

TASK 5 - MAVEN

NAME: SUMITHAA P V R

ROLL NO: 22CSR212

STEPS:

1. Create a folder and move into that folder.

```
sumithaa@sumithaaPVR: ~/maven
sumithaa@sumithaaPVR:~$ mkdir maven
sumithaa@sumithaaPVR:~$ cd maven
```

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

`sudo apt install git`

```
sumithaa@sumithaaPVR:~/maven$ sudo apt install git
[sudo] password for sumithaa:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
git is already the newest version (1:2.43.0-1ubuntu7.2).
git set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 56 not upgraded.
```

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.

```
sumithaa@sumithaaPVR:~/maven$ git --version
git version 2.43.0
sumithaa@sumithaaPVR:~/maven$ 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 | 1.62 MiB/s, done.
Resolving deltas: 100% (3600/3600), done.
sumithaa@sumithaaPVR:~/maven$ ls
spring-framework-petclinic
sumithaa@sumithaaPVR:~/maven$ cd spring-framework-petclinic
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ ls
Jenkinsfile LICENSE.txt dockerfile mvnw mvnw.cmd pom.xml readme.md 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` (This checks the installed version.)

```
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ sudo apt install maven
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
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:
  libatinject-jsr330-api-java-doc libel-api-java libcommons-io-java-doc libasm-java libcglib-java libjsr305-java-doc
  libmaven-shared-utils-java-doc liblogback-java libplexus-utils2-java-doc junit4 testng libcommons-logging-java liblog4j1.2-java
The following NEW 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
  maven
0 upgraded, 32 newly installed, 0 to remove and 56 not upgraded.
Need to get 10.1 MB of archives.
After this operation, 13.1 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu noble/universe amd64 libapache-pom-java all 29-2 [5284 B]
Get:2 http://archive.ubuntu.com/ubuntu noble/universe amd64 libatinject-jsr330-api-java all 1.0+ds1-5 [5348 B]
Get:3 http://archive.ubuntu.com/ubuntu noble/universe amd64 libgeronimo-interceptor-3.0-spec-java all 1.0.1-4fakesync [8616 B]
Get:4 http://archive.ubuntu.com/ubuntu noble/universe amd64 libcdi-api-java all 1.2-3 [54.3 kB]
```

```
sumithaa@sumithaaPVR: ~/maven/spring-framework-petclinic$ mvn --version
Setting up maven (3.8.7-2) ...
update-alternatives: using /usr/share/maven/bin/mvn to provide /usr/bin/mvn (mvn) in auto mode
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ 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.

```
sumithaa@sumithaaPVR:~/maven/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 7.6 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 3.3 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 14 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 3.2 kB/s)
[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 19 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 a
t 57 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/ow2/asm/asm-bom/9.6/asm-bom-9.6.pom
```

```

sumithaa@sumithaaPVR:~/maven/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 ]-----
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 1.5 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 5.1 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 44 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 7.6 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 50 kB/s)
[INFO]

```

```

sumithaa@sumithaaPVR:~/maven/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 ]-----
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 1.6 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 203 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 4.0 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 5.1 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 39 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 14 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-install-plugin/2.4/maven-install-plugin

```

```

sumithaa@sumithaaPVR:~/maven/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/sumithaa/.m2/repository/org/jacoco/org.jacoco.agent/0.8.11/org.jacoco.agent-0.8.11-runtime.jar=destfile=/home/sumithaa/maven/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]
[INFO] --- maven-compiler-plugin:3.11.0:compile (default-compile) @ spring-framework-petclinic ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:3.3.1:testResources (default-testResources) @ spring-framework-petclinic ---
[INFO] Copying 11 resources from src/test/java to target/test-classes
[INFO] Copying 1 resource from src/test/resources to target/test-classes

```

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

```

sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ ls
Jenkinsfile LICENSE.txt dockerfile mvnw mvnw.cmd pom.xml readme.md src target
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ cd target
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic/target$ ls
classes generated-test-sources maven-archiver petclinic site test-classes
generated-sources jacoco.exec maven-status petclinic.war surefire-reports
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic/target$ cd ..
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ cat dockerfile
FROM tomcat:latest
COPY target/*.war /usr/local/tomcat/webapps/ROOT.war
EXPOSE 8080
CMD ["catalina.sh", "run"]

