

#Describe what the mvn package command does and when it uses

The 'mvn package' command in Maven is used to compile the source code, run tests, and then bundle the compiled code and other necessary resources into a distributable format, such as a JAR (Java Archive) or WAR (Web Archive) file. This command is part of the Maven build lifecycle and it initiates the 'package' phase, which includes several key steps.

What the 'mvn package' Command Does:

1.Compiles the Source Code:

- The command compiles the Java source files present in the project. This includes both the main application code and test code.
- Compiled bytecode is generated and placed in the 'target/classes' directory.

2.Runs Tests:

- The command runs the unit tests defined in the project. These tests are usually written using frameworks like JUnit or TestNG.
- Test reports are generated, and if any test fails, the packaging process will stop unless explicitly configured to continue.

3.Packages the Compiled Code:

- The command packages the compiled code along with any necessary resources (e.g., configuration files, properties files) into a distributed archive.
- For a typical Java project, this results in a JAR file. For web applications, this results in a WAR file.
- The packaged archive is placed in the 'target' directory by default.

When mvn package is used:

1.Building a Deployable Artifact:

- Use 'mvn package' when you want to create a deployable version of your application. This artefact can then be deployed to a production environment, staging server, or any other deployment target.

2.Continuous Integration/Continuous Deployment (CI/CD) Pipelines:

- The command is commonly used in CI/CD pipelines to automate the process of building and packaging the application. After packaging, the artefact can be uploaded to a repository or deployed automatically.

3.Local Development:

- During development, developers use 'mvn package' to build the application and verify that all code changes compile correctly and all tests pass. It ensures the project is in a state that can be packaged and potentially released.

4. Testing the Application as a Whole:

- Packaging the application allows developers to test the application in an environment that closely resembles production. This includes verifying that all dependencies are included and the application runs as expected.

```

Administrator: C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19045.4046]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Administrator\workspace\DemoProj>mvn -version
Apache Maven 3.9.6 (cc824033744600333c8d9233cd862205161ae)
Maven home: C:\Program Files\Waven\apache-maven-3.9.6
Java version: 17.0.11, vendor: Oracle Corporation, runtime: C:\Program Files\Java\jdk-17
Default locale: en_IN, platform encoding: Cp1252
OS name: "windows 10", version: "10.0", arch: "amd64", family: "windows"

C:\Users\Administrator\workspace\DemoProj>mvn compile
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.rps:DemoProj >-----
[INFO] Building DemoProj 0.0.1-SNAPSHOT
[INFO] from pom.xml
[INFO]
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- resources:3.3.1:resources (default-resources) @ DemoProj ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] Copying 0 resource from src/main/resources to target/classes
[INFO]
[INFO] --- compiler:3.11.0:compile (default-compile) @ DemoProj ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO]
[INFO] -----
[INFO] Total time: 1.493 s
[INFO] Finished at: 2024-06-05T14:20:50+05:30
[INFO]
[INFO] -----

C:\Users\Administrator\workspace\DemoProj>mvn test
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.rps:DemoProj >-----
[INFO] Building DemoProj 0.0.1-SNAPSHOT
[INFO] from pom.xml
[INFO]
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- resources:3.3.1:resources (default-resources) @ DemoProj ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] Copying 0 resource from src/main/resources to target/classes

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[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 1.493 s
[INFO] Finished at: 2024-06-05T14:28:50+05:30
[INFO] -----

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