

TASK 5 - MAVEN

STEPS:

1. Create a folder and move into that folder.

```
sowbaraniga_k@DESKTOP-73QEITE:~$ mkdir DevOps
sowbaraniga_k@DESKTOP-73QEITE:~$ cd DevOps
```

2. If Git is not already installed, install it using the following command:

sudo apt install git

3. Clone the GitHub repository containing the project files.
4. Check the list of folders using the command: **ls**
5. Move into the cloned folder.

```
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps$ git clone https://github.com/AranganathanPrakash/spring-framework-petclinic.git
Cloning into 'spring-framework-petclinic'...
remote: Enumerating objects: 7351, done.
remote: Counting objects: 100% (1111/1111), done.
remote: Compressing objects: 100% (78/78), done.
remote: Total 7351 (delta 1060), reused 1033 (delta 1033), pack-reused 6240 (from 1)
Receiving objects: 100% (7351/7351), 3.12 MiB | 2.72 MiB/s, done.
Resolving deltas: 100% (3600/3600), done.
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps$ ls
spring-framework-petclinic
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps$ cd spring-framework-petclinic
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ ls
Jenkinsfile  dockerfile  mvnw.cmd  readme.md
LICENSE.txt   mvnw        pom.xml   src
```

6. If Maven is not already installed, install it using the following command:

sudo apt install maven

7. To verify the Maven installation, use the command: **mvn --version**

```
sowbaraniga_k@DESKTOP-73QEITE:~$ sudo apt install maven
[sudo] password for sowbaraniga_k:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  openjdk-11-jdk-headless openjdk-11-jre
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libaopalliance-java libapache-pom-java libatinject-jsr330-api-java
  libcdi-api-java libcommons-cli-java libcommons-io-java
  libcommons-lang3-java libcommons-parent-java liberror-prone-java
  libgeronimo-annotation-1.3-spec-java
  libgeronimo-interceptor-3.0-spec-java libguava-java libguice-java
  libjansi-java libjsr305-java libmaven-parent-java libmaven-resolver-java
  libmaven-shared-utils-java libmaven3-core-java libplexus-cipher-java
  libplexus-classworlds-java libplexus-component-annotations-java
  libplexus-interpolation-java libplexus-sec-dispatcher-java
  libplexus-utils2-java libsisu-inject-java libsisu-plexus-java
  libslf4j-java libwagon-file-java libwagon-http-shaded-java
  libwagon-provider-api-java
Suggested packages:
```

```
sowbaraniga_k@DESKTOP-73QEITE:~$ mvn --version
Apache Maven 3.8.7
Maven home: /usr/share/maven
Java version: 17.0.14, vendor: Ubuntu, runtime: /usr/lib/jvm/java-17-openjdk-amd64
Default locale: en, platform encoding: UTF-8
OS name: "linux", version: "5.15.167.4-microsoft-standard-WSL2", arch: "amd64", family: "unix"
```

