Core Java Tutorial: Java Virtual Machine (JVM), Java Features, Editions and Java arrays

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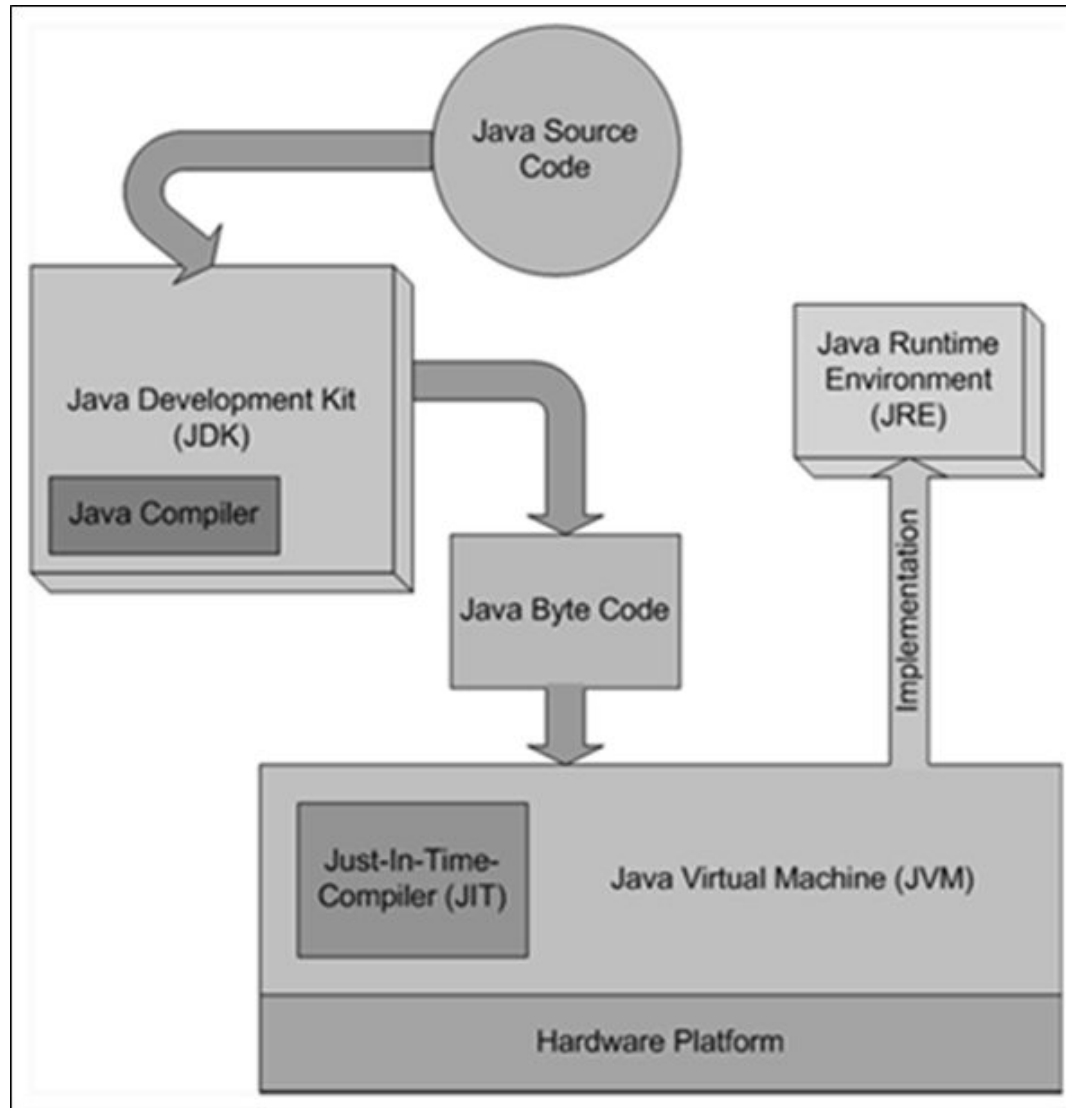
Relationship between JDK, JRE & JVM

Figure 1: JDK, JRE & JVM

Java Virtual Machine (JVM)

