**PRACTICAL # 04**

**OBJECT:**

Using C# Control Structures

**THEORY:**

C# supports three types of program control statements:

1) selection statements: if and the switch;

2) iteration statements: for, while, do-while, and foreach loops;

3) jump statements: break, continue, goto, return, and throw.

General form of if using blocks of statements is

*if(condition)*

*{*

*statements*

*}*

*else*

*{*

*statements*

*}*

If the conditional expression is true, the target of the if will be executed; otherwise, if it exists, the target of the else will be executed. The conditional expression in if must produce a bool result.

The switch is a multiway branch, enabling a program to select among several alternatives. Although a series of nested if statements can perform work for the situation as well, for many situations the switch is a more efficient approach. The general form of the switch statement is:

*switch(expression) {*

*case constant1:*

*statement sequence*

*break;*

*case constant2:*

*statement sequence*

*break;*

*case constant3:*

*statement sequence*

*break;*

*.*

*.*

*.*

*default:*

*statement sequence*

*break;*

*}*

**for Loop**

//the general form of for loop is

*for(initialization; condition; iteration)*

*{*

*statement sequence*

*}*

The initialization is usually sets the initial value of the loop control variable. The condition is a Boolean

expression that determines whether the loop will repeat. The iteration expression defines the amount by which the loop control variable will change each time the loop is repeated.

**The do-while Loop**

A do-while loop will always execute at least once. The general form of the do-while loop is

*do {*

*statements;*

*} while(condition);*

**Program:**

**If**

This program checks if a number is positive or negative.

*if(i < 0)*

*Console.WriteLine("negative");*

*else*

*Console.WriteLine("positive");*

**Switch**

The following program demonstrates the switch example.

*int i;*

*for(i=0; i<10; i++)*

*switch(i) {*

*case 0:*

*Console.WriteLine(“i is zero");*

*break;*

*case 1:*

*Console.WriteLine("i is one");*

*break;*

*case 2:*

*Console.WriteLine("i is two");*

*break;*

*default:*

*Console.WriteLine("i is three or more");*

*break;*

*}*

**For loop**

The following is example for loop program that prints multiples of 5.

*int x;*

*for(x = 100; x > -100; x -= 5)*

*Console.WriteLine(x);*

**do-while loop**

The following program prints digits of an integer in reverse order.

*int num;*

*int nextdigit;*

*num = 198;*

*Console.WriteLine("Number: " + num);*

*Console.Write("Number in reverse order: ");*

*do {*

*nextdigit = num % 10;*

*Console.Write(nextdigit);*

*num = num / 10;*

*} while(num > 0);*

**ACTIVITIES**

**Activity 1**

Write a program that prints Fibonacci series numbers from 1 to a given number n.

**Activity 2**

Write a program using do-while loop that prints set of prime numbers from 2 to n.

**REVIEW QUESTIONS**

1. Which control structures are supported in C#?
2. Differentiate between if and switch statements?
3. What is the difference between while and do-while loops?
4. How can we replace for loop with while loop?
5. When does a loop go in continuous execution without stopping?