1.Write an algorithm and draw a flowchart that will read the two sides of a rectangle and calculate its area and perimeter.

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

int main()
{
    int area,perim,x,y;
    printf("Enter the side length of the rectangle\n ");
    scanf("%d", &x);
    printf("Enter the side width of the rectangle\n ");
    scanf("%d", &y);
    area=x*y;
    perim=(x+y)*2;
    printf("the area is:\t%d",area);
    printf("\nthe perim is:\t%d",perim);
    return 0;
}
```

**2.** Draw a flowchart to find all the roots of a quadratic equation ax2+bx+c=0.

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

int main()
{
    int d,a,b,c,x1,x2,x;
    printf("enter the value to a,b,c\n");
    scanf("%d %d %d", &a,&b,&c);
    d=(b^2)-(4*a*c);

    if(d<0)
        printf("There is no solution to the equation\n");
    else if(d>0){
    x1=(b-(d^(1/2)))/2*a;
    x2=(-b-(d^(1/2)))/2*a;
    printf("The solutions to the equation are:\tx1=%d\tx2=%d",x1,x2);
    }
    else{
        x=-b/2*a;
        printf("The solution to the equation is:\t%d",x1);
    }
    return 0;
}
```

**3.** Print Hello World 10 times

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

int main()
{
    int d,a,b,c,x1,x2,x;
    printf("enter the value to a,b,c\n");
    scanf("%d %d %d", &a,&b,&c);
    d=(b^2)-(4*a*c);

    if(d<0)
        printf("There is no solution to the equation\n");
    else if(d>0){
    x1=(b-(d^(1/2)))/2*a;
    x2=(-b-(d^(1/2)))/2*a;
    printf("The solutions to the equation are:\tx1=%d\tx2=%d",x1,x2);
    }
    else{
        x=-b/2*a;
        printf("The solution to the equation is:\t%d",x1);
    }
    return 0;
}
```

**4.** Draw a flowchart to find the sum of the first 50 natural numbers

```
#include<stdio.h>
#include<stdlib.h>
#include<math.h>
int main(){
    int i=1,sum=0;
    for(i=1; i<=50; i++){
          sum+=i;
        printf("%d+",i);

    }
    printf(" = \t%d", sum);



    return 0;
}
```

**5.** Write an algorithm and draw a flowchart to calculate $2^4$.

```
#include<stdio.h>
#include<stdlib.h>
#include<math.h>
int main(){
    int sum,x,n; //x^n

    printf("Enter the value of the exponent(x)\n");
    scanf("%d", &x);
    printf("Enter the base value(n)\n");
    scanf("%d", &n);
    sum=pow(x,n);
    printf("the result is : %d\t",sum);
    return 0;

 }
```

**6.** Draw a flow chart to find LCM of two numbers.

```
#include <stdio.h>
#include <stdlib.h>
#include<math.h>
int main()
{
    int x,k,y,LCM,i;
    printf("enter tow number to find LCM\n");
    scanf("%d %d", &x,&y);
    for (i = 1; i <= x && i <= y; ++i) {

        // check if i is a factor of both integers
        if (x % i == 0 && y % i == 0)
            k=i;
    }
    LCM = (x*y)/k;
    printf("The LCM of two numbers %d and %d is %d.", x, y, LCM);
return 0;
}
```

**7.** Draw a flow chart to print all Prime numbers between 1 to n.

```
#include <stdio.h>

int main()
{
    int n;
    printf("enter the n \n");
    scanf("%d",&n);
    printf("%d \t",1);
```

```
    printf("%d \t",2);

    int i,j,x;
    for(i=3; i<=n; i++)
    {
        x=0;

        for(j=2; j<i; j++)
        {
            if(i%j==0)
           {
                x=0;
                break;
           }
            else
            x=1;
        }
        if(x==1)

        printf("%d \t",i);
    }


    return 0;
}
```

**8.** Draw a flow chart to find sum of all prime numbers between 1 to n.

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

int main()
{
   int n,top=0;
    printf("enter the n \n");
    scanf("%d",&n);
    printf("1+");
    printf("2");

    int i,j,x;
    for(i=3; i<=n; i++)
    {
        x=0;

        for(j=2; j<i; j++)
        {
            if(i%j==0)
           {
                x=0;
```

```
            break;
          }
           else
           x=1;
       }
       if(x==1)
       printf("+%d",i);
       top+=i;

   }
   printf("=%d",top);

   return 0;
}
```