8. Execute the following commands one by one:

- mvn test → Runs unit tests and generates a report for the project.
- mvn clean → Deletes the previous Maven build.
- mvn install → Installs all the required plugins and packages.
- mvn package → Provides the jar or war file for the entire application.

```
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ mvn test
[INFO] Scanning for projects...
Downloading from central: https://repo.maven.apache.org/maven2/com/fasterxml/jackson/jackson-bom/2.16.1/jackson-bom-2.16.1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/com/fasterxml/jackson/jackson-bom/2.16.1/jackson-bom-2.16.1.pom (18 kB at 8.8 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/com/fasterxml/jackson/jackson-parent/2.16/jackson-parent-2.16.pom
Downloaded from central: https://repo.maven.apache.org/maven2/com/fasterxml/jackson/jackson-parent/2.16/jackson-parent-2.16.pom (6.5 kB at 11 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/com/fasterxml/oss-parent/56/oss-parent-56.pom
Downloaded from central: https://repo.maven.apache.org/maven2/com/fasterxml/oss-parent/56/oss-parent-56.pom (24 kB at 54 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/springframework/data/spring-data-bom/2023.1.1/spring-data-bom-2023.1.1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/springframework/data/spring-data-bom/2023.1.1/spring-data-bom-2023.1.1.pom (5.5 kB at 12 kB/s)
[INFO]
[INFO] -----< org.springframework.samples.spring-framework-petclinic >-----
[INFO] Building Spring Framework Petclinic 6.1.4
[INFO] -----[ war ]-----
Downloading from central: https://repo.maven.apache.org/maven2/org/jacoco/jacoco-maven-plugin/0.8.11/jacoco-maven-plugin-0.8.11.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/jacoco/jacoco-maven-plugin/0.8.11/jacoco-maven-plugin-0.8.11.pom (4.2 kB at 3.7 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/jacoco/org.jacoco.build/0.8.11/org.jacoco.build-0.8.11.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/jacoco/org.jacoco.build/0.8.11/org.jacoco.build-0.8.11.pom (44 kB at 39 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/ow2/asm/asm-bom/9.6/asm-bom-9.6.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/ow2/asm/asm-bom/9.6/asm-bom-9.6.pom (3.2 kB at 8.2 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/ow2/ow2/1.5.1/ow2-1.5.1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/ow2/ow2/1.5.1/ow2-1.5.1.pom (11 kB at 29 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/jacoco/jacoco-maven-plugin/0.8.11/jacoco-maven-plugin-0.8.11.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/jacoco/jacoco-maven-plugin/0.8.11/jacoco-maven-plugin-0.8.11.jar (57 kB at 125 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-enforcer-plugin/3.4.1/maven-enforcer-plugin-3.4.1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-enforcer-plugin/3.4.1/maven-enforcer-plugin-3.4.1.pom (7.7 kB at 8.3 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/enforcer/enforcer/3.4.1/enforcer-3.4.1.pom
```

```

[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.030 s -- in org.springframework.samples.petclinic.model.ValidatorTests
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 62, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] -----[ war ]-----
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 02:00 min
[INFO] Finished at: 2025-03-21T09:02:29Z
[INFO] -----
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ mvn clean

[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.springframework.samples:spring-framework-petclinic >-----
[INFO] Building Spring Framework Petclinic 6.1.4
[INFO] -----[ war ]-----
[INFO]
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-clean-plugin/2.5/maven-clean-plugin-2.5.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-clean-plugin/2.5/maven-clean-plugin-2.5.pom (3.9 kB at 3.6 kB/s)
)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/22/maven-plugins-22.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/22/maven-plugins-22.pom (13 kB at 58 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/21/maven-parent-21.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/21/maven-parent-21.pom (26 kB at 87 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/10/apache-10.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/10/apache-10.pom (15 kB at 88 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-clean-plugin/2.5/maven-clean-plugin-2.5.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-clean-plugin/2.5/maven-clean-plugin-2.5.jar (25 kB at 176 kB/s)

```

```

sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ mvn install

[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.springframework.samples:spring-framework-petclinic >-----
[INFO] Building Spring Framework Petclinic 6.1.4
[INFO] -----[ war ]-----
[INFO]
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-war-plugin/3.4.0/maven-war-plugin-3.4.0.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-war-plugin/3.4.0/maven-war-plugin-3.4.0.pom (8.4 kB at 11 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-war-plugin/3.4.0/maven-war-plugin-3.4.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-war-plugin/3.4.0/maven-war-plugin-3.4.0.jar (83 kB at 520 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-install-plugin/2.4/maven-install-plugin-2.4.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-install-plugin/2.4/maven-install-plugin-2.4.pom (6.4 kB at 128 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/23/maven-plugins-23.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/23/maven-plugins-23.pom (9.2 kB at 170 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/22/maven-parent-22.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/22/maven-parent-22.pom (30 kB at 196 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/11/apache-11.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/11/apache-11.pom (15 kB at 247 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-install-plugin/2.4/maven-install-plugin-2.4.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-install-plugin/2.4/maven-install-plugin-2.4.jar (27 kB at 369 kB/s)

