Java Interview questions notes

History of Java

Java is an object-oriented programming language released by Microsystems in 1995.

Write Once, Run Anywhere(WORA), cross platforms unlike c++.

Borrowed syntax from c++, but provide automatic memory management and eliminate multiple inheritance.

The java virtual machine

WORA is possible because of JVM, in java, code is compiled into a virtual machine language called bytecode. The JVM acts as an intermediary between bytecode and the physical machine.

Every platform that supports Java has its own implementation of the JVM. Java applications are portable because every JVM adheres to a standard interface. The distribution package of   the JVM and standard libraries is called the Java Runtime Environment (JRE). The distribution package of the JRE and development tools, such as the compiler and debugger, is called the JDK.

Procedural Programming vs Object-Oriented Programming

Procedural programming is writing code that executes a series of linear procedures to produce a result. Object-oriented programming is writing code that uses objects to encapsulate attribute and behavior. Procedural code is easier to use in small projects or in multithreaded environments due to its stateless nature, but object-oriented code is far more flexible and easier to maintain.

What is the WORA principle? Why is it beneficial?

Write once and run anywhere, due to the java virtual machine, java code could run on different platforms, it could reduce programmer’s workload, which means they do not need to implement the same application on different platforms, it is time-consuming.

How could java applications run on multiple platforms?

Due to the java virtual machine, every platform has its own implementation of JVM, java code is compiled in an intermediary language called bytecode. JVM translate bytecode into machine language and then run the code.

What is the difference between the JRE and the JDK?

JRE is a package of JVM and java standard libraries.

JDK is a package of JRE and development tools such as debugger, compiler.

What is the difference between procedural programming and object-oriented programming?

Procedural programming is writing linear procedures to produce a result. It is suitable in small projects or in multithreaded environments due to its stateless nature.

Object-oriented programming is writing objects that encapsulate attributes and behaviors. It is flexible to use and easier to maintain.

Object-Oriented Concepts

What is the purpose of abstraction in software development?

Abstraction is the act of perceiving an entity from a narrow perspective. The goal of abstraction is to reduce the complexity in software systems.

What is encapsulation? How does java support it?

Encapsulation is a technique that encourages abstraction by hiding information. Java encourage encapsulation through the use of interfaces and by providing access modifiers that could limit the visibility of classes, fields and methods.

What is polymorphism? How does java support it?

Polymorphism is a technique that encourages abstraction by allowing an entity to assume multiple forms. In Java, an object can take on the form of any parent in its hierarchy or any interface in its hierarchy.