

Ex. No: 4	Maven POM Inheritance & Aggregation
28.08.2024	

Aim:

To implement Maven POM Inheritance and Aggregation

Procedure:

1. Set Up the Parent POM
 - a. Create the Parent Project

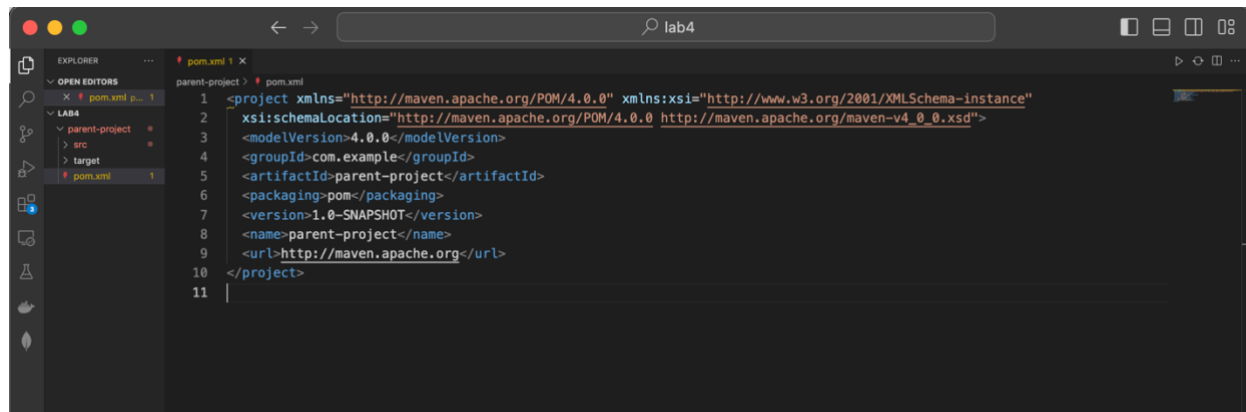
```

lab4 — -zsh — 105x44
(base) ishareddyvaka@Ishas-MacBook-Air lab4 % mvn archetype:generate -DgroupId=com.example -DartifactId=parent-project -DarchetypeArtifactId=maven-archetype-quickstart -DinteractiveMode=false

[INFO] Unable to find the root directory. Create a .mvn directory in the root directory or add the root="true" attribute on the root project's model to identify it.
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.apache.maven:standalone-pom >-----
[INFO] Building Maven Stub Project (No POM) 1
[INFO] -----[ pom ]-----
[INFO]
[INFO] --- archetype:3.2.1:generate (default-cli) @ standalone-pom ---
[INFO] Generating project in Batch mode
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-quickstart/1.0/maven-archetype-quickstart-1.0.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-quickstart/1.0/maven-archetype-quickstart-1.0.pom (703 B at 4.4 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-bundles/2/maven-archetype-bundles-2.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-bundles/2/maven-archetype-bundles-2.pom (1.5 kB at 99 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetype/maven-archetype-parent/1/maven-archetype-parent-1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetype/maven-archetype-parent/1/maven-archetype-parent-1.pom (1.3 kB at 101 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/4/maven-parent-4.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/4/maven-parent-4.pom (10.0 kB at 400 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/3/apache-3.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/3/apache-3.pom (3.4 kB at 25 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-quickstart/1.0/maven-archetype-quickstart-1.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-quickstart/1.0/maven-archetype-quickstart-1.0.jar (4.3 kB at 391 kB/s)
[INFO]
[INFO] -----
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-quickstart:1.0
[INFO] -----
[INFO] Parameter: basedir, Value: /Users/ishareddyvaka/Documents/devops-lab/lab4
[INFO] Parameter: package, Value: com.example
[INFO] Parameter: groupId, Value: com.example
[INFO] Parameter: artifactId, Value: parent-project

```

- b. Modify the Parent pom.xml



Updated pom.xml to act as a parent by adding the `<packaging>` element as pom and removing the `<dependencies>` section

