Student Name: BARAA BADRAN

NO: 2010206551

BROGRAMMING HOMEWORKS AND LAB QUESTIONS (6 to 12)

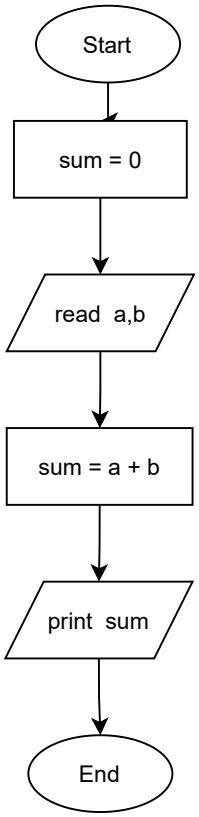
12.30.2021

HOMEWORKE 1 AND 2

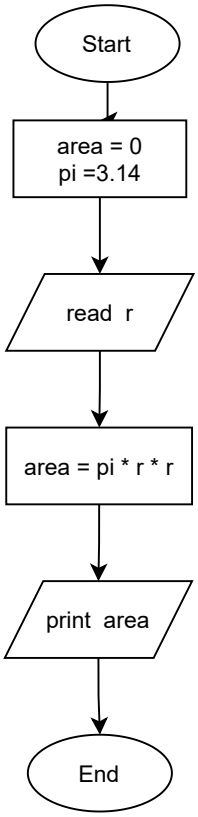
(FLOWCHART)

Homework 1

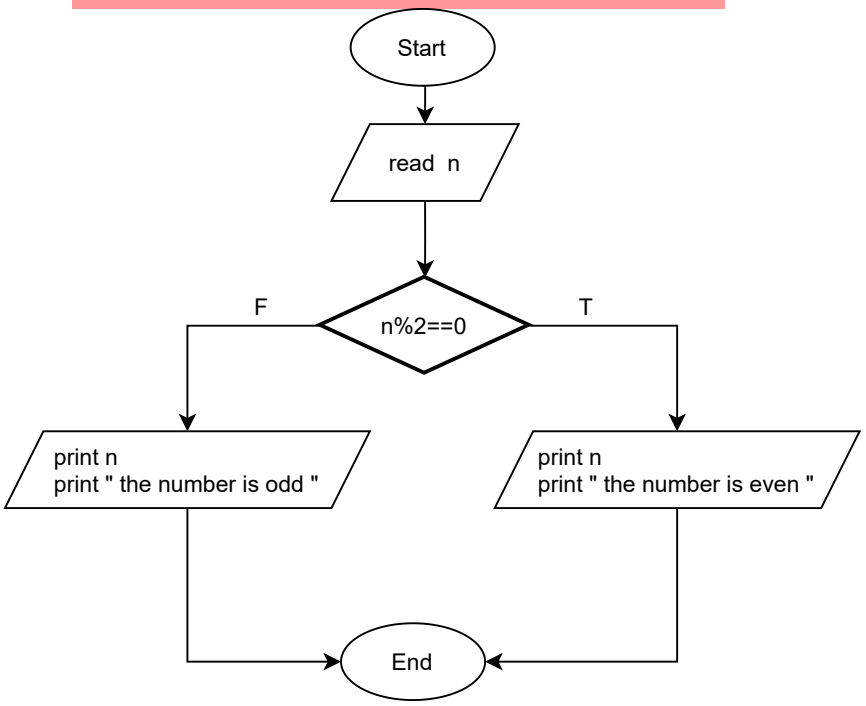
1. Draw a flowchart to add two numbers entered by user.



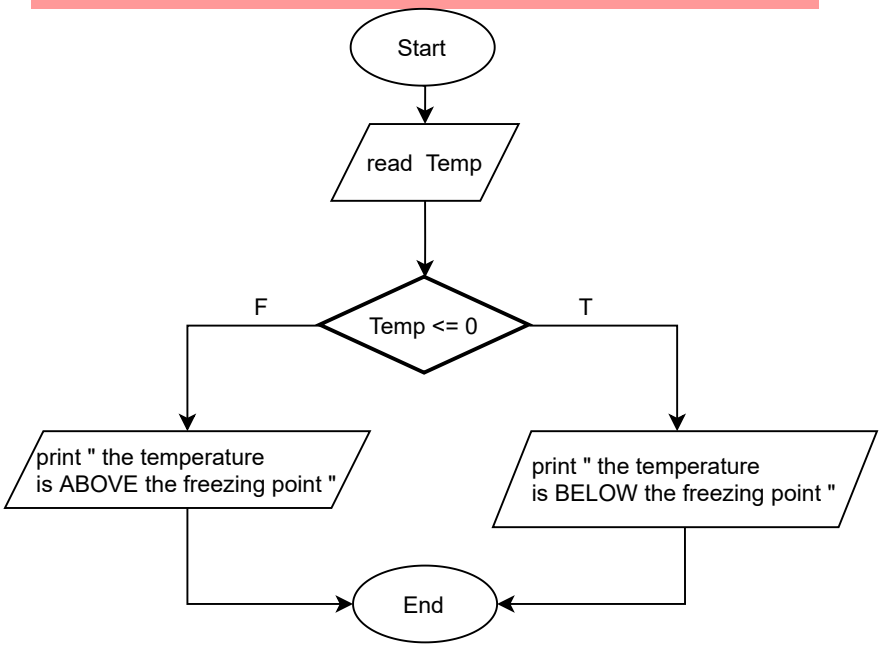
2. Calculate the area of a circle with given radius.



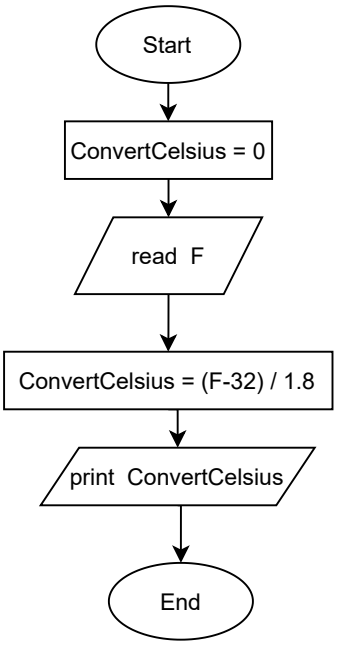
3. Determine and Output Whether Number N is Even or Odd.



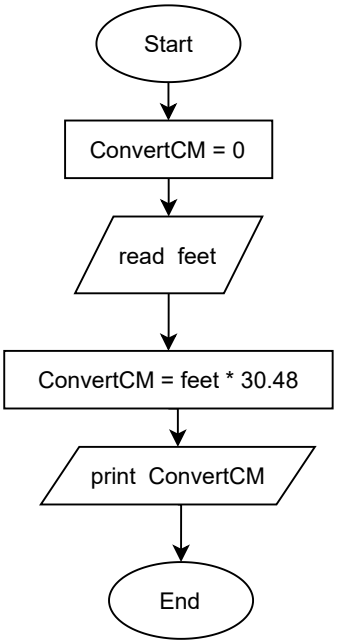
4. Determine Whether a Temperature is Below or Above the Freezing Point



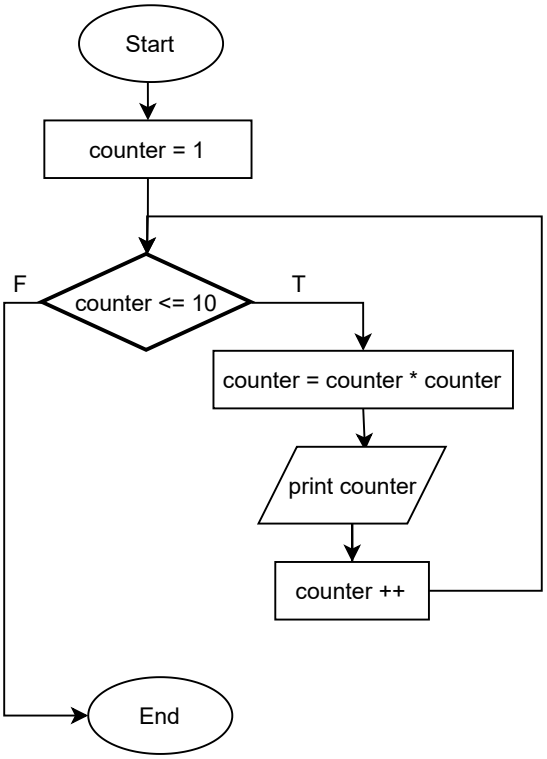
5. Convert Temperature from Fahrenheit (℉) to Celsius (℃).



6. Write an algorithm and draw a flowchart to convert the length in feet to centimeter.

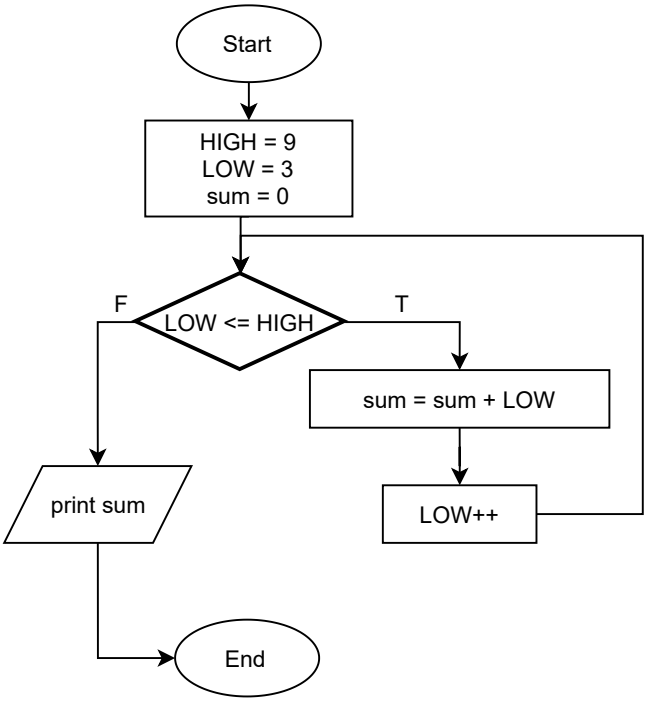


7. Write an algorithm and draw a flowchart to print the square of all numbers from 1 to10.



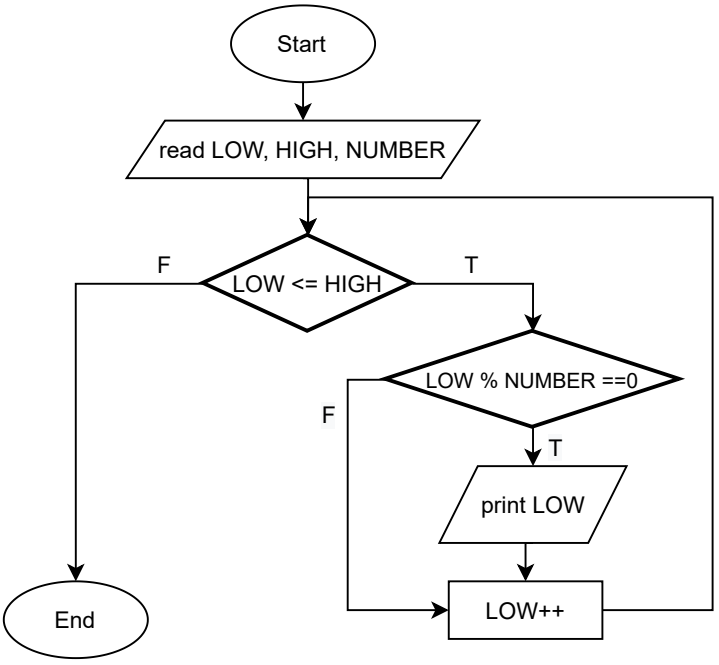
step 1: Start
step 2: let counter =1
step 3: while (counter <= 10)
counter =counter * counter
print counter
counter++
step 4: End

8. Write an algorithm and draw a flowchart to print the SUM of numbers from LOW to HIGH. Test with LOW=3 and HIGH=9.



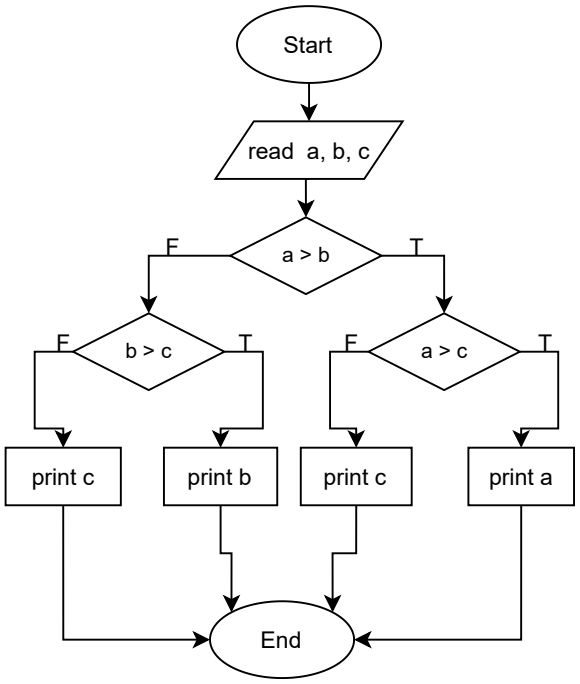
step 1: Start
step 2: let counter =1
step 3: while (counter <= 10)
sum = sum + LOW
LOW++
step 4: print sum
step 5: End

9. Write an algorithm and draw a flowchart to print all numbers between LOW and HIGH that are divisible by NUMBER

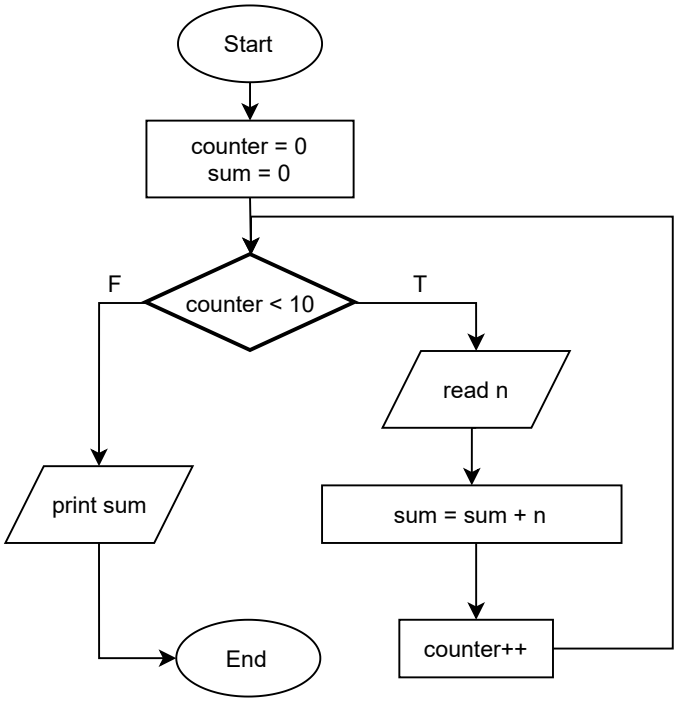


step 1: Start
step 2: read LOW, HIGH, NUMBER
step 3: while (LOW <= HIGH)
if (LOW % NUMBER == 0)
print LOW
LOW++
else
LOW++
step 4 End

10. Draw a flowchart to find the largest of three numbers A, B, and C.

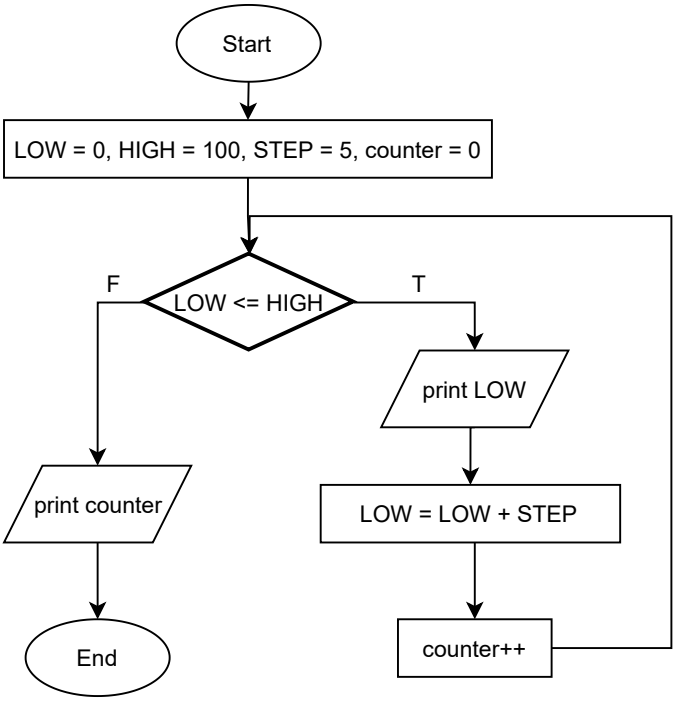


11. Draw a flowchart for a program that reads 10 numbers from the user and prints out their sum, and their product.

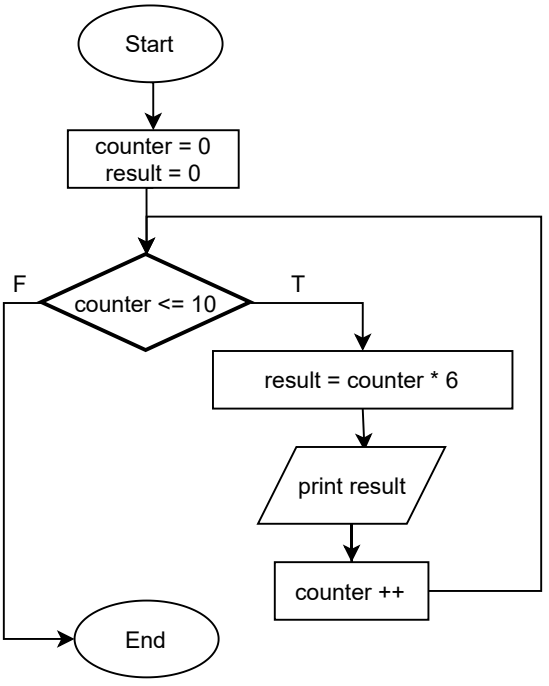


12. Write an algorithm and draw a flowchart to count and print all numbers from LOW to HIGH by steps of STEP. Test with LOW=0 and HIGH=100 and STEP=5.

step 1: Start
step 2: let LOW = 0, HIGH = 100, STEP = 5, counter = 0
step 3: while (LOW <= HIGH)
print LOW
LOW = LOW + STEP
counter++
step 4 print counter
step 5: End

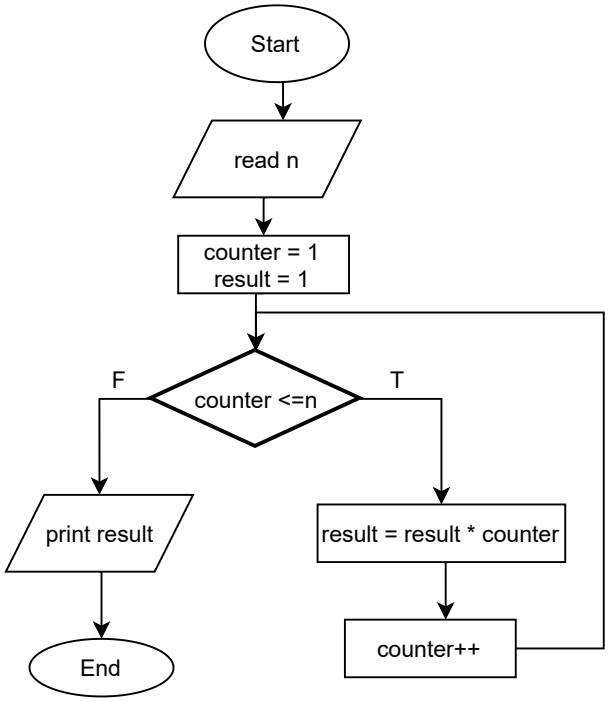


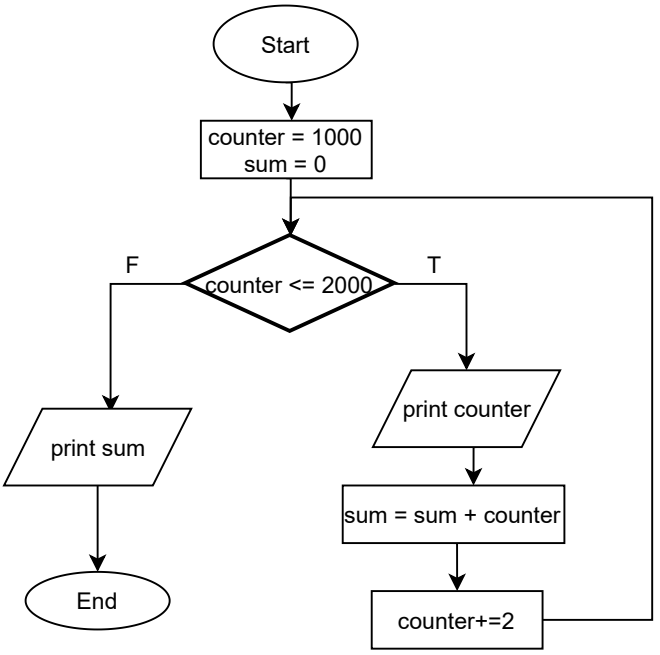
13. Write an algorithm and draw a flowchart to print the multiplication table for 6's.



