

## AP Computer Science: Homework 2

Due Friday 12/4/2009

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Name: \_\_\_\_\_

**Directions:** On the AP Exam, you will not have access to a computer, so attempt to do this homework assignment without using a computer. Once you complete the assignment, and then use Eclipse to double-check your answers.

For questions 1-5, circle the answer that best answers the question.

For questions 6-8, record the output in the space provided.

For question 9, write your program in the space provided.

1. A program simulates fifty slips of paper, numbered 1 through 50, placed in a bowl for a raffle drawing. Which of the following statements stores in `winner` a random integer from 1 to 50?

(A) `int winner = (int)(Math.random() * 50) + 1;`  
(B) `int winner = (int)(Math.random() * 50);`  
(C) `int winner = (int)(Math.random() * 51);`  
(D) `int winner = (int)(Math.random() * 51) + 1;`  
(E) `int winner = (int)(1 + Math.random() * 49);`

2. Consider these declarations:

```
String s1 = "crab";  
String s2 = new String("crab");  
String s3 = s1;
```

Which expression involving these strings evaluates to `true`?

- I. `s1 == s2`  
II. `s1.equals(s2)`  
III. `s3.equals(s2)`

(A) I only  
(B) II only  
(C) II and III only  
(D) I and II only  
(E) I, II, and III

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3. Suppose that `strA = "TOMATO"`, `strB = "tomato"`, and `strC = "tom"`. Given that "A" comes before "a" in dictionary order, which is true?

- (A) `strA.compareTo(strB) < 0 && strB.compareTo(strC) < 0`
- (B) `strB.compareTo(strA) < 0 || strC.compareTo(strA) < 0`
- (C) `strC.compareTo(strA) < 0 && strA.compareTo(strB) < 0`
- (D) `!(strA.equals(strB)) && strC.compareTo(strB) < 0`
- (E) `!(strA.equals(strB)) && strC.compareTo(strA) < 0`

4. The boolean expression `!A && B || C` is equivalent to

- (A) `!A && (B || C)`
- (B) `((!A) && B) || C`
- (C) `(!A) && (B || C)`
- (D) `!(A && B) || C`
- (E) `!(A && B || C)`

5. The following fragment intends that a user will enter a list of positive integers at the keyboard and terminate the list with a sentinel:

```
int value;
final int SENTINEL = -999;
while(value != SENTINEL){
    //code to process value
    . . .
    value = IO.readInt(); //read user input
}
```

The fragment is not correct. Which is a true statement?

- (A) The sentinel gets processed.
- (B) The last nonsentinel value entered in the list fails to get processed.
- (C) A poor choice of `SENTINEL` value causes the loop to terminate before all values have been processed.
- (D) Running the program with this code causes a compile-time error.
- (E) Entering the `SENTINEL` value as the first value causes a run-time error.

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6. Consider the following code segment:

```
public class Runner {
    public static void main(String[] args) {
        int x = 30, y = 40;
        if(x >= 0){
            if(x <=100){
                y = x * 3;
                if(y < 50)
                    x /= 10;
            }
            else
                y = x * 2;
        }
        else
            y = -x;
        System.out.println(x + " " + y);
    }
}
```

What will be the output after the execution of this code?

7. Consider the following code segment:

```
public class Runner {
    public static void main(String[] args) {
        int x = 10, y = 0;
        while(x > 5)
        {
            y = 3;
            while(y < x)
            {
                y *= 2;
                if(y % x == 1)
                    y += x;
            }
            x--=3;
        }
        System.out.println(x + " " + y);
    }
}
```

What will be the output after the execution of this code?

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8. What output will be produced by this code segment?

```
for(int i=5; i >= 1; i--)
{
    for(int j=i; j >= 1; j--)
        System.out.print(2*j-1);
    System.out.println();
}
```

9. Write a code segment using for loops that will produce the following output:

```
2 - - - - -
- 4 - - - -
- - 6 - - -
- - - 8 - -
- - - - 10-
- - - - - 12
```

Ignore the spacing when creating your code.