Experiment 4 - Practical Exercise: Build and Run a Java Application with Maven, Migrate the Same Application to Gradle

You can create a Maven project using the mvn command (or through your IDE, as mentioned earlier). But here, I'll give you the essential pom.xml and Java code.

Objective:

To Build and Run a Java Application with Maven, Migrate the Same Application to Gradle.

Using Command Line:

- Open command prompt.
- **mkdir DevOpsExp4** – this will create **DevOpsExp4** folder.
- **cd DevOpsExp4** – navigate **DevOpsExp4** folder.

```
C:\Users\Sharath\DevOpsExp4>
```

- After that, follow the below steps to work with Maven project.

Step 1:
mvn archetype:generate -DgroupId=com.example -DartifactId=maven-example -DarchetypeArtifactId=maven-archetype-quickstart -DinteractiveMode=false

```
C:\Users\Sharath\DevOpsExp4>mvn archetype:generate -DgroupId=com.example -DartifactId=maven-example
 -DarchetypeArtifactId=maven-archetype-quickstart -DinteractiveMode=false
```

```
C:\Users\Sharath\DevOpsExp4>mvn archetype:generate -DgroupId=com.example -DartifactId=maven-example -DarchetypeArtifact
Id=maven-archetype-quickstart -DinteractiveMode=false
[INFO] Scanning for projects...
[INFO]
[INFO] ------------------< org.apache.maven:standalone-pom >-------------------
[INFO] Building Maven Stub Project (No POM) 1
[INFO] --------------------------------[ pom ]---------------------------------
[INFO]
[INFO] >>> archetype:3.3.1:generate (default-cli) > generate-sources @ standalone-pom >>>
[INFO]
[INFO] <<< archetype:3.3.1:generate (default-cli) < generate-sources @ standalone-pom <<<
[INFO]
[INFO]
[INFO] --- archetype:3.3.1: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: C:\Users\Sharath\DevOpsExp4
[INFO] Parameter: package, Value: com.example
[INFO] Parameter: groupId, Value: com.example
[INFO] Parameter: artifactId, Value: maven-example
[INFO] Parameter: packageName, Value: com.example
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] project created from Old (1.x) Archetype in dir: C:\Users\Sharath\DevOpsExp4\maven-example
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  1.993 s
[INFO] Finished at: 2025-03-17T15:18:13+05:30
[INFO] ------------------------------------------------------------------------

C:\Users\Sharath\DevOpsExp4>
```

The maven-example folder is created with the below-mentioned files.

Step 2:
Navigate to the project folder **maven-example**. Type the command in your command prompt **cd maven-example**.

```
C:\Users\Sharath\DevOpsExp4>cd maven-example

C:\Users\Sharath\DevOpsExp4\maven-example>
```

Step 3: Run the Project
To build and run this project, follow these steps:

- Open the terminal in the project directory and run the following command to build the project. Type **mvn clean install**

  ```
  C:\Users\Sharath\DevOpsExp4\maven-example>mvn clean install
  ```

  Jar file will be created.

- Run the program with below command:
  mvn exec:java -Dexec.mainClass="com.example.App"

  ```
  C:\Users\Sharath\DevOpsExp4\maven-example>mvn exec:java -Dexec.mainClass="com.example.App"
  ```

Step 4: Migrate the Maven Project to Gradle

- **Initialize Gradle**: Navigate to the project directory (**gradle-example**) and run:
  Type "gradle init" in the command prompt

  ```
  C:\Users\Sharath\DevOpsExp4\maven-example>gradle init
  ```

- It will ask **Found a Maven build. Generate a Gradle build from this? (default: yes) [yes, no]**
  - Type **Yes**
- **Select build script DSL:**
  - 1: Kotlin
  - 2: Groovy
  - Enter selection (default: Kotlin) [1.2]
    - Type **2**
- **Generate build using new APIs and behavior (some features may change in the next minor release)? (default: no) [yes, no]**
  - Type **No**

```
Found a Maven build. Generate a Gradle build from this? (default: yes) [yes, no] yes

Select build script DSL:
  1: Kotlin
  2: Groovy
Enter selection (default: Kotlin) [1..2] 2

Generate build using new APIs and behavior (some features may change in the next minor release)?
 (default: no) [yes, no]
 no
```

```
> Task :init
Maven to Gradle conversion is an incubating feature.
For more information, please refer to https://docs.gradle.org/8.12.1/userguide/migrating_from_maven.html in the Gradle documentation.

BUILD SUCCESSFUL in 24s
1 actionable task: 1 executed
Configuration cache entry reused.
C:\Users\Sharath\DevOpsExp4\maven-example>
```