```

```
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ docker build -t dog .
[+] Building 83.4s (7/7) FINISHED                                docker:default
=> [internal] load build definition from dockerfile                0.0s
=> => transferring dockerfile: 148B                                0.0s
=> [internal] load metadata for docker.io/library/tomcat:latest    8.3s
=> [internal] load .dockerignore                                  0.0s
=> => transferring context: 2B                                       0.0s
=> [internal] load build context                                    0.3s
=> => transferring context: 44.38MB                                  0.3s
=> [1/2] FROM docker.io/library/tomcat:latest@sha256:1374a565d5122fdb42807f3a5f2d4fcc245a5e15420ff5bb5123afedc8ef769d 74.3s
=> resolve docker.io/library/tomcat:latest@sha256:1374a565d5122fdb42807f3a5f2d4fcc245a5e15420ff5bb5123afedc8ef769d 0.0s
=> sha256:1374a565d5122fdb42807f3a5f2d4fcc245a5e15420ff5bb5123afedc8ef769d 6.64kB / 6.64kB 0.0s
=> sha256:5a7813e071bfadf18aaa6ca8318be4824a9b6297b3240f2cc84c1db6f4113040 29.75MB / 29.75MB 19.4s
=> sha256:8dbbcb6af9dc7b3e0c20b35797f66551a17f035a85f020fc99a0457dd268aae8 22.94MB / 22.94MB 8.7s
=> sha256:ec01946b5efac78477bdcfbd535c885881d83e873ae884c0cd44ea1e948d49d 2.72kB / 2.72kB 0.0s
=> sha256:88b0f1cee84c76bb84a450edacdc37fb3ee0a8706be9298dfe8ec69e5040cdd 12.50kB / 12.50kB 0.0s
=> sha256:a10b6847b9f1913a9d34980e0354787e49b068cddb78c70bab054c6cfbd1660 157.59MB / 157.59MB 71.4s
=> sha256:dccl1c5ea3c7d921e35f64dce04a1c8a2cd97954281eb6af66f6067f6c2c319b 158B / 158B 9.1s
=> sha256:91e6cc55403ad09f9aeca15ab95bf547ad0b78be2b665c486beef7161150987d 2.28kB / 2.28kB 9.8s
=> sha256:5d4660d0a9e9f9a03ab7c4a134c5a0c8d39f649970092b17ebe6a619a9b838f5 139B / 139B 10.2s
=> sha256:4f4fb700ef54461cf02571ae0db9a0dc1e0cdb5577484a6d75e68dc38e8acc1 32B / 32B 10.9s
=> sha256:e231914ca483a93d4915d672a47db6c2022215b7ce5de04ed3bb7214e89c814f 31.87MB / 31.87MB 34.0s
=> extracting sha256:5a7813e071bfadf18aaa6ca8318be4824a9b6297b3240f2cc84c1db6f4113040 1.3s
=> extracting sha256:8dbbcb6af9dc7b3e0c20b35797f66551a17f035a85f020fc99a0457dd268aae8 0.8s
=> extracting sha256:a10b6847b9f1913a9d34980e0354787e49b068cddb78c70bab054c6cfbd1660 1.7s
=> extracting sha256:dccl1c5ea3c7d921e35f64dce04a1c8a2cd97954281eb6af66f6067f6c2c319b 0.0s
=> extracting sha256:91e6cc55403ad09f9aeca15ab95bf547ad0b78be2b665c486beef7161150987d 0.0s
=> extracting sha256:5d4660d0a9e9f9a03ab7c4a134c5a0c8d39f649970092b17ebe6a619a9b838f5 0.0s
=> extracting sha256:4f4fb700ef54461cf02571ae0db9a0dc1e0cdb5577484a6d75e68dc38e8acc1 0.0s
=> extracting sha256:e231914ca483a93d4915d672a47db6c2022215b7ce5de04ed3bb7214e89c814f 0.8s
=> [2/2] COPY target/*.war /usr/local/tomcat/webapps/ROOT.war 0.5s
=> exporting to image                                             0.1s
=> exporting layers                                              0.1s

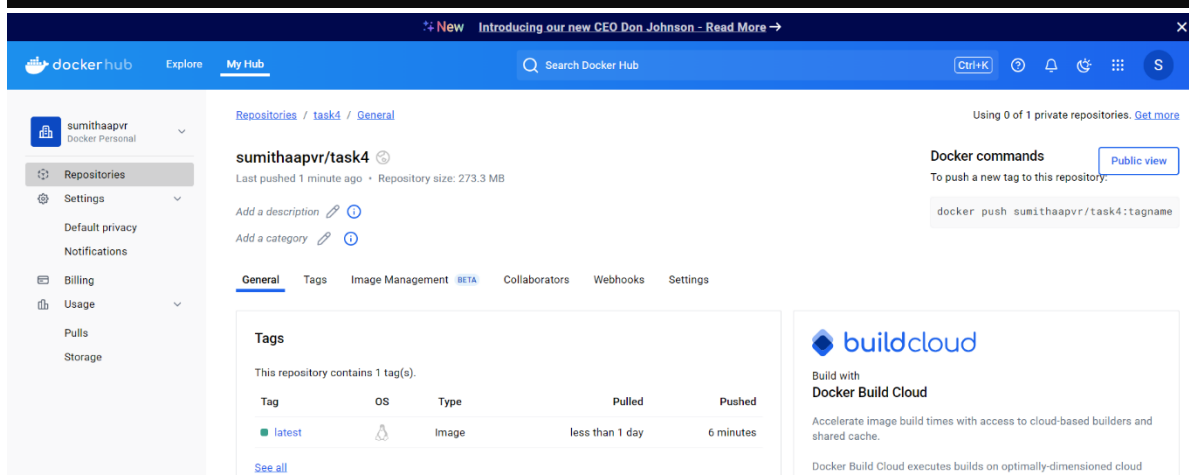
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ docker images
REPOSITORY          TAG         IMAGE ID      CREATED       SIZE
dog                 latest      4a843412451a 10 seconds ago 563MB
test1              latest      d4042b2a980f 23 hours ago 195MB
sumithaapvr/newrepo1 latest      d4042b2a980f 23 hours ago 195MB
gcr.io/k8s-minikube/kicbase v0.0.46    e72c4cbe9b29 2 months ago 1.31GB
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ docker run -itd -p 92:8080 dog
2b246aa909ecd7930e406c4e82c6ba9c20924b05a41d024322f40c34e0025644
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ docker tag dog sumithaapvr/task4
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ docker images
REPOSITORY          TAG         IMAGE ID      CREATED       SIZE
dog                 latest      4a843412451a 3 minutes ago 563MB
sumithaapvr/task4   latest      4a843412451a 3 minutes ago 563MB
test1              latest      d4042b2a980f 23 hours ago 195MB
sumithaapvr/newrepo1 latest      d4042b2a980f 23 hours ago 195MB
gcr.io/k8s-minikube/kicbase v0.0.46    e72c4cbe9b29 2 months ago 1.31GB
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ docker login -u sumithaapvr

Info → A Personal Access Token (PAT) can be used instead.
To create a PAT, visit https://app.docker.com/settings

Password:

WARNING! Your credentials are stored unencrypted in '/home/sumithaa/.docker/config.json'.
Configure a credential helper to remove this warning. See
https://docs.docker.com/go/credential-store/

Login Succeeded
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ docker push sumithaapvr/task4
Using default tag: latest
The push refers to repository [docker.io/sumithaapvr/task4]
0df7ab2fea97: Pushed
```



