Top 100 Java Interview Questions with Answers

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:
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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.
[crayon-5460b0f784cc2340562726/]

In the below example when counter reaches 4, loop jumps tonext iteration and any statements after the continue keyword are skipped for current iteration.
[crayon-5460b0f784cc5843870929/]

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".
[crayon-5460b0f784cc8199688171/]

Q12: What are 6 different types of operators in Java?

Ans: In java, operators can be classified in following six types:

- Arithmetic Operators

Used for arithmetic calculations. Example are **+,-,*,/,%,++,--**

- Relational Operators

Used for relational comparison. E.g. **==,!=, >,**
Q51. Give an example of use of Pointers in Java class.

Ans: There are no pointers in Java. So we can't use concept of pointers in Java.

Q52. How can we restrict inheritance for a class so that no class can be inherited from it?

Ans: If we want a class not to be extended further by any class, we can use the keyword **Final** with the class name.

In the following example, Stone class is Final and can't be extend
[crayon-5460b0f784cef945196767/]

Q53. What's the access scope of Protected Access specifier?

Ans: When a method or a variable is declared with Protected access specifier, it becomes accessible in the same class,any other class of the same package as well as a sub-class.

Access Levels	Modifier	Class	Package	Subclass	World
	public	Y	Y	Y	Y
	protected	Y	Y	Y	N
	no modifier	Y	Y	N	N
	private	Y	N	N	N

Q54. What's difference between Stack and Queue?

Ans: Stack and Queue both are used as placeholder for a collection of data. The primary difference between a stack and a queue is that stack is based on Last in First out (LIFO) principle while a queue is based on FIFO (First In First Out) principle.

Q55. In java, how we can disallow serialization of variables?

Ans: If we want certain variables of a class not to be serialized, we can use the keyword **transient** while declaring them. For example, the variable trans_var below is a transient variable and can't be serialized:
[crayon-5460b0f784cf2756770410/]

Q56. How can we use primitive data types as objects?

Ans: Primitive data types like int can be handled as objects by the use of their respective wrapper classes. For example, Integer is a wrapper class for primitive data type int. We can apply different methods to a wrapper class, just like any other object.

Q57. Which types of exceptions are caught at compile time?

Ans: Checked exceptions can be caught at the time of program compilation. Checked exceptions must be handled by using try catch block in the code in order to successfully compile the code.

Q58. Describe different states of a thread.

Ans: A thread in Java can be in either of the following states:

- Ready: When a thread is created, it's in Ready state.
- Running: A thread currently being executed is in running state.
- Waiting: A thread waiting for another thread to free certain resources is in waiting state.
- Dead: A thread which has gone dead after execution is in dead state.

Q59. Can we use a default constructor of a class even if an explicit constructor is defined?

Ans: Java provides a default no argument constructor if no explicit constructor is defined in a Java class. But if an explicit constructor has been defined, default constructor can't be invoked and developer can use only those constructors which are defined in the class.

Q60. Can we override a method by using same method name and arguments but different return types?

Ans: The basic condition of method overriding is that method name, arguments as well as return type must he exactly same as is that of the method being overridden. Hence using a different return type doesn't override a method.

Q61.What will be the output of following piece of code?
[crayon-5460b0f784cf6594950022/]

Ans: In this case postfix ++ operator is used which first returns the value and then increments. Hence it's output will be 4.

Q61. A person says that he compiled a java class successfully without even having a main method in it? Is it possible?

Ans: main method is an entry point of Java class and is required for execution of the program however; a class gets compiled successfully even if it doesn't have a main method. It can't be run though.

Q62. Can we call a non-static method from inside a static method?

Ans: Non-Static methods are owned by objects of a class and have object level scope and in order to call the non-Static methods from a static block (like from a static main method), an object of the class needs to be created first. Then using object reference, these methods can be invoked.

Q63. What are the two environment variables that must be set in order to run any Java programs?

Ans: Java programs can be executed in a machine only once following two environment variables have been properly set:

1. PATH variable
2. CLASSPATH variable

Q64. Can variables be used in Java without initialization?

Ans: In Java, if a variable is used in a code without prior initialization by a valid value, program doesn't compile and gives an error as no default value is assigned to variables in Java.

Q65. Can a class in Java be inherited from more than one class?

Ans: In Java, a class can be derived from only one class and not from multiple classes. Multiple inheritances is not supported by Java.

Q66. Can a constructor have different name than a Class name in Java?

Ans: Constructor in Java must have same name as the class name and if the name is different, it doesn't act as a constructor and compiler thinks of it as a normal method.

Q67. What will be the output of Round(3.7) and Ceil(3.7)?

Ans: Round(3.7) returns 3 while Ceil(3.7) returns 4.

Q68: Can we use goto in Java to go to a particular line?

Ans: In Java, there is not goto keyword and java doesn't support this feature of going to a particular labeled line.

Q69. Can a dead thread be started again?

Ans: In java, a thread which is in dead state can't be started again. There is no way to restart a dead thread.

Q70. Is the following class declaration correct?

Ans:
[crayon-5460b0f784cfa518049563/]

Ans: The above class declaration is incorrect as an abstract class can't be declared as Final.

Q71. Is JDK required on each machine to run a Java program?

Ans: JDK is development Kit of Java and is required for development only and to run a Java program on a machine, JDK isn't required. Only JRE is required.

Q72. What's the difference between comparison done by equals method and == operator?

Ans: In Java, equals() method is used to compare the contents of two string objects and returns true if the two have same value while == operator compares the references of two string objects.

In the following example, equals() returns true as the two string objects have same values. However == operator returns false as both string objects are referencing to different objects:
[crayon-5460b0f784cfe629726807/]

Q73. Is it possible to define a method in Java class but provide it's implementation in the code of another language like C?

