**1] Why Java is platform independent?**

Java is called platform independent because of its byte codes which can run on any system irrespective of its underlying operating system.

**2]**  **Why Java is not 100% Object-oriented?**

Java is not 100% Object-oriented because it makes use of eight primitive data types such as boolean, byte, char, int, float, double, long, short which are not objects.

### 3] ****What is the difference between equals() and == in Java?****

Equals() method is defined in Object class in Java and used for checking equality of two objects defined by business logic.

“==” or equality operator in Java is a binary operator provided by Java programming language and used to compare primitives and objects. *public boolean equals(Object o)* is the method provided by the Object class. The default implementation uses == operator to compare two objects. For example: method can be overridden like String class. equals() method is used to compare the values of two objects.

### ****4] What are access modifiers in Java?****

In Java, access modifiers are special keywords which are used to restrict the access of a class, constructor, data member and method in another class. Java supports four types of access modifiers:

1. Default
2. Private
3. Protected
4. Public

**5] What is an object in Java and how is it created?**

An object is a real-world entity that has a state and behavior. An object has three characteristics:

1. State
2. Behavior
3. Identity

An object is created using the ‘new’ keyword. For example:

ClassName obj = new ClassName();

### ****5] What is Object Oriented Programming?****

Object-oriented programming or popularly known as OOPs is a programming model or approach where the programs are organized around objects rather than logic and functions. In other words, OOP mainly focuses on the objects that are required to be manipulated instead of logic. This approach is ideal for the programs large and complex codes and needs to be actively updated or maintained.

### 6] What is the platform?

A platform is the hardware or software environment in which a piece of software is executed. There are two types of platforms, software-based and hardware-based. Java provides the software-based platform.

7] What are the advantages of Packages in Java?

There are various advantages of defining packages in Java.

* Packages avoid the name clashes.
* The Package provides easier access control.
* We can also have the hidden classes that are not visible outside and used by the package.
* It is easier to locate the related classes.

### 8] What is the constructor?

The constructor can be defined as the special type of method that is used to initialize the state of an object. It is invoked when the class is instantiated, and the memory is allocated for the object. Every time, an object is created using the **new** keyword, the default constructor of the class is called. The name of the constructor must be similar to the class name. The constructor must not have an explicit return type.

### 9] Does constructor return any value?

 yes, The constructor implicitly returns the current instance of the class (You can't use an explicit return type with the constructor)

### ****10] What is Polymorphism?****

Polymorphism is briefly described as “one interface, many implementations”. Polymorphism is a characteristic of being able to assign a different meaning or usage to something in different contexts – specifically, to allow an entity such as a variable, a function, or an object to have more than one form. There are two types of polymorphism

1. Compile time polymorphism
2. Run time polymorphism

### ****11] What do you mean by an interface in Java?****

An interface in Java is a blueprint of a class or you can say it is a collection of abstract methods and static constants. In an interface, each method is public and abstract but it does not contain any constructor. Thus, interface basically is a group of related methods with empty bodies.

**12] What is abstraction in Java?**

Abstraction refers to the quality of dealing with ideas rather than events. It basically deals with hiding the details and showing the essential things to the user. Thus you can say that abstraction in Java is the process of hiding the implementation details from the user and revealing only the functionality to them. Abstraction can be achieved in two ways:

1. **Abstract Classes** (0-100% of abstraction can be achieved)
2. **Interfaces** (100% of abstraction can be achieved)

**13] What is Abstract class?**

These classes cannot be instantiated and are either partially implemented or not at all implemented. This class contains one or more abstract methods which are simply method declarations without a body.

**14] What is Encapsulation?**

It is the technique of making the fields in a class private and providing access to the fields via public methods. If a field is declared private, it cannot be accessed by anyone outside the class, thereby hiding the fields within the class. Therefore encapsulation is also referred to as data hiding.

**15] Why Packages are used?**

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.

### ****16]  Explain method overloading.****

When a Java program contains more than one method with the same name but with different properties, then it is called method overloading.

**17] What is method overriding?**

Modifying a super class method in the sub class is called method overriding. Using method overriding, we can change super class method according to the requirements of sub class.

**18] What do you mean by Constructor?**

* When a new object is created in a program a constructor gets invoked corresponding to the class.
* The constructor is a method which has the same name as class name.
* If a user doesn’t create a constructor implicitly a default constructor will be created.
* The constructor can be overloaded.
* If the user created a constructor with a parameter then he should create another constructor explicitly without a parameter.