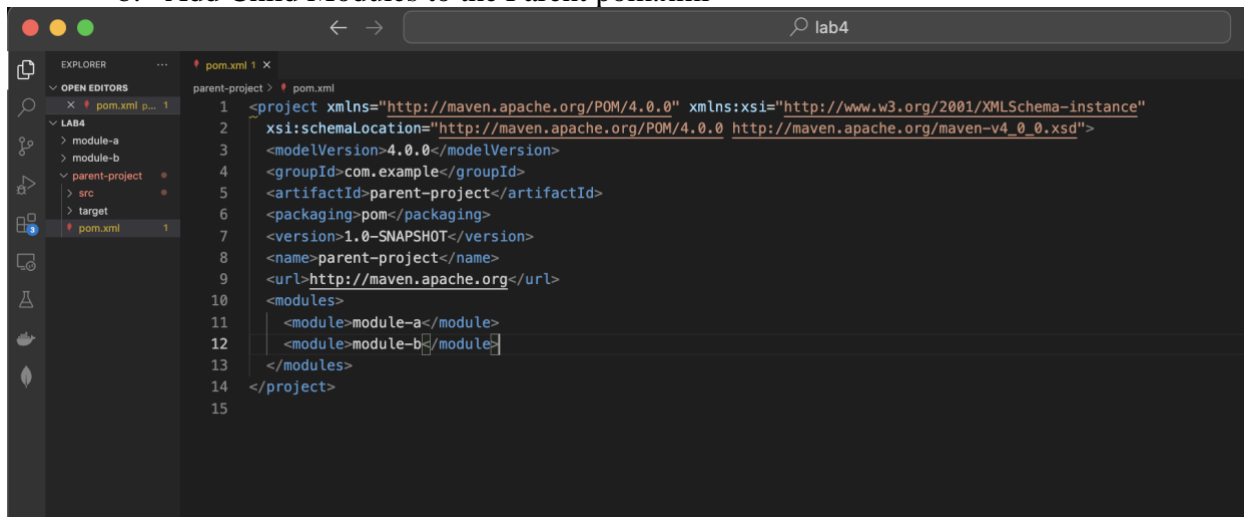
2. Create Child Projects

a. Create Child Modules

```
(base) ishareddyvaka@ishas-MacBook-Air lab4 % mvn archetype:generate -DgroupId=com.example -DartifactId=module-a -DarchetypeArtifactId=maven-archetype-quickstart -DinteractiveMode=false
mvn archetype:generate -DgroupId=com.example -DartifactId=module-b -DarchetypeArtifactId=maven-archetype-quickstart -DinteractiveMode=false

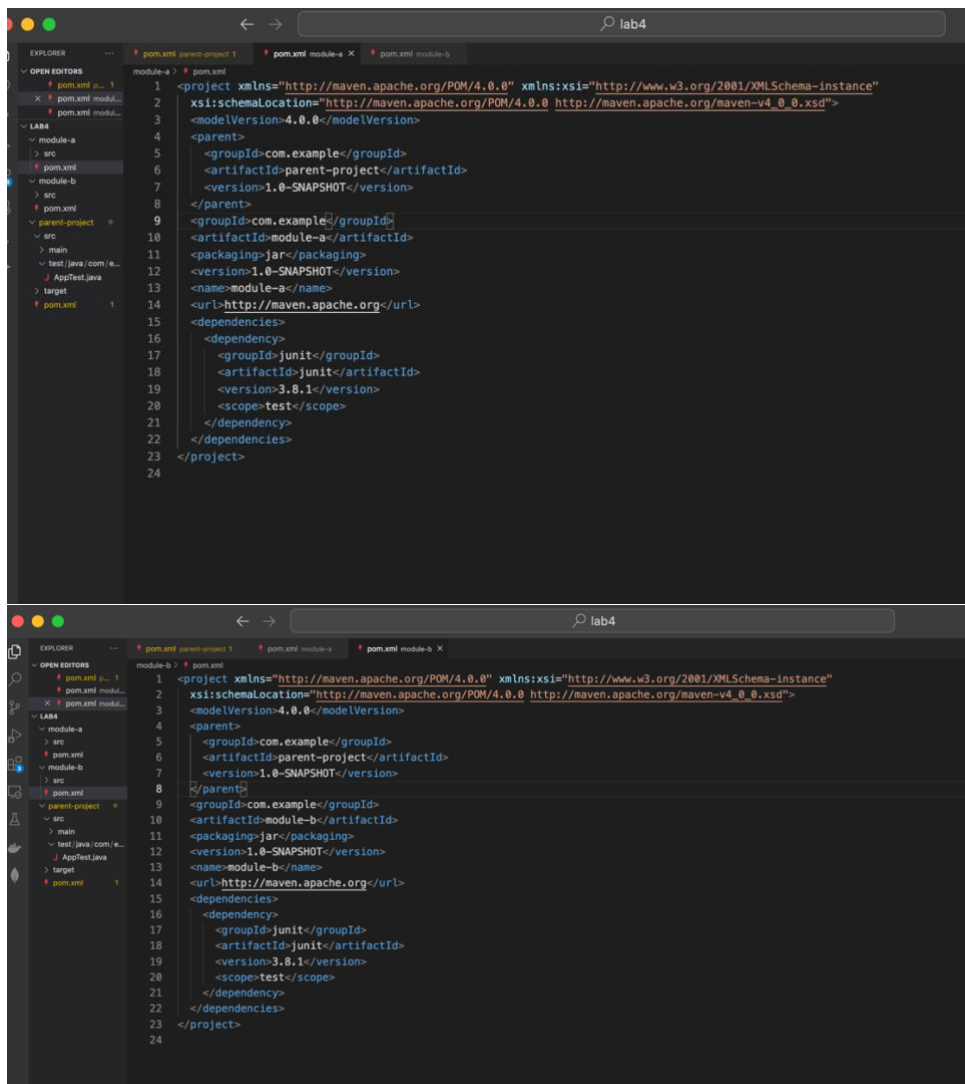
[INFO] Unable to find the root directory. Create a .mvn directory in the root directory or add the root="true" attribute on the root project's model to identify it.
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.apache.maven:standalone-pom -----
[INFO] Building Maven Stub Project (No POM) 1
[INFO] -----[ pom ]-----
[INFO]
[INFO] --- archetype:3.2.1:generate (default-cli) @ standalone-pom ---
[INFO] Generating project in Batch mode
[INFO]
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-quickstart:1.0
[INFO]
[INFO] Parameter: basedir, Value: /Users/ishareddyvaka/Documents/devops-lab/lab4
[INFO] Parameter: package, Value: com.example
[INFO] Parameter: groupId, Value: com.example
[INFO] Parameter: artifactId, Value: module-a
[INFO] Parameter: packageName, Value: com.example