```

```

sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ mvn package

[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.springframework.samples:spring-framework-petclinic >-----
[INFO] Building Spring Framework Petclinic 6.1.4
[INFO] -----[ war ]-----
[INFO]
[INFO] --- maven-enforcer-plugin:3.4.1:enforce (enforce-maven) @ spring-framework-petclinic ---
[INFO] Rule 0: org.apache.maven.enforcer.rules.version.RequireMavenVersion passed
[INFO]
[INFO] --- jacoco-maven-plugin:0.8.11:prepare-agent (prepare-agent) @ spring-framework-petclinic ---
[INFO] argLine set to -javaagent:/home/sowbaraniga_k/.m2/repository/org/jacoco/org.jacoco.agent/0.8.11/org.jacoco.agent-0.8.11-runtime.jar=destfile=/home/sowbaraniga_k/DevOps/spring-framework-petclinic/target/jacoco.exec
[INFO]
[INFO] --- maven-resources-plugin:3.3.1:resources (default-resources) @ spring-framework-petclinic ---
[INFO] Copying 21 resources from src/main/resources to target/classes
[INFO]

```

```

sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ ls
Jenkinsfile  dockerfile  mvnw.cmd  readme.md  target
LICENSE.txt  mvnw       pom.xml   src
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ cd target
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic/target$ ls
classes          jacoco.exec      petclinic        surefire-reports
generated-sources  maven-archiver  petclinic.war    test-classes
generated-test-sources  maven-status    site

```

9. Push the Docker image to DockerHub using the appropriate Docker commands.

```
sowbaraniga_k@DESKTOP-73QEITE:~$ docker build -t pet .
[+] Building 0.1s (1/1) FINISHED                                docker:default
=> [internal] load build definition from Dockerfile            0.0s
=> => transferring dockerfile: 2B                               0.0s
ERROR: failed to solve: failed to read dockerfile: open Dockerfile: no such file or directory
sowbaraniga_k@DESKTOP-73QEITE:~$ cd DevOps
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps$ docker build -t pet .
[+] Building 0.1s (1/1) FINISHED                                docker:default
=> [internal] load build definition from Dockerfile            0.0s
=> => transferring dockerfile: 2B                               0.0s
ERROR: failed to solve: failed to read dockerfile: open Dockerfile: no such file or directory
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps$ cd spring-framework-petclinic
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ docker build -t pet .
[+] Building 62.7s (8/8) FINISHED                                docker:default
=> [internal] load build definition from dockerfile            0.1s
=> => transferring dockerfile: 148B                             0.0s
=> [internal] load metadata for docker.io/library/tomcat:latest 5.3s
=> [auth] library/tomcat:pull token for registry-1.docker.io 0.0s
=> [internal] load .dockerignore                               0.0s
=> => transferring context: 2B                                   0.0s
=> [internal] load build context                               1.8s
=> => transferring context: 44.38MB                             1.8s
=> [1/2] FROM docker.io/library/tomcat:latest@sha256:1374a565d5122f 56.2s
=> => resolve docker.io/library/tomcat:latest@sha256:1374a565d5122fd 0.0s
=> => sha256:ec01946b5efacf78477bdcfbd535c085881d83e 2.72kB / 2.72kB 0.0s
=> => sha256:88b0f1cee84c76bb84a450edacdc37fb3ee00 12.50kB / 12.50kB 0.0s
=> => sha256:5a7813e071bfadf18aaa6ca8318be4824a9b 29.75MB / 29.75MB 12.3s
=> => sha256:a10b6847b9f1913a9d34980e0354787e49 157.59MB / 157.59MB 45.3s
=> => sha256:1374a565d5122fdb42807f3a5f2d4fcc245a5e1 6.64kB / 6.64kB 0.0s
=> => sha256:8dbbbc6af9dc7b3eec20b35797f66551a17f 22.94MB / 22.94MB 13.7s
=> => sha256:ccc1c5ea3c7d921e35f64dce04af1c8a2cd9795428 158B / 158B 12.7s
=> => extracting sha256:5a7813e071bfadf18aaa6ca8318be4824a9b6297b324 5.4s
=> => sha256:91e6cc55403ad09f9aeca15ab95bf547ad0b78 2.28kB / 2.28kB 13.0s
=> => sha256:5d4660d0a9e9f9a03ab7c4a134c5a0c8d39f649970 139B / 139B 13.4s
=> => sha256:4f4fb700ef54461cfa02571ae0db9a0dc1e0cdb55774 32B / 32B 13.8s
=> => sha256:e231914ca483a93d4915d672a47db6c20222 31.87MB / 31.87MB 25.0s
```

```

=> => sha256:8dbbbc6af9dc7b3eec20b35797f66551a17f 22.94MB / 22.94MB 13.7s
=> => sha256:ccc1c5ea3c7d921e35f64dce04af1c8a2cd9795428 158B / 158B 12.7s
=> => extracting sha256:5a7813e071bfadf18aaa6ca8318be4824a9b6297b324 5.4s
=> => sha256:91e6cc55403ad09f9aeca15ab95bf547ad0b78 2.28kB / 2.28kB 13.0s
=> => sha256:5d4660d0a9e9f9a03ab7c4a134c5a0c8d39f649970 139B / 139B 13.4s
=> => sha256:4f4fb700ef54461cfa02571ae0db9a0dc1e0cdb55774 32B / 32B 13.8s
=> => sha256:e231914ca483a93d4915d672a47db6c20222 31.87MB / 31.87MB 25.0s
=> => extracting sha256:8dbbbc6af9dc7b3eec20b35797f66551a17f035a85f0 3.0s
=> => extracting sha256:a10b6847b9f1913a9d34980e0354787e49b068cddb7 7.0s
=> => extracting sha256:ccc1c5ea3c7d921e35f64dce04af1c8a2cd97954281e 0.0s
=> => extracting sha256:91e6cc55403ad09f9aeca15ab95bf547ad0b78be2b66 0.0s
=> => extracting sha256:5d4660d0a9e9f9a03ab7c4a134c5a0c8d39f64997009 0.0s
=> => extracting sha256:4f4fb700ef54461cfa02571ae0db9a0dc1e0cdb55774 0.0s
=> => extracting sha256:e231914ca483a93d4915d672a47db6c2022215b7ce5d 3.2s
=> [2/2] COPY target/*.war /usr/local/tomcat/webapps/ROOT.war 0.4s
=> exporting to image                                          0.6s
=> => exporting layers                                          0.5s
=> => writing image sha256:71fbb8daa914751c8876939924b0f5920805c749d 0.0s
=> => naming to docker.io/library/pet                          0.0s
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ docker lo
gin
Authenticating with existing credentials...
Login Succeeded