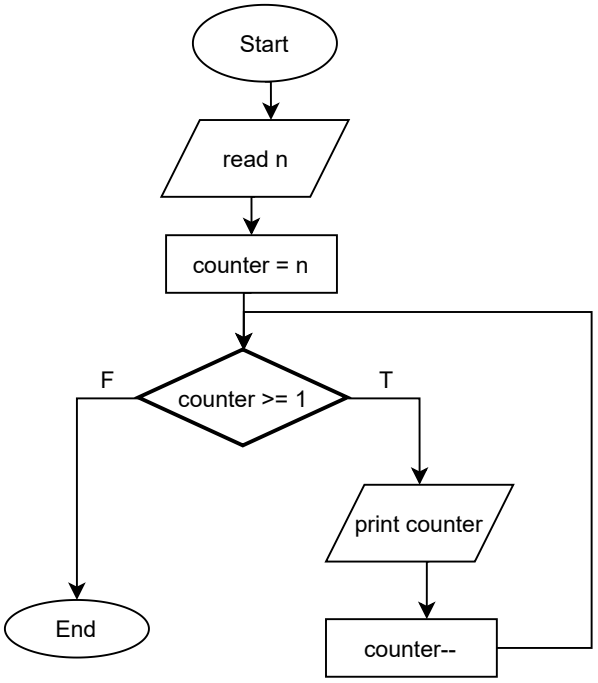
step 1: Start
step 2: let counter =0, result = 0
step 3: while (counter <= 10)
result =counter * 6
print result
counter++
step 4: End

14. Draw a flowchart for computing factorial N (N!).





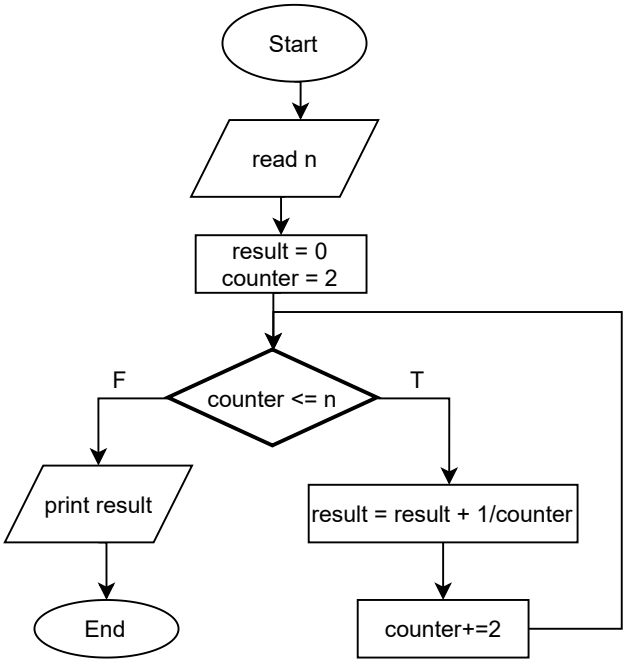
15. Draw a flow chart to print all natural numbers in reverse (from n to 1).



16. Design an algorithm which generates even numbers between 1000 and 2000 and then prints them in the standard output. It should also print total sum.

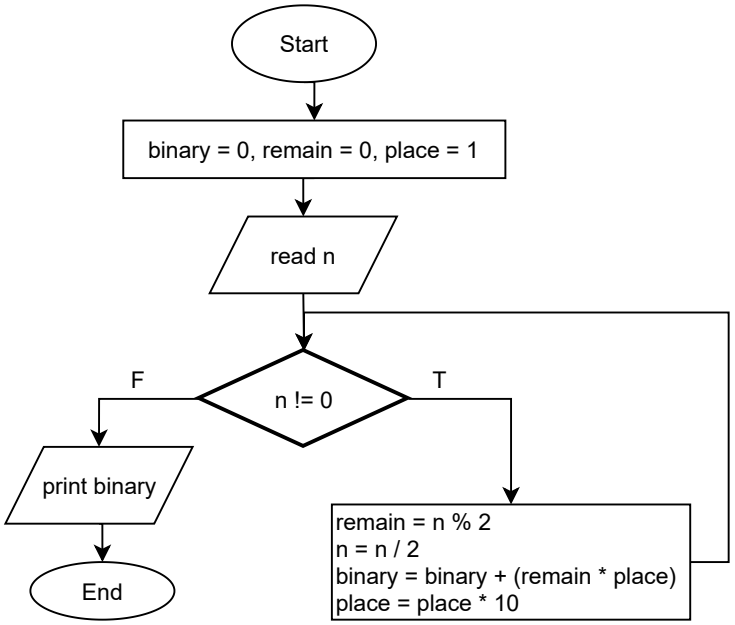
step 1: Start
step 2: let sum = 0, counter = 1000
step 3: while (counter <= 2000)
print counter
sum = sum + counter
counter = counter + 2
step 4: print sum
step 5: End

17. Design an algorithm with a natural number, n, as its input which calculates the following formula and writes the result in the standard output: S = ½ + ¼ + … +1/n.



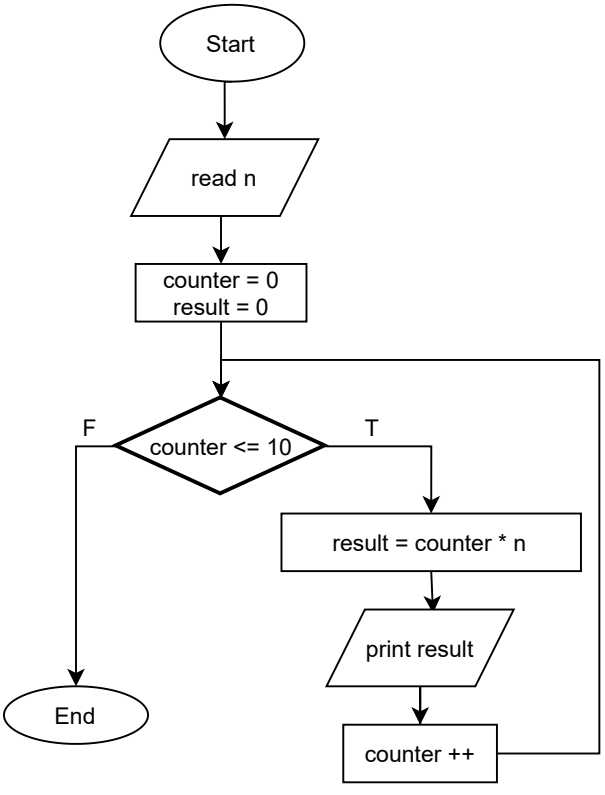
step 1: Start
step 2: read n
step 3: let counter = 2, result = 0
step 4: while (counter <= n)
result = result + 1/counter
counter = counter + 2
step 5: print result
step 6: End

18. Design an algorithm to convert a decimal number, n, to binary format?

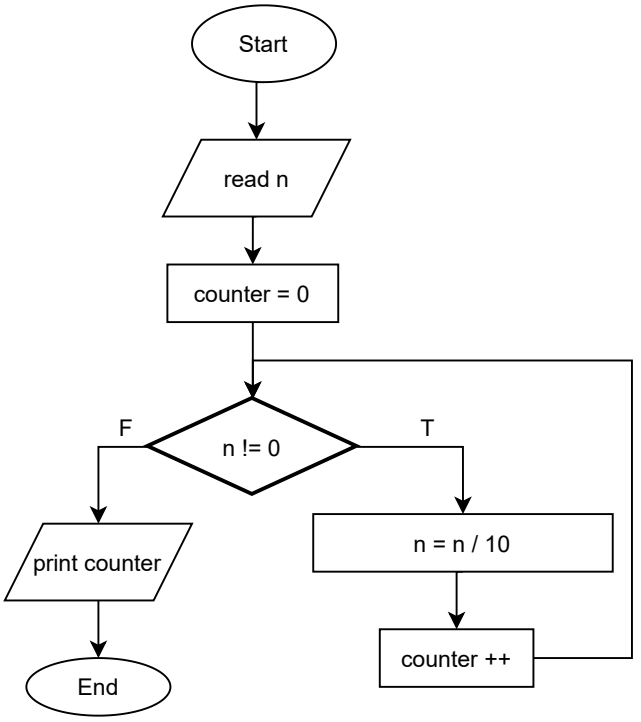


step 1: Start
step 2: let binary = 0, remain = 0, place = 1
step 3: read number, n
step 3: while (n != 0)
remain = n % 2
n = n / 2
binary = binary + (remain * place)
place = place * 10
step 4: print binary
step 5: End

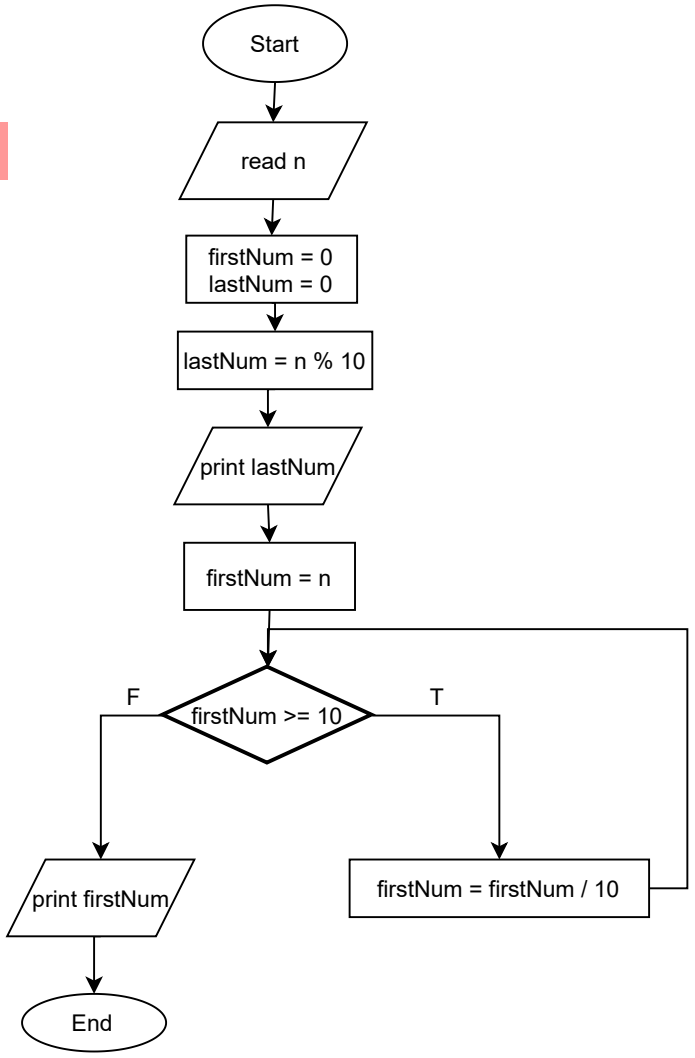
19. Draw a flow chart to print multiplication table of any number



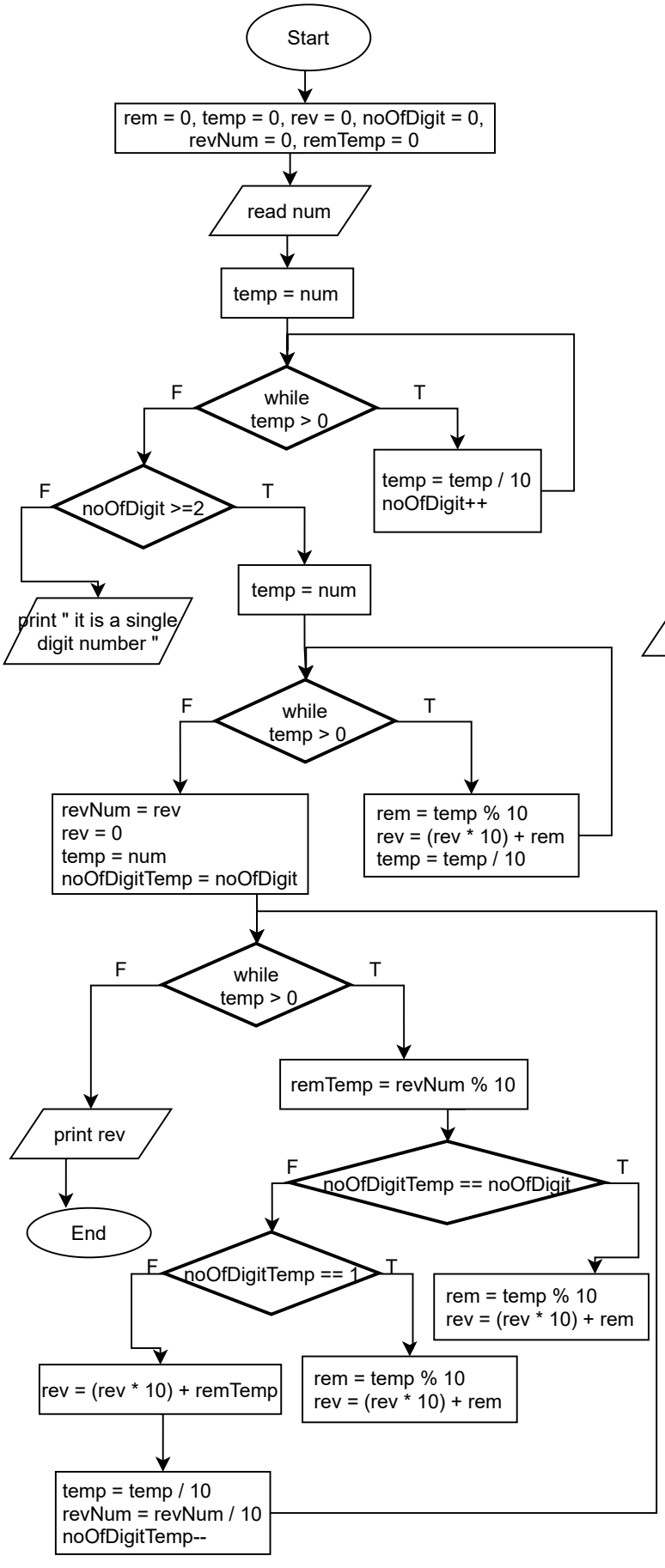
20. Draw a flow chart to count number of digits in a number.



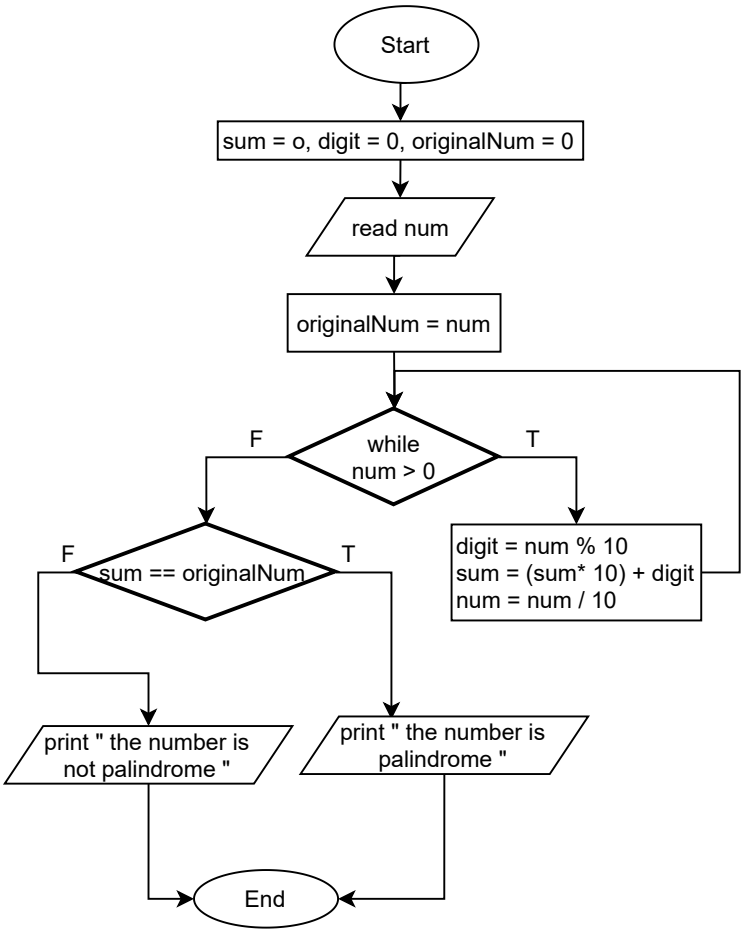
21. Draw a flow chart to find first and last digit of a number.



22. Draw a flow chart to swap first and last digits of a number.



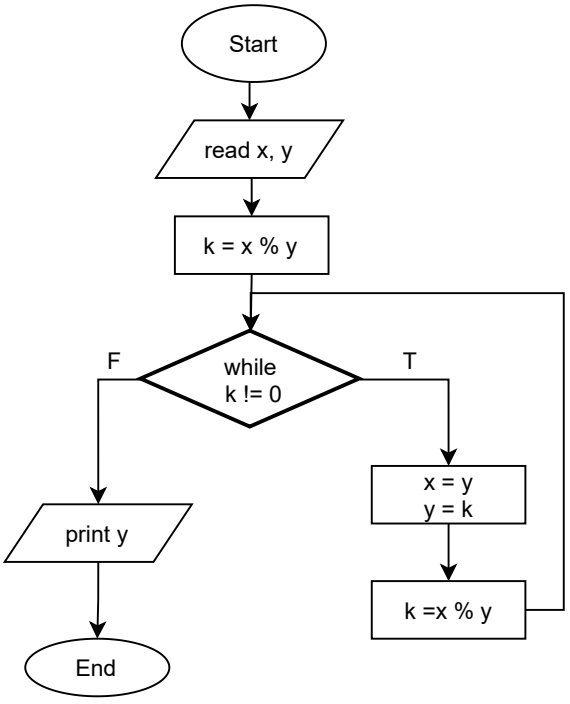
23. Draw a flow chart to check whether a number is palindrome or not.



24. Draw a flow chart to find frequency of each digit in a given integer

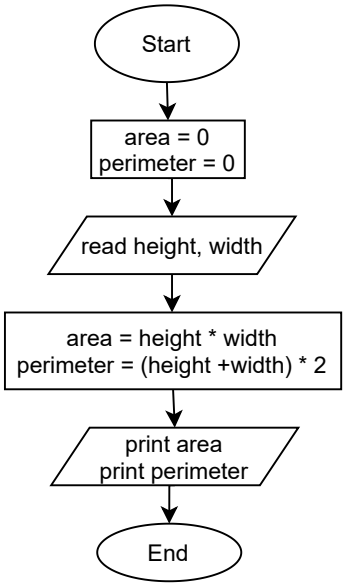
The answer to this question is on
the last page

25. Draw a flow chart to find HCF (Highest Common Factor) of two numbers.

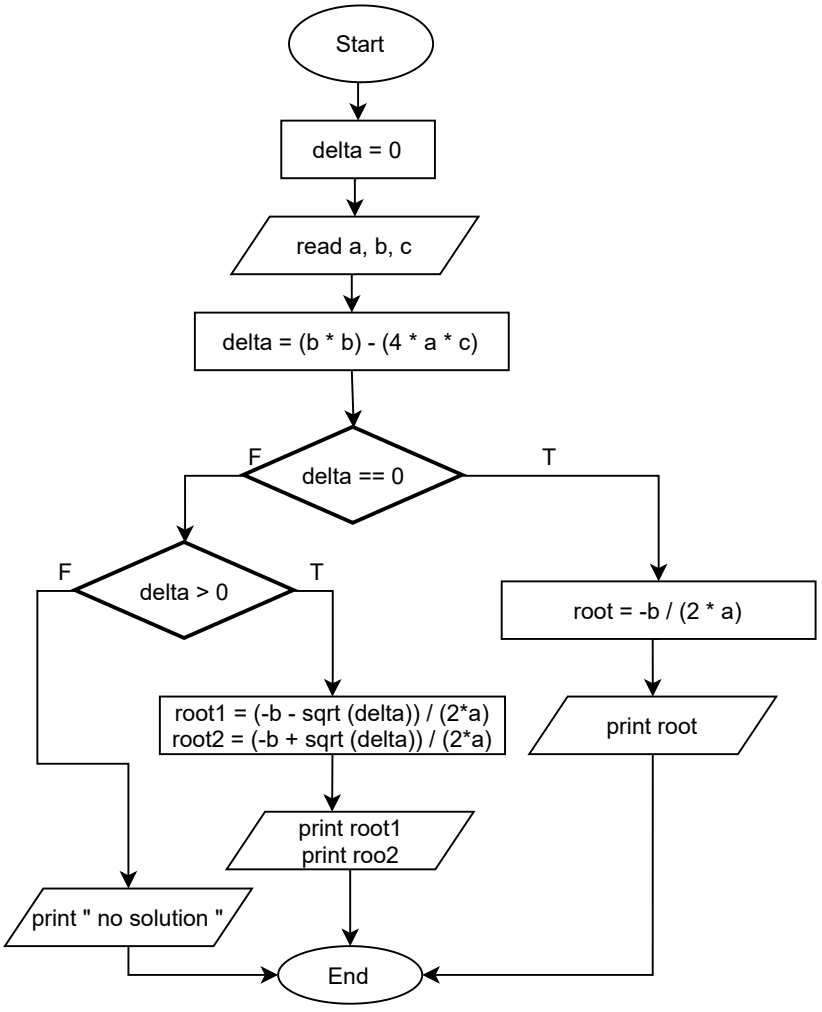


Homework 2

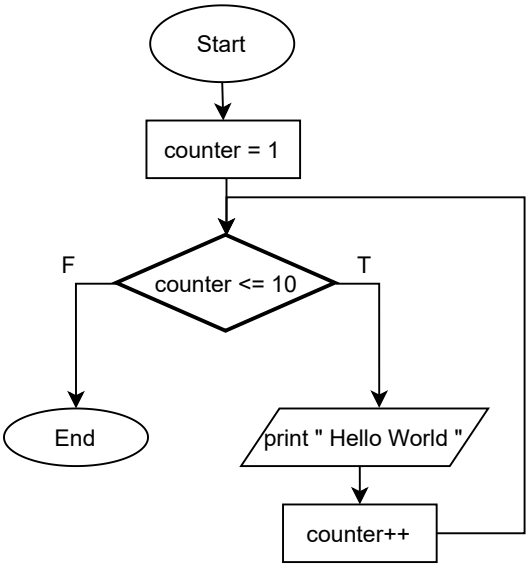
1. Write an algorithm and draw a flowchart that will read the two sides of a rectangle and calculate its area and perimeter.