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] project created from Old (1.x) Archetype in dir: /Users/ishareddyvaka/Documents/devops-lab/lab4/module-a
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 15.219 s
[INFO] Finished at: 2024-09-01T14:42:10+05:30
[INFO]
[INFO] Unable to find the root directory. Create a .mvn directory in the root directory or add the root="true" attribute on the root project's model to identify it.
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.apache.maven:standalone-pom -----
[INFO] Building Maven Stub Project (No POM) 1
[INFO] -----[ pom ]-----
[INFO]
[INFO] --- archetype:3.2.1:generate (default-cli) @ standalone-pom ---
[INFO] Generating project in Batch mode
[INFO]
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-quickstart:1.0
[INFO]
[INFO] Parameter: basedir, Value: /Users/ishareddyvaka/Documents/devops-lab/lab4
[INFO] Parameter: package, Value: com.example
[INFO] Parameter: groupId, Value: com.example
[INFO] Parameter: artifactId, Value: module-b
[INFO] Parameter: packageName, Value: com.example
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] project created from Old (1.x) Archetype in dir: /Users/ishareddyvaka/Documents/devops-lab/lab4/module-b
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 51.718 s
[INFO] Finished at: 2024-09-01T14:43:04+05:30
[INFO]
(base) ishareddyvaka@ishas-MacBook-Air lab4 %
```

