

CS-3020
Advanced Object Technology Using C#/.NET
Spring 2015

EXAM #1
(Chapters 1 - 8)

KEY

Name: _____

SCORES

MC: _____/70 PROB #1: _____/15 PROB #2: _____/15

TOTAL: _____/100

Multiple Choice Responses

Each multiple choice question in the separate packet is worth 2 points. There is no partial credit in this section. Choose the **BEST** answer of those given. Please indicate your answer by **DARKENING** the response that you have chosen **in the space provided below**. Make your selection obvious. Don't forget to mark your answers on this sheet. Only answers indicated below will be graded.

- | | | | | |
|----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| 1. a <input type="radio"/> c d e | 8. a b c <input type="radio"/> e | 15. a b c <input type="radio"/> e | 22. a b c <input type="radio"/> e | 29. a b c <input type="radio"/> e |
| 2. a b <input type="radio"/> d e | 9. a <input type="radio"/> c d e | 16. a b c <input type="radio"/> e | 23. a <input type="radio"/> c d e | 30. a b <input type="radio"/> d e |
| 3. <input type="radio"/> b c d e | 10. a b <input type="radio"/> d e | 17. <input type="radio"/> b c d e | 24. <input type="radio"/> b c d e | 31. a b c <input type="radio"/> e |
| 4. a b <input type="radio"/> d e | 11. a b c <input type="radio"/> e | 18. <input type="radio"/> b c d e | 25. a b c <input type="radio"/> e | 32. a <input type="radio"/> c d e |
| 5. a <input type="radio"/> c d e | 12. <input type="radio"/> b c d e | 19. a b <input type="radio"/> d e | 26. <input type="radio"/> b c d e | 33. a <input type="radio"/> c d e |
| 6. a b c <input type="radio"/> e | 13. a <input type="radio"/> c d e | 20. <input type="radio"/> b c d e | 27. a b <input type="radio"/> d e | 34. a b <input type="radio"/> d e |
| 7. a <input type="radio"/> c d e | 14. a <input type="radio"/> c d e | 21. <input type="radio"/> b c d e | 28. a b <input type="radio"/> d e | 35. a <input type="radio"/> c d e |

Problem #1 (15 pts)

What will the output of the following C# app be?

```
using System;

public class InitArray
{
    public static void Main( string[] args )
    {
        int[ , ] bob = { { 1, 2, 3 }, { 4, 5, 6 } };
        int[][] sue = { new int[] { 1, 2 },
                       new int[] { 3 },
                       new int[] { 4, 5, 6 } };

        OutputArray( sue );
        Console.WriteLine();
        OutputArray( bob );
    }

    public static void OutputArray( int[ , ] array )
    {
        Console.WriteLine("Array Type #1");
        for ( int row = 0; row < array.GetLength( 0 ); ++row )
        {
            for ( int column = 0; column < array.GetLength( 1 ); ++column )
                Console.Write( "{0} ", array[ row, column ] );
            Console.WriteLine();
        }
    }

    public static void OutputArray( int[][] array )
    {
        Console.WriteLine("Array Type #2");
        foreach ( int[] row in array )
        {
            foreach ( int element in row )
                Console.Write( "{0} ", element );
            Console.WriteLine();
        }
    }
}
```

Array Type #2

```
1 2
3
4 5 6
```

Array Type #1

```
1 2 3
4 5 6
```

Problem #2 (15 pts)

The following C# app generates ten random prices, in five cent increments, that can be as low as \$18.55 and as high as \$26.30. What values should be used for the constants A, B, and C (including any necessary type modifiers, such as M)?

```
using System;

class RandomPrice
{
    const decimal MIN = 18.55M;
    const decimal MAX = 26.30M;
    const decimal INC = 0.05M;

    const decimal A = 0;
    const decimal B = 0;
    const int     C = 0;

    public static void Main(string[] args)
    {
        Random random = new Random();
        decimal start, stop;
        decimal value;
        for (int i = 0; i < 10; i++)
            Console.WriteLine("{0:C}", NextValue(random.Next(C)));
    }

    private static decimal NextValue(int randomInt)
    {
        return A + B*randomInt;
    }
}
```

A = Minumum value

= 18.55

B = Increment amount

= 0.05

C = Number of distinct values

= $[(26.30-18.55)/0.05]+1$

= $(7.55/0.05)+1$

= 155+1

= 156

const decimal A = 18.55M ;

const decimal B = 0.05M ;

const int C = 156 ;

Write initializers for A, B, and C in terms of the constants MIN, MAX, and INC -- you may also use A, B, and C if you like. You cannot use ANY literal values). Apply any necessary typecasts.

const decimal A = MIN ;

const decimal B = INC ;

const int C = (int) ((MAX-MIN)/INC) + 1 ;