Set 07 Answers

1.   In what kind of methods does it make sense to use _this_?

instance methods only

2.   What does _this_ refer to?

"this" is a reference to the current object

3.   If you do not write any constructors, what values will instance
      variables of the following primitive types be assigned: `int,`
      `double, boolean, char    ?`

0, 0.0, false, the character with ASCII code 0

4.   If you do not write any constructors, what values will instance
      variables that are references by assigned?

null

5.   Under what circumstances will Java provide a default constructor for
      you automatically?

As long as you don't write any constructors at all, there will be a no-
      argument default constructor that initializes all instance variables to 0.

6.   What is a copy constructor?   Give an example.

The copy constructor accepts an argument that is the same type as the
object being constructed. It initializes the fields of the current object to
match that of the parameter. Example:

```
public Cat(Cat x) {
    numWhiskers = x.numWhiskers;
    name = x.name;
}
```

7.   What is a Stack (in general, not just in Java)?

A stack is a simple _linear_ data structure in which elements are both
      inserted (_pushed_) and removed (_popped_) from the same end. (We

usually picture the stack vertically, and say that we _push_ and _pop_ items from the top.)

8. When you push an entry into the stack does it go on the top or bottom?
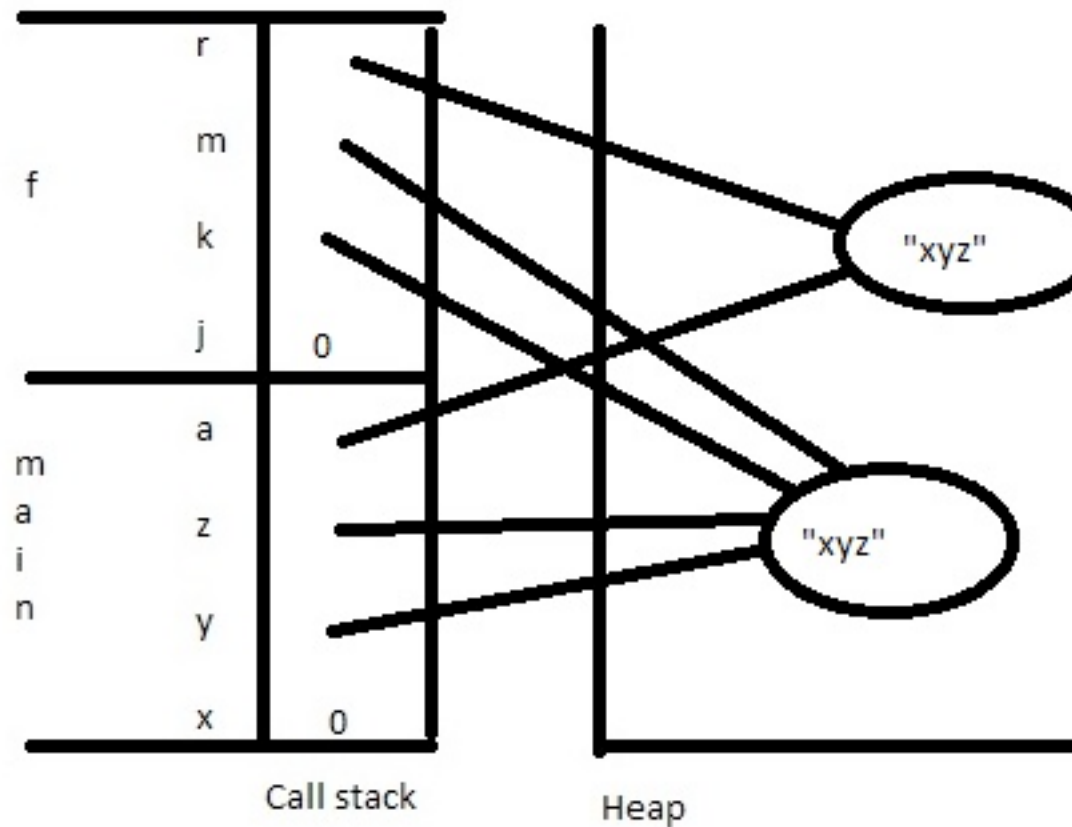
top

9. When you pop an entry from the stack, does it come off the top or bottom?

top

10. Draw a diagram showing both the Stack and the Heap at the moment this program terminates:

```
public static void main(String[] args) {
      int x = 0;
      String y = new String("xyz");
      String z = y;
      String a = new String(y);
       f(x, y, z, a);
}
public static void f(int j, String k, String m,
String r) {
      System.exit(1);
}
```

Call stack

Heap

11. True/False _ in java, when you pass a reference variable as an argument to a method, it is possible for the method to modify the object to which the variable refers.

TRUE

12. What does API stand for?

Application Programming Interface

13. If someone showed you a Java class, how can you quickly identify which members were part of the API for that class?

All of the public things.

14. If a member is declared as _public_, can it be accessed from inside the same class?

YES

15.   If a member is declared as _public_, can it be accessed from another class?

YES

16.   If a member is declared as _private_, can it be accessed from inside the same class?

YES

17.   If a member is declared as _private_, can it be accessed from another class?

NO

18.   What is a _getter_?

A method that returns the value of an instance variable of the object.

19.   What is a _setter_?

A method that modifies the value of an instance variable of the object.

20.   Explain why it is important to limit the number of _public_ members.

Encapsulation of the fields (instance variables) of a class is very important. We frequently need to make changes to a class. If these changes do not modify the class API, then the modified class will work perfectly well within an existing project. However, if you modify the class in such a way that the API is changed, then you will have to re-program other components of the project so that they will work with the new class. By limiting the API we are free to make more extensive changes to the class without having to re-program other parts of the project.

21.   Name and describe the two visibility specifiers that you should know at this point.

public _ these members are visible everywhere

private _ these members are visible only within the class

22. True/False _ if you change a class in such a way that the API changes, then other classes which depend on this one will have to be re-coded.

TRUE

23. True/False _ if you change a class without modifying the API, then other classes which depend on this one will have to be re-coded.

FALSE

24. What package is the Scanner class located in? What is the fully qualified name of the Scanner class?

java.util

java.util.Scanner

25. What is accomplished when you type _import java.awt.Color;_ at the top of a file?

Whenever you type _Color_, the compiler knows that you are talking about the Color class that resides in the package called _java.awt_.

26. What is accomplished when you type _import java.awt.*;_ at the top of a file?

You are importing EVERYTHING that is in the package java.awt.

27. Which java package is automatically imported in it_s entirety into every Java program you write?

java.lang

28. What method of the String class can be used to pick out one particular character in the string?

charAt

29. What method of the String class can tell you how many characters are in the String?

length

30.   What method of the String class can be used to compare to Strings for alphabetical order?

compareTo

31.   What method of the String class can select a portion of an existing String?

substring

32.   Write a method called _count_. The method should be public and static. It takes one parameter, (a reference to a String). The method will return an *int*. The return value should be equal to the number of X_s that appear in the String. For example, if the parameter is: _XaXXXbXXc_ then the return value would be 6.

```
public static int count(String s) {
    int count = 0;
    for (int i = 0; i < s.length(); i++) {
        if (s.charAt(i) == _X_) {
            count++;
        }
    }
    return count;
}
```