



What is the JDK?

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Agenda



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Introduction of JDK

- The Java Development Kit (JDK) is one of three core technology packages used in Java programming, along with the JVM (Java Virtual Machine) and the JRE (Java Runtime Environment)
- Important to differentiate between these three technologies, as well as understanding how they're connected
- The JVM is the Java platform component that executes programs
- The JRE is the on-disk part of Java that creates the JVM, can be used as a standalone component to run Java programs but is part of the JDK
- The JDK allows developers to create Java programs that can be executed and run by the JVM and JRE. JDK requires a JRE as running Java code is part of development

Note: JDK is package of tools for developing Java-based software while JRE is a package of tools to run Java code

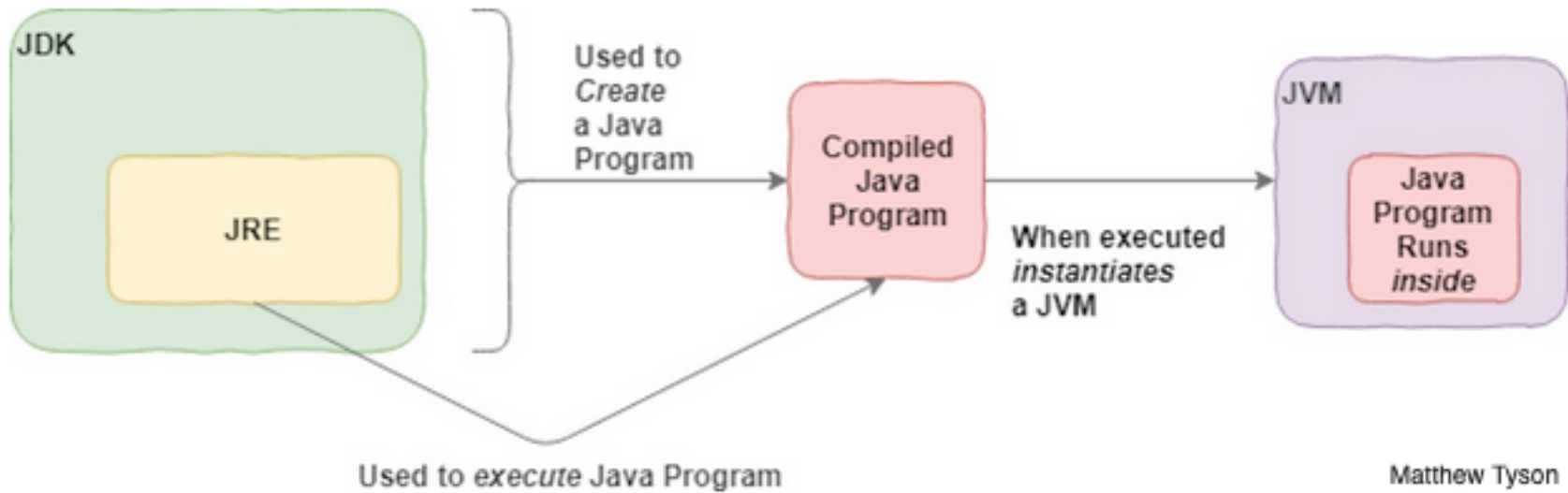


Figure 1. High-level view of the JDK

Technical definition: JDK is an implementation of the Java platform specification, including compiler and class libraries

Everyday definition: JDK is a software package you download in order to create Java applications

Note: every JDK contains a Java compiler, converts .java files to .class files

Get started with the JDK and JDK Packages

- Getting Java setup in dev environment is easy as downloading a JDK and adding it to classpath
- Java 8 is the version most commonly in use but Java 11 is the long-term support release, Java maintains backward compatibility
- In addition to choosing your Java version, you will also need to select a Java package
- *Packages* are Java Development Kits that are targeted for different types of development and the available packages are Java Enterprise Edition (Java EE), Java Standard Edition (Java SE), and Java Mobile Edition (Java ME)
- Note: You would download a Java EE JDK if you were primarily interested in building Java-based web applications. The Java EE JDK includes the [Java Servlet specification](#), which supports HTTP request handling. Every Java EE JDK implementation also requires a *container*, which is a server that runs Java EE applications. Glassfish is the Java EE server reference implementation for Oracle. Other popular implementations are [Tomcat](#) and Jetty.

The jar command

- The `javac` is the star of the JDK, but the `/bin` directory contains other tools you will need. Probably the most prominent after `javac` is the `jar` tool.
- A *.jar file* is a packaged set of Java classes. Once the compiler has created the `.class` files, the developer can put them together in a `.jar`, which compresses and structures them in a predictable fashion.
- Use the `jar` command to convert `.class` file to a `.jar` file
- To execute the `jar` file, add it to the classpath and execute the program by:

```
java -cp sample.jar Sample
```

Note: `-cp` switch tells Java to add the `jar` to the classpath

JDK in your IDE

An *IDE*, or integrated development environment, is software that provides a cohesive set of tools for developing applications.

In Java development, one of the key things the IDE does is manage compilation for you. That is, the IDE automatically runs the compile process in the background so you don't have to continually do it yourself. An IDE also provides play-by-play feedback as you go, catching coding errors on the fly.

With Eclipse installed, open the Window menu item from the menu bar and select **preferences**. Inside the preferences window, you'll see the **Java** item. Open it, and inside you'll see the **Compiler** item. Clicking that will reveal some options for the JDK.

Need to select the correct JDK version for your project. Under the hood, the IDE will run the JDK compiler, just as you ran it from the command line.

The Eclipse IDE also has its own JDK instance. The IDE manages the JDK and JRE for you, which makes life much easier!

Reference

<https://www.javaworld.com/article/3296360/what-is-the-jdk-introduction-to-the-java-development-kit.html>