**9.** Draw a flow chart to check whether a number is Armstrong number or not.

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
  int num,i,x,d=0; //d:basamak sayısı x:her basamak değeri
  int k,h,result=0; //result:her basamak hesabı

  printf("enter the number that you want check armstrong or not\n");
  scanf("%d", &num);
      k=num;
      h=num;
      while(k>0){
          k/=10;
          d++;
      }

      while(h>0){
          x=h%10;
          result+=pow(x,d);
          h/=10;
      }
      if(result==num)
          printf("%d number is armstrong",num);

      else
          printf("%d number is not armstrong",num);

   return 0;
}
```

**10.** Draw a flow chart to print all Armstrong numbers between 1 to n.

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
   int num,i,x,d; //d:basamak sayısı x:her basamak değeri
   int k,h,result; //result:her basamak hesabı

   printf("enter the number that you want check armstrong or not\n");
   scanf("%d", &num);


    for(i=0; i<num; i++)
        {
        result=0;
        k=i;
        h=i;
        d=0;

        while(k>0){
            k/=10;
            d++;
        }

        while(h>0){
            x=h%10;
            result+=pow(x,d);
            h/=10;
        }
        if(result==i)
            printf("%d ",i);


       }

    return 0;
}
```

**11.** Draw a flow chart to check whether a number is Perfect number or not.

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
    int top=0,n;
   printf("enter the number that you want check perfect number or not\n");
   scanf("%d", &n);
```

```
   for(int i=1; i<n; i++){
       if(n%i==0) top=top+i;
   }
   if(top==n)
    printf("%d is perfect number",top);
   else
    printf("%d is not perfect number",top);
    return 0;
}
```

**12.** Draw a flow chart to print all Perfect numbers between 1 to n.

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
    int top,n;
   printf("enter the number that you want check perfect number or not\n");
   scanf("%d", &n);

   for(int j=1; j<n; j++)
    {
        top=0;
        for(int i=1; i<j; i++){
            if(j%i==0) top=top+i;
        }
          if(top==j)
           printf("%d\n",top);
   }
    return 0;
}
```

**13.** Draw a flow chart to check whether a number is Strong number or not.

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
    int n,f,sum,top=0; //f:basamak değeri

    printf("enter any number that is you want check whether a number is Strong
number or not\n");
    scanf("%d", &n);

    int k=n;
    //Sayı basamaklarını kontrol etme aşaması
    while(k>0)
    {
```

```
        sum=1;
        f=k%10;
        k=k/10;
        //Faktöriyel değeri bulun
        for(int i=1; i<=f; i++){
            sum=sum*i;
        }
        top=top+sum;
    }
    //Faktöriyel değeri bulduktan sonra alanların toplamını kontrol etme
    if(top==n)
        printf("%d is strong number",top);
    else
        printf("%d is not strong number",top);

        return 0;
}
```

**14.** Draw a flow chart to print all Strong numbers between 1 to n.

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
    int n,j,f,sum,top; //basamak değeri

    printf("enter any number that is you want check whether a number is Strong
number or not\n");
    scanf("%d", &n);
    for(j=1; j<n; j++){
    int k=j;
    top=0;
    //Sayı basamaklarını kontrol etme aşaması
    while(k>0)
    {
        sum=1;
        f=k%10;
        k=k/10;
        //Faktöriyel değeri bulun
        for(int i=1; i<=f; i++){
            sum=sum*i;
        }
        top=top+sum;
    }
    //Faktöriyel değeri bulduktan sonra alanların toplamını kontrol etme
    if(top==j)
        printf("%d\n",top);
    /*else
        printf("%d is not strong number",top);*/
    }
```

```
        return 0;
}
```

**16.** Draw a flow chart to find the sum of the series [ 1-X^2/2!+X^4/4!- .....].

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main(){

    int i,j,n,x,top; //top: the factorial sum
    float sum=0, result; //sum: the series sum
                         //result:The final sum after subtracting from 1

    printf("Enter the number you want to reach\n");
    scanf("%d", &n);
    printf("enter x value\n");
    scanf("%d", &x);

    for(i=2; i<=n; i+=2){
        top=1;
        //Find the factorial value//
        for(j=1; j<=i; j++)
            top=top*j;

        sum=sum+pow(x,i)/top;
        printf("+%d^%d/%d!",x,i,i);
    }
    result=1-sum;
    printf("=%.2f",result);




        return 0;
}
```

**17.** Draw a flow chart to display the n terms of harmonic series and their sum. (1 + 1/2 + 1/3 + 1/4 + 1/5 ... 1/n terms)

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main(){

    int i,n;
    float sum=0,top;

    printf("enter n to display terms of harmonic series and their sum. (1 + 1/2 +
1/3 + 1/4 + 1/5 ... 1/n terms)\n");
```

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

    for(i=2; i<=n; i++){
        sum=sum+(1/i);
        printf("1/%d+",i);
    }
    printf("=%.2f\n",sum);
    top=1+sum;
    printf("1+sum =%.2f",top);


        return 0;
}
```

**18.** Draw a flow chart to print the Floyd's Triangle.

