Basics

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Java: It is a software platform for building (using its development kit - JDK) and executing (using its runtime environment - JRE) cross-platform applications. It offers
(1) *Consistent Programming Model* for easily writing and reusing program code.
(2) *Portable Distribution Model* for deploying program binaries on different type of machines.
(3) *Safe Execution Model* for running program in a stable (predictable and crash-proof) manner on underlying system.

The implementation of Java platform includes support for

1. **Java Programming Language** - It is a high-level programming language designed specifically for writing program code which targets the Java platform. It has following important features
   (a) It offers C++ like but more consistent syntax based on a type-system consisting of 8 primitive value types and support for implementing user-defined reference types.
   (b) It is primarily object oriented based on common-root single class inheritance model with added support for generic (version 5.0) and functional (version 8.0) programming.

2. **Java Virtual Machine (JVM)** - The source code of each Java user-defined type is translated by the Java compiler (javac) into a separate class file containing *meta-data* (machine readable description) of that type along with the *byte-codes* (machine neutral instructions) of the methods implemented within that type. JVM manages execution of compiled Java application on its target platform by providing support for
   (a) Loading and linking class files of Java types required by the application at runtime.
   (b) Executing byte-codes of a method by first generating the corresponding native machine instructions which can be safely executed.

3. **Java Runtime Library** - It is a collection of Java types organized in packages enabling a Java application to consume services offered by the following in a portable manner
   (a) *Runtime* which includes support for data-types, reflection and native methods.
   (b) *Platform* which includes support for threads, file I/O and network communication.

Java Primitive Types

Data-type	**Value**
boolean	true|false option
char	character unicode (ex 'A')
byte	8-bit signed integer
short	16-bit signed integer
int	32-bit signed integer
long	64-bit signed integer
float	32-bit single-precision real
double	64-bit double-precision real