b. Add Child Modules to the Parent pom.xml

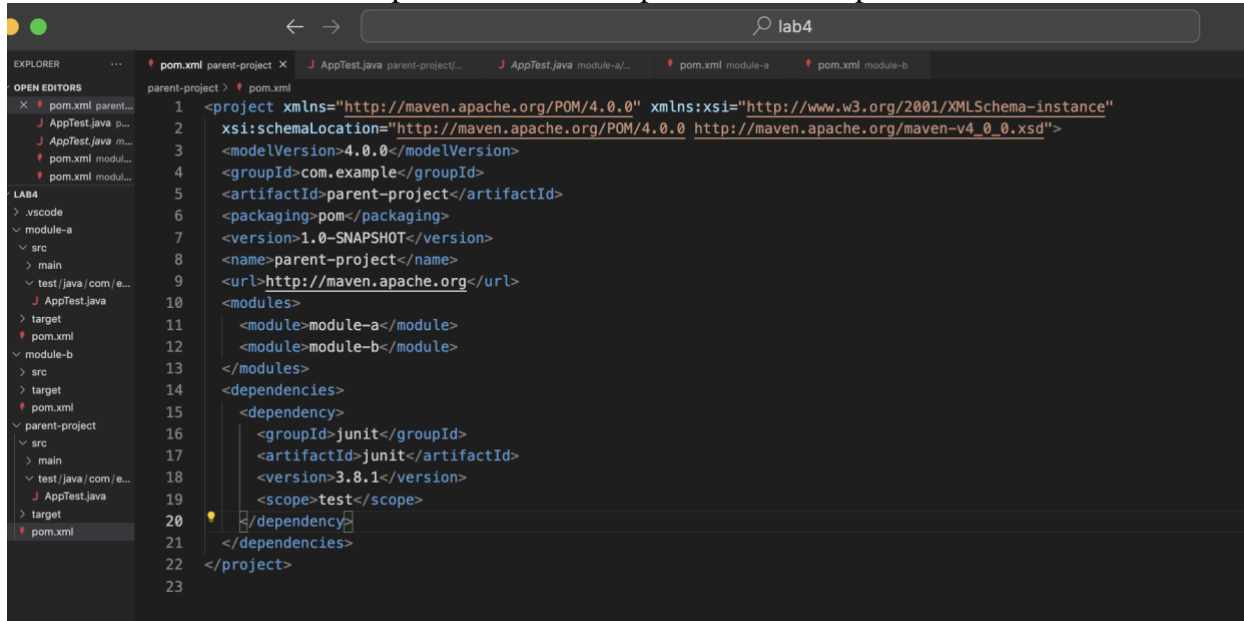


3. Configure Inheritance in Child pom.xml

a. Modify Child pom.xml Files

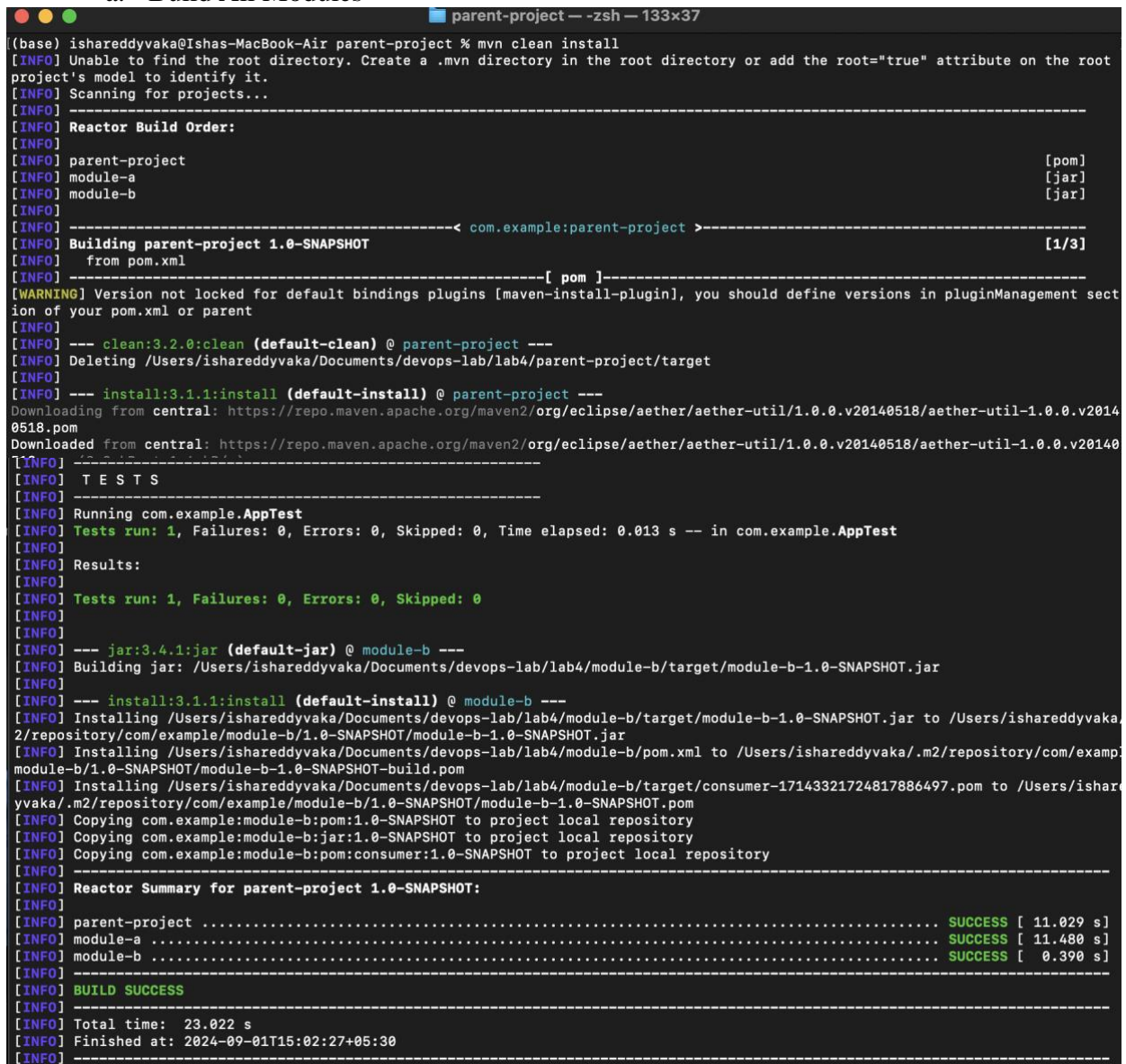


b. Add Common Dependencies and Properties in Parent pom.xml



4. Build the Project

a. Build All Modules

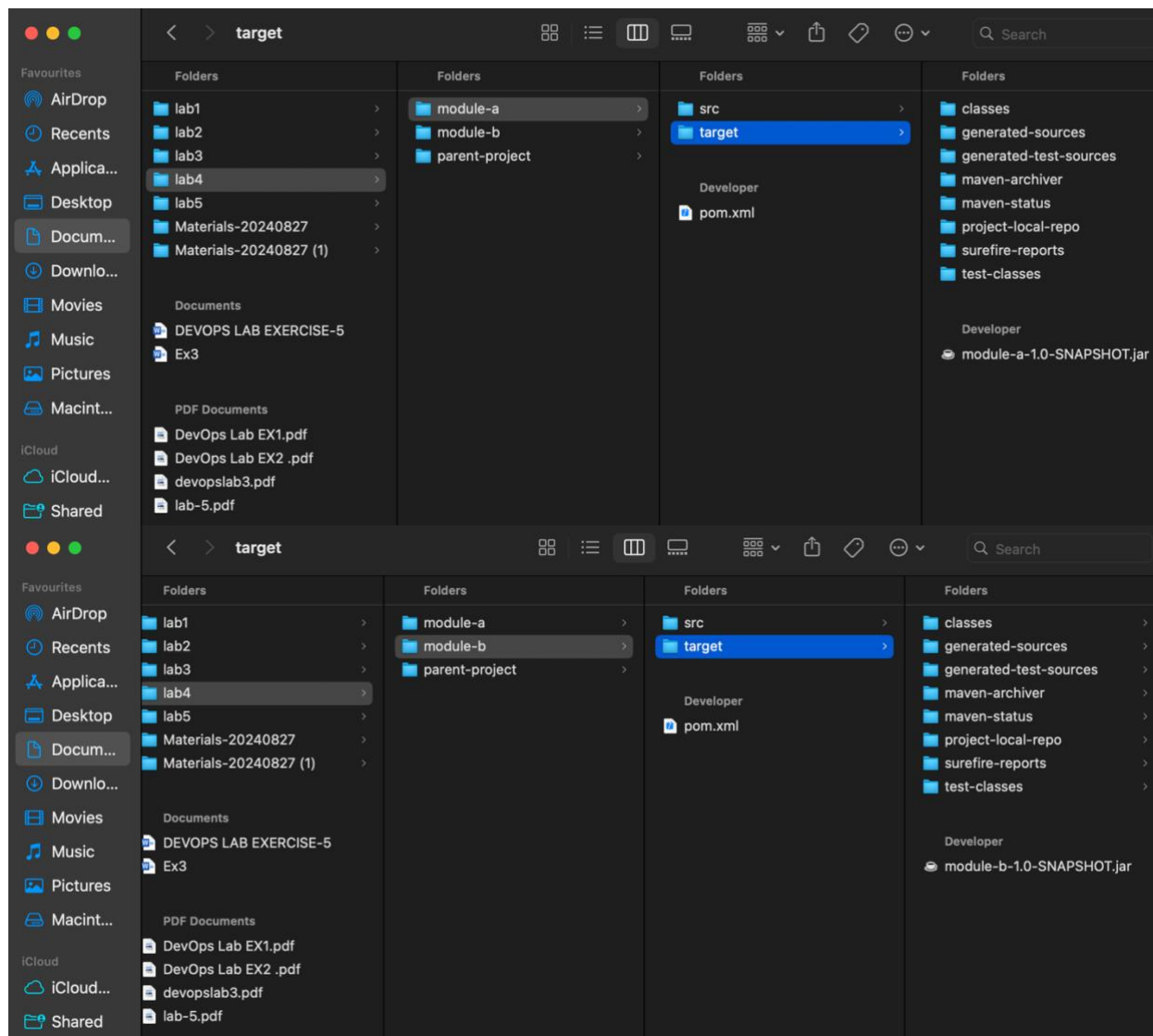


b. Build Individual Modules

```
module-a -- zsh - 133x42
(base) ishareddyvaka@Ishas-MacBook-Air module-a % mvn clean install
[INFO] Unable to find the root directory. Create a .mvn directory in the root directory or add the root="true" attribute on the root project's model to identify it.
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.example:module-a >-----
[INFO] Building module-a 1.0-SNAPSHOT
[INFO] from pom.xml
[INFO] -----[ jar ]-----
[WARNING] Version not locked for default bindings plugins [maven-resources-plugin, maven-compiler-plugin, maven-surefire-plugin, maven-jar-plugin, maven-install-plugin], you should define versions in pluginManagement section of your pom.xml or parent
[INFO]
[INFO] --- clean:3.2.0:clean (default-clean) @ module-a ---
[INFO] Deleting /Users/ishareddyvaka/Documents/devops-lab/lab4/module-a/target
[INFO]
[INFO] --- resources:3.3.1:resources (default-resources) @ module-a ---
[INFO] skip non existing resourceDirectory /Users/ishareddyvaka/Documents/devops-lab/lab4/module-a/src/main/resources
[INFO] skip non existing resourceDirectory /Users/ishareddyvaka/Documents/devops-lab/lab4/module-a/src/main/resources-filtered
