Top 100 Java Interview Questions and Answers

- What is the difference between an Inner Class and a Sub-Class?
- What are the various access specifiers for Java classes?
- What's the purpose of Static methods and static variables?
- What is data encapsulation and what's its significance?
- What is a singleton class? Give a practical example of its usage.
- What are Loops in Java? What are three types of loops?
- What is an infinite Loop? How infinite loop is declared?
- What is the difference between continue and break statement?
- What is the difference between double and float variables in Java?
- What is Final Keyword in Java? Give an example.

Q1. What is the difference between an Inner Class and a Sub-Class?

Ans: An Inner class is a class which is nested within another class. An Inner class has access rights for the class which is nesting it and it can access all variables and methods defined in the outer class.

A sub-class is a class which inherits from another class called super class. Sub-class can access all public and protected methods and fields of its super class.

Q2. What are the various access specifiers for Java classes?

Ans: In Java, access specifiers are the keywords used before a class name which defines the access scope. The types of access specifiers for classes are:

1. Public : Class,Method,Field is accessible from anywhere.

2. Protected:Method,Field can be accessed from the same class to which they belong or from the sub-classes,and from the class of same package,but not from outside.

3. Default: Method,Field,class can be accessed only from the same package and not from outside of it's native package.

4. Private: Method,Field can be accessed from the same class to which they belong.

Q3. What's the purpose of Static methods and static variables?

Ans: When there is a requirement to share a method or a variable between multiple objects of a class instead of creating separate copies for each object, we use static keyword to make a method or variable shared for all objects.

Q4. What is data encapsulation and what's its significance?

Ans: Encapsulation is a concept in Object Oriented Programming for combining properties and methods in a single unit.

Encapsulation helps programmers to follow a modular approach for software development as each object has its own set of methods and variables and serves its functions independent of other objects. Encapsulation also serves data hiding purpose.

Q5. What is a singleton class? Give a practical example of its usage.

A singleton class in java can have only one instance and hence all its methods and variables belong to just one instance. Singleton class concept is useful for the situations when there is a need to limit the number of objects for a class.

The best example of singleton usage scenario is when there is a limit of having only one connection to a database due to some driver limitations or because of any licensing issues.

Q6. What are Loops in Java? What are three types of loops?

Ans: Looping is used in programming to execute a statement or a block of statement repeatedly. There are three types of loops in Java:

1) For Loops

For loops are used in java to execute statements repeatedly for a given number of times. For loops are used when number of times to execute the statements is known to programmer.

2) While Loops

While loop is used when certain statements need to be executed repeatedly until a condition is fulfilled. In while loops, condition is checked first before execution of statements.

3) Do While Loops

Do While Loop is same as While loop with only difference that condition is checked after execution of block of statements. Hence in case of do while loop, statements are executed at least once.

Q7: What is an Infinite Loop? How infinite loop is declared?

Ans: An infinite loop runs without any condition and runs infinitely. An infinite loop can be broken by defining any breaking logic in the body of the statement blocks.

Infinite loop is declared as follows:

```
for (;;)
{
    // Statements to execute

    // Add any loop breaking logic
}
```

Q8. What is the difference between continue and break statement?

Ans: break and continue are two important keywords used in Loops. When a break keyword is used in a loop, loop is broken instantly while when continue keyword is used, current iteration is broken and loop continues with next iteration.

In below example, Loop is broken when counter reaches 4.

```
for (counter = 0; counter &lt; 10; counter++)
    system.out.println(counter);

if (counter == 4) {

    break;
}

}
```

In the below example when counter reaches 4, loop jumps to next iteration and any statements after the continue keyword are skipped for current iteration.

```
for (counter = 0; counter < 10; counter++)
    system.out.println(counter);

if (counter == 4) {

    continue;
}
system.out.println("This will not get printed when counter is 4");
}
```

Q9. What is the difference between double and float variables in Java?

Ans: In java, float takes 4 bytes in memory while Double takes 8 bytes in memory. Float is single precision floating point decimal number while Double is double precision decimal number.

Q10. What is Final Keyword in Java? Give an example.

Ans: In java, a constant is declared using the keyword Final. Value can be assigned only once and after assignment, value of a constant can't be changed.

In below example, a constant with the name const_val is declared and assigned avalue:

Private Final int const_val=100

When a method is declared as final,it can NOT be overridden by the subclasses.This method are faster than any other method,because they are resolved at complied time.

When a class is declares as final,it cannot be subclassed. Example String,Integer and other wrapper classes.

Q11. What is ternary operator? Give an example.

Ans: Ternary operator , also called conditional operator is used to decide which value to assign to a variable based on a Boolean value evaluation. It's denoted as ?

