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step (f). Develop storing boot starter App. by Liking the park aging type. " [ar tile"
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           Import orgapring in an work boots at a configure. Spring Boot Application:
           #SpringSoctApplication
          public allow Dealer Wazup Copplication ( \\
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                             xpring \Delta pplication.run(Cooker Shoppet Application.class, arge),\\
                             System.out.printin("welcome to Docker Appa");
     \operatorname{rin}(\mathcal{O}) . Suppose the Project in QIF Repository
                   Right while we project the bound of street project -\lambda_{--}=-\infty
      map (i) insite docker desktop.
        stage() put the IGE report boy contains. (Make some that WIT Back is already trestalled in great manual mo-
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        step S) push the Image, to Hocker both (Hocker registry).
          D:V.lockerAppsVE-Fools737/EsroEVEstanBootMopledocker tag bestapplidag nateraccocc/fc903repc.bootsock.tag
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```
MAking Spring Boot Standalone App (jar file) as the Docker App
step1) Develop spring boot starter App by taking the packaging type "jar file"
//Main class
package com.nt;
import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;
@SpringBootApplication
public class DockerSbApp1Application {
public static void main(String[] args) {
SpringApplication.run(DockerSbApp1Application.class, args); System.out.println("welcome to Docker
Apps");
Dockerfile
=======
(In the Project directory)
FROM openjdk
WORKDIR /app1
COPY target/*.jar /app1
CMD ["java","-jar","BootApp1.jar"]
in pom.xml
========
add <finalName>Boot App1 </finalName> under <build> tag
}
step2) Keep the Project in GIT Repository
Right click on project ---> team --->share project --->
step3) start docker desktop
step4) pull the GIT repository content (Make sure that GIT Bash is alredy installed in yout computer)
Initialized empty Git repository in D:/DockerApps/FS-Tools903/Demo3/.git/
D:\DockerApps\FS-Tools903\Demo3>git pull
https://github.com/natarazworld/NTFSTools-903.git master
D:\DockerApps\FS-Tools903\Demo3>dir
Volume in drive D has no label.
Volume Serial Number is 90EF-90E7
Directory of D:\DockerApps\FS-Tools903\Demo3
11/29/2024
10:00 AM
```

```
<DIR>
11/29/2024 09:58 AM
<DIR>
11/29/2024 10:00 AM
11/29/2024 10:00 AM
11/29/2024 10:00 AM
<DIR>
© File(s) 5 Dir(s)
175,866,642,432 bytes free
step5) build the app using maven commands
D:\DockerApps\FS-Tools903\Demo3\DockerBootApp1>mvn clean package
step6) build the docker image
D:\DockerApps\FS-Tools903\Demo3\DockerBootApp1>docker build -t bootapp1-img
step7) Build docker container from the docker image (running the app in docker style)
D:\DockerApps\FS-Tools903\Demo3\DockerBootApp1>docker run
bootappl-img
Spring
| | | | | (_| | ) ) ) ) | | _ | | _ \__, | / / / | = \___/=/__/
To: Everyone
Enter chat message here
(v3.4.0)
[DockerBootApp1] [
main] com.nt. DockerBootApp1Ap
tApplApplication v0.0.1-SNAPSHOT using Java 18.0.2.1 with PID 1 (/app2/BootApp1.jar
started by
2024-11-29T04:38:29.963Z INFO 1 [DockerBootApp1] [ set, falling back to 1 default
```

```
profile: "default" 2024-11-29T04:38:30.443Z INFO 1 [DockerBootApp1] [ ApplApplication
in 0.838 seconds (process running for 1.218) Welcome to Docker Spring boot App
main] com.nt. DockerBootApp1Application main] com.nt. DockerBootApp1Application
step8) push the image to docker hub (docker registry)
D:\DockerApps\FS-Tools903\Demo3\DockerBootApp1>docker tag boot app1-img
natarazdocker/fs903repo: bootapp1-tag
username
repo name
tag name
D:\DockerApps\FS-Tools903\Demo3\DockerBootApp1>docker push
natarazdocker/fs903repo:bootapp1-tag The push refers to repository
[docker.io/natarazdocker/fs903repo]
Proecedure make Java App web application as the docker Image / docker App
================
step1) develop the web application and test it locally
Docker-TestWebApp
> Deployment Descriptor: Archetype Created Web App
Java Resources
Deployed Resources
src
main
java
resources
webapp
WEB-INF
index.html
test
target
> > Worskpaces
pom.xml
step2) Add Dockerfile to the Project
index.html
_____
```

<h1 style="color:red;text-align:center"> Welcome to Docker WEB application

```
In pom.xml (change the package name)
_____
<finalName>Docker-TestWebApp</finalName>
: Star
</h1>
DockerFile
========
FROM tomcat:10-jdk17
COPY target/Docker-TestWebApp .war EXPOSE 8080
/usr/local/tomcat/webapps/Docker-TestWebApp.war
(copying war file to Docker Container Tomcat server)
note:: u can create war file for the Project in eclipse itself
to
Right click on the Project ---> run as --> maven build .. ---> goals: mvn clean package
step3) Commit the Project Git hub
step4) pull the Project from GIT
D:\DockerApps\FS-Tools903\Demo3\Docker-TestWebApp>git pull
https://github.com/natarazworld/NTFSTools-903.git master
step5) build the Project using maven tool
D:\DockerApps\FS-Tools903\Demo3\Docker-TestWebApp>mvn clean package
(if we create this war file in Eclipse IDE itself then doing this work here not required)
step6) create the Docker image
D:\DockerApps\FS-Tools903\Demo3\Docker-TestWebApp>docker build -t webappl-img .|
step7) create docker container performing the port mapping
windows
Docker
Os pott Tomcat port
D:\DockerApps\FS-Tools903\Demo3\Docker-TestWebApp>docker run -p 6677:8080 webapp1-img
step9) test the application
http://localhost:6677/Docker-TestWebApp/
in
What is port mapping docker container creation?
port mapping
Ans) The softwares of Docker containers might be running on some default port number like 8080 for
tomcat.. but the same 8080 port number might be busy for other services in the HOST computer, So we need
to map docker container software service port number to a free port number of the HOST computer This
```

process is called port mapping

**Host computer** 

## Docker container

Tomcat server (running on port:: 8080)

**Docker-Test WebApp** 

**Docker engine** 

port mapping

Host OS (Linux/windows)host port :: 6677

**Docker FAQS** 

========

- Q) What is Containerization?
- Q) Why do we need Containerization? (Code + env.. packing)
- Q) List out various Containerization tools?
- Q) Explain various comps of Docker tool?
- a) Docker Client b) Docker Daemon c) Docker Image d) Docker Container e) DockerHub
- Q) Is Docker S/w required in every machine for achieving and code and env portability?
- Q) What is the role Dockerfile in Docker image creation?
- Q) What is the difference b/w Docker image and Docker container?
- Q) What is need of port mapping in Docker Container creation?
- Q) List out few important readily available images of Docker HUB?
- Q) What is role of Docker tool as part of build and deployment automation?

http://localhost:8080/Docker-TestWebApp (error)

http://localhost:66 77/Docker-TestwebApp (success)