[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: 0.012 s -- in com.example.AppTest
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] --- jar:3.4.1:jar (default-jar) @ module-a ---
[INFO] Building jar: /Users/ishareddyvaka/Documents/devops-lab/lab4/module-a/target/module-a-1.0-SNAPSHOT.jar
[INFO]
[INFO] --- install:3.1.1:install (default-install) @ module-a ---
[INFO] Installing /Users/ishareddyvaka/Documents/devops-lab/lab4/module-a/target/module-a-1.0-SNAPSHOT.jar to /Users/ishareddyvaka/.m2/repository/com/example/module-a/1.0-SNAPSHOT/module-a-1.0-SNAPSHOT.jar
[INFO] Installing /Users/ishareddyvaka/Documents/devops-lab/lab4/module-a/pom.xml to /Users/ishareddyvaka/.m2/repository/com/example/module-a/1.0-SNAPSHOT/module-a-1.0-SNAPSHOT-build.pom
[INFO] Installing /Users/ishareddyvaka/Documents/devops-lab/lab4/module-a/target/consumer-1505371447848360734.pom to /Users/ishareddyvaka/.m2/repository/com/example/module-a/1.0-SNAPSHOT/module-a-1.0-SNAPSHOT.pom
[INFO] Copying com.example:module-a:pom:1.0-SNAPSHOT to project local repository
[INFO] Copying com.example:module-a:jar:1.0-SNAPSHOT to project local repository
[INFO] Copying com.example:module-a:pom:consumer:1.0-SNAPSHOT to project local repository
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 1.702 s
[INFO] Finished at: 2024-09-01T15:05:13+05:30
[INFO]
```

```
(base) ishareddyvaka@Ishas-MacBook-Air module-b % mvn clean install
[INFO] Unable to find the root directory. Create a .mvn directory in the root directory or add the root="true" attribute on the root project's model to identify it.
