**Course: Programming for Problem Solving Code: ECSP101**

**LIST OF EXPERIMENT (FIRST YEAR) Session: 2023-24**

**3)To study and demonstrate Loop Control Statements**

## a)Program to Count the Number of Digits

```
#include <stdio.h>
int main() {
  long long n;
  int count = 0;
  printf("Enter an integer: ");
  scanf("%lld", &n);
    do {
    n /= 10;
    ++count;
  } while (n != 0);
  printf("Number of digits: %d", count);
}
```

**Output: Enter an integer: 56789**

**Number of digits: 5**

**Using while**

```
#include <stdio.h>
int main() {
  long long n;
  int count = 0;
  printf("Enter an integer: ");
  scanf("%lld", &n);

  // iterate at least once, then until n becomes 0
```

```
  // remove last digit from n in each iteration
  // increase count by 1 in each iteration
  while(n!=0){
    n /= 10;
    ++count;
  }

  printf("Number of digits: %d", count);
}
```

b) **// Find out the sum of series 1^2 + 2^2 + 3^2 + 4^2 + 5^2**

```
//*Program to find the sum of series 1^2 + 2^2 + 3^2 + 4^2 + 5^2
#include<stdio.h>
#include<math.h>
int main()
{
int n, sum=0, i;

printf("Enter n value: ");
scanf("%d",&n);
for(i=1;i<=n;i++)
{
sum = sum + pow(i,2);
printf("%d^2 + %",i);
}
printf("=%d ",   sum);
return 0;
}
```

**Output=Enter n value: 5**

1^2 + 2^2 + 3^2 + 4^2 + 5^2 + =55

**c)// Program to calculate the sum of numbers (10 numbers max)**

**// If the user enters a negative number, the loop terminates**

```
#include <stdio.h>
int main()
{
    int i;
   double number, sum = 0.0;
   for (i = 1; i <= 10; ++i)
   {
     printf("Enter n%d: ", i);
     scanf("%lf", &number);
     // if the user enters a negative number, break the loop
     if (number < 0.0)
     {
       break;
       }
     sum += number; // sum = sum + number;
     }
   printf("Sum = %.2lf", sum);
   return 0;


   }
```

Output=Enter n1: 5

Enter n2: 6

Enter n3: 6

Enter n4: -5

Sum = 17.00

**d) C Program to Print Pyramids and Patterns**

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

```
int main() {
   int i, j, rows;
   printf("Enter the number of rows: ");
   scanf("%d", &rows);
   for (i = 1; i <= rows; ++i) {
      for (j = 1; j <= i; ++j) {
         printf("* ");
      }
      printf("\n");
   }
   return 0;
}
```

Output: Enter the number of rows: 6

```
*
* *
* * *
* * * *
* * * * *
* * * * * *
```