```

```
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ sudo docker push sowbaranigak/devops:latest
The push refers to repository [docker.io/sowbaranigak/devops]
b0d5549587e4: Pushed
5f70bf18a086: Pushed
6fbd02a6a33: Pushed
49cb1bc2daeb: Pushed
4e5b554b7345: Pushed
39cf0ac89a5a: Pushed
f844dcf94898: Pushed
3359bc3d7a6a: Pushed
4b7c01ed0534: Pushed
latest: digest: sha256:3721acb77fa3be30bb7f3185abb49f704b39b93de21acddb88f64f7a8c3a9355 size: 2413
```

10. Start Minikube.

11. Create the Kubernetes deployment.

12. Expose the deployment.

13. Expose the service using Minikube and obtain the URL.

```
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ kubectl create deployment r4 --image=sowbaranigak/devops --port=8080
deployment.apps/r4 created
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ kubectl expose deployment.apps/r3 --port=8080 --type=NodePort
Error from server (AlreadyExists): services "r3" already exists
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ kubectl expose deployment.apps/r4 --port=8080 --type=NodePort
service/r4 exposed
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
r1-77c5b5bdd7-w5rct 0/1     ImagePullBackOff 0           4h7m
r2-867d7797f8-9v7s2 1/1     Running    1 (13m ago) 3h46m
r3-cc874dc49-qcs9v  1/1     Running    0           8m4s
r4-6799767796-mwm74 1/1     Running    0           34s
sowbaraniga_k@DESKTOP-73QEITE:~/DevOps/spring-framework-petclinic$ minikube service r4

```

| NAMESPACE | NAME | TARGET PORT | URL |
|-----------|------|-------------|---------------------------|
| default | r4 | 8080 | http://192.168.49.2:32762 |

```

Starting tunnel for service r4.

```

| NAMESPACE | NAME | TARGET PORT | URL |
|-----------|------|-------------|------------------------|
| default | r4 | | http://127.0.0.1:32893 |

```

Opening service default/r4 in default browser...
http://127.0.0.1:32893
Because you are using a Docker driver on linux, the terminal needs to be open to run it.

```

14. Use the URL to view the output in the browser.

