1. We want to group the same purpose of java classes, searching and locating much easier, and keep in a good structure. It also helps to prevent naming conflicts and control access for interface, and annotation easier.
2. the default imported package is java.lang.*;
3. Class is used to create java objects. The java object can be defined by using new Class. Classes are categories, and objects are items within each category. All class objects should have the basic class properties
4. The sole purpose of the 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, such as initializing the instance variables. A constructor within a class allows constructing the object of the class at runtime.
5. the default value for local primitive variable is null, the default value of instance variable is zero, and boolean is false;
6. Java Garbage Collection is the process by which Java programs perform automatic memory management. Java programs compile into bytecode that can be run on a Java Virtual Machine (JVM). When Java programs run on the JVM, objects are created on the heap, which is a portion of memory dedicated to the program
7. Yes, The protected data can be accessed by the subclasses, or the same package.
8. 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. difference == checks if both objects point to the same memory location whereas . equals() evaluates to the comparison of values in the objects.
10. A Wrapper class is a class whose object wraps or contains primitive data types. When we create an object to a wrapper class, it contains a field and in this field, we can store primitive data types. In other words, we can wrap a primitive value into a wrapper class object. For example int -> Integer, byte -> Byte, long -> Long and so on.
11. Autoboxing is Automatic conversion of primitive types to the object of their corresponding wrapper classes is known as autoboxing. For example – conversion of int to Integer, long to Long, double to Double and so on.
12. Yes, StringBuilder is thread safe, but it is slower than StringBuffer. StringBuilder is compatible with StringBuffer API but with no guarantee of synchronization. Because it's not a thread-safe implementation, it is faster and it is recommended to use it in places where there's no need for thread safety.
13. No, Java constructer can not be inherited. Subclass can inherited members from the super class except the constructer.
14. Use of super() to access superclass constructor
15. The Object class is the super class of all java classes.
16. check the code in Assignment2.java