CMR Engineering College

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Batch :2022-26

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2022-26_I_CS_B_C Programming Lab

C PROGRAMMING_AUTOMATA FIX_LOOPING STATEMENTS

Attempt : 1
Total Mark : 100
Marks Obtained : 100

Section 1 : Automata Fix

1.   Write a program to find the sum of the series [1-X^2/2!+X^4/4!- ....].

Answer

```
// You are using GCC
#include <stdio.h>
#include <math.h>
unsigned factorial(int);
int main()
{
 float x,sum,t,d;
 int i,n;
  scanf("%f",&x);
 scanf("%d",&n);
  //scanf("%f",&x);
 sum =0; t = 0;
 for (i=0;i<n;i++)
 {
  d = (2*i);
  t = pow(-1,i)*pow(x,d)/factorial(d);
  sum =sum+t;
 }
 printf("%.2f",sum);
```

```
}
unsigned factorial(int x){
    return x==0||x==1 ? 1 : x*factorial(x-1);
}
```

Status : Correct   *Marks : 10/10*

2. Write a program to print the pyramid pattern given below.

Answer

```
#include <stdio.h>
int main()
{
    int i,j,spc,rows,k;
    scanf("%d",&rows);

    for(i=1;i<=rows;i++){
        printf("   ");
        for(j=0;j<rows-i;j++)   printf(" ");
        for(j=0;j<i;j++)      printf("* ");
        printf("\n");
    }

}
```

Status : Correct   *Marks : 10/10*

3. Write a program to print the multiplication table of a given number.

Answer

```
#include <stdio.h>
int main()
{
    int i, num;
    scanf("%d", &num);

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

```
    return 0;
}
```

Status : Correct   *Marks : 10/10*

4.   Write a program to display the sum of the series [9 + 99 + 999 +
9999 ...].

Answer

```
// You are using GCC
#include <stdio.h>
#include <math.h>
int main()
{   long int n;
  float sum =0;
  scanf("%ld",&n);
  for(int i=0;i<n;i++){
    printf("%.0f ",pow(10,i+1)-1);
    sum+=9*(i+1)*pow(10,n-i-1);
  }
  printf("\n%.0f",sum);
}
```

Status : Correct   *Marks : 10/10*

5.   Write a program to find out the sum of an AP series.

Answer

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

int main(){

  int n1,df,n2,i,ln;
  int s1=0;
  scanf("%d",&n1);
  scanf("%d",&n2);
  scanf("%d",&df);
```

```
printf("%d",n1);
for(int i=1;i<n2;i++)   printf(" + %d",n1+df*i);
printf(" = %d",n1*n2+(df*n2*(n2-1)/2));

    return 0;
}
```

Status : Correct   *Marks : 10/10*

6. Write a program to find the numbers and the sum of all integers that are divisible by a certain number in a given range.

Answer

```
// You are using GCC
#include <stdio.h>

int main()
{
  int i, sum=0,start,end,k;
  scanf("%d%d%d",&start,&end,&k);
  for(i=start;i<=end;i++)
  {
   if(i%k==0)
   {
     printf("%d ",i);
     sum+=i;
   }
  }
  printf("\nThe sum : %d",sum);
  return 0;
}
```

Status : Correct   *Marks : 10/10*

7. Write a program to display the n terms of odd natural numbers and their sum.

Answer

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

```
int main()
{
  int i,n,sum=0;
  scanf("%d",&n);

  for(i=0;i<n;i++)
  {
    printf("%d ",2*i+1);
    sum+=2*i+1;
  }
 printf("\n%d",sum);
}
```

Status : Correct   *Marks : 10/10*

8. Write a program to print the strong numbers within a given range.

Hint: A strong number is a special number whose sum of the factorial of digits is equal to the original number.

Answer

```
// You are using GCC
#include <stdio.h>
int main()
{
   int i, n, n1, s1=0,j,k,en,sn;
   long fact;
   scanf("%d", &sn);
   scanf("%d", &en);

 for(k=sn;k<=en;k++)
  {
    n1=k;
    s1=0;

    for(j=n1;j!=0;j=j/10)
    {

       fact = 1;
        for(i=2; i<=j%10; i++)
```

```
        {
         fact = fact*i;
        }
         s1 += fact;
    }

   if(s1==n1)

       printf("%d ", n1);
  }
  return 0;
}
```

Status : Correct   *Marks : 10/10*

9. Write a program to find the sum of the GP series.

Answer

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

int main()
{

   float g1,cr,i,n,j;
   float ntrm,gpn;
   float sum=0;
   scanf("%f",&g1);
   scanf("%f",&ntrm);
   scanf("%f",&cr);
  printf("%.2f ",g1);

sum=g1;
for(int i=1; i<ntrm; i++){
   gpn=g1*pow(cr,i);
   sum+=gpn;
   printf("%.2f ",g1*pow(cr,i));
}

   printf("\n%.2f",sum);
   return 0;
```

```
}
```

Status : Correct   *Marks : 10/10*

10.   Write a program to obtain a number and print it as a sum of two prime numbers.

Answer

```
// You are using GCC
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
    long int num,i,j,temp1,temp2,ctr=0;
    scanf("%ld",&num);
    for(i=2;i<=num/2;i++){
        for(j=2;j<=i/2;j++){
            if(i%j==0){ctr++;break;}
        }
        if(ctr==0){
            for(j=2;j<=(num-i)/2;j++){
                if((num-i)%j==0){ctr++;break;}
            }
            if(ctr==0) printf("%ld + %ld\n",i,num-i);
        }
        ctr=0;
    }
    return 0;
}
```

Status : Correct   *Marks : 10/10*