Assignment 2

1. Why we need packages in java?
   The reason why we need to use packages in Java because it is more continent for us to prevent naming conflicts, control accesses, to make searching/locating and usage of classes, interfaces, enumerations and annotations and etc.

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

3. What is Class? What is Object?
   A class is a user defined prototype from which objects are created. It represent a set of properties including methods and objects in one class and to be function when class is used.
   An object is the basic unit of Object-Oriented Programming and represent many entities. The object can be anything for state, behavior, and identity. Such as name or numbers of IDs. We use objects in methods and methods are in classes.
   Overall, A class is a set of methods that is function as a part of a program.

4. Why we need constructor?
   The purpose that we use constructor is to initialize the data fields of objects in the class. Java constructor can perform any action but specially designed to perform initializing actions and instance variables. It also allow constructing the objects of the class at runtime.

5. What is the default value of local variable? What is the default value of instance variable?
   The local variable in Java does not have a default value. We have to declared and assigned a value before using them, otherwise the compiler will throw an error.
   The instance variable default values in Java are: For Integer, it is 0. For Boolean is false. For object references is null.

6. What is garbage collection?
   The java garbage collection is the process by which java programs perform automatic memory management. Java program complier to bytecode that can run on the JVM. When it run on the JVM, objects will be created on the heap, and those are the portion of memory dedicated to the program.

7. The protected data can be accessed by subclasses or same package. True or false?
   True. You can also say that the protect access modifier is similar to default access modifier with one exception that it has visible sub classes. Classes cannot be declared protected.

8. 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.

9. What's the difference between "==" and equals method?
   "==" is an operator and equals () is method.
   "==" is a reference comparison, both objects point to the same memory location.
   Equals () evaluates to the comparison of values in the objects.

10. What is wrapper class?
    The wrapper classes in Java are used to convert the primitive types to a corresponding objects.
    Int – Integer. char-Character, float-Float, double-Double, Boolean-Boolean etc.

11. What is autoboxing?
    Autoboxing is the automatic conversion that the Java compiler makes between the primitive types and their corresponding object wrapper classes. Example: int to Integer

12. StringBuilder is threadsafe but slower than StringBuffer, true or false?
    False, StringBuilder is not Thread-safe and StringBuffer is Threadsafe.
    Stringbuilder is faster than Stringbuffer because StringBuilder is not synchronized.

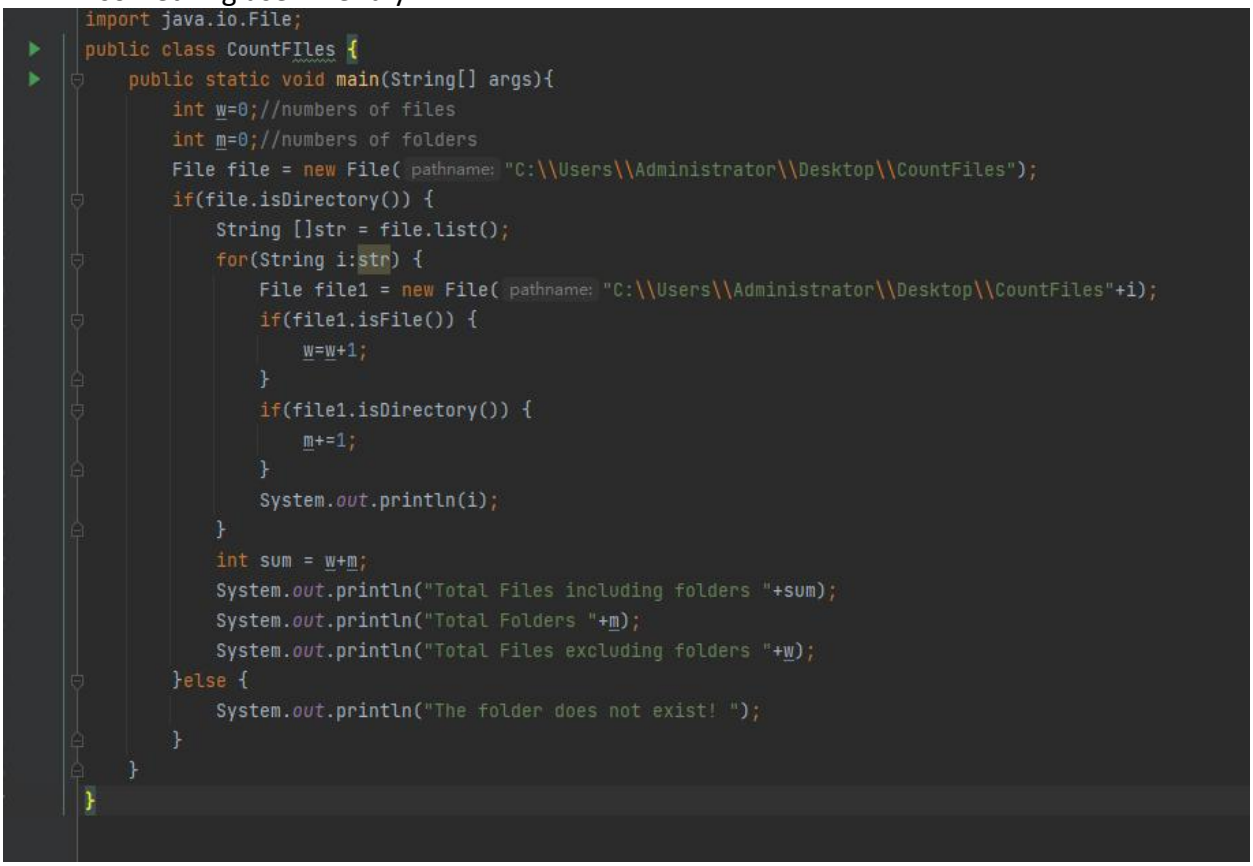
13. Constructor can be inherited, true or false?
    False, a constructor cannot be inherited. Since in subclasses it has a different name.

14. How to call a super class's constructor?
    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 variable of the super class.

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

16. Create a program to count how many files/folders are there inside one folder.
    - the count method should take a parameter called Criteria like this: count(Criteria criteria){}
    - For Criteria class, multiple conditions should be included such as: folder path, includeSubFolder or not, the extension of the file be counted and so on.
    - Optional: Take the input from keyboard.
    - Take care of the invalid inputs. Exception handling.

- Get proper result displayed.
  ”There are XXX file(s) and XXX folder(s) inside folder XXX with extension XXX.” or something user friendly.



```java
import java.io.File;
public class CountFIles {
    public static void main(String[] args){
        int w=0;//numbers of files
        int m=0;//numbers of folders
        File file = new File( pathname: "C:\\Users\\Administrator\\Desktop\\CountFiles");
        if(file.isDirectory()) {
            String []str = file.list();
            for(String i:str) {
                File file1 = new File( pathname: "C:\\Users\\Administrator\\Desktop\\CountFiles"+i);
                if(file1.isFile()) {
                    w=w+1;
                }
                if(file1.isDirectory()) {
                    m+=1;
                }
                System.out.println(i);
            }
            int sum = w+m;
            System.out.println("Total Files including folders "+sum);
            System.out.println("Total Folders "+m);
            System.out.println("Total Files excluding folders "+w);
        }else {
            System.out.println("The folder does not exist! ");
        }
    }
}
```