Phase 5 :

Day 1 : 03-09-2022

jUnit Testing : Phase 3 : jUnit5

Testing and development (devops)

TestNG

Selenium

Docker

CI and CD tool ie Jenkin

Overview of Kubernetes

Overview of AWS : Busket, EBS and EC2.

Test NG : Test NG is a open source testing framework inspired by jUnit and nUnit.

In Test NG ng means next generation. In Text Ng added more features.

Junit is to do unit testing

Test NG mainly use to testing for unit as well as integration testing.

1. Using Test NG we can generate the report in html or any other format.
2. It allow us to use parallel testing.
3. We can run group of test case as well as we can set the priority for the test.

TestNG Hook functions

Mock test with TestNG or jUnit5

Service layer always depends upon DAO layer

Dao layer depends upon resource layer

Resource layer depends upon database or external service.

Service layer want to do the mock or fake or proxy testing for Dao layer.

jMockito is a open source framework which help to provide the mocking mechanism.

Day 2 : 04-09-2022

UI (User Interface)

HTML, CSS, JavaScript,

jQuery

Angular Framework

React JS

Vue JS

Frontend technologies : JSP, html, css and JS

Jasmine : Jasmine is one of the type of open source framework which help to do the testing for JavaScript program.

Jasmine is like unit testing for JavaScript it may be plain JavaScript, typescript , Angular Framework etc.

Karma : Karma is runner for Jasmine framework.

Angular framework with Jasmine and Karma

React JS with JEST testing framework

Node JS + Jasmine or Mocha with Chai tools

Jasmine is like a jUnit

Mocha is like a TestNG

Selenium tool : Selenium is a type of open source automation tool which help to do the testing for UI.

It support for all browser, all os as well as lot of language like Java, Python, C#, Php, Perl etc.

Selenium provide web driver which help to test using Java, C# or python.

Selenium can be used to automation functionality test and can be integrate with other tools like Maven, Gradle, CI/CD ie Jenkin as well as Docker.

DevOps : Git, Maven, Gradle, Jenkin, Docker, Kubernetes, Agile etc

Automation testing tool can access the test data, control the execution of test and compared the actual result against the expected output.

Selenium provided Web Driver features which help to read or access the Web page contents.

Then we have the take the help of jUnit or TestNG API to check actual and expected output.

jUnit and TestNG they provided testsuite, test case and more than one assert method but they can’t load or access web page.

Selenium provided web driver which help to read or access web page content develop in any language.

Selenium with TestNG testing framework for UI testing using Java.

First we write simple Selenium Program to load the web page.

10-09-2022

Selenium with TestNG or jUnit 4.x or 5.x

105.0.1343.33

‘We can do the testing using selenium IDE.

11-09-2022

Docker is an advanced OS Virtualization software platform that makes it easier to create, deploy and run the application in Docker Container.

We can create Docker images

Virtualization : Virtualization means of employing software (such as hypervisor) to create a virtual version of resources such as database, tool, application etc.

Virtualization lets you divide a system into a series of separate section each one act as distinct individual system. That virtual environment is known as virtual machine.

VM ware

With help of VM ware software we can run multiple OS.

Base machine is window 11

RAM : 16 GM Guest OS as Linux or Unix

4GM to run Guest OS

But if we are planning to run more than on Guest OS 10 Guest OS.

Virtualization Vs Containerization

Virtualization is an abstract version of physical machine. Containerization means abstract version of an application. With help of Docker engine we can run the application in Docker container.

Container: run time environment or engine

Docker Container: This is a running process or instance or engine of an image or Running the instance of Docker image container turns the actual application or run the application.

Docker Image : it is a file system and configuration of our application or it is a template that hold a set of instruction which help to run the container.

Docker file : A Docker file is a blue print / set of instruction that defines how your image to build.

Demo.java

Docker commands

docker --version This command is use to find the Docker version

docker images This command is use to display all images present in current machine.

docker pull image-name This command is use to pull the image in local machine.

hello-world

docker run imageName/imageId This command is use to run the program.

