**Assignment 2**

1. Why we need packages in java?

Packages are like folders, they are used to avoid name conflicts, and to write a better maintainable code

1. What is the default imported package?

java.lang

1. What is Class? What is Object?

A class is a user defined blueprint or prototype from which objects are created. It represents the set of properties or methods that are common to all objects of one type.

It is a basic unit of Object-Oriented Programming and represents the real-life entities. A typical Java program creates many objects, which as you know, interact by invoking methods. An object consists of:

1. State: It is represented by attributes of an object. It also reflects the properties of an object.
2. Behavior: It is represented by methods of an object. It also reflects the response of an object with other objects.
3. Identity: It gives a unique name to an object and enables one object to interact with other objects.
4. Why we need constructor?

Java constructors or constructors in Java is a terminology been used to construct something in our programs. A constructor in Java is used to initialize objects. The constructor is called when an object of a class is created. It can be used to set initial values for object attributes.

1. What is the default value of local variable? What is the default value of instance variable?

No default value for local variable, whereas there’s a default value for each instance variable - it has the default value of its type, for Boolean it will be false, int will be 0, etc.

1. What is garbage collection?

Garbage collection in Java 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.

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

True

1. 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.

1. What’s the difference between “==” and equals method?

== checks if both objects point to the same memory location whereas equals() evaluates to the comparison of values in the objects.

1. What is wrapper class?

Wrapper classes provide a way to use primitive data types (int, boolean, etc..) as objects (Integer, Boolean, etc.).

1. What is autoboxing?

Autoboxing is the automatic conversion that the Java compiler makes between the primitive types and their corresponding object wrapper classes.

1. StringBuilder is threadsafe but slower than StringBuffer, true or false?

False, StringBuilder is not synchronized but less overhead, therefore faster.

1. Constructor can be inherited, true or false?

False

1. How to call a super class’s constructor?

super();

1. Which class is the super class of all classes?

The Object class

1. 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.

<https://github.com/xie18ly/Java_Batch_2022_5_6/tree/master/src/main/java>