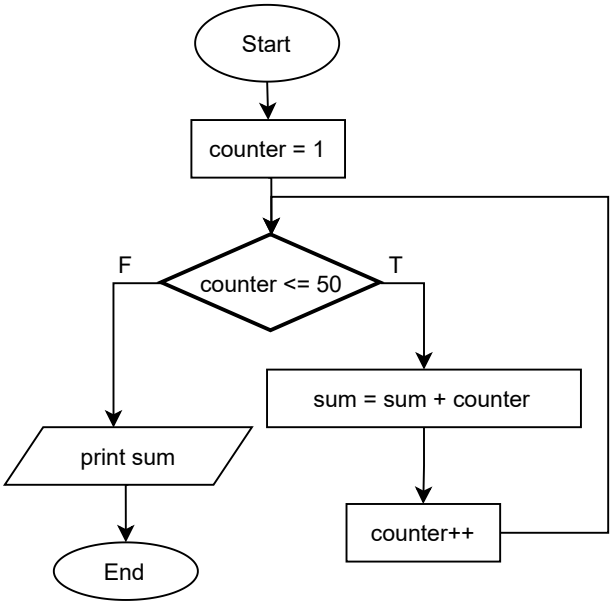
2. Draw a flowchart to find all the roots of a quadratic equation ax2+bx+c=0.



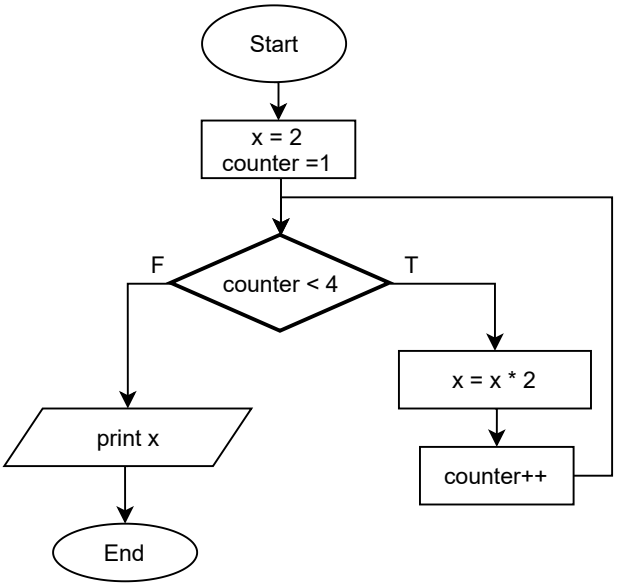
3. Print Hello World 10 times



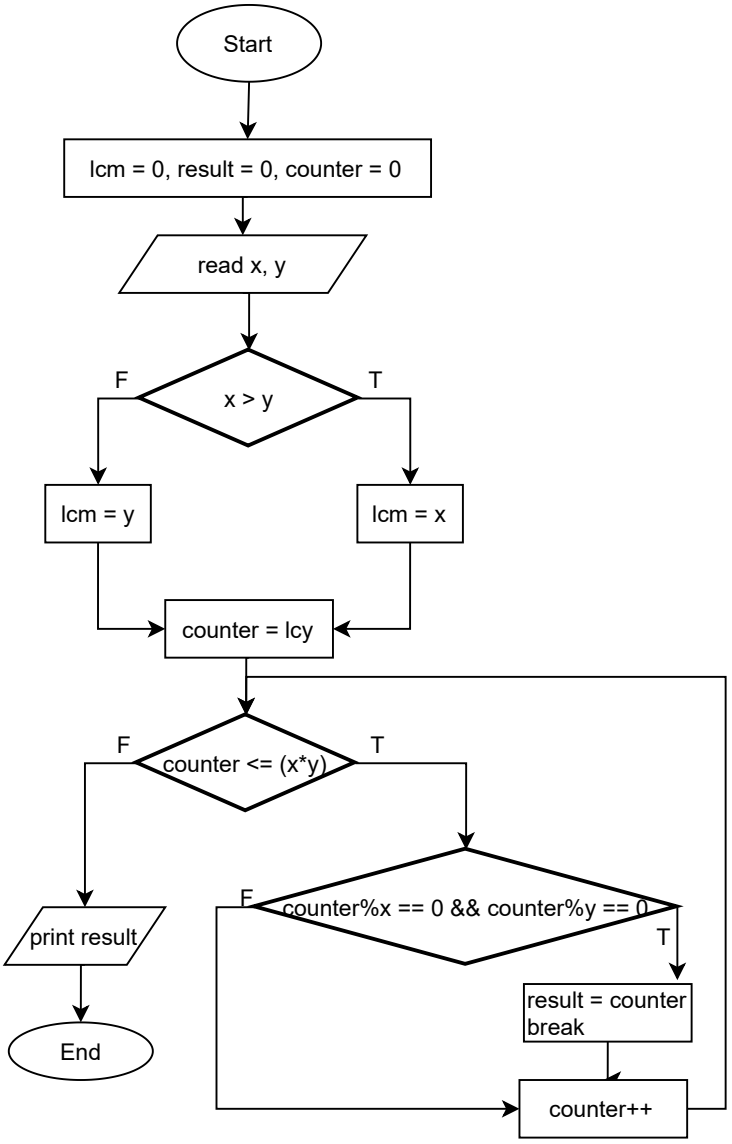
4. Draw a flowchart to find the sum of the first 50 natural numbers.



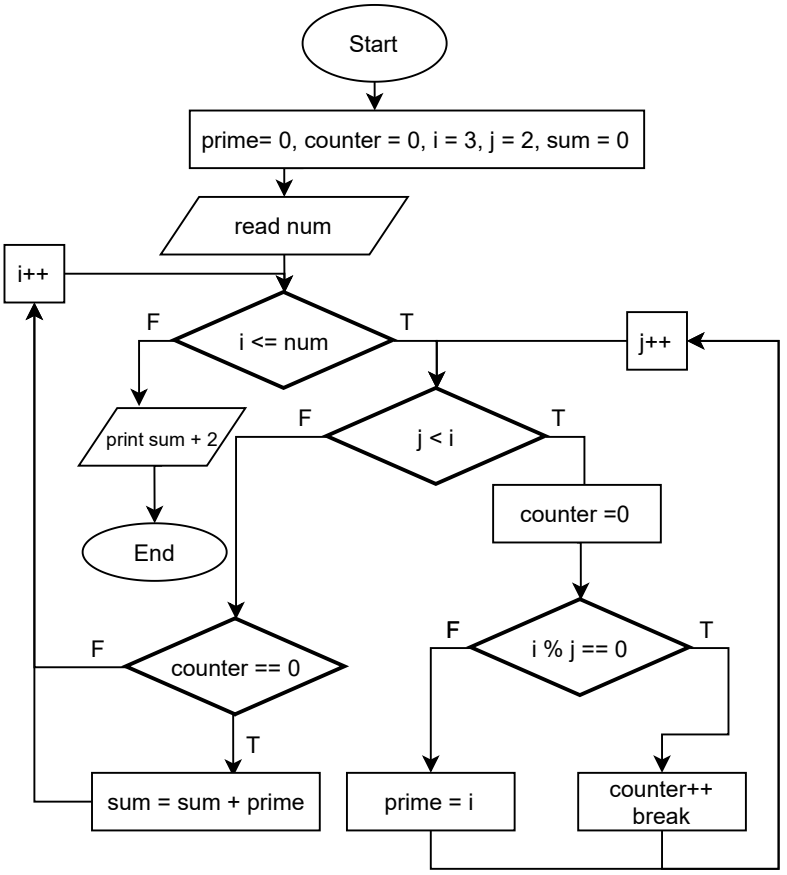
5. Write an algorithm and draw a flowchart to calculate 2^4.



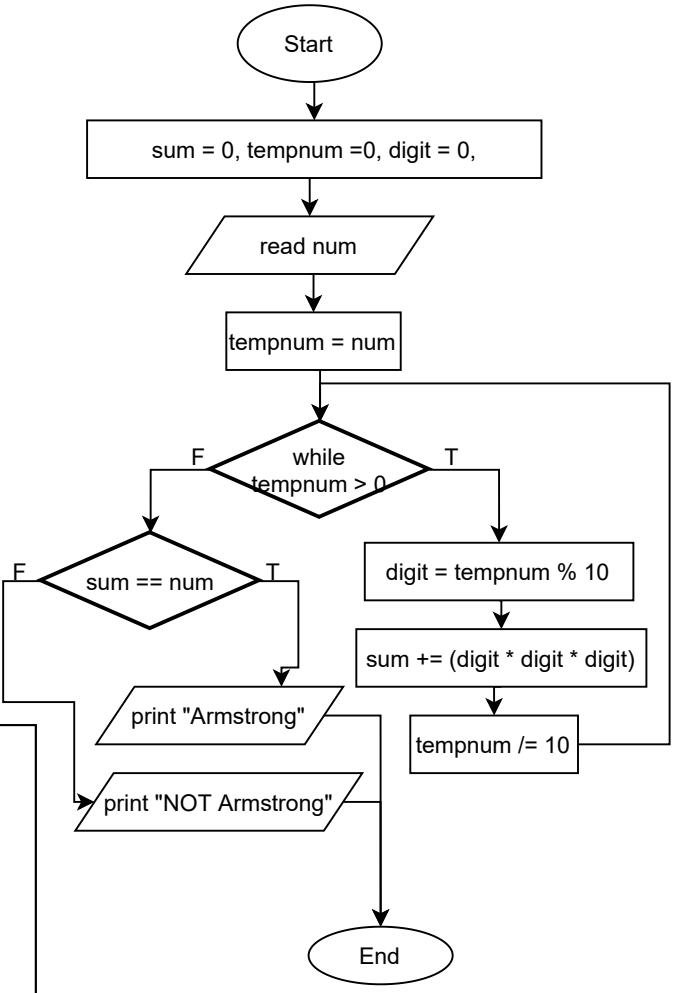
6. Draw a flow chart to find LCM of two numbers.



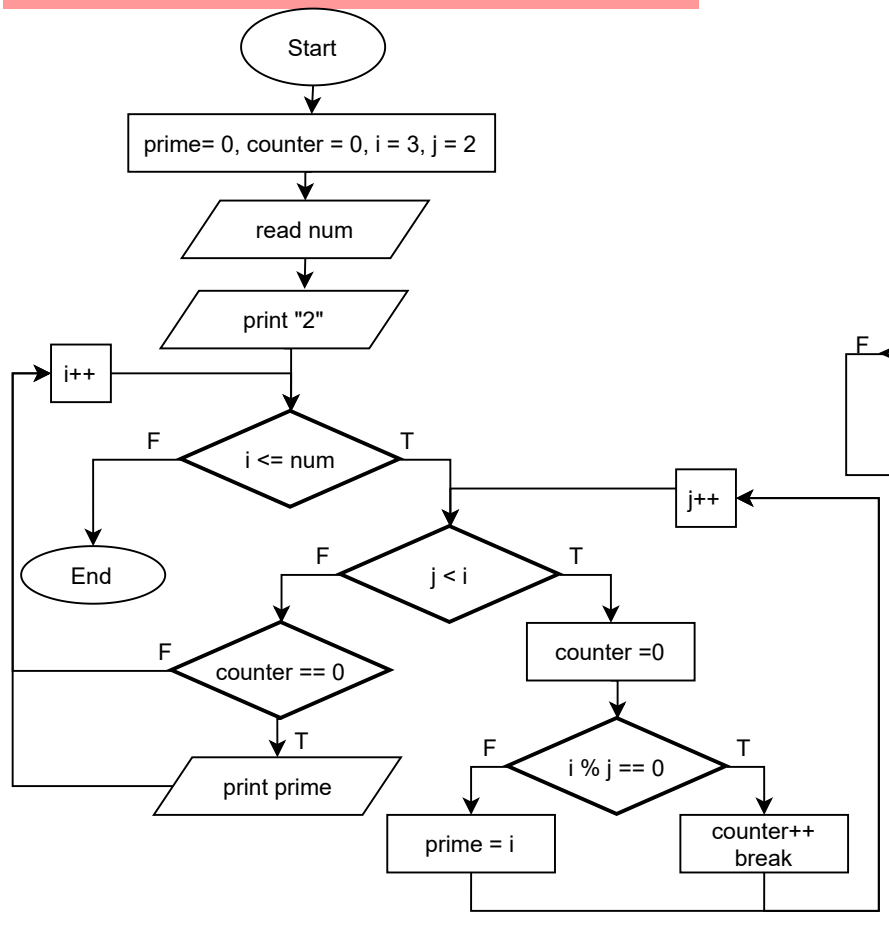
8. Draw a flow chart to find sum of all prime numbers between 1 to n.



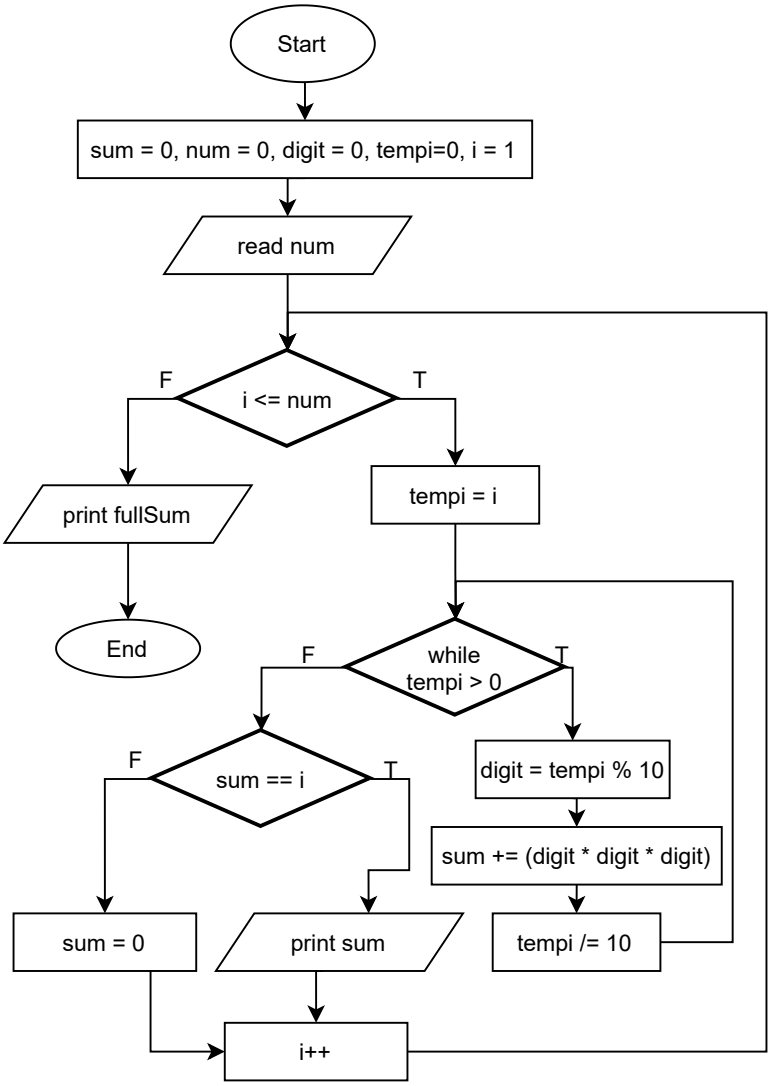
9. Draw a flow chart to check whether a number is Armstrong number or not.



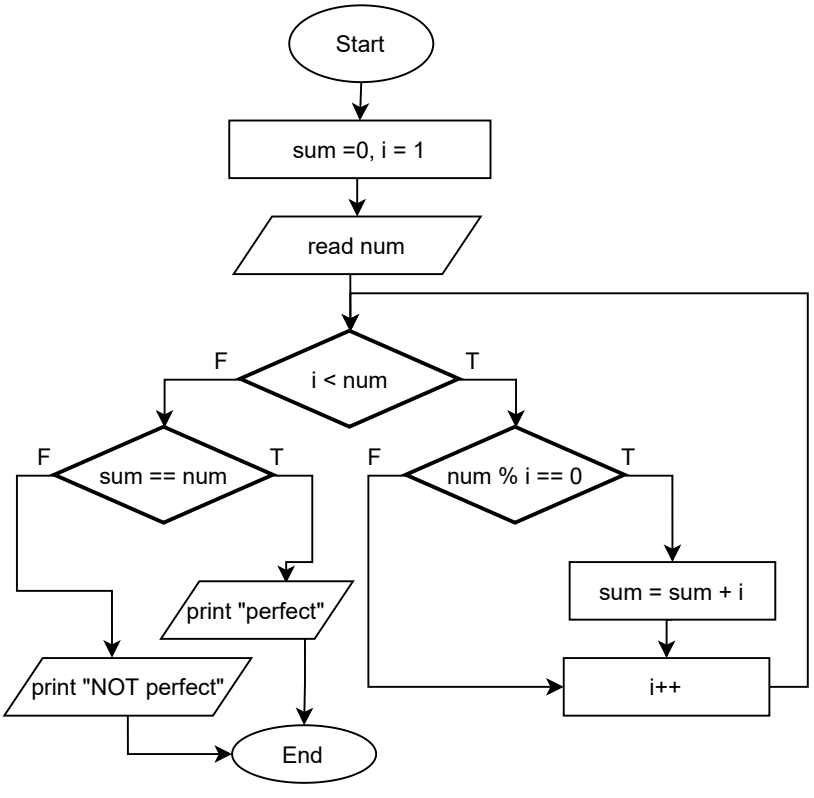
7. Draw a flow chart to print all Prime numbers between 1 to n.



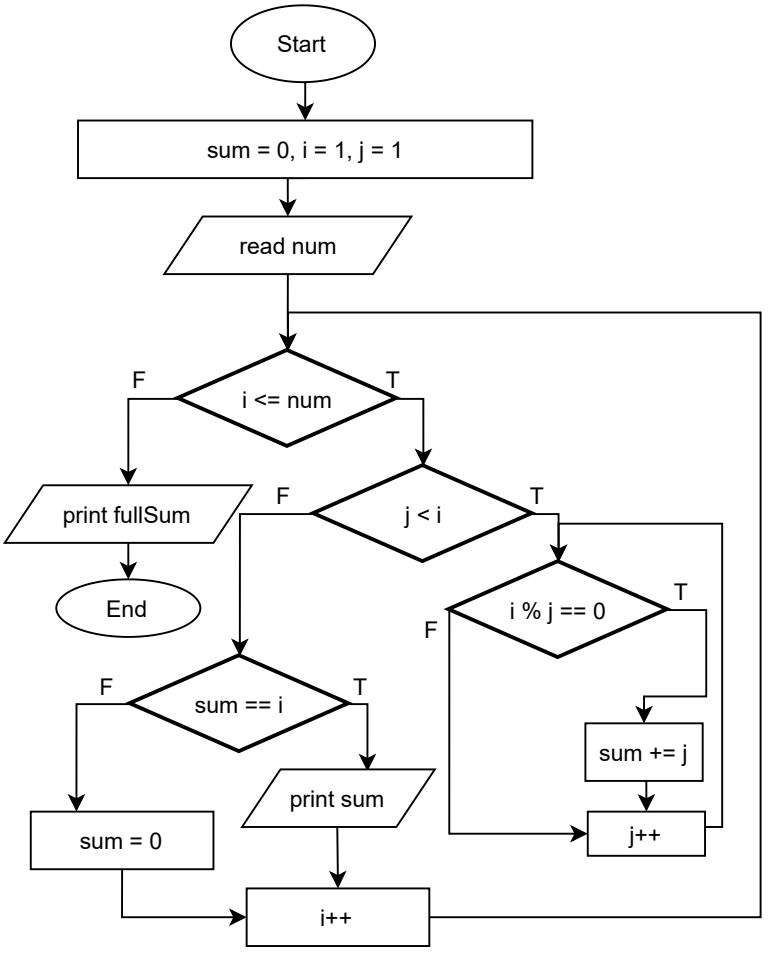
10. Draw a flow chart to print all Armstrong numbers between 1 to n(and the sum of them).



