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:

```
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. 'O'
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?

```
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

____ ____ 4. Consider the following Java program:

```
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:

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

What does it output?

A.
```
objec
ive
```

B.
```
obje
ive
```

C.
```
objec
i
```

D.
```
bjec
ve
```

E.
```
bject
ve
```

F. none of the above

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

```
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:

```
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.

```
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.