Trent University

Computing and Information Systems 1020H

Sample Test 2

Instructor: Dr. R.T. Hurley Duration: 55 minutes

NAME:_____ **STUDENT#** _____

OPEN BOOK – Course Notes/Textbook

In the space provided, answer the following 5 questions. The test is marked out of 25.

1) [6 marks] Multiple Choice: for each question, circle the best answer.

i) A variable is ____ to a method when it is declared within that method.
a. local c. global
b. related d. attached

ii) When you use a(n) ____ parameter in a method header, the method receives a copy of the value passed to it.
a. reference c. input
b. output d. value

iii) Arguments within a method call (or invocation) are referred to as ____ parameters.
a. formal c. global
b. local d. actual

iv) You can navigate through arrays using a *for* or *while* loop that varies a subscript from 0 to ____.
a. Array.Length - 2 c. Array.Length
b. Array.Length - 1 d. Array.Length + 1

v) ____ describe(s) a situation in which the compiler cannot determine which method to use.
a. Overloading c. Ambiguous
b. Polymorphism d. Confusion

vi) A ____ search is one in which a sorted list of objects is split in half repeatedly as the search gets closer and closer to a match.
a. binary c. sequential
b. linear d. differential

vii) When a method's return type is ____, most C# programmers do not use a *return* statement.
a. int c. Object
b. void d. string

viii) With the *foreach* statement, you provide a temporary ___ that automatically holds each array value in turn.
a. iteration variable c. subscript holder
b. index holder d. iteration holder

ix) A method's name and parameter list constitute the method's ____.
a. return type c. signature
b. stamp d. type

x) The ____ operator is used to create objects such as arrays.
a. new c. mem
b. save d. reserve

xi) An array subscript can be an expression, as long as the expression evaluates to a(n) ____.
a. integer c. double
b. float d. Boolean

xii) On occasion, you might want a method to be able to alter a value you pass to it. In that case, you can use a(n) ____ parameter.
a. value c. optional
b. reference d. global

2) [4 marks]

(a) Convert the following segment of code so that it uses a ***for*** loop.

```
int[] studNumber = new int[6] { 1234, 2345, 6463, 8263, 2814, 5431 };
foreach (int stNum in studNumber)
    if(stNum < 5000)
        Console.WriteLine("Wow, you have been here a while. ");
    else
        Console.WriteLine("You must have just started");
```

(b) Convert the following segment of code so that it uses a ***foreach*** loop.

```
double [] aveMark = new double[6] { 76.4, 81.2, 65.9, 92.6, 88.8, 70.0 };
for (int i = 0; i < aveMark.Length; ++i)
  if(aveMark[i] < 60)
     Console.WriteLine("Needs some more work");
  else
     Console.WriteLine("Good job!");
```

3) [4 marks] What is the output of the following program?

```
using System;
public class Quest3
{
    public static void Main()
    {
        Console.Write("H");
        F3();
        Console.WriteLine("U");
        Console.ReadLine();
    }

    public static void F1()
    {
        F2(0);
        Console.Write("R");
    }

    public static void F2(int x)
    {
        if (x > 1)
            Console.Write("L");
        else
            {
            Console.Write("E");
            F2(2);
            }
    }

    public static void F3()
    {
        Console.Write("Y");
        F1();
    }
}
```

ANSWER

4) [5 marks] What is the output from running the following program that uses arrays (ie., what will appear in the output window after running the program):

```
using System;
public static class Quest4
{
    public static void Main()
    {
        int [] array1 = new int [4] {7, -2, 0, 6};
        int [] array2 = new int [4] {0, 0, 0, 0};

        for(int i = 0; i < array2.Length; i++)
        {
           if(array1[i] >= 0)
                array2[i] = array1[i] + 2;
           else
                array2[i] = array1[i] * (-1);
        }

        Console.Write("Array 1: ");
        for (int i = 0; i < array2.Length; ++i)
            Console.Write("{0} ", array1[i]);
        Console.WriteLine();

        Console.Write("Array 2: ");
        for (int i = array2.Length-1; i >= 0; i--)
            Console.Write("{0} ", array2[i]);
        Console.WriteLine();

        Console.ReadLine();
    }
}
```

ANSWER

5) [5 marks] Write a C# method called **ArrayFun** which takes one formal parameter: an int array called **numbers** which can contain positive or negative values. **ArrayFun** is to return a 1 if the sum of the values in the array is positive, 0 if the sum of the values of the array is 0, and -1 if the sum of the values in the array is negative. You must use a *for* loop to compute the sum. You are ONLY to write the method, that is, DO NOT WRITE Main(). The method is not to do any input or output: you can assume that those functions are performed in Main(). Also, you can assume that each element in the array is utilized (i.e., use **numbers.Length** to determine the size of the array). The method heading is:

```
public static int ArrayFun(int [] numbers)
```