

LAB PROGRAM - 5

Create a Maven Project, Understanding the POM File, Dependency Management and Plugins.

1. Prerequisites required
 - Java JDK (version 21 preferable) must be installed.
 - Confirm Java installation by typing the below command in command prompt:

java -version

Step 1: Download and install Maven from: <https://maven.apache.org/download.cgi>

- Install Binary Zip file only.

->apache-maven-3.9.6-bin.zip

Binary zip archive

[apache-maven-3.9.9-bin.zip](#)

✗ Do NOT Download:

- src.zip – contains source code (not needed for installation)
- .tar.gz – intended for Linux/Unix systems

Step 2 : Add Maven to your system path:

- `MAVEN_HOME` → Path to Maven folder
- Add `MAVEN_HOME/bin` to the PATH

After Downloading:

1. **Extract** the zip file to a location like:

`C:\Program Files\Apache\Maven\apache-maven-3.9.6`

2. **Set environment variables** using `setx` (as explained below)
3. Open Command Prompt (**Run as Administrator**) and execute the following :

```
> setx MAVEN_HOME "C:\Program Files\Apache\Maven\apache-maven-3.9.6" /M
```

```
> setx PATH "%PATH%;C:\Program Files\Apache\Maven\apache-maven-3.9.6\bin" /M
```

4. Restart your Command Prompt and check:

-> Check whether is Maven is properly installed

5. Open Command Prompt and execute the following :

```
> mvn -v
```

Step 3: Create a Maven Project

-> Type the following in the cmd prompt

```
> mvn archetype:generate -DgroupId=com.example -DartifactId=demo-project -DarchetypeArtifactId=maven-archetype-quickstart -DinteractiveMode=false
```

OR

Option 2: Using IDE (like IntelliJ IDEA or Eclipse)

- File → New → Project → Maven → Use default archetype or choose a template
- Specify GroupId and ArtifactId

-> After the Execution the above cmd on the command prompt, the project structure looks like below.

1.

```
demo-project/  
├─ pom.xml  
├─ src/  
│   ├─ main/java/com/example/App.java  
│   └─ test/java/com/example/AppTest.java
```

Step 4: Add a Dependency

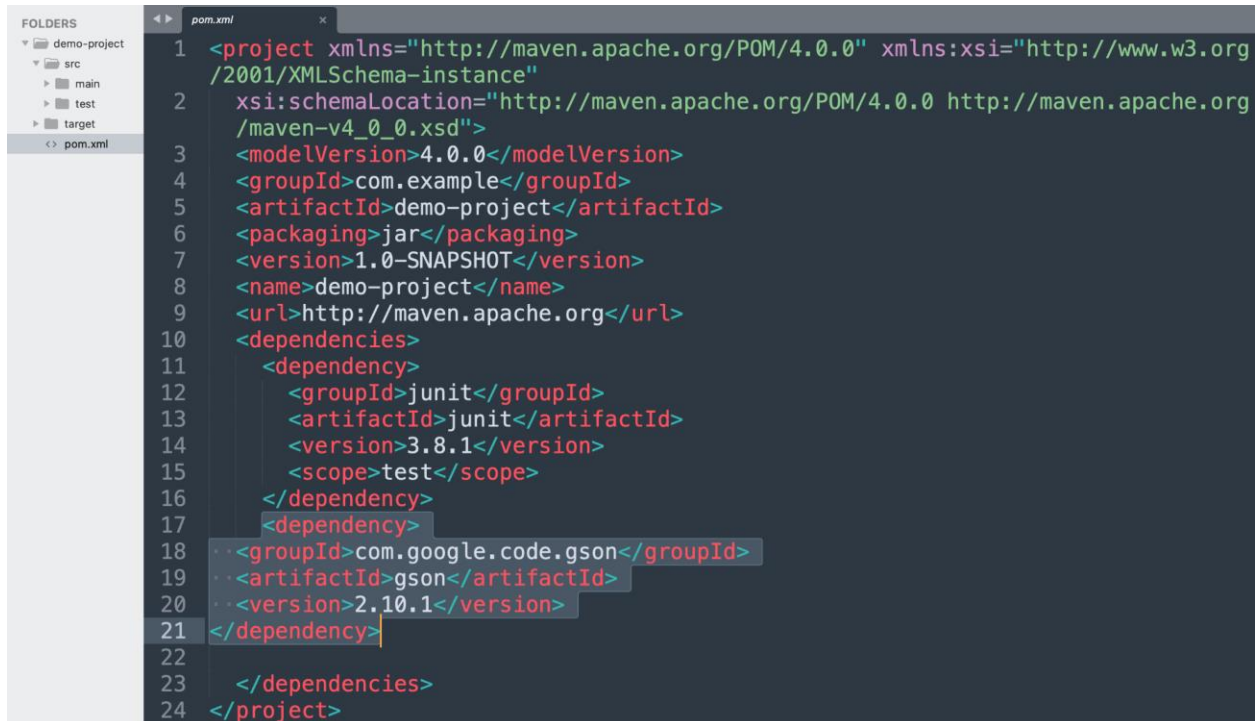
-> Step 4 : Go to the demo-project folder and understand the usage of pom.xml file.

-> To use a library, add its dependency in the `<dependencies>` block,

Example: Add Gson (for JSON parsing):

-> Add the below dependency code section to the pom.xml file.

```
<dependency>
  <groupId>com.google.code.gson</groupId>
  <artifactId>gson</artifactId>
  <version>2.10.1</version>
</dependency>
```



-> In the same way you can add any number of dependencies required for your application.

Step 5: Building Maven Project

-> Change the directory to demo-project :

> **cd demo-project**

> **mvn compile**

```
[INFO] Recompiling the module because of changed dependency.
[WARNING] File encoding has not been set, using platform encoding UTF-8, i.e. build is platform dependent!
[INFO] Compiling 1 source file with javac [debug target 1.8] to target\classes
[WARNING] bootstrap class path not set in conjunction with -source 8
[WARNING] source value 8 is obsolete and will be removed in a future release
[WARNING] target value 8 is obsolete and will be removed in a future release
[WARNING] To suppress warnings about obsolete options, use -Xlint:-options.
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 3.161 s
[INFO] Finished at: 2025-05-31T11:41:53+05:30
[INFO] -----
```

> **mvn test**

```
5.2.13.jar (16 KB at 1.1 MB/s)
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running com.example.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.016 s -- in com.example.AppTest
[INFO] Results:
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 4.202 s
[INFO] Finished at: 2025-05-31T11:43:13+05:30
[INFO] -----
```

> **mvn package**

```
[INFO] Building jar: C:\Users\BMSIT\Desktop\demo5\demo-project\target\demo-project-1.0-SNAPSHOT.jar
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 3.000 s
[INFO] Finished at: 2025-05-31T11:44:04+05:30
[INFO] -----
```

Step 6: Run the JAR File

-> If you have a `main()` method in `App.java`, run the JAR like this:

`java -cp target/demo-project-1.0-SNAPSHOT.jar com.example.App`

```
C:\Users\BMSIT\Desktop\demo5\demo-project>java -cp target/demo-project-1.0-SNAPSHOT.jar com.example.App
Hello From MAVEN !!
```

Note : The above steps is to run a Java Application using Maven.