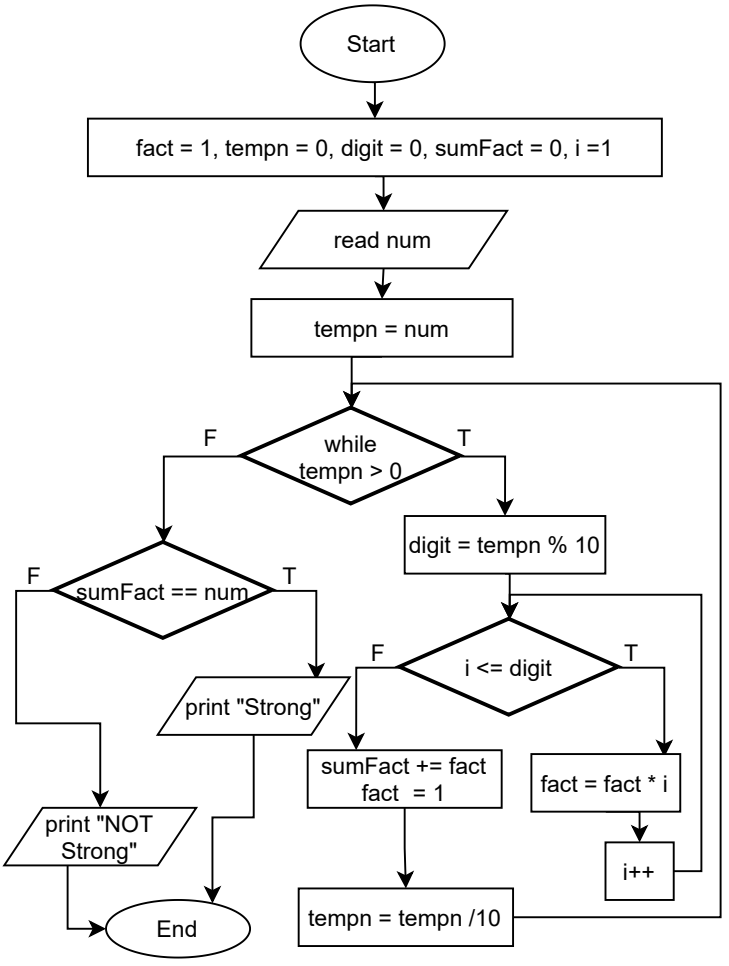
11. Draw a flow chart to check whether a number is Perfect number or not.



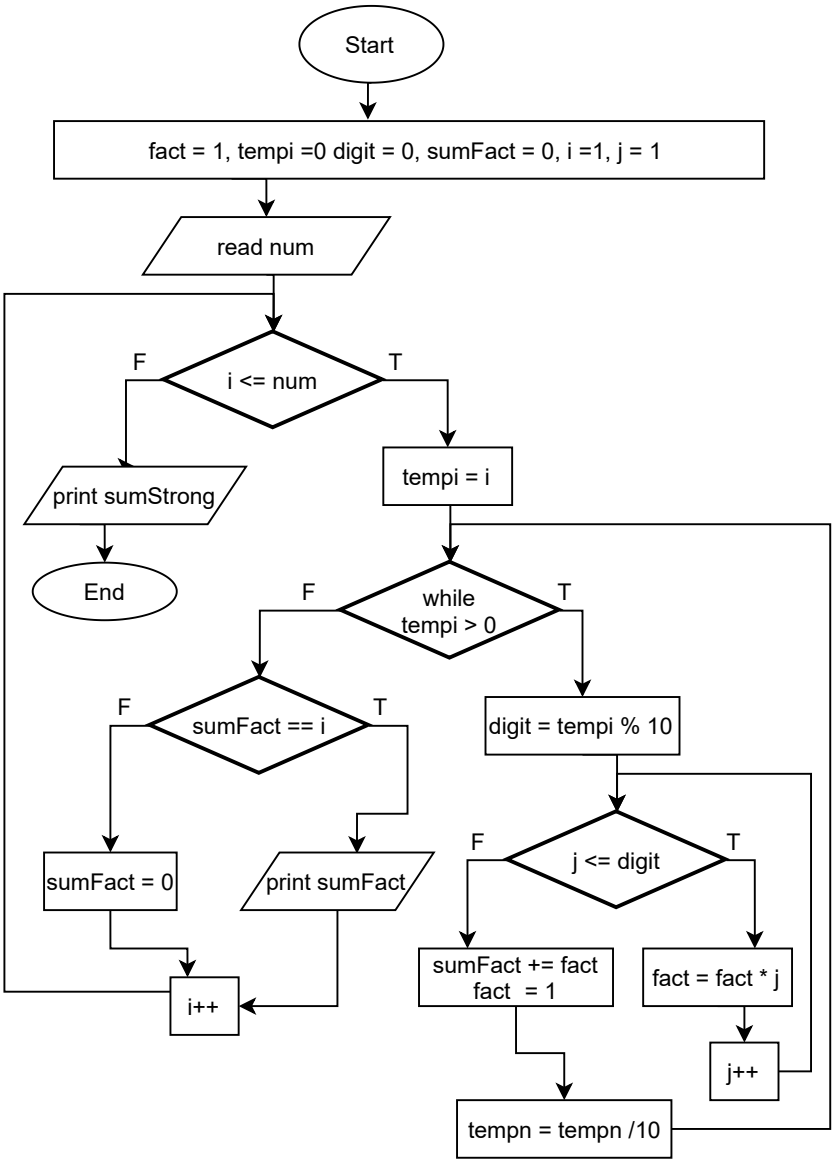
12. Draw a flow chart to print all Perfect numbers between 1 to n (and the sum of them).



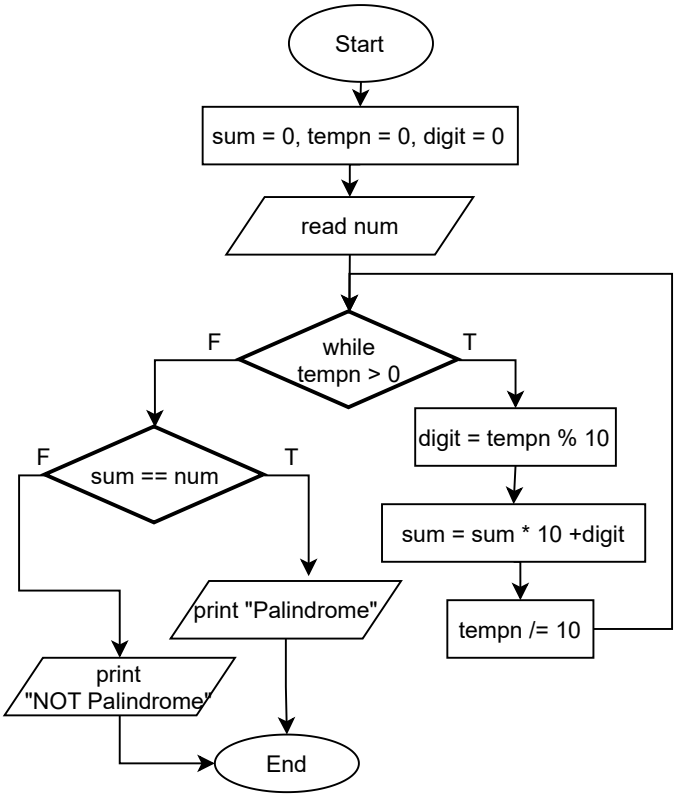
13. Draw a flow chart to check whether a number is Strong number or not.



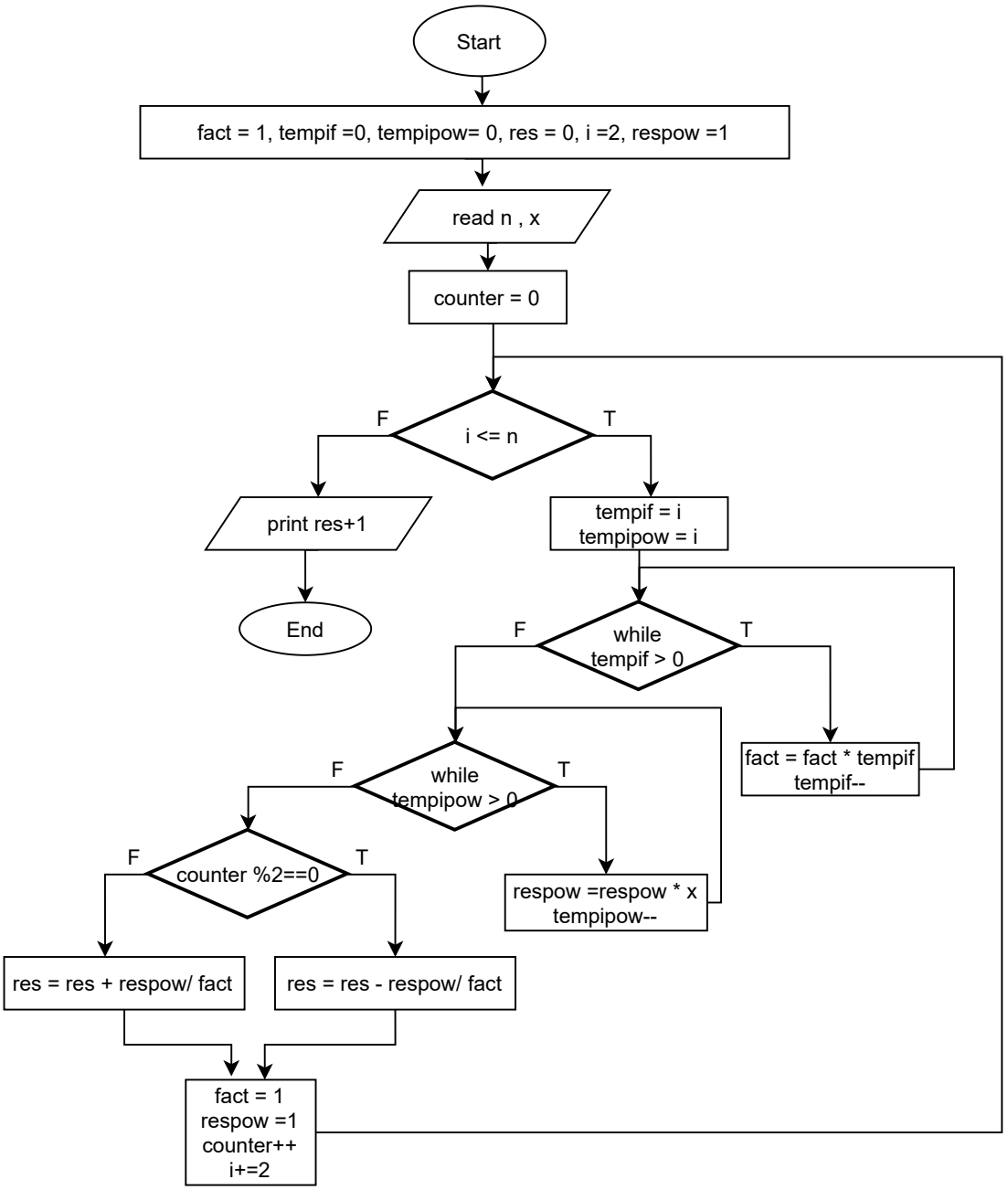
14. Draw a flow chart to print all Strong numbers between 1 to n.



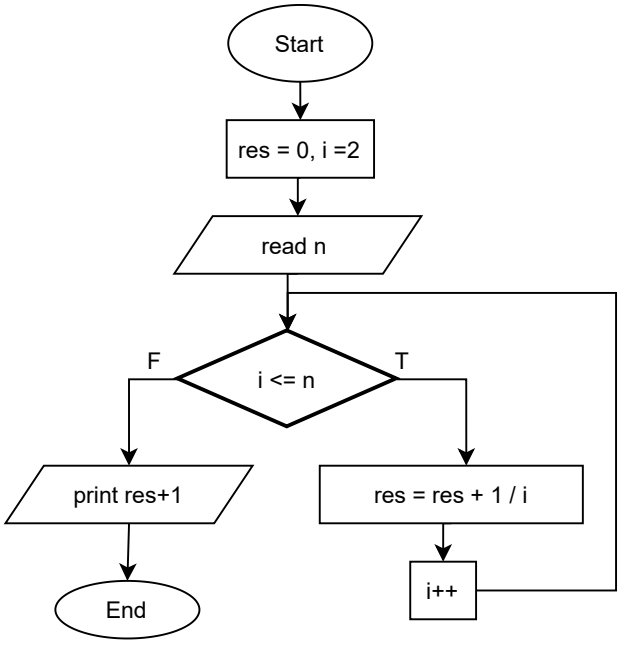
15. Draw a flow chart to check Whether a Number is Palindrome or Not



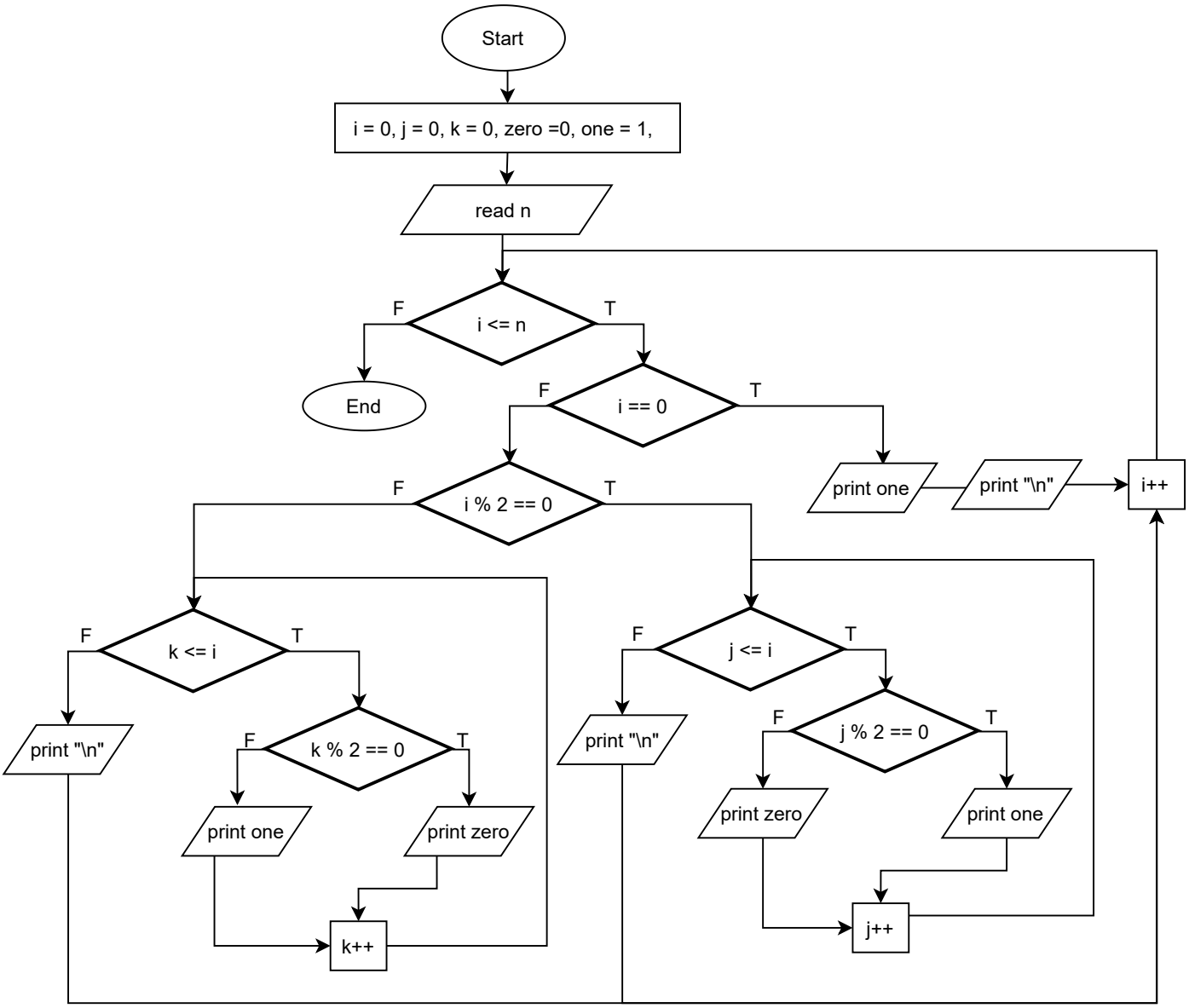
16. Draw a flow chart to find the sum of the series [1-X^2/2!+X^4/4!-..].



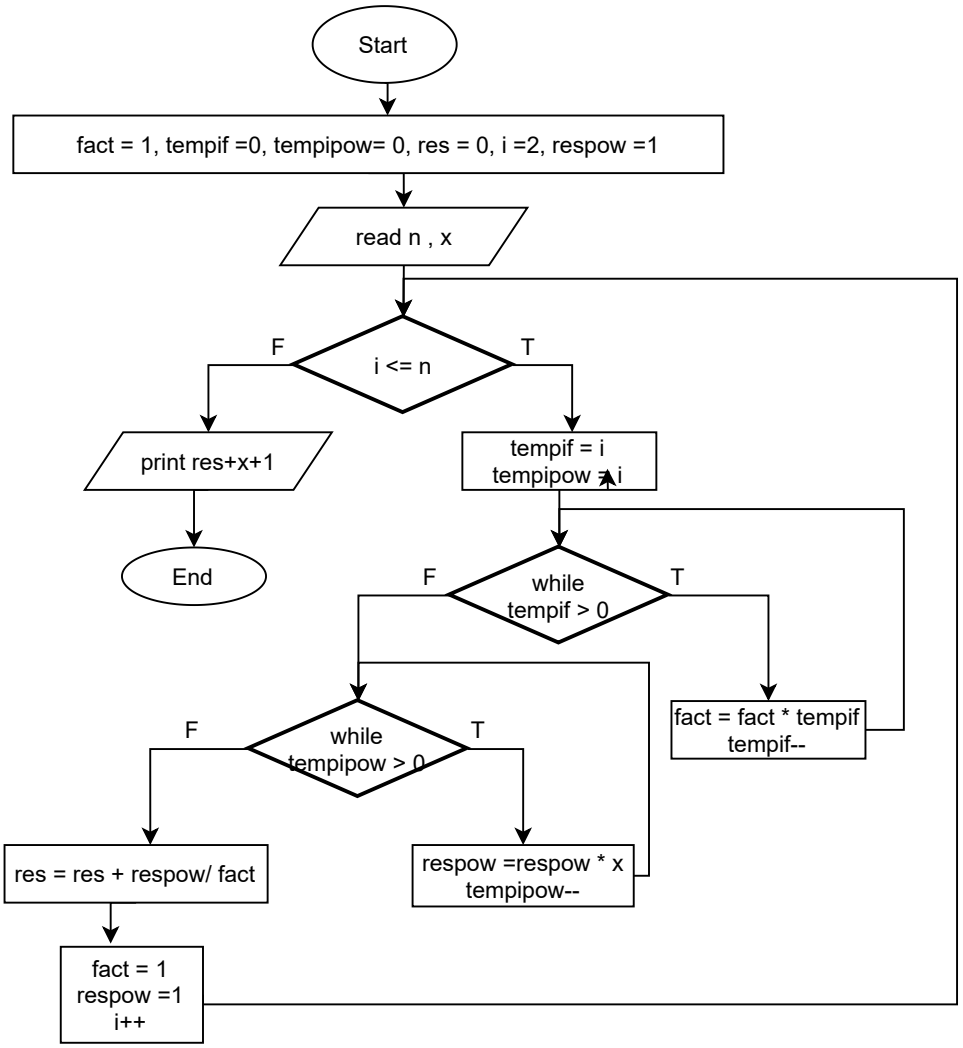
17. Draw a flow chart to display the n terms of harmonic series and their sum. (1 + 1/2 + 1/3 + 1/4 + 1/5 ... 1/n terms)



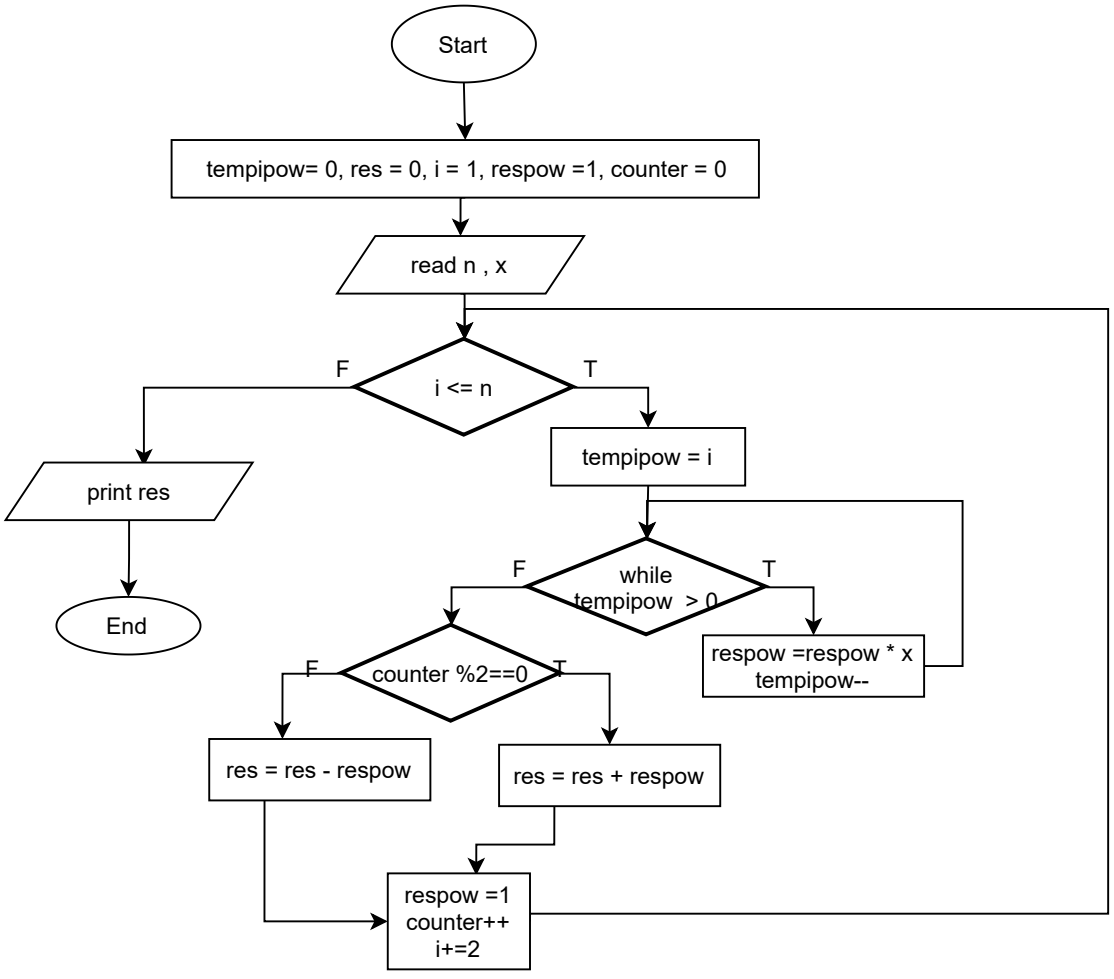
18. Draw a flow chart to print the Floyd's Triangle.
1
01
101
0101
10101



