12.2. Exam 1 for the AP CS A Exam (not timed)

The following problems are similar to what you might see on the AP CS A exam. Please answer each to the best of your ability.

12-2-1: Which of the following is equivalent to the statement below? Recall DeMorgan's Law.

```
!((a <= b) && (b < 0))
```

- **A. (a >= b) && (b >= 0)**
- **B. !(a > b) || !(b >= 0)**
- **C. (a >= b) || (b > 0)**
- **D. (a > b) || (b >= 0)**
- **E. (a > b) && (b >= 0)**

Check Me Compare me

Activity: 12.2.1 Multiple Choice (qtnt1_1)

12-2-2: Consider the following recursive method. What does `mystery(4)` return?

```
public int mystery(int m)
{
  if (m == 1)
  {
      return 3;
  } else
  {
      return 3 * mystery(m - 1);
  }
}
```

- **A. 9**
- **B. 81**
- **C. 3**
- **D. 243**
- **E. 27**

Check Me Compare me

Activity: 12.2.2 Multiple Choice (qtnt1_2)

12-2-3: In which of these cases will an ascending order (from smallest to largest) insertion sort have the fastest run time?

```
I.   An array that is in reverse order (from largest to smallest).
II.  An array that is in sorted order already (from smallest to largest).
III. An array that is in random order (not already sorted).
```

- **A. II only**
- **B. I only**
- **C. I and II only**
- **D. II and III only**
- **E. III only**

Check Me Compare me

Activity: 12.2.3 Multiple Choice (qtnt1_3)

12-2-4: Which of these loops will output `01234` ?

```
int max = 5;

//Loop I
for (int i = 0; i < max; i++)
{
   System.out.print(i);
}


//Loop II
int j = 0;
while (j < max)
{
   System.out.print(j);
   j++;
}


//Loop III
int k = 0;
for (int i = max; i > 0; i--)
{
   System.out.print(i);
}
```

- **A. I only**
- **B. II only**
- **C. II and III only**
- **D. I and II only**

○ **E. I, II, and III**

Check Me Compare me

Activity: 12.2.4 Multiple Choice (qtnt1_4)

12-2-5: Consider the following block of code. What are the first and last numbers printed after running the code?

```
int value = 15;
while (value < 30)
{
    value++;
    System.out.println(value);
}
```

○ **A. First: 15 Last: 29**

○ **B. First: 15 Last: 30**

○ **C. First: 16 Last: 29**

○ **D. First: 16 Last: 30**

○ **E. First: 16 Last: 28**

Check Me Compare me

Activity: 12.2.5 Multiple Choice (qtnt1_5)

12-2-6: Consider the following block of code. What value is returned from `solution(5)` ?

```
public int solution(int limit)
{
  int s = 0;

  for (int outside = 1; outside <= limit; outside++)
  {
      for (int middle = 1; middle <= limit; middle++)
      {
          for (int inside = 1; inside <= limit; inside++)
          {
              s++;
          }
      }
  }
  return s;
}
```

○ **A. 25**

○ **B. 15**

- **C. 125**
- **D. 64**
- **E. 625**

Check Me Compare me

Activity: 12.2.6 Multiple Choice (qtnt1_6)

12-2-7: Given that both `count` and `n` are integer values, which of the following statements is true about both code blocks?

```
// Code block I
for (count = 0; count <= n; count++)
{
    System.out.println(count);
}

//Code block II
count = 0;
while (count <= n)
{
    count = count + 1;
    System.out.println(count);
}
```

- **A. I and II are exactly equivalent for all input values n.**
- **B. I and II are only equivalent when n is an even number.**
- **C. I and II are only equivalent when n = 0**
- **D. I and II are equivalent for all values except when n = 0**
- **E. I and II are never going to have the exact same outputs.**

Check Me Compare me

Activity: 12.2.7 Multiple Choice (qtnt1_7)

12-2-8: Consider the following class declarations. Which statements are true?

```
public class Animal
{
 /* Some code */
}

public class Cat extends Animal
{
   /* Some code */
}

I. Cat inherits the constructors of Animal
II. Cat cannot add new methods and private instance variables that Animal does not have
III. Cat can override existing public methods of Animal
```

- **A. I only**
- **B. II only**
- **C. III only**
- **D. I and II**
- **E. II and III**

Check Me Compare me

Activity: 12.2.8 Multiple Choice (qtnt1_8)

12-2-9: Consider the following code. What is the maximum amount of times that `HELLO` could possibly be printed?

```
for (int i = 0; i <= k; i++)
{
   if (arr[i] < someValue)
   {
     System.out.print("HELLO")
   }
}
```

- **A. k**
- **B. k + 1**
- **C. k - 1**
- **D. 1**
- **E. 0**

Check Me Compare me

Activity: 12.2.9 Multiple Choice (qtnt1_9)

12-2-10: When will the method `stringRecursion` produce a run time error?

```
public void stringRecursion(String s)
{

  if (s.length() < 16)
  {
    System.out.println(s);
  }
  stringRecursion(s + "*");
}
```

- **A. It will never produce a run time error.**
- **B. It will always produce a run time error.**
- **C. Only when the length of the input string is greater than or equal to 16.**
- **D. Only when an empty string is input.**
- **E. Whenever the input string length is less than 16.**

Check Me | Compare me

Activity: 12.2.10 Multiple Choice (qtnt1_10)

12-2-11: Consider the following class definitions. Which of I, II and III below would cause an error when used in place of the missing code in the main method?

```
public class A
{
  public void method1() { };
}

public class B extends A
{
    // Instance variables and other methods not shown

    public void method1()
    {
      /* implementation not shown */
    }
}

public class C extends B
{
  //Instance variables and other methods not shown

  public void method2(C o)
  {
     /* implementation not shown */
  }

  public static void main(String[] args)
  {
    C objectC = new C();
    B objectB = new B();
    // Missing code
  }
}

I objectC.method1();
II objectB.method2(objectC);
III objectC.method2(objectB);
```

