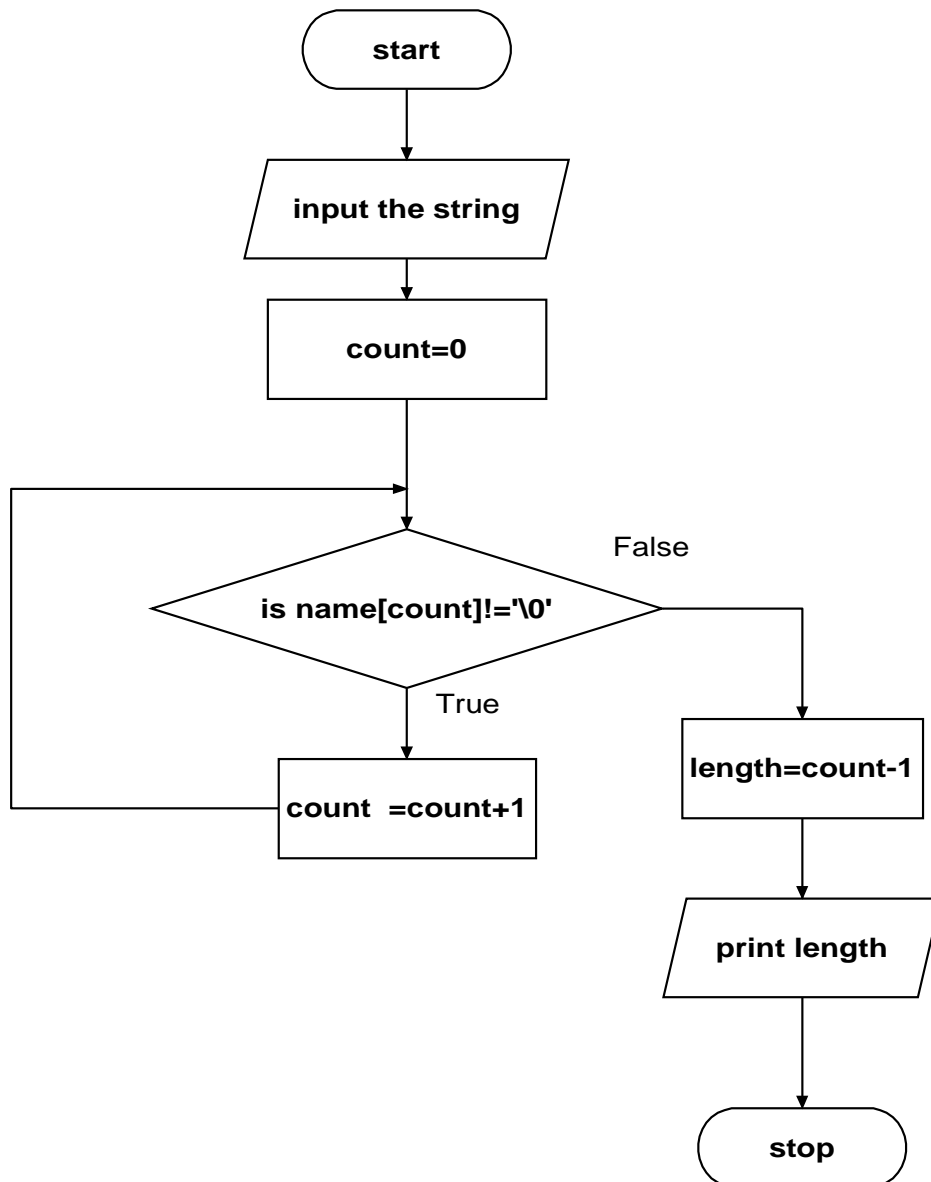
int main( )
{
    char name[1000];
    int count=0;
    cout<<"Enter the String";
    cin.getline(name,1000);
    while(name[count]!='\0')
    {
        count ++;
    }
    cout<<"The length of the string is"<<count;
    return 0;
}
```

Output:-

Enter the string Exam

The length of the string is 4

Flowchart:-



6. Read admission number of N students in a class and search for a given admission number in the list. Use linear search method of searching.

