**Assignment 2**

1. 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.

1. 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. The important classes are Object, which is the root of the class hierarchy, and Class, instances of which represent classes at run time.

1. What is Class? What is Object?

Java is an object-oriented programming language. Everything in Java is associated with classes and objects, along with its attributes and methods. For example: in real life, a car is an object. The car has attributes, such as weight and color, and methods, such as drive and brake. A Class is like an object constructor, or a "blueprint" for creating objects.

In Java, an object is created from a class.

1. Why we need constructor?

A constructor in Java is a special method that 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?

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. Values can be assigned during the declaration or within the constructor.

1. 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.

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?

In simple words, == checks if both objects point to the same memory location whereas . equals() evaluates to the comparison of values in the objects. If a class does not override the equals method, then by default, it uses the equals(Object o) method of the closest parent class that has overridden this method.

1. What is wrapper class?

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

The table below shows the primitive type and the equivalent wrapper class:

|  |  |
| --- | --- |
| Primitive Data Type | Wrapper Class |
| byte | Byte |
| short | Short |
| int | Integer |
| long | Long |
| float | Float |
| double | Double |
| boolean | Boolean |
| char | Character |

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 thread-safe but slower than StringBuffer, true or false?

False, StringBuffer is thread-safe but StringBuilder is not.

1. Constructor can be inherited, true or false?

False. A subclass inherits all the members (fields, methods, and nested classes) from its superclass. Constructors are not members, so they are not inherited by subclasses, but the constructor of the superclass can be invoked from the subclass.

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

With super(), the superclass no-argument constructor is called. With super(parameter list), the superclass constructor with a matching parameter list is called.

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

The class named Object is the super class of every class in Java.

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.

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