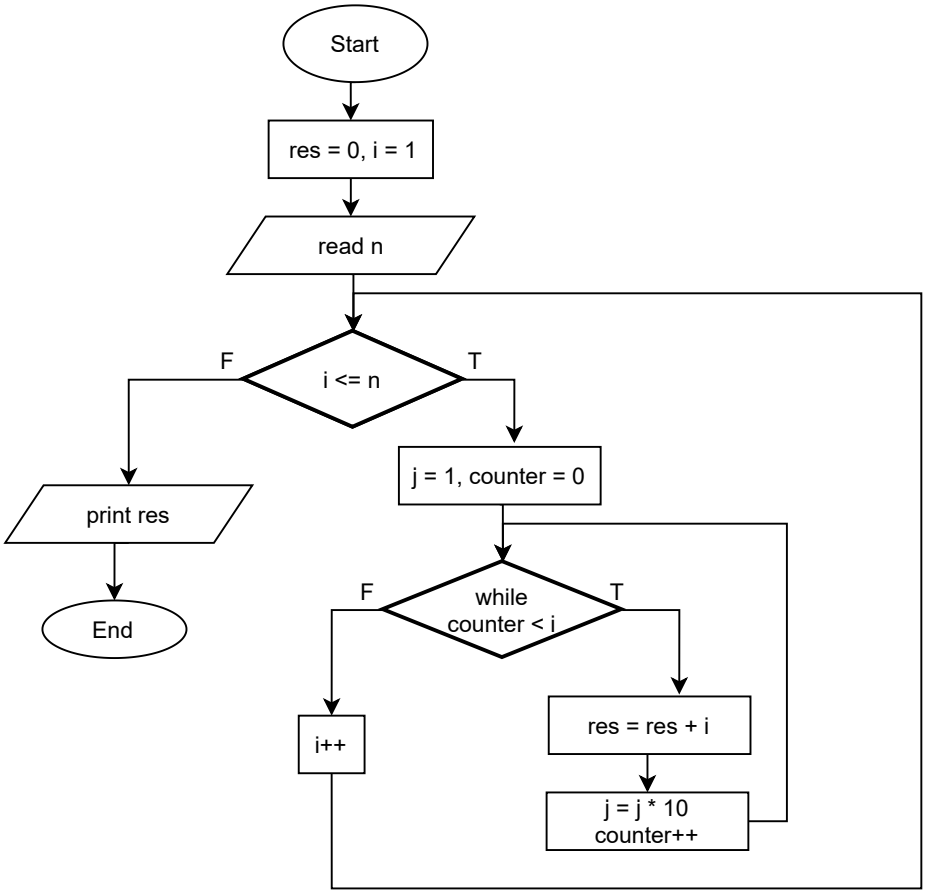
19. Draw a flow chart to display the sum of the series [1+x+x^2/2!+x^3/3!+....].



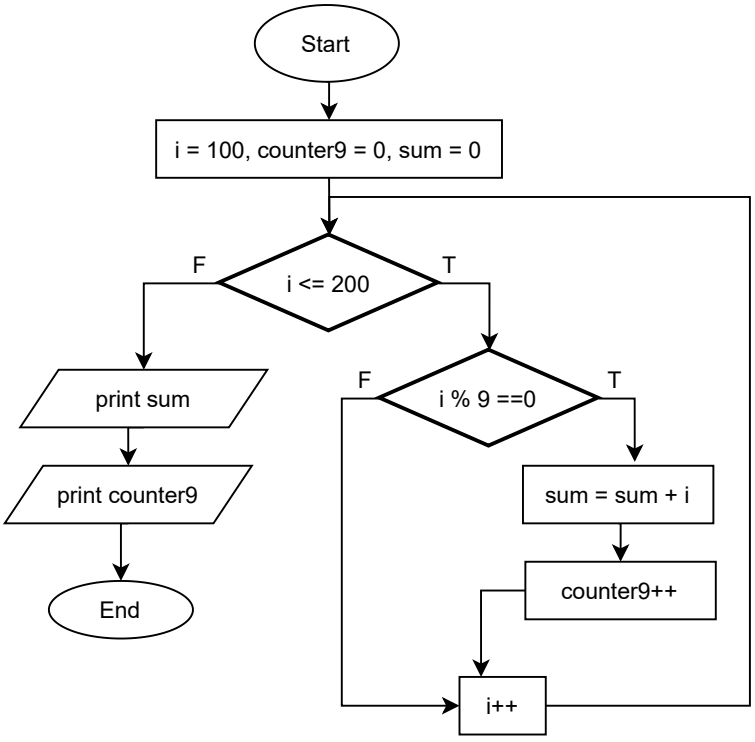
20. Draw a flow chart to find the sum of the series [x - x^3 + x^5 + ...].



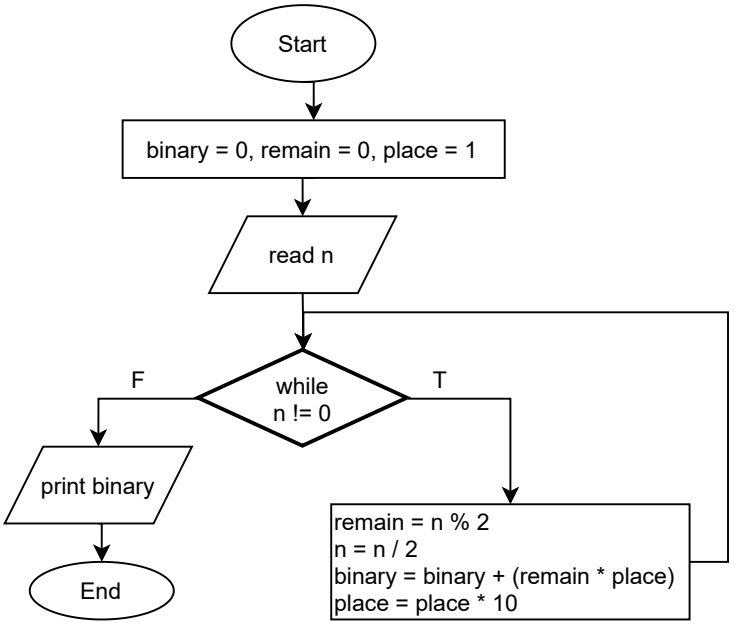
21. Draw a flow chart to find the sum of the series 1 +11 + 111 + 1111 + .. n terms



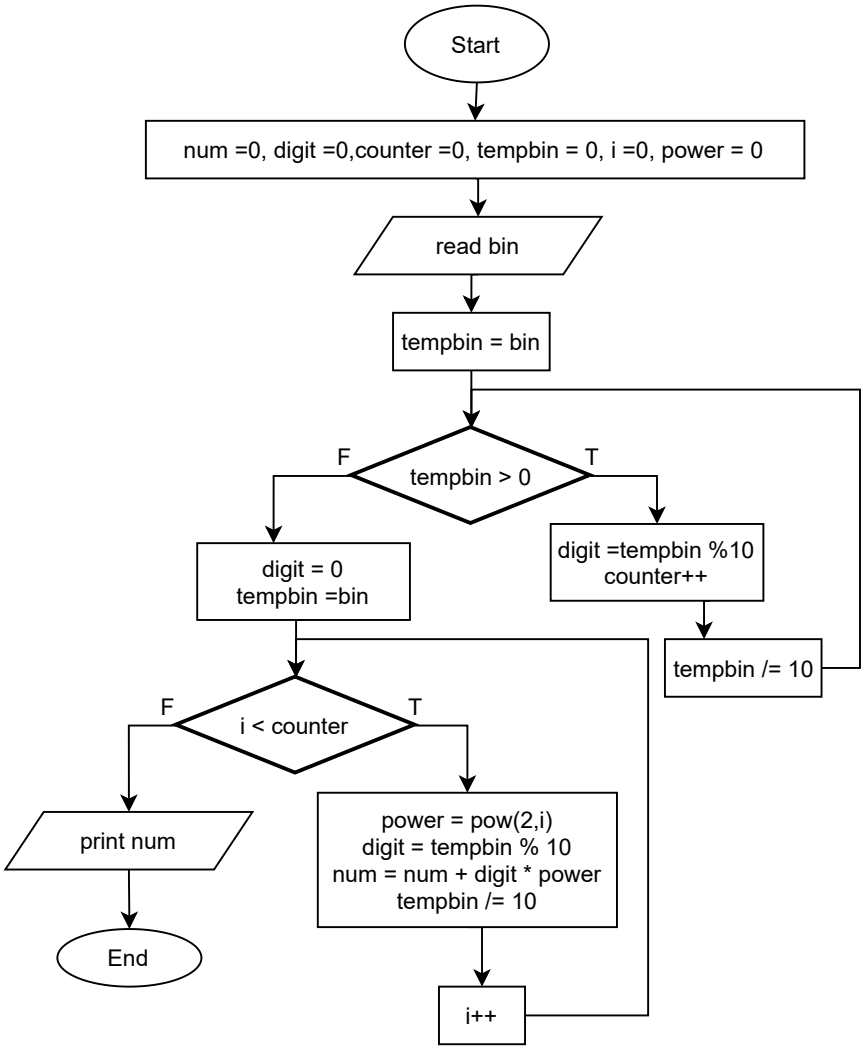
22. Draw a flow chart to find the number and sum of all integer between 100 and 200 which are divisible by 9.



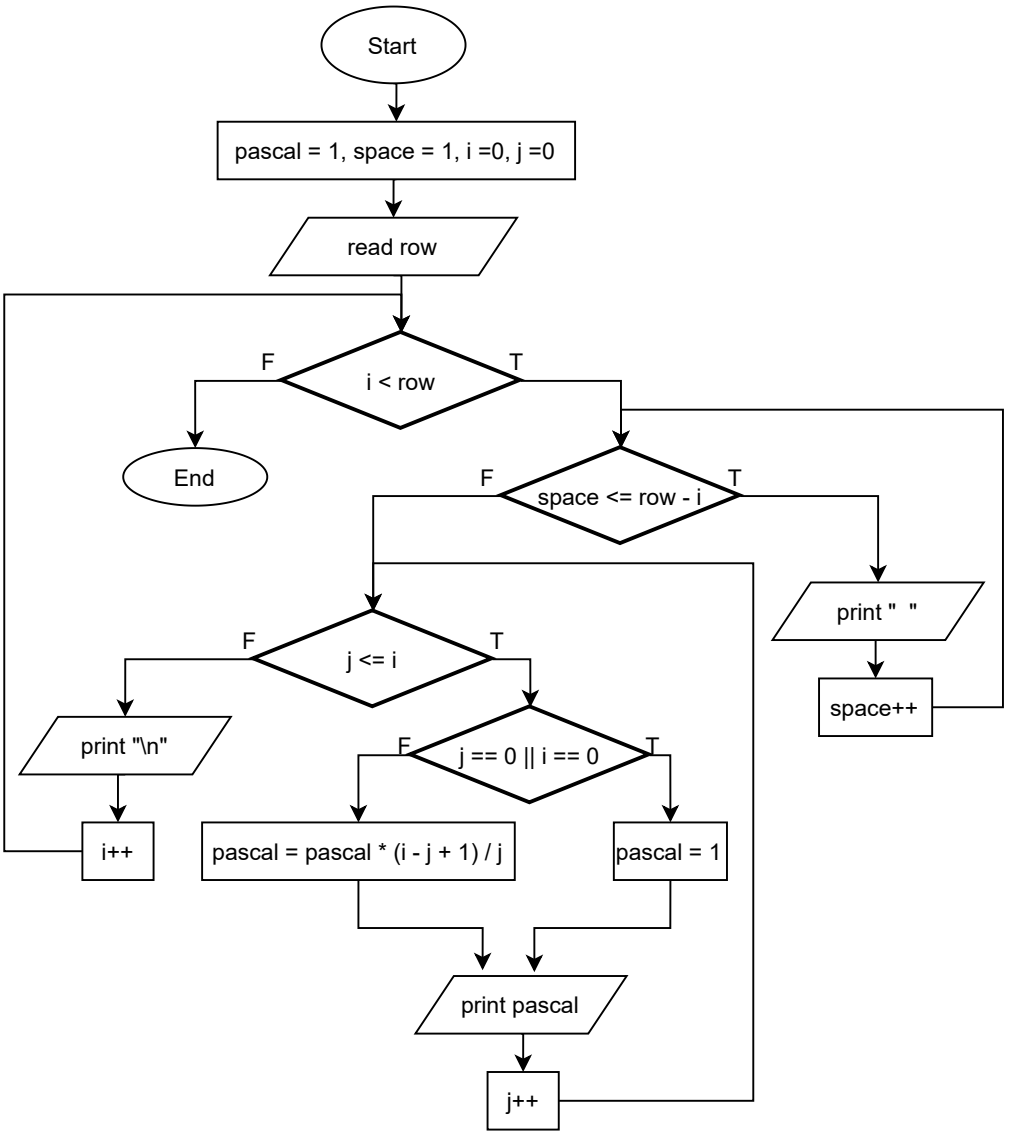
23. Draw a flow chart to convert a decimal number into binary without using an array.



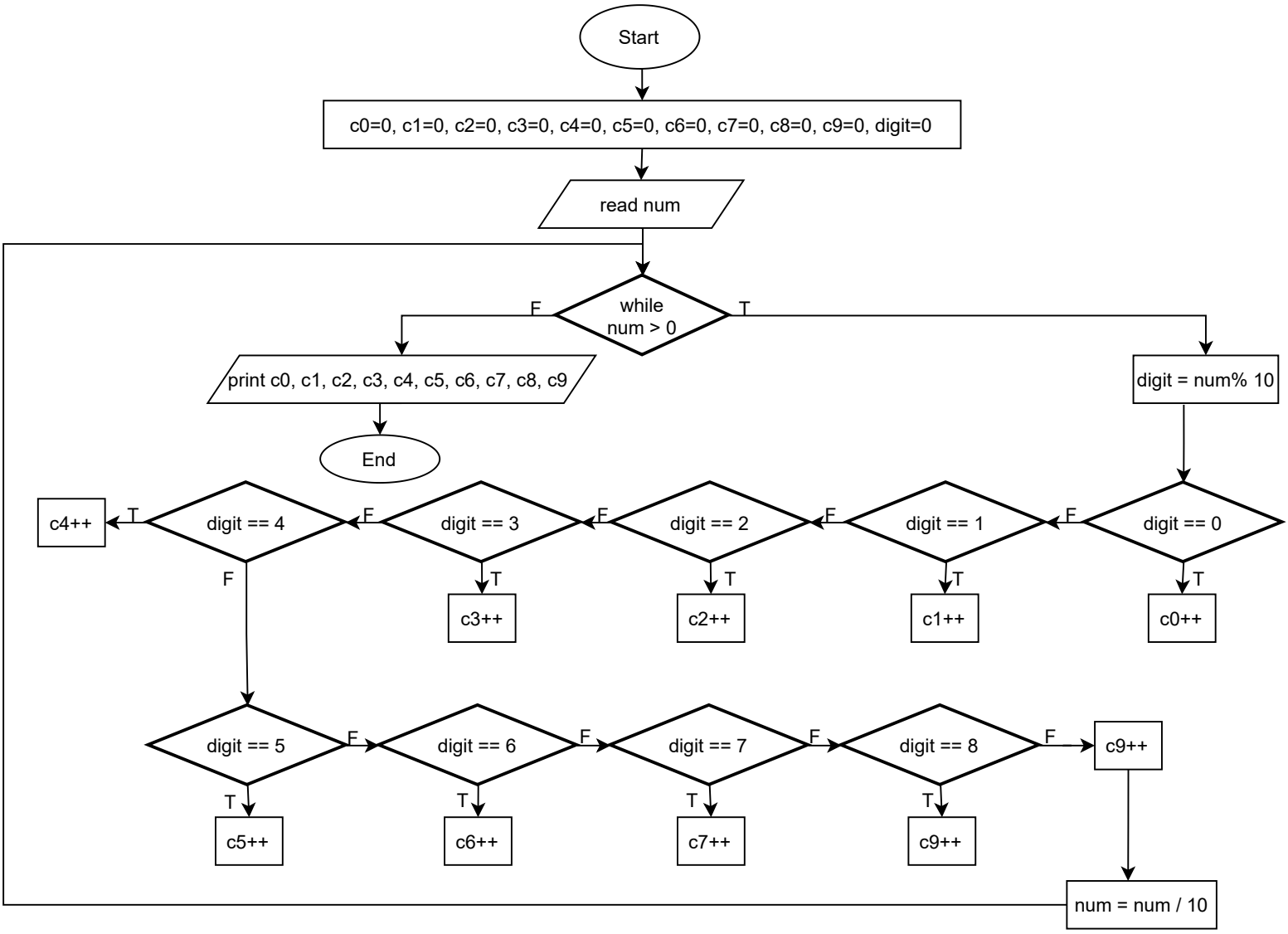
24. Draw a flow chart to convert a binary number into a decimal number without using array, function and while loop.



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



24. Draw a flow chart to find frequency of each digit in a given integer (from homework 1)



HOMEWORKE 3 AND 4

(C CODE)

HOMEWORK 3

1. Write C code to add two numbers entered by user.

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

int x, y;
printf("Enter the first number :\n");
scanf ("%d", &x);
printf("\nEnter the second number :\n");
scanf ("%d", &y);
printf ("The result is : %d\n", x+y);
   return 0;
}
```

2. Calculate the area of a circle with given radius.

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

float r, pi = 3.14, area = 0;
printf("Enter the radius of the circle :\n");
scanf ("%f", &r);
area = pi * r * r;

printf ("\nThe result is : %.2f\n", area);
   return 0;
}
```

3. Determine and Output Whether Number N is Even or Odd.

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

int n;
printf("Enter a number :\n");
scanf ("%d", &n);
if (n % 2 == 0)
{
  printf ("\nThe number is EVEN");
} else {
  printf ("\nThe number is ODD");
}
 return 0;
}
```

4. Determine Whether a Temperature is Below or Above the Freezing Point.

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

int temp;
printf("Enter the temperature :\n");
scanf ("%d", &temp);
if (temp <=0)
{
  printf ("\nthe temperature is BELOW the freezing point");
} else {
  printf ("\nthe temperature is ABOVE the freezing point");
}
 return 0;
}
```

5. Convert Temperature from Fahrenheit (℉) to Celsius (℃).

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

float ConvertCelsius = 0, f;
printf("Enter the temperature by Fahrenheit :\n");
scanf ("%f", &f);
ConvertCelsius = (f - 32) / 1.8;
printf ("\nthe temperature by Celsius is : %.2f", ConvertCelsius);

 return 0;
}
```

6. Write C code to convert the length in feet to centimeter.

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

float convertCM = 0, feet;
printf("Enter the length by feet :\n");
scanf ("%f", &feet);
convertCM = feet * 30.48;
printf ("\nthe length by CM is : %.2f", convertCM);

 return 0;
}
```

7. Write C code to print the square of all numbers from 1 to10.

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

for (int i = 1; i <= 10; i++)
{
  printf ("%d\n", i*i);
}
 return 0;
}
```

8. Write C code to print the SUM of numbers from LOW to HIGH. Test with LOW=3 and HIGH=9.

```c
#include <stdio.h>
int main() {
int HIGH = 9, sum = 0;

for (int LOW = 3; LOW <= HIGH; LOW++)
{
  sum = sum + LOW;
}
printf ("%d\n", sum);
 return 0;
}
```

9. Write C code to print all numbers between LOW and HIGH that are divisible by NUMBER.

```c
#include <stdio.h>
int main() {
int HIGH, LOW, NUMBER;
printf ("Enter the HIGH : \n");
scanf ("%d", &HIGH);
printf ("Enter the LOW : \n");
scanf ("%d", &LOW);
printf ("Enter the NUMBER : \n");
scanf ("%d", &NUMBER);
printf ("The numbers between LOW and HIGH that are divisible by NUMBER :\n");
for (LOW ; LOW <= HIGH; LOW++)
{
  if (LOW % NUMBER == 0)
  {
    printf ("%d\n", LOW);
  }
}
 return 0;
}
```

10. Write C code to find the largest of three numbers A, B, and C.

```c
#include <stdio.h>
int main() {
int a, b , c;
printf("enter the first number:\n");
scanf ("%d",&a);
printf("enter the second number:\n");
scanf ("%d",&b);
printf("enter the third number:\n");
scanf ("%d",&c);

if (a>b)
{
  if (a>c)
    printf ("the largest number is: %d", a);
  else
  {
    if (c>b)
      printf ("the largest number is: %d", c);
  }
}
else
{
  if (b>c)
    printf ("the largest number is: %d", b);
  else
  {
    if(c>a)
      printf ("the largest number is: %d", c);
  }
}
 return 0;
}
```

11. Write C code for a program that reads 10 numbers from the user and prints out their sum, and their product.

