**Academy of Technology**

**Discipline: CSE Semester: 1ST**

**Lab name: Fundamental of Computer Science (FCS)**

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**Assignment-4**

1. Calculate n th value of AP series and also calculate the sum of the series. Take the input of starting value and common difference from standard input.

**CODE:**

#include <stdio.h>

int main()

{

float n,d,a,v;

float s=0;

printf("Enter the first value ");

scanf("%f",&a);

printf("Enter the range ");

scanf("%f",&n);

printf("Enter the difference ");

scanf("%f",&d);

v = a;

printf("AP Series\n");

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

printf("%f ", v);

s += v;

v = v + d;

}

printf("\nthe sum is %f",s);

return 0;

}

**INPUT AND OUTPUT:**

Enter the first value 2

Enter the range 10

Enter the difference 5

AP Series

2.000000 7.000000 12.000000 17.000000 22.000000 27.000000 32.000000 37.000000 42.000000 47.000000

the sum is 245.000000

2. Calculate n th value of GP series and also calculate the sum of the series. Take the input of starting value and common ratio from standard input.

**CODE:**

#include <stdio.h>

int main()

{

float n,d,a,v;

float s=0;

printf("Enter the first value ");

scanf("%f",&a);

printf("Enter the range ");

scanf("%f",&n);

printf("Enter the common ratio ");

scanf("%f",&d);

v = a;

printf("GP SERIES\n");

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

printf("%f ", v);

s += v;

v = v \* d;

}

printf("\nthe sum is %f",s);

return 0;

}

**INPUT AND OUTPUT:**

Enter the first value 3

Enter the range 6

Enter the common ratio 2

GP SERIES

3.000000 6.000000 12.000000 24.000000 48.000000 96.000000

the sum is 189.000000

3. Calculate value of sin series upto nth term and compare it with value using library function .

**CODE:**

#include <stdio.h>

#include <math.h>

int fact(int x)

{

int i,fact=1;

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

fact=fact\*i;

return fact;

}

int main()

{

float x,sum=0,z;

int i,j,n,c;

printf("Enter the value of x : ");

scanf("%f",&x);

printf("Enter the limit of the series: ");

scanf("%d",&n);

x = x\*(3.1415/180);

z=sin(x);

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

{

for(j=1;j<=n;j=j+2){

if(i%2!=0)

{

sum=sum+pow(x,j)/fact(j);

}

else{

sum=sum-pow(x,j)/fact(j);

}

}

}

printf("%f",z);

printf("\nthe sum is %f",sum);

return 0;

}

**INPUT AND OUTPUT:**

Enter the value of x : 30

Enter the limit of the series: 5

0.499987

the sum is 0.547834

4. Calculate value of cos series upto nth term and compare it with value using library Function

**CODE:**

#include<stdio.h>

#include<math.h>

int factorial(int n)

{

int i,fact=1;

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

fact=fact\*i;

return fact;

}

int main()

{

double x,sum=1,a,z;

int n, i,sign=1;

printf("Enter the value for x : ") ;

scanf("%lf", &x) ;

printf("Enter the value for n : ") ;

scanf("%d", &n) ;

x = x \* 3.14159 / 180 ;

z=cos(x);

i=0;

for(i=2;i<=n;i=i+2)

{

sign=-sign;

a=sign\*pow(x,i)/factorial(i);

sum=sum+a;

}

printf("cos(x) is approximately %.4lf\n", sum);

printf("%f",z);

return 0;

}

INPUT AND OUTPUT:

Enter the value for x : 90

Enter the value for n : 5

cos(x) is approximately 0.0200

0.000001