Task 1: Build Lifecycle

Demonstrate the use of Maven lifecycle phases (clean, compile, test, package, install, deploy) by executing them on a sample project and documenting what happens in each phase.

First, create a new Maven project using the following steps:

mkdir MavenLifecycleDemo

cd MavenLifecycleDemo

Initialize a new Maven project using archetype (e.g., maven-archetype-quickstart):

mvn archetype:generate -DgroupId=com.example.maven -DartifactId=MavenLifecycleDemo -DarchetypeArtifactId=maven-archetype-quickstart -DinteractiveMode=false

Now, let's execute each phase on our sample Maven project and observe what happens.

mvn clean

Deletes the target directory and all generated files under it.

mvn compile

Compiles the source code (src/main/java) into bytecode (target/classes).

mvn test

Compiles and runs the unit tests (src/test/java) using a suitable framework (e.g., JUnit).

mvn package

Packages the compiled code (target/classes) into a distributable format (e.g., JAR, WAR) and places it in the target directory.

mvn install

Installs the packaged artifact (e.g., JAR) into the local Maven repository (~/.m2/repository), making it available for other projects.

mvn deploy

Copies the packaged artifact to a remote repository (if configured), making it accessible for other developers or projects.