```c
#include <stdio.h>
int main() {
int sum = 0, n;

for (int i = 0; i < 10; i++)
{
  printf("Enter a number : \n");
  scanf ("%d", &n);
  sum = sum + n;
}
printf("The sum of your entered number is : %d", sum);

 return 0;
}
```

12. Write C code to count and print all numbers from LOW to HIGH by steps of STEP. Test with LOW=0 and HIGH=100 and STEP=5.

```c
#include <stdio.h>
int main() {
int LOW =0 , HIGH = 100, STEP = 5, counter=0;
while (LOW <= HIGH)
{
  printf ("%d\n", LOW);
  LOW = LOW + STEP;
  counter++;
}
printf ("%d", counter);
 return 0;
}
```

13. Write C code to print the multiplication table for 6's.

```c
#include <stdio.h>
int main() {
int result = 0;
for (int i = 0; i <= 10; i++)
{
  result = i*6;
  printf ("%d x 6 = %d\n",i,result);
}
 return 0;
}
```

14. Write C code for computing factorial N (N!).

```c
#include <stdio.h>
int main() {
int n, result = 1;
scanf ("%d", &n);
for (int i = 1; i <= n; i++)
{
  result = result * i;
}
printf ("%d! = %d\n",n,result);
 return 0;
}
```

15. Write C code to print all natural numbers in reverse (from n to 1).

```c
#include <stdio.h>
int main() {
int n;
scanf ("%d", &n);
for (int i = n; i >= 0; i--)
{
 printf ("%d\n",i);
}
 return 0;
}
```

16. Write C code which generates even numbers between 1000 and 2000 and then prints them in the standard output. It should also print total sum.

```c
#include <stdio.h>
int main() {
int sum, counter = 1000;

while (counter <= 2000)
{
  printf ("%d\n",counter);
  sum = sum + counter;
  counter+=2;
}
printf ("the sum of all even numbers between 1000 and 2000 is : %d\n",sum);
 return 0;
}
```

17. Write C code with a natural number, n, as its input which calculates the following formula and writes the result in the standard output: S = ½ + ¼ + … +1/n.

```c
#include <stdio.h>
int main() {
float n, result = 0, counter = 2;
scanf ("%f", &n);
printf ("S = ");
while (counter <= n)
{
  if (counter ==  n)
  printf ("1/%.1f",counter);
  else
  printf ("1/%.1f + ",counter);
  result = result + 1/counter;
  counter+=2;
}
printf (" = %.2f\n",result);
 return 0;
}
```

18. Write C code to convert a decimal number, n, to binary format?

```c
#include <stdio.h>
int main() {
int binary = 0, remain = 0, place = 1,n;
printf ("Enter a decimal namber :\n");
scanf ("%d",&n);
while ( n != 0 )
{
  remain = n % 2;
  n = n / 2;
  binary = binary + (remain * place);
  place = place * 10;
}
printf ("the binary number is : %d", binary);
 return 0;
}
```

19. Write C code to print multiplication table of any number.

```c
#include <stdio.h>
int main() {
int result = 0, n;
printf ("Enter a number to to print multiplication table of it\n");
scanf ("%d", &n);
for (int i = 0; i <= 10; i++)
{
  result = i*n;
  printf ("%d x %d = %d\n",i,n,result);
}
 return 0;
}
```

20. Write C code to count number of digits in a number.

```c
#include <stdio.h>
int main() {
int counter = 0,n;
printf ("Enter a number\n");
scanf ("%d", &n);
while (n!=0){
 n = n /10;
 counter++;
}
printf ("The number of digits in a number that writen is : %d", counter);
 return 0;
}
```

21. Write C code to find first and last digit of a number.

```c
#include <stdio.h>
int main() {
int n, firstD = 0, lastD = 0;
printf ("Enter a number : \n");
scanf ("%d", &n);
lastD = n % 10;
firstD = n;
while (firstD >= 10)
{
  firstD = firstD /10;
}
printf ("The first number is : %d", firstD);
printf ("\nThe last number is : %d", lastD);
 return 0;
}
```

22. Write C code to swap first and last digits of a number.

```c
#include<stdio.h>
#include<conio.h>
int main()
{
  int num, rem, temp, rev=0, noOfDigit=0, noOfDigitTemp, revNum, remTemp;
  printf("Enter the Number: ");
  scanf("%d", &num);
  temp = num;
  while(temp>0)
  {
    temp = temp/10;
    noOfDigit++;
  }
  if(noOfDigit>=2)
  {
    temp = num;
    while(temp>0)
    {
      rem = temp%10;
      rev = (rev*10)+rem;
      temp = temp/10;
    }
    revNum = rev;
    rev = 0;
    temp = num;
    noOfDigitTemp = noOfDigit;
    while(temp>0)
    {
      remTemp = revNum%10;
      if(noOfDigitTemp==noOfDigit)
      {
        rem = temp%10;
        rev = (rev*10)+rem;
      }
      else if(noOfDigitTemp==1)
      {
       rem = temp%10;
       rev = (rev*10)+rem;
      }
      else
      {
        rev = (rev*10)+remTemp;
      }
      temp = temp/10;
      revNum = revNum/10;
      noOfDigitTemp--;
    }
    printf("\nNew Number = %d", rev);
  } else {
    printf("\nIt's a single-digit number.");
  }
    return 0;
}
```

23. Write C code to check whether a number is palindrome or not.

```c
#include<stdio.h>
#include<conio.h>
int main()
{
  int digit= 0, sum =0, originalNum = 0, num;
  printf("Enter the Number: ");
  scanf("%d", &num);
  originalNum = num;
  while (num>0)
  {
    digit = num % 10;
    sum = (sum* 10) + digit;
    num = num / 10;
  }
  if (sum == originalNum)
  {
   printf("\nthe number is palindrome");
  } else {
    printf("\nthe number is NOT palindrome");
  }
    return 0;
}
```

24. Write C code to find frequency of each digit in a given integer.

```c
#include <stdio.h>
int main() {
  int c0 = 0, c1=0, c2=0, c3=0, c4=0, c5=0, c6=0, c7=0, c8=0, c9=0, num, digit = 0;
  printf("Enter a number : ");
  scanf ("%d",&num);
  while (num > 0)
  {
    digit = num % 10;
    if (digit == 0)
      c0++;
    else if (digit == 1)
      c1++;
    else if (digit == 2)
      c2++;
    else if (digit == 3)
      c3++;
    else if (digit == 4)
      c4++;
    else if (digit == 5)
      c5++;
    else if (digit == 6)
      c6++;
    else if (digit == 7)
      c7++;
    else if (digit == 8)
      c8++;
    else
```

```
      c1++;
    num = num /10;
  }
  printf ("\nthe nember contines of 0 : %d", c0);
  printf ("\nthe nember contines of 1 : %d", c1);
  printf ("\nthe nember contines of 2 : %d", c2);
  printf ("\nthe nember contines of 3 : %d", c3);
  printf ("\nthe nember contines of 4 : %d", c4);
  printf ("\nthe nember contines of 5 : %d", c5);
  printf ("\nthe nember contines of 6 : %d", c6);
  printf ("\nthe nember contines of 7 : %d", c7);
  printf ("\nthe nember contines of 8 : %d", c8);
  printf ("\nthe nember contines of 9 : %d", c9);
   return 0;
}
```

25. Write C code to find HCF (Highest Common Factor) of two numbers.

```
#include <stdio.h>
#include <math.h>
int main()
{
  int x, y, k;
  printf("Enter the first number :\n");
  scanf("%d", &x);
  printf("Enter the second number :\n");
  scanf("%d", &y);
  k = x%y;
  while (k!=0)
  {
    x=y;
    y=k;
    k=x%y;
  }
  printf("The HCF (Highest Common Factor) of your numbers is : %d",y);
  return 0;
}
```

HOMEWORK 4

1. Write C code that will read the two sides of a rectangle and calculate its area and perimeter.

```c
#include <stdio.h>
#include <math.h>
int main()
{
  int area = 0, perimeter = 0, height, width;
  printf("Enter the height :\n");
  scanf("%d", &height);
  printf("Enter the width :\n");
  scanf("%d", &width);
  area = height * width;
  perimeter = (height +width) * 2;
  printf("The area is : \n%d",area);
  printf("\nThe perimeter is : \n%d",perimeter);
  return 0;
}
```

2. Write C code to find all the roots of a quadratic equation ax2+bx+c=0.

```c
#include <stdio.h>
#include <math.h>
int main()
{
  int delta = 0, a, b, c, root, root1, root2;
  printf("Enter a :\n");
  scanf("%d", &a);
  printf("Enter b :\n");
  scanf("%d", &b);
  printf("Enter c :\n");
  scanf("%d", &c);
  delta = (b * b) - (4 * a * c);
  if (delta == 0)
  {
    root = -b / (2 * a);
    printf("The root is : \n%d",root);
  }else if (delta > 0)
  {
    root1 = (-b - sqrt (delta)) / (2*a);
    root2 = (-b + sqrt (delta)) / (2*a);
    printf("The first root is : \n%d",root1);
    printf("\nThe second root is : \n%d",root2);
  } else {
    printf("\n THERE IS NO SOLUTIONS");
  }
  return 0;
}
```

3. Print Hello World 10 times

```c
#include <stdio.h>
int main()
{
  for (int i = 1; i <= 10; i++)
  {
    printf ("Hello World\n");
  }
  return 0;
}
```

4. Write C code to find the sum of the first 50 natural numbers

```c
#include <stdio.h>
int main()
{
  int sum = 0;
  for (int i = 1; i <= 50; i++)
  {
    sum = sum + i;
  }
  printf("the sum of number from 1 to 50 is : %d", sum);
  return 0;
}
```

5. Write C code to calculate 2^4

```c
#include <stdio.h>
int main()
{
  int x = 2;
  for (int i = 1; i < 4; i++)
  {
    x = x*2;
  }
  printf("the result is : %d", x);
  return 0;
}
```

6. Write C code to find LCM of two numbers.

```c
#include<stdio.h>

int main()
{
  int x, y, lcm, result;
  printf ("Enter the first number :\n");
  scanf ("%d", &x);
  printf ("Enter the second number :\n");
  scanf ("%d", &y);
  if (x>y)
    lcm = x;
  else
    lcm = y;
```

```
  for (int i = lcm; i <= (x*y); i++)
  {
    if (i%x==0 && i%y==0)
    {
      result =i;
      break;
    }
  }
  printf ("the LCM is : %d\n",result);
  return 0;
}
```

7. Write C code to print all Prime numbers between 1 to n.

```
#include <stdio.h>
int main(){
int num, prime, counter = 0;
printf ("Enter a number\n");
scanf ("%d", &num);
printf ("2\t");
for (int i = 3; i <= num; i++)
{
  for (int j = 2; j < i; j++)
  {
    counter =0;
    if (i % j == 0)
    {
      counter++;
      break;
    }
    else
    {
      prime = i;
    }
  }
  if (counter == 0)
  {
    printf ("%d\t", prime);
  }
}
return 0;
}
```

8. Write C code to find sum of all prime numbers between 1 to n.

```c
#include <stdio.h>
int main(){
int num, prime = 0, counter = 0, sum =0;
printf ("Enter n number\n");
scanf ("%d", &num);
for (int i = 3; i <= num; i++)
{
  for (int j = 2; j < i; j++)
  {
    counter =0;
    if (i % j == 0)
    {
      counter++;
      break;
    }
    else
    {
      prime = i;
    }
  }
  if (counter == 0)
  {
    sum = sum + prime;
  }
}
printf ("the sum of all prime numbers between 1 to n is : %d\t", sum+2);
return 0;
}
```

9. Write C code to check whether a number is Armstrong number or not.

```c
#include<stdio.h>
#include <math.h>
int main(){
int num, digit, tempnum, sum;
printf ("Enter a number\n");
scanf ("%d", &num);
tempnum = num;
while (num>0)
{
  digit = num%10;
  sum = sum + (digit* digit *digit);
  num = num/10;
}
if (sum == tempnum)
  {
    printf("\nthe number is Armstrong");
  } else {
    printf("\nthe number is not Armstrong");
  }
  return 0;
}
```

10. Write C code to print all Armstrong numbers between 1 to n I(and the sum of them)

```c
#include<stdio.h>
int main(){
    int num, digit, tempnum, sum,tempi, fullsum = 0;
    printf("Enter a number: \n");
    scanf ("%d", &num);
    printf("\nthe  Armstrong numbers are :");
    for (int i = 1; i <= num; i++)
    {
        tempi = i;
        while (tempi>0)
        {
            digit = tempi%10;
            sum = sum + (digit * digit * digit);
            tempi = tempi/10;
        }
        if (sum == i)
        {
            printf("%d\t", sum);
            fullsum = fullsum +sum;
        }
        sum = 0;
    }
    printf("\nthe sum of Armstrong numbers is : %d", fullsum);
   return 0;
}
```

11. Write C code to check whether a number is Perfect number or not

```c
#include<stdio.h>
int main(){
    int num, sum = 0;
    printf ("Enter a number :");
    scanf ("%d", &num);
    for (int i = 1; i < num; i++)
    {
        if (num % i == 0){
            sum = sum +i;
        }
    }
    if (sum == num){
        printf ("\nthe number is perfect");
    } else {
        printf ("\nthe number is NOT perfect");
    }
   return 0;
}
```

12. Write C code to print all Perfect numbers between 1 to n. (and the sum of them)

```c
#include<stdio.h>
int main(){
int num, sum = 0, fullsum;
printf ("Enter a number :");
scanf ("%d", &num);
printf ("the perfect numbers are :\n");
for (int i = 1; i <= num; i++)
{
  for (int j = 1; j < i; j++)
  {
    if (i % j == 0)
    {
      sum = sum +j;
    }
  }
  if (sum == i)
  {
    printf ("%d\t", sum);
    fullsum = fullsum + sum;
  }
  sum = 0;
}
printf ("\nthe sum of perfect numbers is : %d\t",fullsum);
return 0;
}
```

13. Write C code to check whether a number is Strong number or not.

```c
#include<stdio.h>
int main(){
int num, fact = 1, tempn, digit, sumFact = 0;
printf ("Enter a number : \n");
scanf ("%d", &num);
tempn = num;
while (tempn>0)
{
  digit = tempn % 10;
  for (int i = 1; i <= digit; i++)
  {
    fact = fact * i;
  }
  sumFact =sumFact + fact;
  tempn = tempn /10;
  fact = 1;
}
if (sumFact == num){
  printf("\n strong");
} else {
  printf ("Not strong");
}
return 0;
}
```

14. Write C code to print all Strong numbers between 1 to n.(and the sum of them)

```c
#include<stdio.h>
int main(){
int num, fact = 1, tempi, digit, sumFact = 0, sumStrong = 0;
printf("Enter a number:");
scanf ("%d", &num);
printf("\n the strong numbers are:");
for (int i = 1; i <= num; i++)
{
  tempi = i;
  while (tempi>0)
  {
    digit = tempi % 10;
    for (int j = 1; j <= digit; j++)
      {
        fact = fact * j;
      }
    sumFact =sumFact + fact;
    tempi = tempi /10;
    fact = 1;
  }
  if (sumFact == i)
  {
    printf ("%d\t", sumFact);
    sumStrong = sumStrong + sumFact;
  }
  sumFact = 0;
}
printf("\n the sum of strong numbers is:%d\t", sumStrong);
return 0;
}
```

15. Write C code to check Whether a Number is Palindrome or Not

```c
#include<stdio.h>
int main(){
int nun, top =0, tempn, digit;
printf ("Enter a number :\n");
scanf ("%d", &nun);
tempn = nun;
while (tempn > 0)
{
  digit = tempn % 10;
  top = top * 10 + digit;
  tempn = tempn / 10;
}
if (top == nun)
{
  printf ("the num is palindrome");
} else {
  printf ("the num is not palindrome");
}
return 0;
}
```

16. Write C code to find the sum of the series [1-X^2/2!+X^4/4!- .....].

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

float n, x, fact =1, tempif,tempipow, res=0,respow = 1;
int counter = 0;

printf ("if you need to found the sum of the series [ 1-X^2/2!+X^4/4!- .....].");
printf ("\nenter n number :\t");
scanf ("%f", &n);
printf ("\nenter x number :\t");
scanf ("%f", &x);

for (int i = 2; i <= n; i+=2)
{
  tempif = i;
  tempipow = i;
  while (tempif>0)
  {
    fact = fact * tempif;
    tempif--;
  }
  printf ("\nf : %f",fact);
  while (tempipow>0)
  {
    respow = respow * x;
    tempipow--;
  }
  printf ("\nressq : %f",respow);
  if (counter%2 == 0) {
    res = res - respow / fact;
  } else {
    res = res + respow / fact;
  }
  fact = 1;
  respow =1;
  counter++;
}

printf ("\nthe result is : %f\t", res+1);

return 0;
}
```

17. Write C code to display the n terms of harmonic series and their sum. (1 + 1/2 + 1/3 + 1/4 + 1/5 ... 1/n terms)

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

float res = 0, n;

printf ("if you need to found the sum of the series (1 + 1/2 + 1/3 + 1/4 + 1/5 ... 1/n terms)");
printf ("\nEnter n number : ");
scanf ("%f", &n);

for (float i = 2; i <= n; i++)
{
  res = res + 1 / i;
}

printf ("\nthe result is : %f", res+1);

return 0;
}
```

18. Write C code to print the Floyd's Triangle.

1
01
101
0101
10101

```c
#include <stdio.h>
int main () {
int n , tempi = 0, zero =0, one = 1;
printf ("print the Floyd's Triangle");
printf ("\nEnter n number : ");
scanf ("%d", &n);

for (int i = 0; i <= n; i++)
{
  tempi = i;
  if (tempi == 0)
  {
    printf ("%d", one);
  } else {
    if (tempi %2 == 0){
      for (int i = 0; i <= tempi; i++)
      {
        if (i%2==0)
        {
          printf ("%d", one);
        } else {
          printf ("%d", zero);
        }
      }
    } else {
      for (int i = 0; i <= tempi; i++)
      {
        if (i%2==0)
        {
          printf ("%d", zero);
        } else {
          printf ("%d", one);
        }
      }
    }
  }
  printf ("\n");
}
 return 0;
}
```

19. Write C code to display the sum of the series [1+x+x^2/2!+x^3/3!+....].

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

float n, x, fact =1, tempif,tempipow, res=0,respow = 1;

printf ("if you need to found the sum of the series [ 1+x+x^2/2!+x^3/3!+....].");
printf ("\nenter n number :\t");
scanf ("%f", &n);
printf ("\nenter x number :\t");
scanf ("%f", &x);

for (int i = 2; i <= n; i++)
{
  tempif = i;
  tempipow = i;
  while (tempif>0)
  {
    fact = fact * tempif;
    tempif--;
  }
  printf ("\nf : %f",fact);
  while (tempipow>0)
  {
    respow = respow * x;
    tempipow--;
  }
  printf ("\nressq : %f",respow);
  res = res + respow / fact;
  fact = 1;
  respow =1;
}
printf ("\nthe result is : %f\t", res+x+1);
return 0;
}
```

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

```c
#include <stdio.h>

int main () {

int n, x,tempipow, res=0,respow = 1;
int counter = 0;

printf ("if you need to found the sum of the series [ x - x^3 + x^5 + ......]..");
printf ("\nenter n number :\t");
scanf ("%d", &n);
printf ("\nenter x number :\t");
scanf ("%d", &x);
```

```
for (int i = 1; i <= n; i+=2)
{
  tempipow = i;
  while (tempipow>0)
  {
    respow = respow * x;
    tempipow--;
  }
  printf ("\nressq : %d",respow);
  if (counter%2 == 0) {
    res = res + respow;
  } else {
    res = res - respow;
  }
  respow =1;
  counter++;
 }

  printf ("\nthe result is : %d\t", res);

  return 0;
}
```

21. Write C code to find the sum of the series 1 +11 + 111 + 1111 + .. n terms

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

int n, res=0;

printf ("if you need to found the sum of the series 1 +11 + 111 + 1111 + .. n terms.");
printf ("\nenter n number :\t");
scanf ("%d", &n);

for (int i = 1; i <= n; i++)
{
  int j = 1, counter = 0;
  while (counter<i)
  {
    res = res +j;
    j = j * 10;
    counter++;
  }
}
  printf ("\nthe result is : %d\t", res);

  return 0;
}
```

22. Write C code to find the number and sum of all integer between 100 and 200 which are divisible by 9.

```c
#include <stdio.h>

int main () {
int i9 = 0, sum = 0;
for (int i = 100; i <= 200; i++)
{
  if (i%9==0)
  {
    sum = sum + i;
    i9++;
  }
}

printf ("the sum of the numbers which are divisible by 9 is : %d",sum);
printf ("\nthe number of the numbers which are divisible by 9 is :%d",i9);

return 0;
}
```

23. Write C code to convert a decimal number into binary without using an array.

```c
#include <stdio.h>
int main() {
int binary = 0, remain = 0, place = 1,n;
printf ("Enter a decimal namber :\n");
scanf ("%d",&n);
while ( n != 0 )
{
  remain = n % 2;
  n = n / 2;
  binary = binary + (remain * place);
  place = place * 10;
}
printf ("the binary number is : %d", binary);
 return 0;
}
```

24. Write C code to convert a binary number into a decimal number without using array, function and while loop.