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.example:module-b >-----
[INFO] Building module-b 1.0-SNAPSHOT
[INFO] from pom.xml
[INFO] -----[ jar ]-----
[WARNING] Version not locked for default bindings plugins [maven-resources-plugin, maven-compiler-plugin, maven-surefire-plugin, maven-jar-plugin, maven-install-plugin], you should define versions in pluginManagement section of your pom.xml or parent
[INFO]
[INFO] --- clean:3.2.0:clean (default-clean) @ module-b ---
[INFO] Deleting /Users/ishareddyvaka/Documents/devops-lab/lab4/module-b/target
[INFO]
[INFO] --- resources:3.3.1:resources (default-resources) @ module-b ---
[INFO] skip non existing resourceDirectory /Users/ishareddyvaka/Documents/devops-lab/lab4/module-b/src/main/resources
[INFO] skip non existing resourceDirectory /Users/ishareddyvaka/Documents/devops-lab/lab4/module-b/src/main/resources-filtered
[INFO]
[INFO] --- compiler:3.13.0:compile (default-compile) @ module-b ---
[INFO] Recompiling the module because of changed source code.
[INFO] Compiling 1 source file with javac [debug target 1.8] to target/classes
[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: 0.014 s -- in com.example.AppTest
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] --- jar:3.4.1:jar (default-jar) @ module-b ---
[INFO] Building jar: /Users/ishareddyvaka/Documents/devops-lab/lab4/module-b/target/module-b-1.0-SNAPSHOT.jar
[INFO]
[INFO] --- install:3.1.1:install (default-install) @ module-b ---
