WeekNo	PPA	PROGRAM
4	4.1	**Factorial of n**
	4.2	**Leap year or not**
	4.3	$f(x) = \begin{cases} x+2 & 0 \leq x < 10 \\ x^2+2 & 10 \leq x \\ 0 & \text{otherwise} \end{cases}$
	4.4	**The sum of the employee-ids of every pair of adjacent employees at the table must be an even number or not**
	4.5	**Two integers are co-prime or not**
	4.6	**Compound interest using the formula** $A = P * (1 + r/n)^{nt}$
	4.7	**Calculate final amount to pay after discount**

PPA 4 - Program 4.1

AIM : Write a program that accept an integer n and print the factorial of n.

PROGRAM :

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

OUTPUT:

Sample Input1
5
Output
120

Sample Input2
3
Output
6

Sample Input3
7
Output
5040

Sample Input4
9
Output
362880

PPA 4- Program 4.2

AIM : Write a program to check if a given year is a leap year or not. Accept the integer value of Y as input and print Y is a leap year if Y is leap year, otherwise, print Y is not a leap year.

PROGRAM:

```
#include<stdio.h>
int main()
{
   int Y;
   scanf("%d",&Y);
   if(Y%100==0)
   {
      if(Y%400 == 0)
        printf("%d is a leap year",Y);
      else
        printf("%d is not a leap year",Y);
   }
   else
   {
      if(Y%4 == 0)
        printf("%d is a leap year",Y);
      else
        printf("%d is not a leap year",Y);
   }
   return 0;
}
```

OUTPUT:

Sample Input1
2023
Output
2023 is not a leap year

Sample Input2
100
Output
100 is not a leap year

Sample Input3

400
Output
400 is a leap year

Sample Input4
2020
Output
2020 is a leap year

Sample Input5
1900
Output
1900 is not a leap year

PPA 4- Program 4.3

PROGRAM 1

AIM : Consider the piece-wise function given below.

$$f(x) = \begin{cases} x+2 & 0 \leq x < 10 \\ x^2+2 & 10 \leq x \\ 0 & \text{otherwise} \end{cases}$$

Write a program that accept the float value of ***x*** as input and print the float value of *f(x)* as output with two decimal places. Note that both the input and output are real numbers. Your code should reflect this aspect.

PROGRAM

```
#include<stdio.h>
int main()
{
   float x,f=0;
   scanf("%f",&x);
   if((x>0) && (x<10))
      f=x+2;
   else if (x>=10)
      f=x*x+2;
   else
      f=0;
   printf("%.2f",f);
   return 0;
}
```

OUTPUT :

Sample Input1
5.0
Output
7.00

Sample Input2
0
Output
0.00

Sample Input3
-2.0
Output
0.00

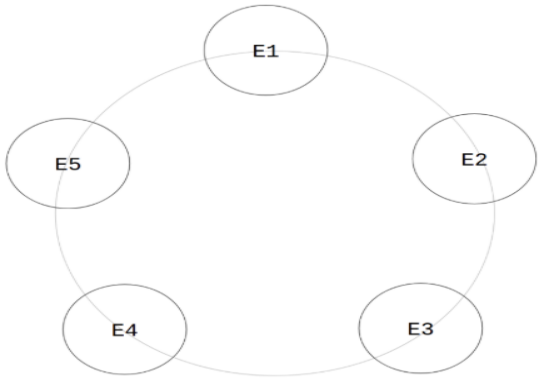
Sample Input4
10.0
Output
102.00

Sample Input5
12.2
Output
150.84

PPA 4- Program 4.4

PROGRAM 1

AIM : EvenOdd is a tech startup. Each employee at the startup is given an employee id which is a **unique positive integer**. On one warm Sunday evening, five employees of the company come together for a meeting and sit at a circular table:



The employees follow a strange convention. They will continue the meeting only if the following condition is satisfied.

The sum of the employee-ids of every pair of adjacent employees at the table must be an even number.

They are so lazy that they won't move around to satisfy the above condition. If the current seating plan doesn't satisfy the condition, the meeting will be canceled. You are given the employee-id of all five employees. Your task is to decide if the meeting happened or not.

Write a program that accept five integer input which represent employee ids of ***E1, E2, E3, E4 and E5*** respectively. The output will be a single line containing one of these two strings: YES or NO.