```c
#include <stdio.h>
#include <math.h>
int main()
{
  int num = 0, bin, digit = 0, counter = 0, tempbin, power;

  printf("Enter a binary number\n");
  scanf("%d", &bin);
  tempbin = bin;
  printf("\nDecimal equivalent of %d is ", bin);
  for (tempbin ; tempbin > 0; tempbin/=10)
  {
    digit = tempbin %10;
    counter++;
  }
  digit=0;
  tempbin = bin;
  for (int i = 0; i < counter; i++)
  {
    power = pow (2,i);
    digit = tempbin %10;
    num = num + digit * power;
    tempbin = tempbin /10;
  }
  printf("%d\n", num);
  return 0;
}
```

25. Write C code to print Pascal triangle upto n rows.

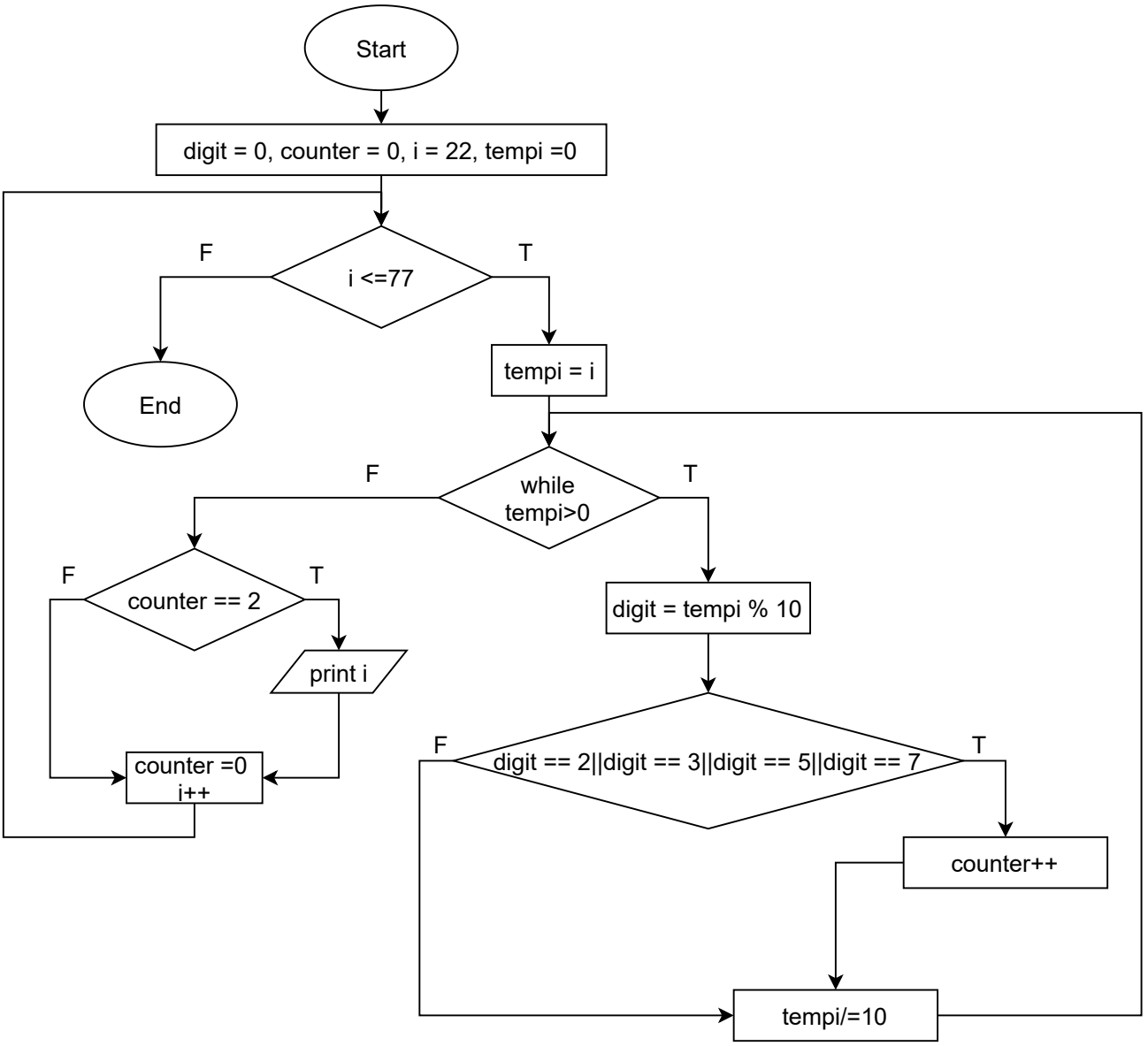
```c
#include <stdio.h>
int main() {
int row, pascal = 1, space, i, j;
printf("Enter the number of rows: ");
scanf("%d", &row);
for (i = 0; i < row; i++)
{
  for (space = 1; space <= row - i; space++)
    printf("  ");
  for (j = 0; j <= i; j++)
  {
    if (j == 0 || i == 0)
      pascal = 1;
    else
      pascal = pascal * (i - j + 1) / j;
    printf("%4d", pascal);
  }
  printf("\n");
}
return 0;
}
```

LAB QUESTIONS

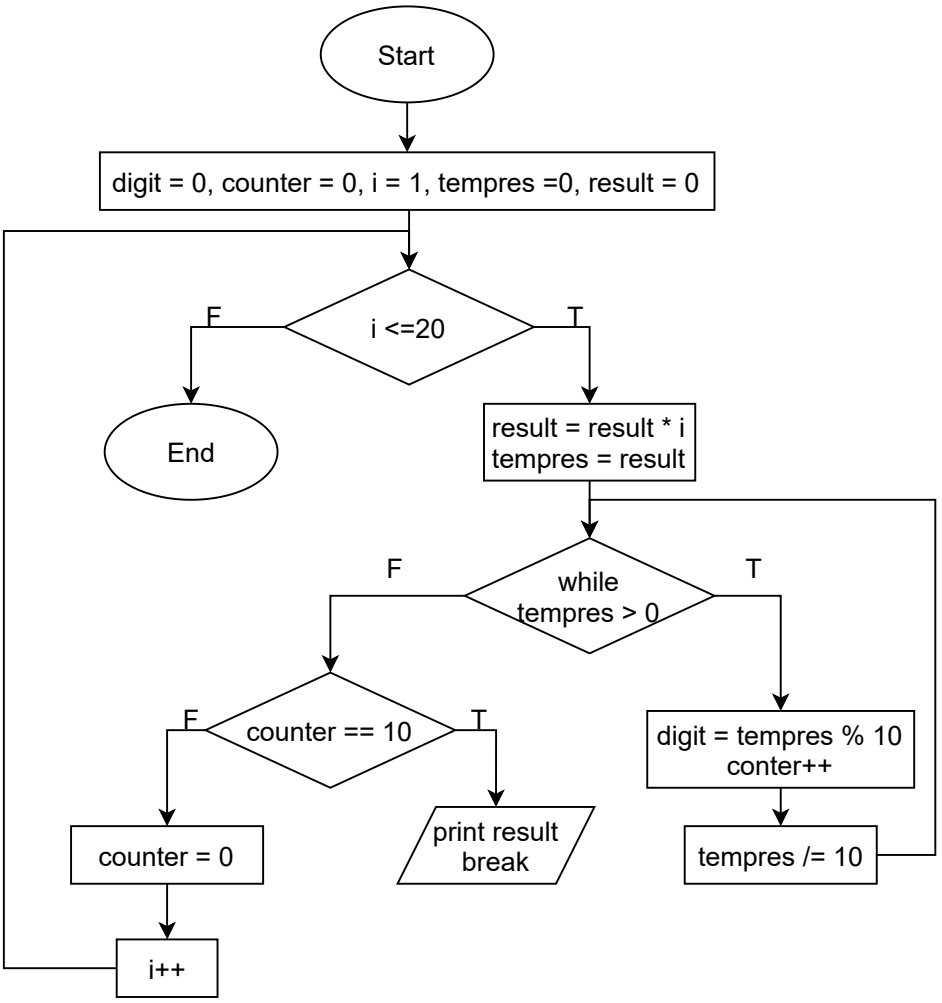
FROM LAB 6 TO LAB 12

LAB 6

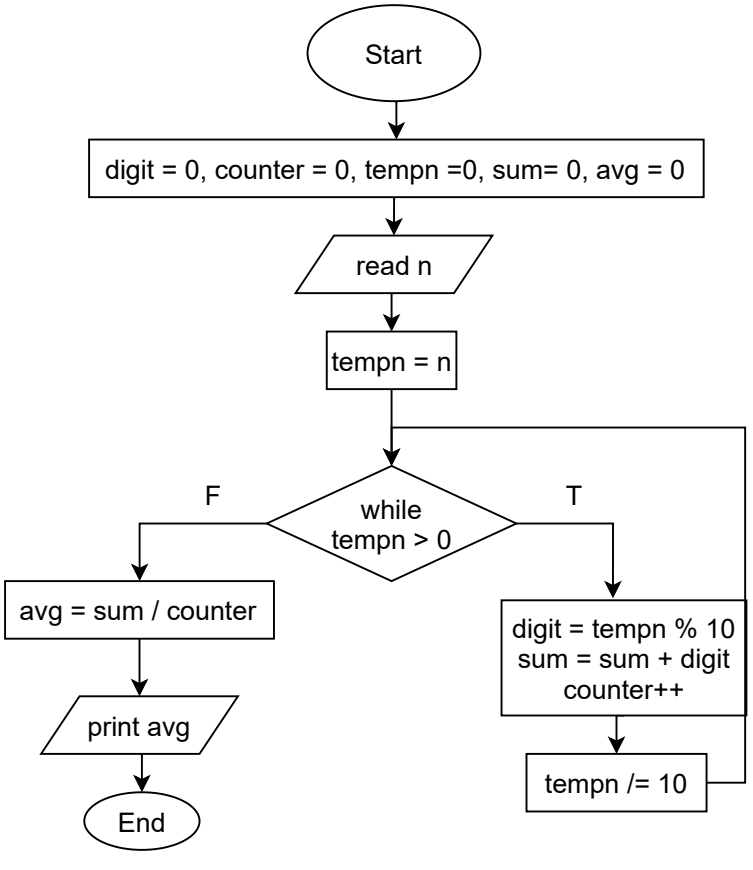
Soru1 Her iki basamağı da “ asal sayı ” olan iki basamaklı tamsayıları listeleyen algoritmanın akış diyagramını çiziniz



Soru 2 Faktöriyeli 10 basamaklı olan ilk tamsayıyı bulup yazdıran programın akış diyagramını çiziniz

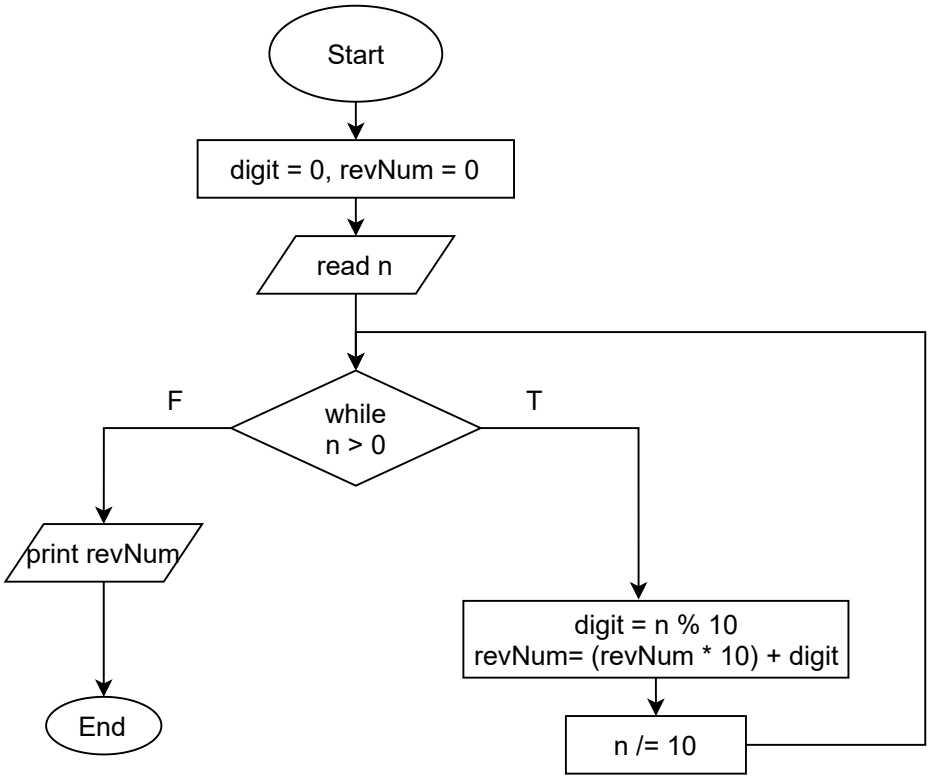


Soru3 Klavyeden girilen üç basamaklı pozitif tamsayının rakamlarının basamaklarının) aritmetik ortalamasını hesaplayıp ekrana yazdıran algoritmanın akış diyagramını çiziniz



Soru4 Klavyeden girilen pozitif tamsayıyı tersten yazdıran algoritmanın akış diyagramını çizerek analizini yapınız

n	digit	revNum
123	0	0
	3	3
12	2	32
1	1	321
0		321



LAB 7

1- Write the program with the C language, which computes the sum of the two numbers entered on the keyboard.

```c
#include <stdio.h>

void main()
{
    int x, y, sum;
    printf("enter number x :\n");
    scanf("%d", &x);
    printf("enter number y :\n");
    scanf("%d", &y);
    sum = x + y;
    printf("the result is : %d", sum);
```

2-Two numbers are entered from the keyboard with integer variables A and B. Write the program with the C language, which changes the values of the A and B variables between them.

```c
    int A = 9, B = 5, C;
    printf("A number is: %d and B number is: %d\n", A, B);
    C = A;
    A = B;
    B = C;
    printf("A number is: %d and B number is: %d", A, B);
```

3- Klavyeden bir öğrenci için öğrenci no, vize ve final girildiğinde, öğrencinin vize notunun %40'I ve final notunun %60'ı alarak geçme notunu hesaplayan ve öğrencinin numarası ile birlikte ekrana sonucu yazdıran programı C dili ile yazınız.

```c
    int studentID;
    int final, visa, passingGrade;
    printf("please enter your Student ID:\n");
    scanf("%d", &studentID);
    printf("please enter your visa result (from 100):\n");
    scanf("%d", &visa);
    printf("please enter your final result (from 100):\n");
    scanf("%d", &final);
    visa = (40 * visa) / 100;
    final = (60 * final) / 100;
    passingGrade = visa + final;
    printf("Dier %d\n", studentID);
    printf(" your passing grade is: %d\n", passingGrade);
```

4- Klavyeden bir dairenin yarıçap bilgisi ve işlem türü girildiğinde işlem türü 1 ise dairenin çevresini hesaplanıp yazdıran 2 girilirse alanının hesaplayıp yazdıran, bunların dışındaki girişler için "Yanlış giriş" mesajı vererek sonlanan programı C dili ile yazınız.

```c
float perimeter, area, r, chose, pi = 3.14;
printf("Enter number 1 for calculating perimeter or enter 2 for calculating area\n");
scanf("%f", &chose);

if (chose == 1)
{
    printf("enter the radius of circle:\n");
    scanf("%f", &r);
    perimeter = 2 * pi * r;
    printf("the perimeter of the circle = %f\n", perimeter);
}
else if (chose == 2)
{
    printf("enter the radius of circle:\n");
    scanf("%f", &r);
    area = pi * r * r;
    printf("the area of the circle = %f\n", area);
}
else
{
    printf("Wrong Input");
}
```

5- Klavyeden girilen bir para miktarını en az banknot kullanarak oluşturmak istediğimizde içinde kaç tane 100, 50, 20 ve 10'luk olduğunu bulan programı C dili ile yazınız. Not: Klavyeden girilen para miktarı 10'un katları olmalıdır.

```
    int num;
    int iHundred = 0, iFifty = 0, iTwenty = 0, iTen = 0;
    printf("enter your money's number (the number must be multiples of 10)\n");
    scanf("%d", &num);
    if (num % 10 == 0)
    {
        for (num; num >= 100; num -= 100)
        {
            iHundred++;
        }
        for (num; num < 100 && num >= 50; num -= 50)
        {
            iFifty++;
        }
        for (num; num < 50 && num >= 20; num -= 20)
        {
            iTwenty++;
        }
        for (num; num < 20 && num >= 10; num -= 10)
        {
            iTen++;
        }

        printf("H: %d F: %d TW: %d TE: %d\n", iHundred, iFifty, iTwenty, iTen);
    }
    else
    {
        printf("Wrong Input");
    }
    return 0;
}
```

LAB 8

Soru 1ve2- girilen iki sayiyi yazdirma ve bu sayıları toplama

```c
#include <stdio.h>
int main()
{
    int x, y;
    printf("Enter the first numbrer : \n");
    scanf("%d", &x);

    printf("Enter the second numbrer : \n");
    scanf("%d", &y);

    printf("\n %d + %d = %d", x, y, x + y);
    return 0;
}
```

Soru 3- girilen N sayisi tek mi cift mi

```c
#include <stdio.h>
int main()
{
    int n;
printf("Enter a number : /n");
scanf("%d",&n);

if(n%2==0){
    printf("\n%d number is EVEN number\n",n);
}else{
    printf("\n%d number is ODD number\n",n);
}
    return 0;
}
```

Soru 4- Girilen sicakligin donma noktasi ile durumu

```c
#include <stdio.h>
int main()
{
    int temperature;
    printf("Enter the temperature :\n");
    scanf("%d", &temperature);

    if (temperature == 0)
        printf("\nThe temperature equals the freezing point.\n");
    else if (temperature < 0)
        printf("\nThe temperature is under the freezing point.\n");
    else
        printf("\nThe temperature is over the freezing point.\n");

    return 0;
}
```

Soru 5- Fahrenheit to celsius

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

    float ConvertCelsius = 0, f;
    printf("Enter the temperature by Fahrenheit :\n");
    scanf("%f", &f);
    ConvertCelsius = (f - 32) / 1.8;
    printf("\nthe temperature by Celsius is : %.2f", ConvertCelsius);

    return 0;
}
```

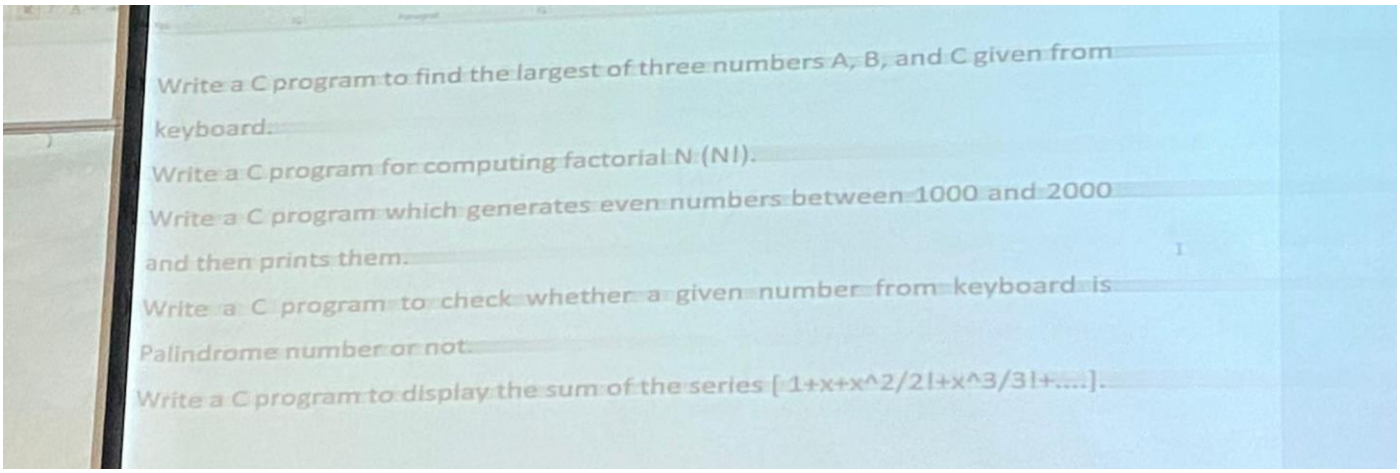
Soru 7- 1den 10a kadar sayıların karesi

```c
#include <stdio.h>
int main()
{
for (int i = 0; i <= 10; i++)
    printf("%d\n", i * i);
return 0;
}
```

Soru 8- Girilen A,B,C'den en buyugunu bulma

```c
#include <stdio.h>
int main() {
int a, b , c;
printf("enter the first number:\n");
scanf ("%d",&a);
printf("enter the second number:\n");
scanf ("%d",&b);
printf("enter the third number:\n");
scanf ("%d",&c);
if (a>b)
{
  if (a>c)
    printf ("the largest number is: %d", a);
  else
  {
    if (c>b)
      printf ("the largest number is: %d", c);
  }
}
else
{
  if (b>c)
    printf ("the largest number is: %d", b);
  else
  {
    if(c>a)
      printf ("the largest number is: %d", c);
  }
}
 return 0;
}
```

LAB 9



I have already answered to 1, 2, 4, and 5 questions

Q3:

```
for (int i = 1000; i <= 2000; i++)
{
    if(i%2 == 0){
    printf ("%d\n",i);
    }

}*
```

LAB 10

1- the average of arrays elements

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

float arr[8];
float sum = 0, avg = 0;
printf("enter 8 numbers\n");

for (int i = 0; i < 8; i++)
{
    scanf ("%f",&arr[i]);
}
for (int i = 0; i < 8; i++)
{
sum = sum + arr[i];
}
avg = sum / 8;

printf ("the averaga = %f", avg);*/
```

2- A program that prints the square of a user-entered array and stops when entering -1