```
#include<iostream>

using namespace std;

int main()
{
    cout<<"Enter The number of Students: ";
    int size;
    cin>>size;
    int array[size],key,i;
    cout<<"Enter the admission numbers: ";
    for(int j=0;j<size;j++)
    {
        cin>>array[j];
    }
    cout<<"Enter Key To Search in Array";
    cin>>key;
    for(i=0;i<size;i++)
    {
        if(key==array[i])
        {
            cout<<"Key Found At Index Number : "<<i<<endl;
            break;
        }
    }
}
```

```
    }  
}  
return 0;  
}
```

Output:-

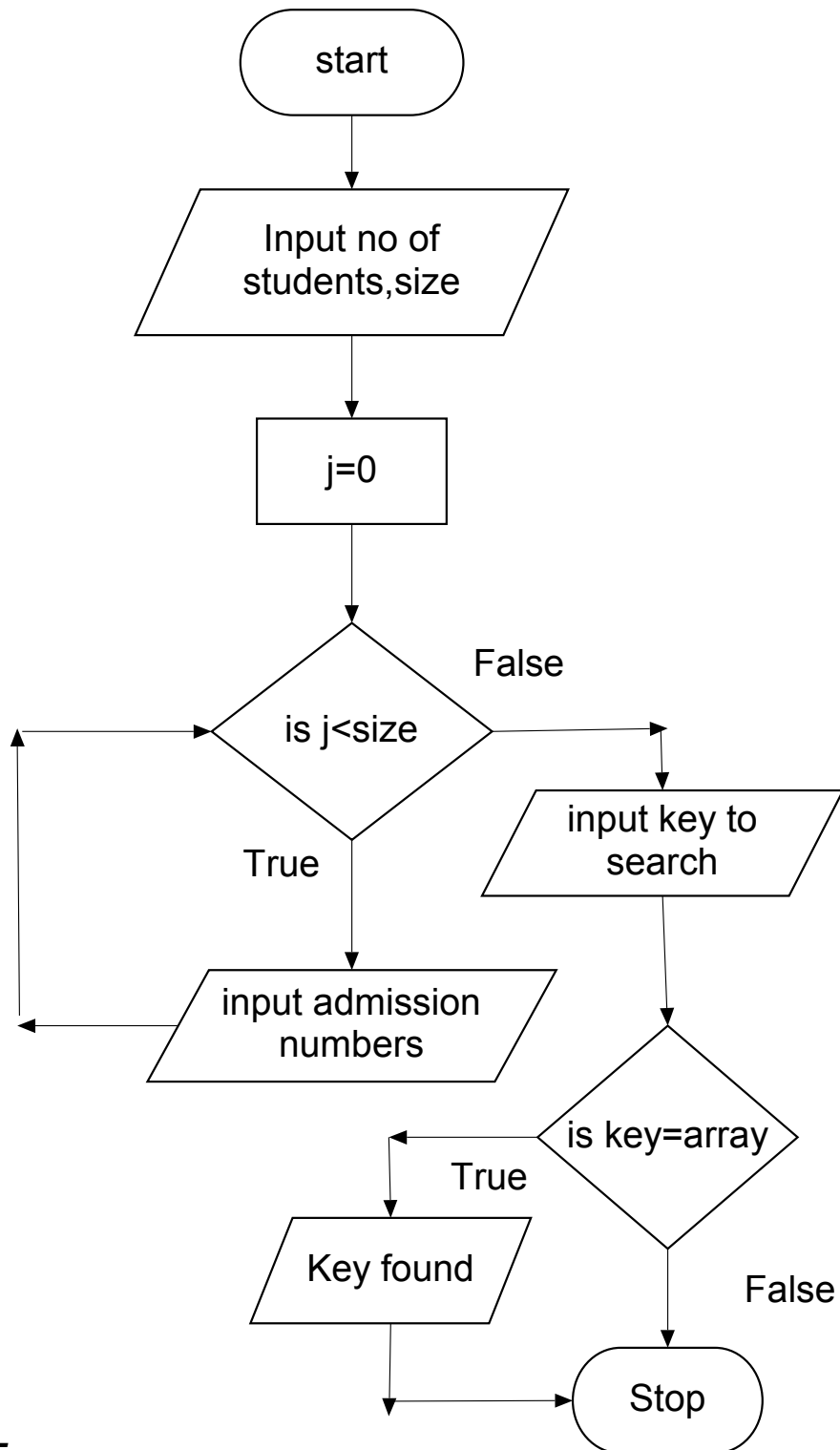
Enter the number of students :2

Enter the admission numbers :1 100

1106

Enter key to search in array 1106

Key found at index number 1



Flowchart:-

7. Find the factorial of a number with the help of a user-defined function. Using this function find the value of nCr

```
#include<iostream>

using namespace std;

int fact(int k)
{
    int i,f=1;
    for(i=1;i<=k;i++)
    {
        f=f*i;
    }
    return f;
}

