

## EXPERIMENT NO 6

### While Loop in C++

#### Objectives:

- Learn the syntax of while loop and how & when to use it in C++
- Understand the differences between for loop and while Loops

#### Equipment required:

- Dev-C++/Eclipse/Visual Studio installed in PC/Windows

### DISCUSSION

#### 1. Pre-Lab

##### While Loop

A loop is part of a program that repeats. The while loop has two important parts: (1) an expression that is tested for a true or false value, and (2) a statement or block that is repeated as long as the expression is true.

##### Syntax

```
while (expression)
{
    statement;
    statement;
    // Place as many statements here
    // as necessary.
}
```

The while and For Loop are pretest Loops, which means they test their expression before each iteration whereas the do-while loop is a posttest loop, which means its expression is tested after each iteration.

##### Infinite Loops

If a loop does not have a way of stopping, it is called an infinite loop. An infinite loop continues to repeat until the program is interrupted. Here is an example of an infinite loop:

```
int number = 0;
while (number < 5)
{
    cout << "Hello\n";
}
```

We can make this loop finite by adding a line as shown below:

```
while (number < 5)
{
    cout << "Hello\n";
    number++;
}
```

## 2. Post-Lab (Lab Tasks)

1. Write a Program to print all even numbers between x to n-1 using while loop. Take x and n from user.
2. Write a C++ Program to Generate Fibonacci Sequence up to a Certain Number (Take input from user). The Fibonacci sequence is a series of numbers where a number is found by adding up the two numbers before it. Starting with 0 and 1, the sequence goes 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, and so forth. USE WHILE LOOP
3. Write a C++ Program to find whether the provided number is a Prime number or not using while loop.
4. Write a program that displays the sum of the following series using while loop.  
 $1 + 1/2 + 1/4 + 1/6 + \dots + 1/100$ .
5. Write a program that displays the sum of all odd numbers and the sum of all even numbers from 1 to the number entered by the user.

END