

**North South University**  
**Department of Electrical and Computer Engineering**  
**CSE 115L: Programming Language I Lab**  
**Week 03 - Loop**

**Loop:** Loop is generally used for performing a same task, a fixed number of times.

<u>For Loop:</u>	<u>While Loop</u>	<u>Do-while Loop</u>
<pre>// same task fixed number of times #include&lt;stdio.h&gt;  int main() {     int i;      for(i=0; i&lt;5 ; i++)     {         printf("Repeating %d times!\n",i);     }      return 0; }</pre>	<pre>//10 random number generator #include&lt;stdio.h&gt;  int main() {     int i=1;      while(i&lt;=10)     {         int num= rand()%10+1;         printf("%d. Random number: %d\n",i,num);         i++;     }      return 0; }</pre>	<pre>// Taking input only even numbers #include&lt;stdio.h&gt;  int main() {     int num;      do{         printf("Enter a number:");         scanf("%d",&amp;num);      }while(num%2==0);      return 0; }</pre>

[NOTES: i++ is the same as i=i+1]

<b>Break</b>	<b>Continue</b>
<pre>while( condition check ) {     statement-1;     statement-2;     if( some condition )     {         break;     }     statement-3;     statement-4; }</pre> <p>→ Jumps out of the loop, no matter how many cycles are left, loop is exited.</p>	<pre>while( condition check ) {     statement-1;     statement-2;     if( some condition )     {         continue;     }     statement-3;     statement-4; }</pre> <p>Jumps to the next cycle directly.</p> <p>Not executed for the cycle of loop in which continue is executed.</p>

Ex-8 break example	Ex-9 Continue example
<pre>#include&lt;stdio.h&gt; int main() {     int i;     for(i=10; i&gt;=0; i=i-2)     {         if(i==6){             break;         }         else             printf("%d ",i);     }     return 0; }</pre>	<pre>#include&lt;stdio.h&gt; int main() {     int i;     for(i=10; i&gt;=0; i--)     {         if(i==6    i==3)         {             continue;         }         else             printf("%d ",i);     } }</pre>

### **Task(10 marks)**

1. Write a program using while loop that ask the user to about how many number he/she wants to enter. Your task is to take input those many number and calculate their sum.
2. Print summation of the following series:  $1 + 1/2 + 1/3 + 1/4 + 1/5 + \dots + 1/n$  where integer n will be input to your program.
3. Write a program that calculates the factorial of number N using while loop and prints the value.
4. Take an integer n as input from the user. Write a program that displays the Fibonacci series up to n term. In Fibonacci series, the first two numbers are 0 and 1. The remaining numbers are sum of the previous two.  
Enter a number: 10      The first 8 Fibonacci numbers are: 0 1 1 2 3 5 8 13 21 34

5. Print the following patterns using nested loop if user input is 5.

#### **Pattern 1:**

```

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

#### **Pattern 2:**

```

5 4 3 2 1
5 4 3 2
5 4 3
5 4
5
```

### **HW**

1. Write a program to find the GCD (Greatest Common Divisor) of two positive integer inputs.  
Enter two integers: 45 120      GCD: 15
2. Write a program that will take a positive integer as input and will display the sum of all the digits as output. If the input is 135, then your program should display 9.