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)

The object is a new instance of the class. The object has all the same properties and functions of the class.

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]);
      }
   }
}
```

25,36,39,64,81

X[5] = 25
X[6] = 36
...

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
        {            1  /  (1 -  1)
            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 = does not work due to dividing by zero exception

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 Student
{
   public string Name;
   public int SSN;
   public int Classes;
   public string Grade;
}
```

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

```
enum Seasons {Spring, Summer, Fall, Winter};
```

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);
        }
    }
}
```

-2, 4, 5

x=2

2

6 - 1

Display = 9 5 -2 4 5 5

Removes 3's from array unless it is at the end of 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]; 7
                xlist[x] = xlist[x+1]; {-2, -2}
                xlist[x+1] = t;  {-2, 7}
            }
        }

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

Display = - 2 7

1 pass of a bubble sort.