[INFO] Installing /Users/ishareddyvaka/Documents/devops-lab/lab4/module-b/target/module-b-1.0-SNAPSHOT.jar to /Users/ishareddyvaka/.m2/repository/com/example/module-b/1.0-SNAPSHOT/module-b-1.0-SNAPSHOT.jar
[INFO] Installing /Users/ishareddyvaka/Documents/devops-lab/lab4/module-b/pom.xml to /Users/ishareddyvaka/.m2/repository/com/example/module-b/1.0-SNAPSHOT/module-b-1.0-SNAPSHOT-build.pom
[INFO] Installing /Users/ishareddyvaka/Documents/devops-lab/lab4/module-b/target/consumer-9831791238457194721.pom to /Users/ishareddyvaka/.m2/repository/com/example/module-b/1.0-SNAPSHOT/module-b-1.0-SNAPSHOT.pom
[INFO] Copying com.example:module-b:pom:1.0-SNAPSHOT to project local repository
[INFO] Copying com.example:module-b:jar:1.0-SNAPSHOT to project local repository
[INFO] Copying com.example:module-b:pom:consumer:1.0-SNAPSHOT to project local repository
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 2.462 s
[INFO] Finished at: 2024-09-01T15:06:30+05:30
[INFO]
```

5. Verify Inheritance and Aggregation



The 'target' directory in each module contains the generated JAR files. The parent settings, like shared dependencies are also reflected in the child modules.

Result:

Inheritance: Allows child projects to inherit properties, dependencies, and configurations from a parent POM.

Aggregation: Allows a parent POM to manage and build multiple child modules as a single unit.

Therefore, we've successfully managed a Maven project with multiple modules using POM Inheritance and Aggregation.

