Student Name:

IT FDN using C# EXAM 2 Instructor: Vallejo

Note: The test is worth **100 points**. **Show all your work** for each problem. No partial credit will be given if no work is shown for each answer. Read the entire description to each question before answering the question. **Good Luck!**

True / False (2 points)

	Circle One
1. Array indices start at one.	TRUE / FALSE
2. Array.Rank is the total number of elements.	TRUE / FALSE
3. Array.Length is the number of array dimensions.	TRUE / FALSE
4. **foreach** is used to iterate through an array.	TRUE / FALSE
5. **protected** class data is used in inheritance.	TRUE / FALSE
6. Static variables retain their values for the life of the program.	TRUE / FALSE
7. Constructors are used to initialize class data.	TRUE / FALSE
8. Accessor functions are used to hide data.	TRUE / FALSE
9. The elements of an array can be different types.	TRUE / FALSE
10. The elements of a structure can be different types.	TRUE / FALSE

Multiple Choice (3 points)

11. Which is the correct operator to access a member of a structure?
    A. .
    B. []
    C. ()
    D. !

12. Several functions with the same name are called:
    A. overall
    B. oversize
    C. overloading
    D. overdone

13. If aiArray has 10 elements, which is the last logically valid accessible element:
    A. aiArray[8]
    B. aiArray[9]
    C. aiArray[10]
    D. aiArray[11]

14. Which is the correct way to declare a two-dimensional array:
    A. int[,] aiArray;
    B. int[ ] aiArray;
    C. int[ ][ ] aiArray;
    D. int[ ].[ ] aiArray;

15. The parameter to a function `int AddSum(int iVal)` is:
    A. passed by ref
    B. passed by value
    C. passed by pointer
    D. None of the above

16. A local variable's scope is:
    A. within a module
    B. within a function
    C. within a statement
    D. None of the above

17. Declare an integer array of size 100:
    A. `int[] numbers = new int[100];`
    B. `int numbers = new[] int[100];`
    C. `int[100] numbers = new int[];`
    D. `int new numbers = int[100];`

18. Properties should have the following:
    A. `let / set`
    B. `get / set`
    C. `get only`
    D. `set only`

19. Which is the correct way to test two strings for equality?
    A. Str1 == Str2
    B. *Str1 == *Str2
    C. &Str1 == &Str2
    D. None of the above

20. Which one is a correct way to access a method from class Point:

A. point.MyMethod();
B. Point.MyMethod();
C. class point.MyMethod()
D. class MyMethod();

Short Answer

21. What happens when you create an object of a class? Briefly describe the steps that happen behind the scene to the class that we instantiate from. (5 points)

When creating an object of a class it creates a reference to memory to store the data for that object.

22. What will the following display? (5 points)

```
using System;
class Test
{
   static void Main( )
   {
   int[] X = new int[10] {0,1,4,9,16,0,0,0,0,0};
   int   k;

   for (k = 5; k < 10; ++k)
      {
      X[k] = k * k;
      }

   for (k = 0; k < X.Length; k++)
      {
      Console.Write("{0}     ", X[k]);
      }
   }
}
```

25 36 49 64 81

Display = _____

0
1
4
9
16
25
36
49
64
81

23. What will the following do? (5 points)

```
using System;

class Factorial
{
    public static void Main()
    {
        long nFactorial = 1;
        long nComputeTo = 5;

        long nCurDigit = 1;

        try
        {
            long x = 1 / (1 - nFactorial);

            checked
            {
                for (; nCurDigit <= nComputeTo; nCurDigit++)
                {
                    nFactorial *= nCurDigit;
                }
            }
        }
        catch (OverflowException e)
        {
            Console.WriteLine("Computing  {0}! caused an  overflow
{1}",
                nComputeTo, e.StackTrace);
            return;
        }

        Console.WriteLine("{0}! is {1}", nComputeTo, nFactorial);
    }
}
```

Behavior = It will error at the begining of the try command because it will be trying to divide by 0, which it can't do

24. What will the following display? (5 points)

```
using System;

class Shape
{
}

class Test
{
   static void Main()
   {
      Shape s = new Shape();
      Console.WriteLine(s);
   }
}
```

Display = Shape

25. Define a structure that contains a student name, social security number, number of classes taken, and a letter grade. (5 points)

```
struct School
{
   public string studentName;
   public int socialNumber;
   public short numberofClasses;
   public string grade;
}
```

26. Define an **enum** for the seasons (Summer, Spring, Winter, and Fall). (5 points)

```
enum seasons
{ Summer,
  Spring,
  Winter,
  Fall
}
```

Problem Solving

27. Given the following program what will be displayed. Is there anything unusual about this program? (10 points)

```
using System;

class Test
{
    static void Main()
    {
        int[] xlist = new int[] {9,5,3,-2,4,5};

        for (int x = 0; x < xlist.Length; x++)
        {
            if (xlist[x] == 3)
            {
                for (int y = x; y < xlist.Length - 1; y++)
                {
                    xlist[y] = xlist[y+1];
                }
            }
        }

        foreach (int v in xlist)
        {
            Console.Write("{0} ", v);
        }
    }
}
```

Display = 9 5 -2 4 5 5

It creates an array of length 6. Then sets x to value 0. it will go through the for loop until it hits the value in the array that is 3, which is when x=2. It then sets y=2 and compares it to length -1, which is 5. It will continue to overwrite the value of Y with Y+1. So in the array of {9,5,3,-2,4,5}, the updated array will look like {9,5,-2,4,5,5}. Finally it displays each value in the array

28. Given the following program what will be displayed. Is there anything unusual about this program? (10 points)

```
using System;

class Test
{
    static void Main()
    {
        int[] xlist = new int[] {7,-2};

        for (int x = 0; x < xlist.Length - 1; x++)
        {
            if (xlist[x] > xlist[x+1])
            {
                int t = xlist[x];
                xlist[x] = xlist[x+1];
                xlist[x+1] = t;
            }
        }

        foreach (int v in xlist)
        {
            Console.Write("{0} ", v);
        }
    }
}
```

Display = -2 7

Creates an array of 7 and -2. int x is set to 0 and the checked to see if it is less than length-1, which is 2-1. It then will execute the if statement which checks the value of [0] to see if its greater than [1]. It then will execute the commands within the if statement. t will be set to the value of [0] which is 7. Then the value of [0] will be set to the value of [1] which is -2. Then [1] will be set to the value of t which in 7. Then the program will display the results of the array -2 7.