

## TOPIC 8 EXERCISES

### Tracing Exercises

1. Suppose you have the following declaration.

```
String str;
```

Which of the following values can be assigned to the variable str? If any value cannot be assigned, explain why not.

- (a) "dog"                      (b) "4315"                      (c) 43                      (d) 4.5                      (e) 'h'

2. What value will this string get after each of the following?

```
String day;  
Scanner kybd = new Scanner(System.in);
```

- (a) day = kybd.next();                      and user enters "Tuesday"  
(b) day = kybd.next();                      and user enters "next Tuesday"  
(c) day = kybd.nextLine();                      and user enters "Tuesday the 24th"  
(d) day = kybd.nextLine();                      and user enters "last Wednesday"

3. Show how to represent each of the following (assume that all variables have been declared to have type **String**):

- (a) the character in position 5 of arr                      (b) the character in the first position of hold  
(c) the character in position 3 of str                      (d) the character in position 1 of line  
(e) the last character in hope (*Hint: this one is harder than the others-why?*)

4. For (a), (b), and (c), show what each variable contains after the series of statements is executed. Use these declarations for each part:

```
String str, str1, str2, str3;  
int i, j;
```

- (a) str1 = "fantastic";                      (b) str = "123456";  
str3 = " weekend";                      str2 = "hi";  
str = str1;                      str += str2;  
str += str3;
- (c) str3 = "waterfall";  
j = str3.length();  
i = str3.length();

5. What is the result of each of the following comparisons (true or false)? Use these declarations for each part:

```
String str = "water";
String str2 = "waterfall";
String str3 = "what";
```

- (a) if (str.equals("water")) . . .      (b) if (str3.compareTo(str) < 0) . . .  
(c) if (str.compareTo(str3) < 0) . . .      (d) if (str.compareTo(str2) > 0) . . .  
(e) if (str2.compareTo(str) > 0) . . .      (f) if (str3.compareTo("where") > 0)

6. Show what is printed by the following section of code:

```
String str = "another value";
StringBuilder p = new StringBuiulder(str);

p.delete(3,7);
System.out.println("p is: " + p);
p.insert(4,"done");
System.out.println("p is: " + p);
p.replace(1,3,"XY");
System.out.println("p is: " + p);
```

7. Show what is printed by the following section of code:

```
String t = "cannon ball news";
int m,k,j;

k = t.indexOf("all");
m = t.indexOf("all",10);
j = t.indexOf("call",0);
System.out.println("m, k, and j: " + m + " " + k + " " + j);
```

8. For each of the following, show what values are assigned to the variables. For each part, start from the following declaration and initial values:

```
String str = "good morning";
String str1 = "evening news";
String str2 = "bad";
```

- (a) str1 = str.substring(5);      (b) str2 = str1.substring(5);  
(c) str1 = str.substring(5,9);      (d) str2 = str1.substring(5,9);

9. For each of the following, show the result of the method call. For each part, start from the following declaration and initial values:

```
StringBuilder str = new StringBuilder("your cat is full of fur");
StringBuilder str1 = new StringBuilder("lunchtime aggravation");
StringBuilder str2 = new StringBuilder("half of the apple");
```

- (a) `str.replace(5, 8, "dog");`                      (b) `str.replace(20, 23, "food");`  
(c) `str1.replace(5, 9, "room");`                      (d) `str2.replace(12, 17, "orange");`

10. For each of the following, show what is printed. For each part, start from the following declaration and initial values:

```
StringBuilder str = new StringBuilder("happy home appliances");
StringBuilder str1 = new StringBuilder("living room refrigerator");
StringBuilder str2 = new StringBuilder("microwave telephone");
String str3;
```

- (a) `str.delete(6, 10);`    (b) `str1.delete(0, 11);`  
`str.insert(6, "workplace");`    `str1.insert(0, "office");`  
`System.out.println(str);`    `System.out.println(str1);`
- (c) `str2.delete(5, 9);`    (d) `str1.delete(14, str1.length());`  
`str3 = str2.substring(10, 15);`    `str1.insert(14, "treat");`  
`str2.insert(5, str3);`    `System.out.println(str1);`  
`str2.delete(15, 20);`  
`str2.insert(15, "vision");`  
`System.out.println(str2);`

11. Show what is printed by the following programs:

(a)

```
public class prob8_11a {
    public static void main(String[] args)
    {
        String str1;
        String str2;
        String str3;
        int len;

        str1 = "first";
        str2 = "alexander";
        str3 = str2;
        len = str3.length();
        str3 = str3 + str1;
        System.out.println(str1 + " " + str2 + " " + str3);
        System.out.println(len);
    }
}
```

(b)

```
public class prob8_11b {
    public static void main(String[] args)
    {
        String str;
        String str1;
        int k, m, n;

        str = "jacksonville fl";
        m = str.length();
        str1 = "here is ";
        str1 += str;
        k = str1.length();
        n = str1.length();
        System.out.println(str + " " + str1);
        System.out.println(k + " " + m + " " + n);
    }
}
```

12. (a) Show what is printed by the following program as it executes. Assume that the set of data read in is the following: Smith Brown Jones.

```
import java.util.Scanner;
public class prob8_12a {
    public static void main(String[] args)
    {
        String[] part = new String[3];
        String[] title = new String[3];
        String name;
        Scanner kybd = new Scanner(System.in);

        part[0] = "Linda";
        part[1] = "Mary";
        part[2] = "Bill";

        title[0] = "Mr.";
        title[1] = "Ms.";
        title[2] = "Mrs.";

        for (int i = 0; i < 3; i++) {
            name = makename(part[i],title[i],kybd);
            System.out.println(name);
        }
        kybd.close();
    }

    public static String makename(String first, String title, Scanner kybd)
    {
        String last, whole;

        System.out.print("Enter the last name: ");
        last = kybd.next();

        whole = "";
        whole += title;
        whole += " ";
        whole += first;
        whole += " ";
        whole += last;

        return whole;
    }
}
```

(b) Explain why the formal parameters first and title are not arrays of strings even though part and title in the main program are.

## Programming Projects

13. Write a method reverse() that receives a string str as a parameter and returns the characters in str in reverse order. Thus, if the value sent to reverse() is "I me ", the method returns "em I".