

HOMework #1

1-) Why we need to use OOP ? Some major OOP languages ?

Coding with OOP design is flexible, modular, and abstract. This is useful for larger programs.

Popular OOP languages are: Java, Python, C++, Ruby

2-) Interface vs Abstract class ?

For Java, Interface can have only abstract methods. An abstract class can have abstract and other methods.

Interface has only static and final variables but Abstract class can have final, static or non of them.

3-) Why we need equals and hashCode ? When to override ?

We need them for comparing objects.

4-) Diamond problem in Java ? How to fix it?

Java does not support multiple inheritance for classes so no class can inherit properties from more than one class. We can solve this using multiple interfaces.

5-) Why we need Garbage Collector ? How does it run ?

Simply, garbage collector is the process of looking at heap memory, identifying which objects are in use and which are not, and deleting the unused objects. It runs automatically and lives in the JVM.

6-) Java 'static' keyword usage ?

The main purpose of the static keyword is memory management and used in classes. When the class is extended or created static blocks always work.

7-) Immutability means ? Where, How and Why to use it ?

Immutability means unable to change and in Java, immutable object means object which internally state and constant after created. It uses for classes final and private variable to implement they are constant and can not change.

8-) Composition and Aggregation means and differences ?

They are about the object communication in Java which means Association. Aggregation means (has-a) relationship but it does not mean owning so every part of them can exist independently. Composition means also (has-a) relationship but with (belongs-to) meaning. The composition is stronger than Aggregation, shortly a relationship between two objects is referred to as an association, and an association is known as

composition when one object *owns* another while an association is known as aggregation when one object uses another object.

9-) Cohesion and Coupling means and differences ?

Cohesion is used to measure the functional strength of a module. Coupling is used to measure the strength of relationships between modules.

10-) Heap and Stack means and differences ?

Stack is a special area of computer's memory which stores temporary variables created by a function. Heap is a memory used by programming languages to store global variables. Stack memory can not become fragmented but heap memory can and stack accesses local variables only but heap accesses to global variables. Stack variables can't be resized but Heap variables can.

11-) Exception means ? Type of Exceptions ?

In java, exception means an event that disrupts the normal flow of the program and it is an object. Types of them, checked, unchecked and error.

12-) How to summarize 'clean code' as short as possible ?

Clean code means briefly a code that in the standards and any other developer can read easily and change it.

13-) What is the method of hiding in Java ?

Method hiding is about relationship with subclass and superclass and it can be defined as if a subclass defines a static method with the same signature as a static method in the super class, in such a case, the method in the subclass hides the one in the superclass.

14-) What is the difference between abstraction and polymorphism in Java ?

They are actually very related and similar, abstraction means information hiding and polymorphism means reuse with different types.