Unit 3 Practice Test

This test is worth 25 points:
10 points for the multiple-choice questions (2 points each)
15 points for questions 6, 7, and 8 (5 points each)
You may specify up to two answers for each multiple-choice question. You will get one point for any problem in which your first choice is wrong but your second choice is correct.

1st 2nd

1. Consider the following Java code fragment:
   ```java
   import java.util.*;
   Scanner console = new Scanner(System.in);
   String str = console.nextLine();
   char ch = str.charAt(str.length() - 3);
   ```
   Assume that when this fragment is executed, the user enters the following input:
   
   S-111 ROCKS
   
   (where the S is the first character in the input). What value is assigned to the variable ch?
   
   A. ' -'
   B. '1'
   C. '0'
   D. 'C'
   E. 'k'
   F. 'S'

2. Which of the following is a valid Java boolean expression with a value of true?
   
   A. ((7 < 3) || !false)
   B. ((5 < 4) && (3*3 > 8))
   C. ((3 > 5) = false)
   D. (5 >= 5 > 3)
   E. (12 != 10 || 14)

3. What is the output of the following Java code fragment?
   ```java
   int x = 15;
   while (x > 1) {
       x = x / 2;
       System.out.print(x + " ");
   }
   ```
   
   A.  7  3  1
   B.  7  3
   C.  15  7  3
   D.  15  7  3  1
   E. none of the above
Consider the following Java program:

```java
public class Problem4 {
    public static void main(String[] args) {
        int x = 1;
        int y = 2;
        int z = 3;
        z = mystery(x, z, y);
        System.out.println(x + " " + y + " " + z);
        mystery(y, y, x);
        System.out.println(x + " " + y + " " + z);
    }
    public static int mystery(int z, int x, int y) {
        z--;
        x = 2*y + z;
        y = x - 1;
        System.out.println(x + " " + y + " " + z);
        return x;
    }
}
```

What does it output?

A. 4 3 0
   1 2 3
   3 2 1
   1 2 3

B. 4 3 0
   1 2 4
   3 2 1
   3 2 4

C. 4 3 0
   1 2 4
   3 2 1
   1 2 4

D. 6 5 2
   6 5 2
   11 10 1
   11 10 1

E. 6 5 2
   1 2 3
   6 5 0
   1 2 3

F. none of these
5. Consider the following Java code fragment:

```java
String s1 = "objective";
System.out.println(s1.substring(1, 5));
System.out.println(s1.substring(7));
```

What does it output?

A. objec
   ivec
B. obje
   ivec
C. objec
   ivec
D. bjec
   ivec
E. bject
   ivec
F. none of the above

6. What is the output of the following code fragment?

```java
int val = 14;
if (val < 10 && val <= 20) {
    System.out.println("bye");
} else if (val != 10) {
    System.out.println("eek");
    if (!(val < 10)) {
        System.out.println("ack");
    }
} else if (val >= 10) {
    System.out.println("bat");
}
if (val / 2 == 7) {
    System.out.println("yak");
}
```

Put the output below:
7. Consider the following main method of a program for airline baggage fees:

```java
public static void main(String[] args) {
    Scanner console = new Scanner(System.in);
    System.out.print("How many bags are you checking? ");
    int numBags = console.nextInt();
    System.out.print("Are you a first-class passenger (y/n)? ");
    String reply = console.next();
    int fee;
    if (reply.equals("y")) {
        fee = 20 * (numBags - 1);
    } else {
        fee = 25 * numBags;
    }
    System.out.print("Your fee is ");
    System.out.println(fee);
}
```

Complete the template shown below to create a program that has the **same behavior as the code shown above**, but that uses a separate method to compute the fee.

```java
public static void main(String[] args) {
    Scanner console = new Scanner(System.in);
    System.out.print("How many bags are you checking? ");
    int numBags = console.nextInt();
    System.out.print("Are you a first-class passenger (y/n)? ");
    String reply = console.next();

    // Fill in the blank to correctly use the method you write below.
    System.out.print("Your fee is ");

    System.out.println(____________________________________________);
}
```

// **Construct a method below for computing and returning the fee.**
// **Make sure that it can be used in the blank shown above to give**
// **the same behavior as the original program.**
// **You are welcome to reuse code from the original program.**
8. Write a method named `processName` that takes as a parameter a `String` representing a name and does the following:
   
   - If the name is a one-word name (e.g., "Oprah" or "Bono"), the method should return the number of characters in the name.
   - If the name has more than one word (e.g., "Barack Obama" or "Sarah Jessica Parker"), the method should return the number of spaces in the name.

   **Hint:** You will need a cumulative computation using a for loop.

   For example:
   
   - `processName("Oprah")` should return 5
   - `processName("Bono")` should return 4
   - `processName("Barack Obama")` should return 1
   - `processName("Sarah Jessica Parker")` should return 2

   You may assume that multi-word names have one space between each pair of words in the name, and that there are no leading or trailing spaces in the string.