

## **MAVEN - BUILD AUTOMATION TOOL**

Maven is a powerful **build tool** that provides developers a complete build lifecycle framework.

A build tool is a tool that automates everything related to building the software project.

Building a software project typically includes one or more of these activities:

- Generating source code (if auto-generated code is used in the project).
- Generating documentation from the source code.
- Compiling source code.
- Packaging compiled code into JAR files or ZIP files.

### **Maven Build LifeCycles**

Following are the phases of Maven default build lifecycle:

1. Mvn Validate - validate the project is correct and all necessary information is available
2. Mvn compile - compile the source code of the project [ target folder creates and .class files are generated ]
3. Mvn test -test the compiled source code using a suitable unit testing framework. These tests should not require the code be packaged or deployed.
4. Mvn package - take the compiled code and package it in its distributable format, such as JAR [ generates JAR ]
5. Mvn verify - run any checks on results of integration tests to ensure quality criteria are met
6. Mvn install -install the package into the local repository, for use as a dependency in other projects locally
7. Mvn deploy - done in the build environment, copies the final package to the remote repository for sharing with other developers and projects

## mvn validate

```
C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject>mvn validate
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.epam:DemoProject >-----
[INFO] Building DemoProject 1.0-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 0.118 s
[INFO] Finished at: 2022-01-27T09:50:59+05:30
[INFO] -----
```

## mvn compile

```
C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject>mvn compile
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.epam:DemoProject >-----
[INFO] Building DemoProject 1.0-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-resources-plugin:3.0.2:resources (default-resources) @ DemoProject ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\src\main\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.8.0:compile (default-compile) @ DemoProject ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 1 source file to C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\target\classes
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 2.112 s
[INFO] Finished at: 2022-01-27T09:51:35+05:30
[INFO] -----
```

## mvn test

```
C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject>mvn test
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.epam:DemoProject >-----
[INFO] Building DemoProject 1.0-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-resources-plugin:3.0.2:resources (default-resources) @ DemoProject ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\src\main\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.8.0:compile (default-compile) @ DemoProject ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:3.0.2:testResources (default-testResources) @ DemoProject ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\src\test\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.8.0:testCompile (default-testCompile) @ DemoProject ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 1 source file to C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\target\test-classes
[INFO]
[INFO] --- maven-surefire-plugin:2.22.1:test (default-test) @ DemoProject ---
[INFO]
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running com.epam.app.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.065 s - in com.epam.app.AppTest
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 4.041 s
[INFO] Finished at: 2022-01-27T09:52:30+05:30
[INFO] -----
```

## mvn package

```
C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject>mvn package
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.epam:DemoProject >-----
[INFO] Building DemoProject 1.0-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-resources-plugin:3.0.2:resources (default-resources) @ DemoProject ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\src\main\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.8.0:compile (default-compile) @ DemoProject ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:3.0.2:testResources (default-testResources) @ DemoProject ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\src\test\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.8.0:testCompile (default-testCompile) @ DemoProject ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-surefire-plugin:2.22.1:test (default-test) @ DemoProject ---
[INFO]
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running com.epam.app.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.06 s - in com.epam.app.AppTest
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO]
[INFO] --- maven-jar-plugin:3.0.2:jar (default-jar) @ DemoProject ---
[INFO] Building jar: C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\target\DemoProject-1.0-SNAPSHOT.jar
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] -----
[INFO] Total time: 3.192 s
[INFO] Finished at: 2022-01-27T09:52:56+05:30
```

## mvn verify

```
C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject>mvn verify
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.epam:DemoProject >-----
[INFO] Building DemoProject 1.0-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-resources-plugin:3.0.2:resources (default-resources) @ DemoProject ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\src\main\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.8.0:compile (default-compile) @ DemoProject ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:3.0.2:testResources (default-testResources) @ DemoProject ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\src\test\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.8.0:testCompile (default-testCompile) @ DemoProject ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-surefire-plugin:2.22.1:test (default-test) @ DemoProject ---
[INFO]
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running com.epam.app.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.077 s - in com.epam.app.AppTest
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO]
[INFO] --- maven-jar-plugin:3.0.2:jar (default-jar) @ DemoProject ---
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] -----
[INFO] Total time: 2.874 s
[INFO] Finished at: 2022-01-27T09:53:46+05:30
```

## mvn install

```
C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject>mvn install
[INFO] Scanning for projects...
[INFO] -----< com.epam:DemoProject >-----
[INFO] Building DemoProject 1.0-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO] --- maven-resources-plugin:3.0.2:resources (default-resources) @ DemoProject ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\src\main\resources
[INFO] --- maven-compiler-plugin:3.8.0:compile (default-compile) @ DemoProject ---
[INFO] Nothing to compile - all classes are up to date
[INFO] --- maven-resources-plugin:3.0.2:testResources (default-testResources) @ DemoProject ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\src\test\resources
[INFO] --- maven-compiler-plugin:3.8.0:testCompile (default-testCompile) @ DemoProject ---
[INFO] Nothing to compile - all classes are up to date
[INFO] --- maven-surefire-plugin:2.22.1:test (default-test) @ DemoProject ---
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running com.epam.app.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.066 s - in com.epam.app.AppTest
[INFO] Results:
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO] --- maven-jar-plugin:3.0.2:jar (default-jar) @ DemoProject ---
[INFO] --- maven-install-plugin:2.5.2:install (default-install) @ DemoProject ---
[INFO] Installing C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\target\DemoProject-1.0-SNAPSHOT.jar to C:\Users\Vineethkumar_Gogu\.m2\repository\com\epa
am\DemoProject\1.0-SNAPSHOT\DemoProject-1.0-SNAPSHOT.jar
```

## Executing the App.java

```
C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject>set classpath=C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\target\DemoProject-1.0-S
NAPSHOT.jar;

C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject>cd target

C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\target>java com.epam.app.App
Hello World!

C:\Users\Vineethkumar_Gogu\Desktop\maven\Demo_projects\DemoProject\target>
```