1. **What is JAVA ?**

Java is a programming language used to develop different applications like standalone application,Web application, Enterprise application and Mobile application.it also has some important features like

Simple , object oriented ,robust, platform independent, distributed , multithreading etc.,

1. **Features of JAVA ?**

Java is a programming language which supports different features simple, object oriented robust, platform independent ,portable, secured , multithreaded and distributed etc.,

* **Simple** : Simple- Java was designed to be easy for the professional programmer to learn and use it effectively. Since Java inherits C/C++ syntax and object oriented (OO) concepts of C++, it is easy to learn for most programmers.
* **Object** **oriented** : java follows different object oriented concepts like inheritance abstraction, encapsulation and polymorphism .
* **Robust** : Robust simply means strong. Java uses strong memory management. There are lack of pointers that avoids security problem. There is automatic garbage collection in java. There is exception handling and type checking mechanism in java. All these points makes java robust.
* **Plaform** **Independent** :The byte code generated by a valid java compiler can be carried to any platform.
* **Portable** :Java code is compiled by the compiler and converted into bytecode. This bytecode is a platform-independent code because it can be run on multiple platforms i.e. Write Once and Run Anywhere(WORA).
* **Secured** : Java is secured because,
  + - * + No explicit pointer.
        + Java Programs run inside virtual machine sandbox.
    - **Multithreaded :**  We can write Java programs that deal with many tasks at once by defining multiple threads. The main advantage of multi-threading is that it doesn't occupy memory for each thread. It shares a common memory area.

1. **What are the Different types of applications you can build with JAVA ?**

There are mainly 4 type of applications that can be created using java programming:

**1) Standalone Application:**It is also known as desktop application or window-based application. An application that we need to install on every machine such as media player, antivirus etc. AWT and Swing are used in java for creating standalone applications.

**2) Web Application:**

An application that runs on the server side and creates dynamic page, is called web application. Currently, servlet, jsp, struts, jsf etc. technologies are used for creating web applications in java.

**3) Enterprise Application:**

An application that is distributed in nature, such as banking applications etc. It has the advantage of high level security, load balancing and clustering. In java, EJB is used for creating enterprise applications.

**4) Mobile Application:**

An application that is created for mobile devices. Currently Android and Java ME are used for creating mobile applications.

**4. Difference between JDK, JRE and JVM ?**

JVM (Java Virtual Machine) : It is an abstract machine which loads, verifies and executes the code, provides the run time environment for the byte code to be executed. It directly comes in contact with OS but the code within the JVM never interacts with it which makes it more secured.

JRE (Java Run Time Environment): It is the implementation of the JVM. It has got all the libraries + all the files used by JVM at run time. It provides the run time environment.

JDK (Java Development Kit): It provides the utilities for the compilation of the code and includes development tools. It consists of the JRE.

1. **What is the Java memory Model?**

* Class Area: It consists of the static variables.
* Heap: The objects created at the run time are stored in heap.
* Stack: It holds the primitive variables, partial results and local variables.
* Program Counter: It consists of the address of the current instruction being executed.
* Native Methods: it consists of the methods of other programming languages like C.

1. **What are the types of variables in JAVA?**

* Local Variables: These variables are declared within a method and their scope is also within the method. They don’t have any default values.
* Static Variables: The variable declared as static are known as static variables. It cannot be local.
* Instance Variables: The variables declared outside a method but inside a class are known as instance variables. They do have default values like int (0), string (null) etc.

1. **Different types of operators ?**

There are many types of operators in java which are given below:

* + - * + Unary Operator,
        + Arithmetic Operator,
        + shift Operator,
        + Relational Operator,
        + Bitwise Operator,
        + Logical Operator,
        + Ternary Operator and
        + Assignment Operator.

1. **Explain the design of JAVA class ?**

The design of java class starts with valid package name ,import statements ,class name , variable declaration ,method signature , comments

1. **What is Class and Object ?**

Class : class is a template which represents state and behavior . here the state incudes properties and behavior includes methods .

Object: object is an instance of class.

1. **What are different OOPS concepts?**

* Abstraction
* Polymorphism
* Encapsulation
* Inheritance

1. **What is Abstraction?**

Abstraction: Abstraction is the **concept** of hiding the implementation and showing only the essential features of the object. Abstraction mainly comes into picture for future flexibility when the developer is not sure of the implementation.

A class that is declared as abstract is known as **abstract class**. It needs to be extended and its method implemented. It cannot be instantiated. A method that is declared as abstract and does not have implementation is known as abstract method.

1. **What is Encapsulation?**

Encapsulation is the **concept** of restricting the access of data members from one class to another by giving the private keyword and providing access through the getters and setters.

1. **What is the difference between abstraction and encapsulation?**

**Encapsulation**is a **concept** by which you restrict the access to some of the object's components, as well as binding the data and methods operating on the data.

**Abstraction** is the **concept** to define an object that can represent abstract entities which can work, change state and communicate with other entities.

**Abstraction** is implemented in Java using interface and abstract class while

**Encapsulation** is implemented using private and protected access modifier

1. **What is Inheritance?**

Inheritance is the **concept** of acquisition of properties and behavior from one class to another. It is mainly used for code reusability. It is an IS-A relationship. The extends keyword is used to extend once class to another. A class that is inherited is called a super class. The new class is called a subclass.

1. **What is Polymorphism?**

Polymorphism is the **concept** of an object’s ability to take on many forms. There are two types of polymorphism in java: compile time polymorphism and runtime polymorphism.

1. **What is method overloading and overriding?**

Method overloading is the **concept** of a class having multiple methods of same name but vary with type and number of arguments. It enhances the readability. It is performed within a class.

Method overriding is the **concept** of implementing a method in the sub class which is already provided in the super class. It should compulsorily be in an IS-A relation. The subclass method should have the same method name and the parameters.

1. **What is static in JAVA?**

Static is a **keyword** which specifies that the variables, keywords will have common properties to all the instances of the class, rather than depending on the object. It can be applied to a variable, method, block or a nested class. It is mainly used for memory management.

1. **What is final ?**

FINAL is keyword which can be applied towards classes, variables and methods

When we apply towards classes we can’t inherit the classes , when we apply towards variables the value of variable cannot be reassigned or modified, when we apply towards methods we can’t override the methods

1. **What is final, finally, finalize ?**

**FINAL** is keyword which can be applied towards classes, variables and methods When we apply towards classes we can’t inherit the classes , when we apply towards variables the value of variable cannot be reassigned or modified, when we apply towards methods we can’t override the methods

**Finally**  is a block where we place important statements of code which needs to be executed irrespective of occurrence of exception. Example closing database connections, file reader, buffered reader connection .

**Finalize**  is method which is used to perform clean up processing before object is garbage collection .

1. **What is static and dynamic binding ?**

The concept of establishing connection between method call and method body is called binding

There are two types of binding

**Static binding :** when the object type is determined at compile time then it is called static binding.

**Dynamic binding :** when the object type is determined at runtime it is called dynamic binding

1. **What is Heap space in Java?**

When a Java program started Java Virtual Machine gets some memory from Operating System. Java Virtual Machine or JVM uses this memory for all its need and part of this memory is call java heap memory. Heap in Java generally located at bottom of address space and move upwards. whenever we create object using new operator or by any another means object is allocated memory from Heap and When object dies or garbage collected ,memory goes back to Heap space in Java  
Read more: <http://javarevisited.blogspot.com/2011/05/java-heap-space-memory-size-jvm.html#ixzz4bbDz5J2D>