Step 5:
Navigate the project folder and open **build.gradle** file, add the code below, and save it.

```
task run(type: JavaExec) {
   main = 'com.example.App'
   classpath = sourceSets.main.runtimeClasspath
}
```

```
task run(type: JavaExec) {
    main = 'com.example.App'
    classpath = sourceSets.main.runtimeClasspath
}
```

Step 6:
Run the Gradle Project

- **Build the Project**: In the project directory (gradle-example), run the below command to build the project:

  gradlew build

```
C:\Users\Sharath\DevOpsExp4\maven-example>gradlew build
Calculating task graph as no cached configuration is available for tasks: build

[Incubating] Problems report is available at: file:///C:/Users/Sharath/DevOpsExp4/maven-example/build/reports/problems/problems-report.html

Deprecated Gradle features were used in this build, making it incompatible with Gradle 9.0.

You can use '--warning-mode all' to show the individual deprecation warnings and determine if they come from your own scripts or plugins.

For more on this, please refer to https://docs.gradle.org/8.12.1/userguide/command_line_interface.html#sec:command_line_warnings in the Gradle documentation.

BUILD SUCCESSFUL in 7s
4 actionable tasks: 4 executed
Configuration cache entry stored.
C:\Users\Sharath\DevOpsExp4\maven-example>
```

Step 7:

Run the Application: Once the build is successful, run the application using below command:

gradlew run

```
C:\Users\Sharath\DevOpsExp4\maven-example>gradle run
Calculating task graph as no cached configuration is available for tasks: run

> Task :run
Hello World! WELCOME TO DEVOPS LAB

[Incubating] Problems report is available at: file:///C:/Users/Sharath/DevOpsExp4/maven-exa
mple/build/reports/problems/problems-report.html

Deprecated Gradle features were used in this build, making it incompatible with Gradle 9.0

You can use '--warning-mode all' to show the individual deprecation warnings and determine
if they come from your own scripts or plugins.

For more on this, please refer to https://docs.gradle.org/8.12.1/userguide/command_line_int
erface.html#sec:command_line_warnings in the Gradle documentation.

BUILD SUCCESSFUL in 6s
2 actionable tasks: 1 executed, 1 up-to-date
Configuration cache entry stored.
C:\Users\Sharath\DevOpsExp4\maven-example>
```

Step 8:

Verify the Migration

Compare the Output: Make sure that both the Maven and Gradle builds produce the same output:

In command prompt type - mvn exec:java -Dexec.mainClass="com.example.App"

```
C:\Users\Sharath\DevOpsExp4\maven-example>mvn exec:java -Dexec.mainClass="com.example.App"
[INFO] Scanning for projects...
```

- **Maven Output:**

```
C:\Users\Sharath\DevOpsExp4\maven-example>mvn exec:java -Dexec.mainClass="com.example.App"
[INFO] Scanning for projects...
[INFO]
[INFO] ----------------------< com.example:maven-example >----------------------
[INFO] Building maven-example 1.0-SNAPSHOT
[INFO]   from pom.xml
[INFO] --------------------------------[ jar ]---------------------------------
[INFO]
[INFO] --- exec:3.5.0:java (default-cli) @ maven-example ---
Hello World! WELCOME TO DEVOPS LAB
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  0.521 s
[INFO] Finished at: 2025-03-17T16:05:52+05:30
[INFO] ------------------------------------------------------------------------
```

Gradle Output:

```
C:\Users\Sharath\DevOpsExp4\maven-example>gradlew run
```

```
C:\Users\Sharath\DevOpsExp4\maven-example>gradlew run
Reusing configuration cache.

> Task :run
Hello World! WELCOME TO DEVOPS LAB

BUILD SUCCESSFUL in 2s
2 actionable tasks: 1 executed, 1 up-to-date
Configuration cache entry reused.
```

If you haven't got the output run clean install command followed by
mvn exec:java -Dexec.mainClass="com.example.App"
gradlew run