```
1
01
101
0101
10101
```

```
#include <stdio.h>

int main() {
  int rows, i, j, value = 1;

  // Get the number of rows from the user
  printf("Enter the number of rows: ");
  scanf("%d", &rows);

  // Print the Floyd's Triangle
  for (i = 1; i <= rows; i++) {
    for (j = 1; j <= i; j++) {
      printf("%d", value);
      value = 1 - value; // Toggle the value between 1 and 0
    }
    printf("\n");
  }

  return 0;
}
```

**19.** Draw a flow chart to display the sum of the series [ 1+x+x^2/2!+x^3/3!+....].

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main(){
```

```
    int i,j,n,x,top; //top: the factorial sum
    float sum=0, result; //sum: the series sum
                          //result:The final sum after subtracting from 1

    printf("Enter the number you want to reach\n");
    scanf("%d", &n);
    printf("enter x value\n");
    scanf("%d", &x);

    for(i=2; i<=n; i++){
        top=1;
        //Find the factorial value//
        for(j=1; j<=i; j++)
            top=top*j;

        sum=sum+pow(x,i)/top;
        printf("+%d^%d/%d!",x,i,i);
    }
    result=1+x+sum;
    printf("\n1+%d+sum=%.2f",x,result);




        return 0;
}
```

**20.** Draw a flow chart to find the sum of the series [ x - x^3 + x^5 + .....].

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main(){

    int i,n,x;
    float sum=0,top;

    printf("enter n to display terms of harmonic series and their sum. [ x - x^3 + x^5 +
.....].\n");
    scanf("%d", &n);
    printf("enter the 'x' value\n");
    scanf("%d", &x);

    for(i=3; i<=n; i+=2){
        sum=sum+pow(x,i);
        printf("%d^%d+",x,i);
    }
    printf("=%.2f\n",sum);
    top=x-sum;
    printf("x-sum =%.2f",top);
```

```
        return 0;
}
```

**21.** Draw a flow chart to find the sum of the series 1 +11 + 111 + 1111 + .. n terms

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main(){

    int n, i=0, sum=0, top=0;
    printf("enter n value to find the sum of the series 1 +11 + 111 + 1111 + .. n terms\n");
    scanf("%d", &n);

    while(i<n){
        i=i*10+1;
        printf("%d+", i);
        sum=sum+i;

    }
    printf("=%d",sum);
        return 0;
}
```

**22.** Draw a flow chart to find the number and sum of all integer between 100 and 200 which are divisible by 9.

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main(){

    int i, sum=0;

    for(i=109; i<=200; i+=9){
        printf("%d+",i);
        sum=sum+i;
    }
    printf("=\t%d", sum);
        return 0;
}
```

**23.** Draw a flow chart to convert a decimal number into binary without using an array.

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

```
int main()
{
    int decimal_num, quotient;
    printf("Enter a decimal number: ");
    scanf("%d", &decimal_num);

    quotient = decimal_num;
    while (quotient != 0) {
        printf("%d", quotient % 2);
        quotient = quotient / 2;
    }

    return 0;
}
```

**24.** Draw a flow chart to convert a binary number into a decimal number without using array, function and while loop.

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


int main() {
    int i, num, sum=0;
    printf("enter the binary number to convert it to decimal \n");
    scanf("%d", &num);

    while(num!=0){

        sum=sum+(num%10)*pow(2,i);
        i++;

        num=num/10;
    }
    printf("\n");
    printf("decimal number is:\t%d", sum);
    return 0;
}
```

25.Draw a flow chart to print Pascal triangle upto n rows.

```
#include <stdio.h>

int main()
{
  int n, i, j;

  // Read the number of rows from the user
  printf("Enter the number of rows: ");
  scanf("%d", &n);
```

```
  // Iterate through each row
  for (i = 0; i < n; i++)
  {
    // Print the leading spaces
    for (j = 0; j < n - i - 1; j++)
      printf(" ");

    // Print the numbers in the row
    for (j = 0; j <= i; j++)
      printf("%d ", pascal(i, j));

    // Move to the next line
    printf("\n");
  }

  return 0;
}

int pascal(int i, int j)
{
  // Base case: if either row or column is 0, the value is 1
  if (j == 0 || i == j)
    return 1;
  // Otherwise, the value is the sum of the two values above it
  return pascal(i - 1, j - 1) + pascal(i - 1, j);
}
```