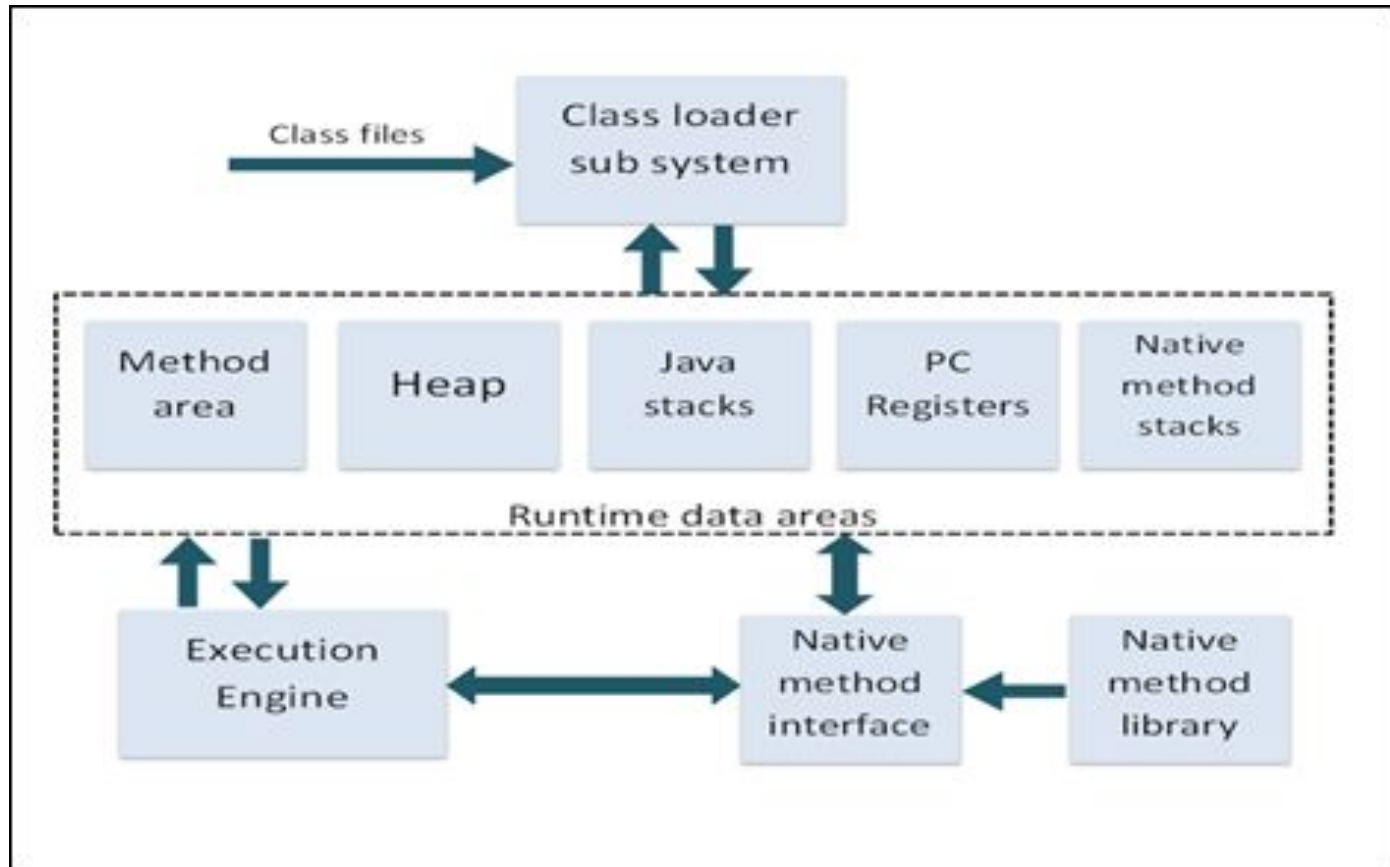JVM has various sub components internally which are shown in the diagram below.

Figure 2: JVM Architecture

Java Features

o   Platform Independent

o   Object Oriented

o   Compiled & Interpreted

o   Robust

o   Several dangerous features of C and C++ eliminated

o   Automatic Memory Management

o   Secure

o   Dynamic Binding

o   High Performance

o   Multithreading

o   Built-in Networking

Java Platforms / Editions

- **Java SE (Java Standard Edition)**
  - This is the basic Java programming platform

- **Java EE (Java Enterprise Edition)**
  - This is the enterprise platform which is mainly used to develop web and enterprise applications

- **Java ME (Java Micro Edition)**
  - This is the micro platform which is mainly used to develop mobile applications

- **JavaFX**
  - This is the platform which is used to develop rich internet applications (RIA)

Java arrays

- An array is an ordered collections of identical objects that can be accessed via an index. They behave like class-type variables.

- Declaring an array only declares the array variable:

```java
int arr[]; //array declaration
```

- To instantiate the array, the new operator must be used with the [ ] operator to enclose the array size:

```java
arr = new int[10]; //array instantiation
```

- To initialize the array, we use a read-only data field called length that indicates its size:

```java
//array initialization
for (int i = 0; i < arr.length; i++) {
    arr[i] = i + 1;
}
```

- Java provides support for multi-dimensional arrays.

References

- ## Book Resources:
  - Herbert Schildt. *Java: The complete Reference*. Tata McGraw Hill (TMH), 9th Edition.
  - Cay S. Horstmann, Gary Cornell. *Core Java Volume-I and Volume-II.* Pearson Education, 8th Edition.
  - Kathy Sierra, Bert Bates. *Head First Java*. O'Reilly Media, 2nd Edition.
  - E. Balagurusamy, *Programming with Java A Primer*. TMH, 3rd Edition.

- ## URL Resources:
  - https://docs.oracle.com/javase/tutorial/java/package/index.html
  - https://www.w3schools.com/java/default.asp