### ****19] What is a copy constructor in Java?****

Copy constructor is a member function that is used to initialize an object using another object of the same class. Though there is no need for copy constructor in Java since all objects are passed by reference. Moreover, Java does not even support automatic pass-by-value.

**20]  What are the different types of inheritance in Java?**

Java supports four types of inheritance which are:

1. **Single Inheritance:** In single inheritance, one class inherits the properties of another i.e there will be only one parent as well as one child class.
2. **Multilevel Inheritance:**When a class is derived from a class which is also derived from another class, i.e. a class having more than one parent class but at different levels, such type of inheritance is called Multilevel Inheritance.
3. **Hierarchical Inheritance:**When a class has more than one child classes (subclasses) or in other words, more than one child classes have the same parent class, then such kind of inheritance is known as hierarchical.
4. **Hybrid Inheritance:**Hybrid inheritance is a combination of two*or more types* of inheritance.

### ****21] What is an association?****

Association is a relationship where all object have their own lifecycle and there is no owner. Let’s take the example of Teacher and Student. Multiple students can associate with a single teacher and a single student can associate with multiple teachers but there is no ownership between the objects and both have their own lifecycle. These relationships can be one to one, one to many, many to one and many to many.

### ****22] What do you mean by aggregation?****

An aggregation is a specialized form of Association where all object has their own lifecycle but there is ownership and child object can not belong to another parent object. Let’s take an example of Department and teacher. A single teacher can not belong to multiple departments, but if we delete the department teacher object will not destroy.

### ****23] What is composition in Java?****

Composition is again a specialized form of Aggregation and we can call this as a “death” relationship. It is a strong type of Aggregation. Child object does not have their lifecycle and if parent object deletes all child object will also be deleted. Let’s take again an example of a relationship between House and rooms. House can contain multiple rooms there is no independent life of room and any room can not belongs to two different houses if we delete the house room will automatically delete.

### 24] What is the importance of main method in Java?

main() method is the entry point of any standalone java application. The syntax of main method is public static void main(String args[]).

Java main method is public and static so that Java runtime can access it without initializing the class. The input parameter is an array of String through which we can pass runtime arguments to the java program.

### 25] Why Java is not pure Object Oriented language?

Java is not said to be pure object-oriented because it supports primitive types such as int, byte, short, long etc. I believe it brings simplicity to the language while writing our code. Obviously, java could have wrapper objects for the primitive types but just for the representation, they would not have provided any benefit.

As we know, for all the primitive types we have wrapper classes such as Integer, Long etc that provides some additional methods.

**26]** **What is Java Package and which package is imported by default?**

Java package is the mechanism to organize the java classes by grouping them. The grouping logic can be based on functionality or modules based. A java class fully classified name contains package and class name. For example, java.lang.Object is the fully classified name of Object class that is part of java.lang package.

java.lang package is imported by default and we don’t need to import any class from this package explicitly.

**27] What is Garbage Collection?**

Garbage Collection is the process of looking at heap memory, identifying which objects are in use and which are not, and deleting the unused objects. In Java, process of deallocating memory is handled automatically by the garbage collector.

We can run the garbage collector with code Runtime.getRuntime().gc() or use utility method System.gc().

**28] What is a method? Provide several signatures of the methods**  
A Java method is a set of statements to perform a task. A method is placed in a class.  
Signatures of methods: The name of the method, return type and the number of parameters comprise the method signature.  
A method can have the following elements in its signature:  
– Access specifier – public, private, protected, etc. (Not mandatory)  
– Access modifier – static, synchronized, etc. (Not mandatory)  
– Return type – void, int, String, etc. (Mandatory)  
– Method name – show() (Mandatory)  
– With or without parameters – (int number, String name); (parenthesis are mandatory)

**29] Which class is the superclass of all classes?**[java.lang.Object](https://www.geeksforgeeks.org/object-class-in-java/)is the root class for all the java classes and we don’t need to extend it.

**30] Explain Final keyword in java?**

Final keyword in java is used to restrict usage of variable, class and method.  
   
Variable: Value of Final variable is constant, you can not change it.  
Method: you can’t override a Final method.  
Class: you can’t inherit from Final class.

**31] What are the primitive data types in Java ?**

There are eight primitive data types.

* byte.
* short.
* int.
* long.
* float.
* double.
* boolean.
* char.

**32] What is a Java package?**

Package is a collection of related classes and interfaces. Related classes will have the package defined using package keyword.

**package** packageName.subpackageName;

Any java class/interface will have the package declaration as the first statement.

package is optional however it is common practice to place the java class under a package.