10. Start Minikube.

11. Create the Kubernetes deployment.

12. Expose the deployment.

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

```
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ minikube start
minikube v1.35.0 on Ubuntu 24.04 (amd64)
Using the docker driver based on existing profile
Starting "minikube" primary control-plane node in "minikube" cluster
Pulling base image v0.0.46 ...
Restarting existing docker container for "minikube" ...
Preparing Kubernetes v1.32.0 on Docker 27.4.1 ...
Verifying Kubernetes components...
  * Using image gcr.io/k8s-minikube/storage-provisioner:v5
Enabled addons: default-storageclass, storage-provisioner
Done! kubectrl is now configured to use "minikube" cluster and "default" namespace by default
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ kubectl create deployment dogpic --image=sumithaaapvr/task4 --port=8080
deployment.apps/dogpic created
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ kubectl expose deployment.apps/dogpic --port=8080 --type=NodePort
service/dogpic exposed

sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ kubectl get nodes
NAME       STATUS   ROLES    AGE     VERSION
minikube   Ready    control-plane  3h42m   v1.32.0
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
dogpic-78c4986c6c-25l4x             1/1     Running   0           112s
r1-65665bb6d4-4r9xd                 1/1     Running   1 (3m49s ago)  3h29m
sumithaa@sumithaaPVR:~/maven/spring-framework-petclinic$ minikube service dogpic
-----
| NAMESPACE | NAME   | TARGET PORT | URL                      |
|-----|-----|-----|-----|
| default    | dogpic | 8080         | http://192.168.49.2:31027 |
|-----|-----|-----|-----|
Starting tunnel for service dogpic.
-----
| NAMESPACE | NAME   | TARGET PORT | URL                      |
|-----|-----|-----|-----|
| default    | dogpic |             | http://127.0.0.1:40925   |
|-----|-----|-----|-----|
Opening service default/dogpic in default browser...
http://127.0.0.1:40925
! 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.