Docker pull imageName : first it will search in image in Docker engine in local machine. if not present then it will pull from Docker hub

Docker hub is just like a Git hub responsible to publish as well as we can pull public images base upon our requirements.

Creating image to display simple message

Dockerfile

FROM busybox:latest

CMD ["echo","Welcome to My Busy Box Image"]

docker build -t my-busybox222 . -f Dockerfile this command is use to create the image

docker run my-busybox222 this command is use to run the image

creating image to display the date

Dockerfile

FROM alpine:latest

CMD [ "date" ]

docker build -t my-alpine222 . -f Dockerfile

docker run my-alpine222

Creating image to run the Simple Java program

Please create Java program

Dockerfile

FROM openjdk:11

#COPY \*.java .

COPY com .

RUN javac -d . \*.java

CMD [ "java","com.Demo" ]

docker build –t my-javaimage222 . –f Dockerfile

docker run my-javaimage222

Creating image to run the spring boot project

First create spring boot project.

Then create one or more rest api

Then using mvn command create the jar file

mvn package

Then create Dockerfile

FROM openjdk:11

COPY ./target/SpringBootWithRESTAPI-0.0.1-SNAPSHOT.jar .

CMD ["java","-jar","SpringBootWithRESTAPI-0.0.1-SNAPSHOT.jar"]

docker build -t my-spring-boot-app . -f Dockerfile

docker run -p 9090:9090 my-spring-boot-app

9090 : red port number actual port number

9090 : orange port number expose port number it can be same or different.

docker run -p 9090:9090 –d my-spring-boot-app

docker ps : This command is use to display all running container.

docker stop containerId/containerName

docker start containerId/containerName

to delete or remove container

first stop the container and then remove

or remove forcefully

docker rm containerId

or

docker rm containerId –f

UI (Frontend technology) to create the Image

First create html, css and js files

Then create Dockerfile

FROM nginx

COPY . /usr/share/nginx/html

docker build -t my-web-app . -f Dockerfile

by default tomcat port number 8080

by default nginx sever port number is 80

creating image to run the angular app

first create the project and verify it is running or not.

ng build : This command is use to build the project

after build you can see dist folder insider a angular project.

After build now you have to create Dockerfile

FROM nginx

COPY /dist/angular-with-docker/ /usr/share/nginx/html

Build the image

docker build -t my-angular-app . -f Dockerfile

nginx default port number 80.

docker run -p 82:80 -d a6104eba374b

Running mysql image

docker pull mysql:8

after pull we have start the server.

**docker run -e MYSQL\_ROOT\_PASSWORD=root -e MYSQL\_DATABASE=mydb -p 3309:3306 -d 43fcfca0776d**

username is by default root.

Password we can give anything.

Now we have to open the image terminal

docker exec -it quirky\_dubinsky bash

quirky\_dubinsky : this is random image name

Then in image terminal we have to write

mysql -u root –p

password : root

**We push the image in docker hub . so other people can pull and run in their machine.**

docker push imageName

equested access to the resource is denied

docker login

docker push akashkale/my-angular-app

before push we have to create the tag for that image. Tag is like a version or identity for that image

generally we use tag as 1.0, 1.1, 1.2 or latest

docker tag my-angular-app akashkale/my-angular-app:1.0

docker push akashkale/my-angular-app:1.0

docker tag my-angular-app akashkale/my-angular-app:1.0

docker push akashkale/my-angular-app:2.0

docker-compose : it I use to run yml file which contains more than one container details which are communicate to each other to run the application.

Spring boot and mysql running

Image for Spring boot we have to pull the mysql

Assign username and password and database.

Network between two container which help communicate to each other and bridge.

Using docker command we have to create the network

Create the image for spring boot application and that application link the network environment.

Pull the mysql image and create username,password and database and run in network environment.

In application.properties file we have to provide the mysql image container details like host, username, and password.

And run both the images.

Or

Docker compose yml file. In this file we have to provide all image details, one image depends upon other image with network details and using docker compose command we have to run that file.

docker rmi imageId

docker rm containerId