In the below example, if rank is 1, status is assigned a value of "Done" else "Pending".

```
public class conditionTest {
    public static void main(String args[]) {
        String status;
        int rank = 3;
        status = (rank == 1) ? "Done" : "Pending";
        System.out.println(status);
    }
}
```

Q12: How can you generate random numbers in Java?

Ans:

- Using Math.random() you can generate random numbers in the range greater than or equal to 0.1 and less than 1.0
- Using Random class in package java.util

Q13. What is default switch case? Give example.

Ans: In a switch statement, default case is executed when no other switch condition matches. Default case is an optional case .It can be declared only once all other switch cases have been coded.

In the below example, when score is not 1 or 2, default case is used.

```
public class switchExample {
    int score = 4;
    public static void main(String args[]) {
        switch (score) {
            case 1:
                system.out.println("Score is 1");
                break;
            case 2:
                system.out.println("Score is 2");
                break;
            default:
                system.out.println("Default Case");
        }
    }
}
```

Q14. What's the base class in Java from which all classes are derived?

Ans: java.lang.object

Q15. Can main() method in Java can return any data?

Ans: In java, main() method can't return any data and hence, it's always declared with a void return type.

Q16. What are Java Packages? What's the significance of packages?

Ans: In Java, package is a collection of classes and interfaces which are bundled together as they are related to each other. Use of packages helps developers to modularize the code and group the code for proper re-use. Once code has been packaged in Packages, it can be imported in other classes and used.

Q17. Can we declare a class as Abstract without having any abstract method?

Ans: Yes we can create an abstract class by using abstract keyword before class name even if it doesn't have any abstract method. However, if a class has even one abstract method, it must be declared as abstract otherwise it will give an error.

Q18. What's the difference between an Abstract Class and Interface in Java?

Ans: The primary difference between an abstract class and interface is that an interface can only possess declaration of public static methods with no concrete implementation while an abstract class can have members with any access specifiers (public, private etc) with or without concrete implementation.

Another key difference in the use of abstract classes and interfaces is that a class which implements an interface must implement all the methods of the interface while a class which inherits from an abstract class doesn't require implementation of all the methods of its super class.

A class can implement multiple interfaces but it can extend only one abstract class.

Q19. What are the performance implications of Interfaces over abstract classes?

Ans: Interfaces are slower in performance as compared to abstract classes as extra indirections are required for interfaces. Another key factor for developers to take into consideration is that any class can extend only one abstract class while a class can implement many interfaces.

Use of interfaces also puts an extra burden on the developers as any time an interface is implemented in a class; developer is forced to implement each and every method of interface.

Q20. Does Importing a package imports its sub-packages as well in Java?

Ans: In java, when a package is imported, its sub-packages aren't imported and developer needs to import them separately if required.

For example, if a developer imports a package university.*, all classes in the package named university are loaded but no classes from the sub-package are loaded. To load the classes from its sub-package (say department), developer has to import it explicitly as follows:

Import university.department.*

Q21. Can we declare the main method of our class as private?

Ans: In java, main method must be public static in order to run any application correctly. If main method is declared as private, developer won't get any compilation error however, it will not get executed and will give a runtime error.

Q22. How can we pass argument to a function by reference instead of pass by value?

Ans: In java, we can pass argument to a function only by value and not by reference.

Q23. How an object is serialized in java?

Ans: In java, to convert an object into byte stream by serialization, an interface with the name Serializable is implemented by the class. All objects of a class implementing serializable interface get serialized and their state is saved in byte stream.

Q24. When we should use serialization?

Ans: Serialization is used when data needs to be transmitted over the network. Using serialization, object's state is saved and converted into byte stream .The byte stream is transferred over the network and the object is re-created at destination.

Q25. Is it compulsory for a Try Block to be followed by a Catch Block In Java for Exception handling?

Ans: Try block needs to be followed by either Catch block or Finally block or both. Any exception thrown from try block needs to be either caught in the catch block or else any specific tasks to be performed before code abortion are put in the Finally block.

Q26. Is there any way to skip Finally block of exception even if some exception occurs in the exception block?

the code forcibly by writing following line of code at the end of try block:

```
System.exit(0);
```

Q27. When the constructor of a class is invoked?

Ans: The constructor of a class is invoked every time an object is created with new keyword.

For example, in the following class two objects are created using new keyword and hence, constructor is invoked two times.

```
public class const_example {

    const_example() {

        system.out.println("Inside constructor");
    }
    public static void main(String args[]) {

        const_example c1 = new const_example();

        const_example c2 = new const_example();
    }
}
```