

Program 2: Working with Maven: Creating a Maven Project, Understanding the POM File, Dependency Management and Plugins.

Install Eclipse and Maven

- Ensure Eclipse IDE is installed. You can download it from the official website if not already installed.
- Ensure Maven is installed on your machine. You can verify its installation by running `mvn -v` in the command line.

Open Eclipse and Configure Maven

- Open Eclipse and go to **Window > Preferences**.
- Navigate to **Maven** and ensure it's configured correctly, pointing to your Maven installation.

Create a New Maven Project

- In Eclipse, go to **File > New > Other...** and select **Maven Project**.
- Leave the default workspace location and click **Next**.
- Choose **Create a simple project** (skip archetype selection) and click **Next**.

Specify Project Details

- Enter the Group ID (usually your organization or package name).
- Enter the Artifact ID (the name of your project).
- Fill in the Version and Packaging (e.g., jar).
- Click **Finish** to create the project.

Understand the POM File

- The newly created project will have a `pom.xml` file in its root directory. This file is crucial for Maven configuration.
- This XML file includes project configuration details, dependencies, and plugins.

Adding Dependencies

- Open `pom.xml`.
- To add a dependency, find the dependency information on Maven Repository (e.g., <https://mvnrepository.com/>).

Add the dependency snippet within the <dependencies> tag. For example:

```
<dependency>
  <groupId>org.springframework</groupId>
  <artifactId>spring-context</artifactId>
  <version>5.2.3.RELEASE</version>
</dependency>
```

Adding Plugins

```
<plugins>
  <plugin>
    <groupId>org.apache.maven.plugins</groupId>
    <artifactId>maven-compiler-plugin</artifactId>
    <version>3.8.1</version>
    <configuration>
      <source>1.8</source>
      <target>1.8</target>
    </configuration>
  </plugin>
</plugins>
```

Build the Project

- Right-click on the project in Eclipse's Project Explorer.
- Select **Run As > Maven build...**
- In the **Goals** field, type **clean install** to clean and install your project.
- Click **Run** to build the project with Maven, which will download necessary dependencies and compile the project.