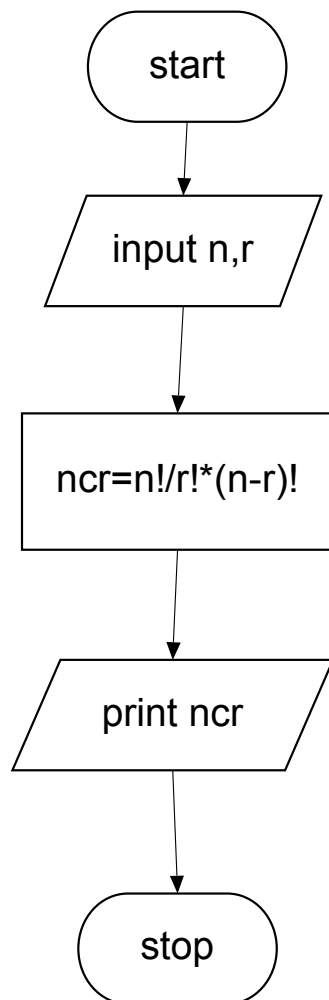
int main()
{
    int n,r,ncr;
    cout<<"Enter N and R";
    cin>>n>>r;
    ncr=fact(n)/fact(r)* fact(n-r);
    cout<<n<<"C"<<r<<"="<<ncr;
}
```

Output:-

Enter N and R 5 4

$${}^5C_4=5$$

Flowchart:-



8. Input an integer number and display its binary equivalent with the help of a userdefined function.

```
#include <iostream>

using namespace std;

long binary(long dec)
{
    long rem,i=1,sum=0;
    do
    {
        rem=dec%2;
        sum=sum + (i*rem);
        dec=dec/2;
        i=i*10;
    }while(dec>0);
    return sum;
}

int main()
{
    long d,ans;

    cout<<"Enter the decimal to be converted:";

    cin>>d;

    ans=binary(d);

    cout<<"The binary of the given number is:"<<ans<<endl;
```

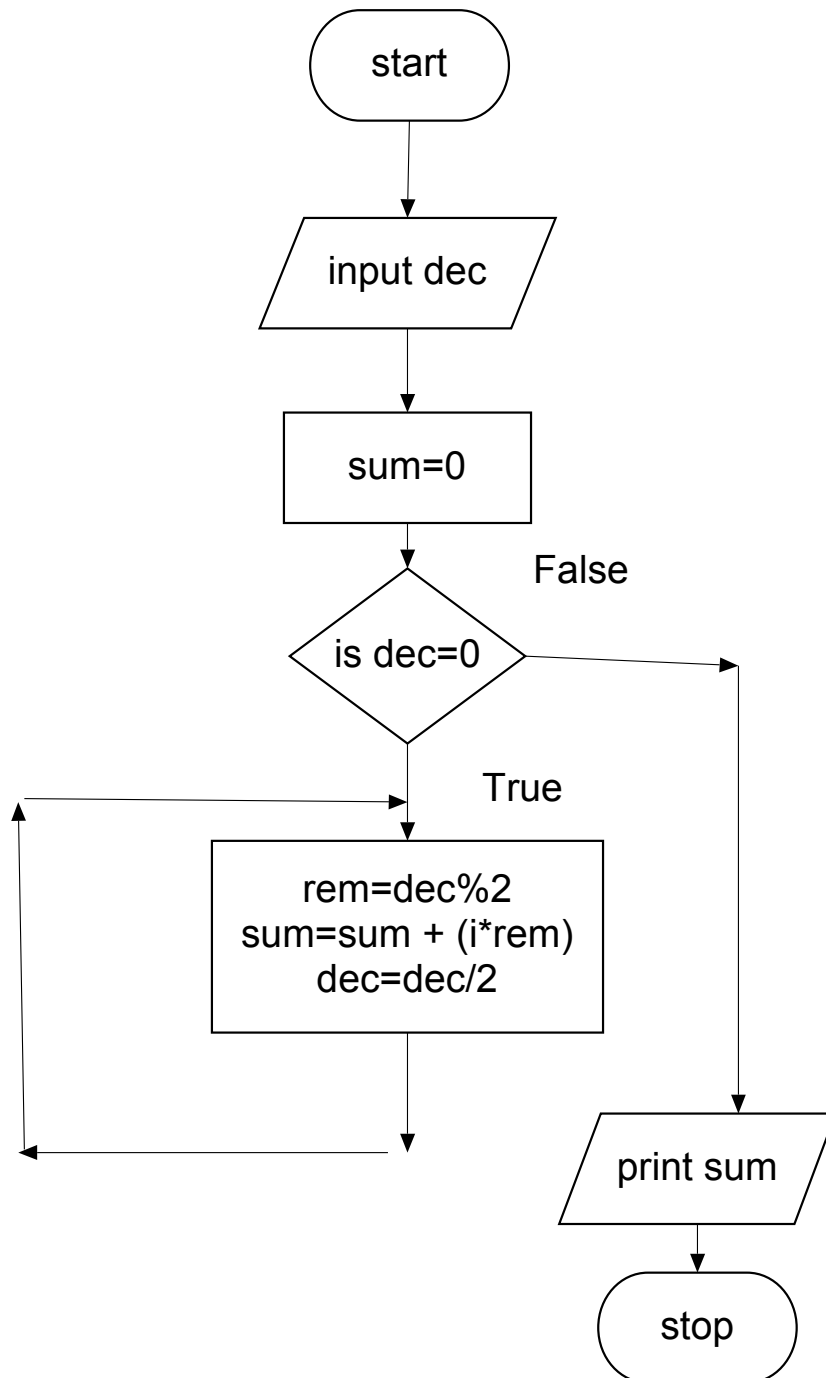
}

Output:-

Enter the decimal to be converted 12

The binary of the given number is 1100

Flowchart:-



9. Define a structure to store the details of books such as Book Code, Book Title, Date of Purchase, Author, Publisher and Price. Write a program with this structure to store the details of 10 books and display the details.