- A. I only
- B. II only
- C. II and III only
- D. III only
- E. I, II and III

Check Me Compare me

Activity: 12.2.11 Multiple Choice (qtnt1_11)

12-2-12: Which of these declarations will *not* cause an error?

```
I ArrayList<String> stringList = new List<String>();
II ArrayList<int> intList = new ArrayList<int>();
III ArrayList<String> stringList = new ArrayList<String>();
```

- **A. I only**
- **B. II only**
- **C. III only**
- **D. II and III**
- **E. I and II**

Check Me Compare me

Activity: 12.2.12 Multiple Choice (qtnt1_12)

12-2-13: Suppose that the following method takes in a two dimensional array called `matrix`. After the method call `printMatrix(matrix)` what will the output be? Possible options are listed below the method definition.

```
/* assume that matrix has the following values */
7654
3210
4567
0123

public static void printMatrix(int[][] matrix)
{
  for (int i = 0; i < matrix.length; i++)
  {

    for (int t = 0; t < i; t++)
    {
      System.out.println(matrix[i][t]);
    }
    System.out.println();
  }
}

Possible output:

I.
7654
3210
4567
0123

II.
7
32
456
0123

III.
3
45
012

IV.
7
3
4
0
```

- ○ **A. I**
- ○ **B. II**
- ○ **C. III**
- ○ **D. IV**
- ○ **E. An ArrayIndexOutOfBoundsException will be thrown.**

Check Me Compare me

Activity: 12.2.13 Multiple Choice (qtnt1_14)

12-2-14: If randomList is an `ArrayList` of `Integer` objects and is initially set to {0, 1, 2, 3}, what will randomList look like after the following code is executed?

```
randomList.add(5);
randomList.add(7);
int randomNum = randomList.get(2);
randomList.remove(2);
randomList.add(randomNum, 4);
randomList.set(1, 8);
```

- **A. [0, 1, 2, 3, 5, 7]**
- **B. [0, 1, 4, 3, 5, 7]**
- **C. [0, 8, 3, 4, 5, 7]**
- **D. [0, 8, 4, 3, 5, 7]**
- **E. [5, 7, 0, 8, 4, 3]**

Check Me Compare me

Activity: 12.2.14 Multiple Choice (qtnt1_15)

12-2-15: Consider the following code segment. What will be printed as a result of executing the code below?

```
String str = "fedcba";
int counter = 0;
while(counter < str.length() - 1)
{
  System.out.print(str.substring(counter + 1, counter + 2));
  counter++;
}
```

- **A. edcba**
- **B. edcb**
- **C. Nothing is printed because an IndexOutOfBoundsException is thrown.**
- **D. feeddccbba**
- **E. fededcdcbcba**

Check Me Compare me

Activity: 12.2.15 Multiple Choice (qtnt1_16)

12-2-16: Consider the following class declarations. Which of the following statements will not compile?

```
public class B
{

   public int myValue;

   public B()
   {
      myValue = 0;
   }

   public B(int x)
   {
      myValue = x;
   }
}

public class C extends B
{

   public C()
   {
      super(0);
   }
}
```

- A. C c1 = new C();
- B. B b1 = new B();
- C. B c2 = new C();
- D. B b3 = new B(10);
- E. C c3 = new C(24);

Check Me Compare me

Activity: 12.2.16 Multiple Choice (qtnt1_17)

12-2-17: Consider the following method. Assume that `String s = "rain";` and `int b = 4;` have been executed. What are the values of `s` and `b` after `test(s,b)` is executed?

```
public static void test(String str, int y)
{
   str = str + "bow";
   y = y * 2;
}
```

- A. s="rainbow"; b=8;
- B. s="rain"; b=8;
- C. s="rainbow"; b=4;
- D. s="rain"; b=4;

E. s="bow"; b=4;

Check Me Compare me

Activity: 12.2.17 Multiple Choice (qtnt1_18)

12-2-18: Which of the following is/are true about using insertion sort versus using merge sort?

```
I. Insertion sort requires more storage space than mergesort.
II. Insertion sort is only more efficient than mergesort in the case that we have a ver
III. Insertion sort is almost always less efficient than mergesort.
```

A. I only

B. II only

C. III only

D. I and III

E. II and III

Check Me Compare me

Activity: 12.2.18 Multiple Choice (qtnt1_19)

12-2-19: What would the contents of `matrix` , a 2-D array of integers, be after a call to `alter(1)` ? The method alter is defined below.

```
  private int[][] matrix;

  /* matrix looks like this initially
  1 3 5 7
  2 4 6 8
  3 5 7 9
  */

  public void alter(int c)
  {
    for (int i = 0; i < matrix.length; i++)
    {
      for (int j = c + 1; j < matrix[0].length; j++)
      {
        matrix[i][j - 1] = matrix[i][j];
      }
    }
  }
```

```
I. 1 7 7 7
   2 8 8 8
   3 9 9 9

II. 1 5 7
    2 6 8
    3 7 9

III. 1 3 5 7
     3 5 7 9

IV. 1 3 5 7
    3 5 7 9
    3 5 7 9

V. 1 5 7 7
   2 6 8 8
   3 7 9 9
```

- ○ **A. I**
- ○ **B. II**
- ○ **C. III**
- ○ **D. IV**
- ○ **E. V**

Check Me | Compare me

Activity: 12.2.19 Multiple Choice (qtnt1_20)

You have attempted 1 of 20 activities on this page

Mark as Completed

(testPractice.html) (test2nt.html)

Finished reading assignment. Page 0 of 0.

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