Assignment2

Question1. Why we need packages in java?
Packages are used in Java in order to prevent naming conflicts, to control access, to make searching/locating and usage of classes, interfaces, enumerations and annotations easier, etc.

Question2. What is the default imported package?
Java compiler imports java. lang package internally by default. It provides the fundamental classes that are necessary to design a basic Java program.

Question3. What is Class? What is Object?
class: a class describes the contents of the objects that belong to it: it describes an aggregate of data fields (called instance variables), and defines the operations (called methods).
object: an object is an element (or instance) of a class; objects have the behaviors of their class.

Question4. Why we need constructor?
A constructor is a special method of a class that initializes new objects
or instances of the class. Without a constructor, you can't create instances of the class. Imagine that you could create a class that represents files, but without constructors, you couldn't create any files based on the class.

Question5. What is the default value of local variable? What is the default value of instance variable?
The default value of the local variable is NULL in JAVA, no primitive values or object references

Instance variables have default values. For numbers, the default value is 0, for Booleans it is false, and for object references it is null.

Question6. What is garbage collection?
Java garbage collection is the process by which Java programs perform automatic memory management. Java programs compile to bytecode that can be run on a Java Virtual Machine, or JVM for short. When Java programs run on the JVM, objects are created on the heap, which is a portion of memory dedicated to the program. Eventually, some objects will no longer be needed. The garbage collector finds these unused objects and deletes them to free up memory.

Question7. The protected data can be accessed by subclasses or same package. True or false?
True

Question8. What is immutable class?

Immutable class in java means that once an object is created, we cannot change its content.In Java, all the wrapper classes (like Integer, Boolean, Byte, Short) and String class is immutable

Question9. What's the difference between "==" and equals method?
In simple words, == checks if both objects point to the same memory location whereas . equals() evaluates to the comparison of values in the objects.

Question10. What is wrapper class?
Wrapper classes provide a way to use primitive data types (int, boolean, etc..) as objects.

Question11. What is autoboxing?
Autoboxing is the automatic conversion that the Java compiler makes between the primitive types and their corresponding object wrapper classes. For example, converting an int to an Integer, a double to a Double, and so on. If the conversion goes the other way, this is called unboxing.

Question12. StringBuilder is threadsafe but slower than StringBuffer, true or false?:
False, In single threads, StringBuffer is not significantly slower than StringBuilder

Question13. Constructor can be inherited, true or false?
False, Constructors are not inherited. The superclass constructor can be called from the first line of a subclass constructor by using the keyword super and passing appropriate parameters to set the private instance variables of the superclass.

Question14. How to call a super class's constructor?
Use of super() to access superclass constructor
As we know, when an object of a class is created, its default constructor is automatically called. To explicitly call the superclass constructor from the subclass constructor, we use super() . It's a special form of the super keyword.

Question15. Which class is the super class of all classes?
Object class is the root or superclass of the class hierarchy, which is present in java.

Question16.

```
package Day2;

import java.io.File;
import java.util.HashMap;

public class Criteria {
	static Boolean includeSubFolder;
```

```
    static String folderPath;
    static HashMap<String, Integer> extension = new HashMap<>();
    public static void main(String[] args) throws Exception    {

        Criteria criteria = new Criteria();
        criteria.folderPath = "/Users/simengfeng/Desktop/master course";
        File f = new File(criteria.folderPath);
        count(criteria);
        for(String s : extension.keySet()){
            System.out.println("There are " + extension.get(s) + " file(s) inside folder
" + f.getName() + " with extension " + s);
        }
    }

    public static void count(Criteria criteria) {
        File f = new File(criteria.folderPath);
        File[] s = f.listFiles();

        for (int i = 0; i < s.length; i++) {
            if (s[i].isDirectory())
                extension.put("folder", extension.getOrDefault("folder", 0) + 1);
            else if (s[i].getName().endsWith(".txt")) {
                extension.put("txt", extension.getOrDefault("txt", 0) + 1);
            } else if (s[i].getName().endsWith(".pdf")) {
                extension.put("pdf", extension.getOrDefault("txt", 0) + 1);
            } else if (s[i].getName().endsWith(".doc")) {
                extension.put("doc", extension.getOrDefault("doc", 0) + 1);
            } else if (s[i].getName().endsWith(".png")) {
                extension.put("doc", extension.getOrDefault("PNG", 0) + 1);
            }
        }
    }
}
```