```c

int a[10];
printf("enter maximum 10 numbers and press -1 if you want stop entering numbers\n");
for (int i = 0; i < 10; i++)
{
    scanf ("%d", &a[i]);
    if(a[i]== -1){
        break;
    }
}
for (int i = 0; i < 10; i++)
{
   if (a[i]== -1){
        break;
    }
    printf ("%.1lf\t", pow(a[i],2));
}
```

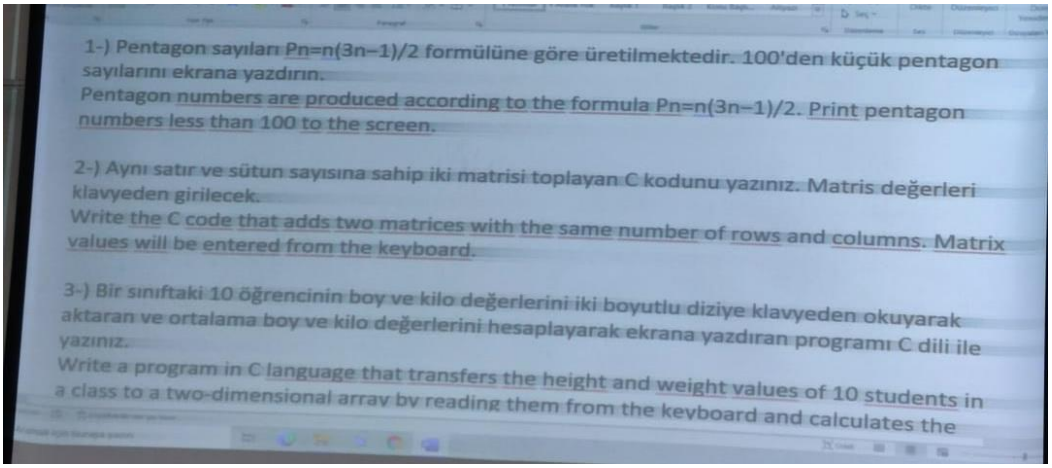
3- write a program that assigns the digits of the maximum 5-digit number to an array and prints it to the screen

```
int n, digit = 0;
printf (" enter an number that contains maximum 5 digits\n");
scanf("%d",&n);
int x[5];
for (int i = 0; i < 5; i++)
{
    digit = n % 10;
    x[i] = digit;
    n = n /10;
}
for (int i = 4; i >= 0; i--)
{
   printf ("%d",x[i]);
}
```

4- A program that reverses the elements of an array

```
int rev[10];
printf ("enter 10 numbers\n");
for (int i = 0; i < 10; i++)
{
    scanf ("%d",&rev[i]);
}
printf("\nyour numbers is :\n");
for (int i = 0; i < 10; i++)
{
    printf ("%d", rev[i]);
}
printf("\nthe reverse of your numbers is :\n");
for (int i = 9; i >= 0; i--)
{
    printf ("%d", rev[i]);
}

return 0;
}
```

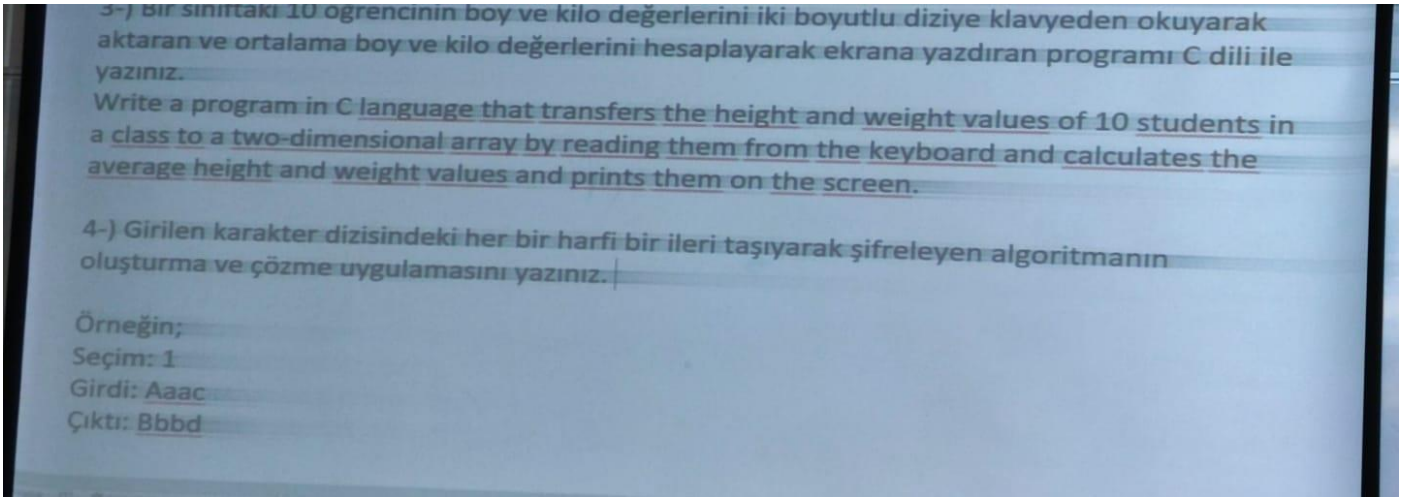
LAB 11



1-) Pentagon sayıları Pn=n(3n−1)/2 formülüne göre üretilmektedir. 100'den küçük pentagon sayılarını ekrana yazdırın.
Pentagon numbers are produced according to the formula Pn=n(3n−1)/2. Print pentagon numbers less than 100 to the screen.

2-) Aynı satır ve sütun sayısına sahip iki matrisi toplayan C kodunu yazınız. Matris değerleri klavyeden girilecek.
Write the C code that adds two matrices with the same number of rows and columns. Matrix values will be entered from the keyboard.

3-) Bir sınıftaki 10 öğrencinin boy ve kilo değerlerini iki boyutlu diziye klavyeden okuyarak aktaran ve ortalama boy ve kilo değerlerini hesaplayarak ekrana yazdıran programı C dili ile yazınız.
Write a program in C language that transfers the height and weight values of 10 students in a class to a two-dimensional array by reading them from the keyboard and calculates the



3-) Bir sınıftaki 10 öğrencinin boy ve kilo değerlerini iki boyutlu diziye klavyeden okuyarak aktaran ve ortalama boy ve kilo değerlerini hesaplayarak ekrana yazdıran programı C dili ile yazınız.
Write a program in C language that transfers the height and weight values of 10 students in a class to a two-dimensional array by reading them from the keyboard and calculates the average height and weight values and prints them on the screen.

4-) Girilen karakter dizisindeki her bir harfi bir ileri taşıyarak şifreleyen algoritmanın oluşturma ve çözme uygulamasını yazınız.

Örneğin;
Seçim: 1
Girdi: Aaac
Çıktı: Bbbd

Q1:

```c
#include <stdio.h>

int main()
{


    int pn;

    for (int i = 1; i < 100; i++)
    {
        pn = i * ((3*i)-1) / 2;
        if(pn <= 100)
        {
        printf ("the pentagon number of %d is : %d\n", i,pn);
        }
    }
```

Q2:

```
int matric[5][5];

for (int i = 0; i < 5; i++)
{
    for (int j = 0; j < 5; j++)
    {
        scanf ("%d", &matric[i][j]);
    }
}
for (int i = 0; i < 5; i++)
{
    for (int j = 0; j < 5; j++)
    {
        printf ("%d", matric[i][j]);
    }
}
```

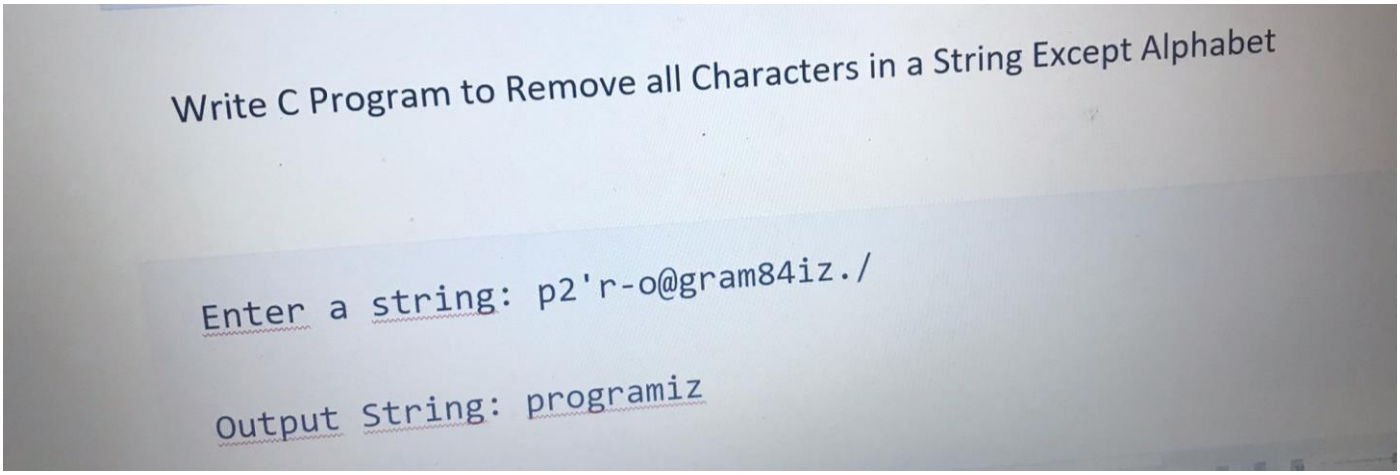
Q3:

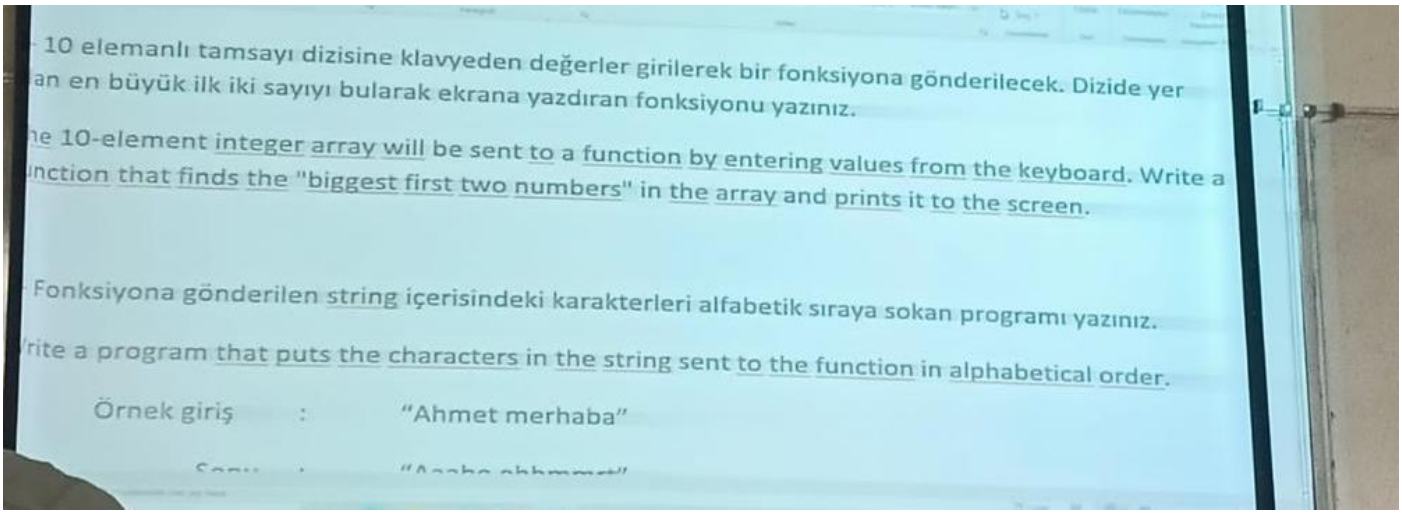
```
int counterS = 0, counterWH = 0;
float HWStudent[3][2];
float sumH = 0, sumW = 0;
float avgH = 0, avgW = 0;

for (int i = 0; i < 3; i++)
{
    counterS++;
    for (int j = 0; j < 2; j++)
    {
        counterWH++;
        if (counterWH % 2 == 0)
            printf("Enter the height of student (%d) : ", counterS);
        else
            printf("Enter the weight of student (%d) : ", counterS);
        scanf("%f", &HWStudent[i][j]);
    }
}
for (int i = 0; i < 3; i++)
{
    sumW = sumW + HWStudent[i][0];
}
for (int i = 0; i < 3; i++)
{

    sumH = sumH + HWStudent[i][1];
}

avgH = sumH / 3;
avgW = sumW / 3;
printf("\n the sum of heights students is :%.2f\t", sumH);
printf("\n the sum of weights students is :%.2f\t", sumW);
printf("\n the AVG of heights students is :%.2f\t", avgH);
printf("\n the AVG of weights students is :%.2f\t", avgW);
```

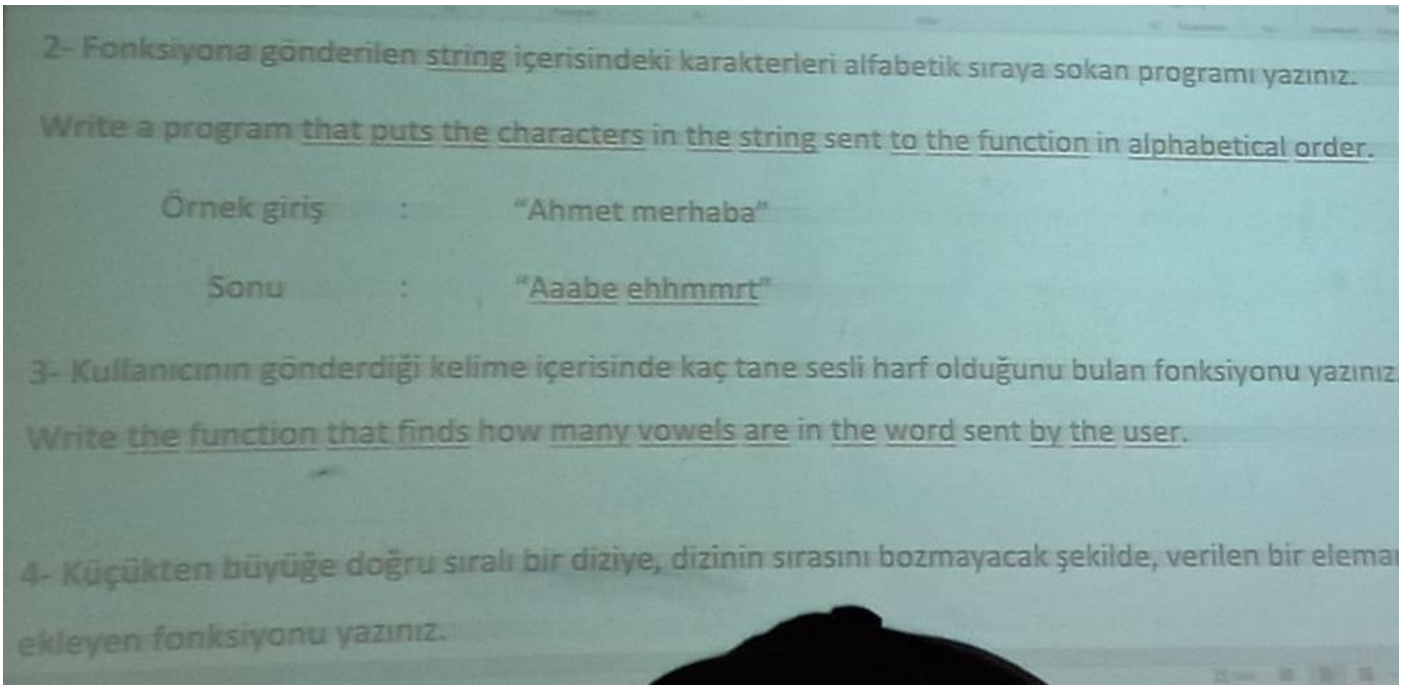
Q4:

```
    char temp, str[100];

    printf("\n Enter the string : ");
    gets(str);
    printf("\nThe sorted first string is : ");
    for (int i = 0; i < str[i]!='\0'; i++)
    {
        for (int j = i; j < str[j]!='\0'; j++)
        {
            if (str[i] > str[j])
            {
                temp = str[i];
                str[i] = str[j];
                str[j] = temp;
            }
        }
    }
    printf ("%s",str);
  return 0;
}
```

LAB 12







Q1:

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

int main()
{

    char str[150];

    gets(str);

    for (int i = 0; i <= str[i] != '\0'; i++)
    {
        if ((str[i] >= 'a' && str[i] <= 'z') || (str[i] >= 'A' && str[i] <= 'Z'))
        {

            printf("%c", str[i]);
        }
    }
    return 0;
}
```

Q2:

```
void biggestN(int arr[10])
{
    int tempmax = 0, max1 = 0, max2 = 0;

    for (int i = 0; i < 10; i++)
    {
        if (arr[i] > tempmax)
        {
            tempmax = arr[i];
        }
    }
    max1 = tempmax;
    for (int i = 0; i < 10; i++)
    {
        if (arr[i] == max1)
        {
            arr[i] = 0;
        }
    }
    for (int i = 0; i < 10; i++)
    {
        printf("%d\t", arr[i]);
    }

    for (int i = 0; i < 10; i++)
    {
        if (arr[i] > max2)
        {
            max2 = arr[i];
        }
    }
    printf("\nthe first biggest number is :%d", max1);
    printf("\nthe second biggest number is :%d", max2);
}
```

Q3:

```
void alphabetical(char str[100])
{
    char temp;
    for (int i = 0; i < str[i] != '\0'; i++)
    {
        for (int j = i; j < str[j] != '\0'; j++)
        {
            if (str[i] > str[j])
            {
                temp = str[i];
                str[i] = str[j];
                str[j] = temp;
            }
        }
    }
    printf("%s", str);
}
```

Q4:

```
int vowel(char str[])
{
    int counter = 0;
    for (int i = 0; i < str[i] != '\0'; i++)
    {
    if (str[i] == 'a' || str[i] == 'e' || str[i] == 'i' || str[i] == 'u' || str[i] == 'o')
        {
            counter++;
        }
    }
    return counter;
}
```

Q5:

```
void addNumber(int num[], int x, int size)
{
    int p;
    for (int i = 0; i < size; i++)
    {
        if (x < num[i])
        {
            p = i;
            break;
        }
        else
        {
            p = i + 1;
        }
    }
    for (int i = size + 1; i >= p; i--)
        num[i] = num[i - 1];

    num[p] = x;
    printf("\n\nAfter Insert the list is :\n");
    for (int i = 0; i <= size; i++)
        printf("% 5d", num[i]);
    printf("\n");
}
```

SOME QUESTIONS THAT GIVES AS A HOMEWORK DURING THE LESSONS

1- Program for throwing a dice 100 times at random and counting the number of each possibility

```c
#include <stdio.h>
#include <stdlib.h>
#include <time.h>
int main()
{
    int n[100];
    int i1 = 0, i2 = 0, i3 = 0, i4 = 0, i5 = 0, i6 = 0;

    printf("Ten random numbers in [1,6]\n");
    for (int i = 0; i < 100; i++)
    {
        n[i] = rand() % 6 + 1;
        printf("%d", n[i]);
    }
    for (int i = 0; i < 100; i++)
    {
        switch (n[i])
        {
        case 1:
            i1++;
            break;
        case 2:
            i2++;
            break;
        case 3:
            i3++;
            break;
        case 4:
            i4++;
            break;
        case 5:
            i5++;
            break;
        default:
            i6++;
            break;
        }
    }
    printf("\nthe number of (1) =  %d", i1);
    printf("\nthe number of (2) =  %d", i2);
    printf("\nthe number of (3) =  %d", i3);
    printf("\nthe number of (4) =  %d", i4);
    printf("\nthe number of (5) =  %d", i5);
    printf("\nthe number of (6) =  %d", i6);
    return 0;
}
```

2- Switch between the first and last character of an string array

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

char str [80];
int leng =0;
char x;

gets (str);

x = str[0];

for ( leng = 0;str[leng] != '\0'; leng++);
str[0]=str[leng-1];
str[leng-1] = x;
puts (str);
```

3- merge two arrays

```c
char name[50], surname[50], nameAndSur[100];
int lengName = 0, lengSur = 0;
printf ("enter your name :\t");
gets (name);
printf ("\nenter your surname :\t");
gets (surname);
while (name[lengName] != '\0')
{
    lengName++;
}
while (surname[lengSur]!='\0')
{
    lengSur++;
}
for (int i = 0; i < lengName ; i++)
{
    nameAndSur[i] = name[i];
}
for (int i = 0; i < (lengName+lengSur); i++)
{
    nameAndSur[i + lengName] = surname[i];
}
printf("\nyour full name is :\t");

puts(nameAndSur);
```

4- Checking whether two arrays are equal or not

```
char s1[50], s2[50];
int ls1 = 0, ls2 = 0, maxl=0;
printf ("enter the first word :\t");
gets (s1);
printf ("\nenter the second word :\t");
gets (s2);
while (s1[ls1] != '\0')
{
    ls1++;
}
while (s2[ls2]!='\0')
{
    ls2++;
}

if (ls1 != ls2){
     printf ("\nthe first word and second word are NOT same");
} else {

   for (int i = 0; i < ls1; i++)
   {
       if (s1[i] == s2[i])
       {
           maxl++;
       }
   }
   if (maxl == ls1)
   {
        printf ("\nthe first word and second word are same");
   } else {
        printf ("\nthe first word and second word are NOT same");
   }
}


return 0;
}
```

THE END