PROGRAM :

```
#include<stdio.h>
int main()
{
   int E1, E2,E3,E4,E5;
   scanf("%d%d%d%d%d",&E1,&E2,&E3,&E4,&E5);
   if((E1+E2)%2 ||(E2+E3)%2 |(E3+E4)%2 ||(E4+E5)%2||(E5+E1)%2)
      printf("NO");
   else
      printf("YES");
   return 0;
}
```

OUTPUT :

Sample Input1
1 2 3 4 5
Output
NO

Sample Input2
2 4 6 8 10
Output
YES

Sample Input3
1 3 4 6 8
Output
NO

Sample Input4
3 5 7 8 9
Output
NO

Sample Input5
3 5 9 13 21
Output
YES

PPA 4- Program 4.5

PROGRAM 1

AIM : Two integers are co-prime if the only common divisor between the two integers is one.

Write a program that accept two positive integers as input in two different lines. Print Coprime if the two integers are co-prime, else print Not Coprime. Assume that both the integers are greater than two.

PROGRAM :

```
#include<stdio.h>
int main()
{
   int a,b;
   scanf("%d %d",&a,&b);
   while(a!=b)
   {
      if(a>b)
         a=a-b;
      else
         b=b-a;
   }
   if(a==1)
      printf("Coprime");
   else
      printf("Not Coprime");
   return 0;
}
```

OUTPUT :

Sample Input1
16 6
Output
Not Coprime

Sample Input2
19 4
Output
Coprime

Sample Input3
10 18
Output
Not Coprime

Sample Input4
9 16
Output
Coprime

Sample Input5
100 999
Output
Coprime

PPA 4- Program 4.6

PROGRAM 1

AIM : You are developing a program for a bank that calculates the compound interest earned on a savings account.

Write a C program that takes the principal amount, interest rate (annual percentage), the number of years, and the number of times interest is compounded per year as input. Calculate the amount (including interest) after every year using the given formula for compound interest:

$$A = P * (1 + r/n)^{nt}$$

Where:
- A is the final amount (as a decimal).
- P is the principal amount (as a decimal).
- r is the annual interest rate in percent (as a decimal).
- t is the number of years (as an integer).
- n is the number of times interest is compounded per year (as an integer).

Print the final amount (including interest) as double up to two decimal point after every year until the specified number of years.

Input Format
First line - the principal amount P as double.
Second line - will be the interest rate (annual percentage) r as double.
Third line - will be the number of years t as integer.
Fourth line - will be the number of times interest is compounded per year n as integer.

Output Format
The next t lines will have final amount (including interest) as double up to two decimal point after every year i from 1 to t.

Note:- For consistency in output, use double data type for variable to store decimal value.

PROGRAM :

```
#include<stdio.h>
#include<math.h>
int main()
{
   double P,r,A,I;
   int t,n,i;
   scanf("%lf",&P);
   scanf("%lf",&r);
   scanf("%d",&t);
   scanf("%d",&n);
   for(i=1;i<=t;i++){
      A=P*pow((1+r/(100*n)),n*i);
      printf("%.2lf\n",A);
   }
   return 0;
}
```

OUTPUT :

Sample Input1
100.00
5.00
4
1

Output
105.00
110.25
115.76
121.55

Sample Input2
1000.00
8.00
5
1

Output
1080.00
1166.40
1259.71
1360.49

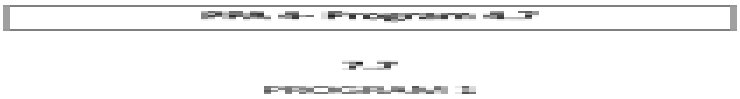
1469.33

Sample Input3
1000.00
10.00
5
2

Output
1102.50
1215.51
1340.10
1477.46
1628.89

Sample Input4
1000.00
8.00
5
4

Output
1082.43
1171.66
1268.24
1372.79
1485.95



AIM : You are developing a program for a retail store that offers a discount based on the total purchase amount. Write a C program that takes the total purchase amount as input and print the final amount to pay after discount given as follows:

- If the purchase amount is less than 200, there is no discount.
- If the purchase amount is between 200 and 500 (both inclusive), apply a 10% discount.
- If the purchase amount is greater than 500, apply a 20% discount.

Input Format
First line -Total purchase amount as double.

Output Format
Print the final amount after discount as double up to two decimal place.

Sample Input
300.00

Output
270.00

Note:- For consistency in output, use double data type for variable to store decimal value.

PROGRAM :

```
#include<stdio.h>
int main()
{
 double p,d,a;
 scanf("%lf",&p);
 if(p<200)
   d=0;
 else if ( p<=500)
   d=0.1*p;
 else
   d=0.2*p;
 a=p-d;
 printf("%.2lf",a);
 return 0;
 }
```

OUTPUT :

Sample Input1
300.00
Output
270.00

Sample Input2
190.00
Output
190.00

Sample Input3
500.50
Output
400.40

Sample Input4
500.00
Output
450.00