Ans: Yes, we can do this by use of native methods. In case of native method based development, we define public static methods in our Java class without its implementation and then implementation is done in another language like C separately.

Q74. How destructors are defined in Java?

Ans: In Java, there are no destructors defined in the class as there is no need to do so. Java has its own garbage collection mechanism which does the job automatically by destroying the objects when no longer referenced.

Q75. Can a variable be local and static at the same time?

Ans: No a variable can't be static as well as local at the same time. Defining a local variable as static gives compilation error.

Q76. Can we have static methods in an Interface?

Ans: Static methods can't be overridden in any class while any methods in an interface are by default abstract and are supposed to be implemented in the classes being implementing the interface. So it makes no sense to have static methods in an interface in Java.

Q77. In a class implementing an interface, can we change the value of any variable defined in the interface?

Ans: No, we can't change the value of any variable of an interface in the implementing class as all variables defined in the interface are by default public, static and Final and final variables are like constants which can't be changed later.

Q78. Is it correct to say that due to garbage collection feature in Java, a java program never goes out of memory?

Ans: Even though automatic garbage collection is provided by Java, it doesn't ensure that a Java program will not go out of memory as there is a possibility that creation of Java objects is being done at a faster pace compared to garbage collection resulting in filling of all the available memory resources.

So, garbage collection helps in reducing the chances of a program going out of memory but it doesn't ensure that.

Q79. Can we have any other return type than void for main method?

Ans: No, Java class main method can have only void return type for the program to get successfully executed.

Nonetheless , if you absolutely must return a value to at the completion of main method , you can use System.exit(int status)

Q80. I want to re-reach and use an object once it has been garbage collected. How it's possible?

Ans: Once an object has been destroyed by garbage collector, it no longer exists on the heap and it can't be accessed again. There is no way to reference it again.

Q81. In Java thread programming, which method is a must implementation for all threads?

Ans: Run() is a method of Runnable interface that must be implemented by all threads.

Q82. I want to control database connections in my program and want that only one thread should be able to make database connection at a time. How can I implement this logic?

Ans: This can be implemented by use of the concept of synchronization. Database related code can be placed in a method which hs **synchronized** keyword so that only one thread can access it at a time.

Q83. How can an exception be thrown manually by a programmer?

Ans: In order to throw an exception in a block of code manually, **throw** keyword is used. Then this exception is caught and handled in the catch block.
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Q84. I want my class to be developed in such a way that no other class (even derived class) can create its objects. How can I do so?

Ans: If we declare the constructor of a class as private, it will not be accessible by any other class and hence, no other class will be able to instantiate it and formation of its object will be limited to itself only.

Q85. How objects are stored in Java?

Ans: In java, each object when created gets a memory space from a heap. When an object is destroyed by a garbage collector, the space allocated to it from the heap is re-allocated to the heap and becomes available for any new objects.

Q86. How can we find the actual size of an object on the heap?

Ans: In java, there is no way to find out the exact size of an object on the heap.

Q87. Which of the following classes will have more memory allocated?

Class A: Three methods, four variables, no object

Class B: Five methods, three variables, no object

Ans: Memory isn't allocated before creation of objects. Since for both classes, there are no objects created so no memory is allocated on heap for any class.

Q88. What happens if an exception is not handled in a program?

Ans: If an exception is not handled in a program using try catch blocks, program gets aborted and no statement executes after the statement which caused exception throwing.

Q89. I have multiple constructors defined in a class. Is it possible to call a constructor from another constructor's body?

Ans: If a class has multiple constructors, it's possible to call one constructor from the body of another one using **this()**.

Q90. What's meant by anonymous class?

Ans: An anonymous class is a class defined without any name in a single line of code using new keyword.

For example, in below code we have defined an anonymous class in one line of code:
[crayon-5460b0f784d07292355100/]

Q91. Is there a way to increase the size of an array after its declaration?

Ans: Arrays are static and once we have specified its size, we can't change it. If we want to use such collections where we may require a change of size (no of items), we should prefer vector over array.

Q92. If an application has multiple classes in it, is it okay to have a main method in more than one class?

Ans: If there is main method in more than one classes in a java application, it won't cause any issue as entry point for any application will be a specific class and code will start from the main method of that particular class only.

Q93. I want to persist data of objects for later use. What's the best approach to do so?

Ans: The best way to persist data for future use is to use the concept of serialization.

Q94. What is a Local class in Java?

Ans: In Java, if we define a new class inside a particular block, it's called a local class. Such a class has local scope and isn't usable outside the block where its defined.

Q95. String and StringBuffer both represent String objects. Can we compare String and StringBuffer in Java?

Ans: Although String and StringBuffer both represent String objects, we can't compare them with each other and if we try to compare them, we get an error.

Q96. Which API is provided by Java for operations on set of objects?

Ans: Java provides a Collection API which provides many useful methods which can be applied on a set of objects. Some of the important classes provided by Collection API include ArrayList, HashMap, TreeSet and TreeMap.

Q97. Can we cast any other type to Boolean Type with type casting?

Ans: No, we can neither cast any other primitive type to Boolean data type nor can cast Boolean data type to any other primitive data type.

Q98. Can we use different return types for methods when overridden?

Ans: The basic requirement of method overriding in Java is that the overridden method should have same name, and parameters.But a method can be overridden with a different return type as long as the new return type extends the original.

For example , method is returning a reference type.
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Q99. What's the base class of all exception classes?

Ans: In Java, **Java.Lang.throwable** is the super class of all exception classes and all exception classes are derived from this base class.

Q100. What's the order of call of constructors in inheritiance?

Ans: In case of inheritance, when a new object of a derived class is created, first the constructor of the super class is invoked and then the constructor of the derived class is invoked.

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