```
#include<iostream>

#include<cstdio>

using namespace std;

struct dop{
int day;
int month;
int year;
};

struct book
{
int bookcode;
char booktitle[100];
dop purchase;
char author[100],publisher[100];
float price;
};

int main()
{
book b[10];
int i;
```

```

for(i=0;i<1;i++)
{
cout<<"Enter the Book Code";
cin>>b[i].bookcode;
cout<<"Enter the Book Title";
fflush(stdin);
gets(b[i].booktitle);
cout<<endl<<"Enter the day of purchase";
cin>>b[i].purchase.day;
cout<<endl<<"Enter the month of purchase";
cin>>b[i].purchase.month;
cout<<endl<<"Enter the year of purchase";
cin>>b[i].purchase.year;
cout<<"Enter the author";
fflush(stdin);
gets(b[i].author);
cout<<"\n"<<"Enter the Publisher";
gets(b[i].publisher);
cout<<"\n"<<"Enter the Price";
cin>>b[i].price;
cout<<endl;
}

for(i=0;i<1;i++)

```

```

{
cout<<endl<<"Book Code  :";
cout<<b[i].bookcode;
cout<<endl<<" Book Title  :";
puts(b[i].booktitle);
cout<<endl<<"Date of Purchase  :";
cout<<b[i].purchase.day<<"-"<<b[i].purchase.month<<"-"<<b[i].purchase.year;
cout<<endl<<"Author          :";
puts(b[i].author);
cout<<endl<<"Publisher          :";
puts(b[i].publisher);
cout<<endl<<"Price  :";
cout<<b[i].price;
}
}

```

Output:-

Enter the Book Code 101

Enter the Book Title C++

Enter the day of purchase 12

Enter the month of purchase 04

Enter the year of purchase 2015

Enter the author Balaguruswamy

Enter the Publisher BPB

Enter the Price 120

Book Code :101

Book Title:C++

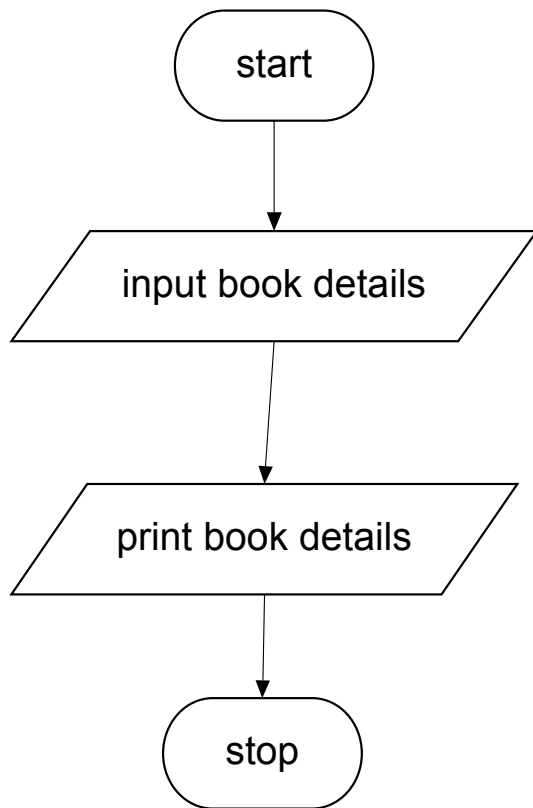
Date of Purchase :12-04-2015

Author :Balaguruswamy

Publisher :BPB

Price :120

Flowchart:-



10. Input string into a character pointer and count the vowels in the string.

```
#include<iostream>

#include<cstdio>

#include<cstring>

#include<cctype>


using namespace std;

int main()

{

char a[20],*s;

int i,count=0;

cout<<"Enter a string";

cin>>a;

s=a;

int l=strlen(a);

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

{

switch(tolower(*(s+i)))

{

case 'a':

count++;

break;

case 'e':

count++;

break;
```

```
case 'i':  
    count++;  
    break;  
case 'o':  
    count++;  
    break;  
case 'u':  
    count++;  
    break;  
}  
}  
cout<<"The Number of vowels is "<<count;  
}
```

Output:-

Enter the string Hello

The number of vowels is 2

Flowchart:-

