SWE - 645 Assignment 2
Readme

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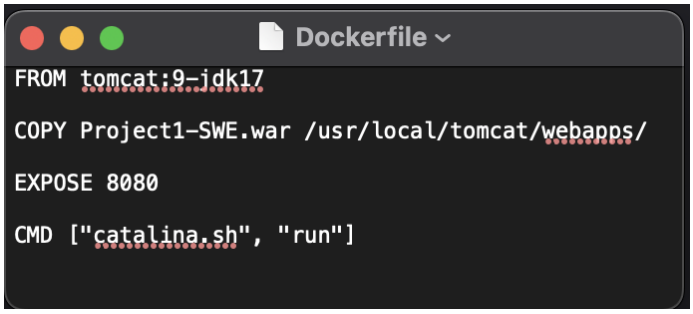
TASK 1 Creating Docker Image

1. First install Docker hub in your system and log into your docker hub account.
2. Now create the docker file from the eclipse and the following lines in the file



3. Now keep docker file, and war file in the same folder and run the following commands.
    a. /usr/sbin/softwareupdate --install-rosetta
    b. 'docker buildx create --use'
    c. 'docker buildx build --platform linux/amd64 --push -t newestimg' .
    d. 'docker run -it -p 8182:8080 newestimg'
    e. 'docker tag newestimg nagasumukh/newestimg:0.1' (This changes the name of the tag along with the username of the dockerhub)
4. After all this we can verify the image is on docker by connecting to the http://localhost:8182/Project1-SWE

TASK 2 Rancher installation on AWS

1. Creating an starting instance:
    a. First create the AWS academy account and create EC2 instanc
    b. Launch Ubuntu instance with the t2.medium type and give 28gb of storage.
    c. Create 2 instances, one name it as 'Rancher' and another one as 'Worker'.
    d. Connect to the instance from the SSH command.
    e. After instance is connected run 'sudo apt-get update' and update the instance
    f. Install the docker with the command 'sudo apt install docker.io'
    g. Run command 'sudo docker run --privileged=true -d --restart=unless-stopped -p 80:80 -p 443:443 rancher/rancher' on one of the instances.
    h. Next open the public IP of that particular instance and follow the steps in the screen in creating password and logging in.
2. Add cluster and deploy
    a. Now inside the Rancher create the cluster
    b. Add the name of the cluster and then hit next and copy the command which will be shown on the next page.

c. Run the command in the another ‘Worker’ instance
d. Post this wait for sometime and then the cluster will be active.
e. Now the next step is to deploy the deployments which will be under the workload tab.
f. Give name for the deployment and container-image and add port 8080 under the node-port
g. Repeat the above with the same for the load balancer.
h. After all this the clusters and deployment are successfully created.
i. You can check if everything is working by going to the service tab and clicking on the hyperlink of the ip address and check if the survey page is opening.
j. After successfully running the cluster and deploying go to the Cluster main page and download the kube config file.

TASK 3 Jenkins Installation

1. Launch another instance on the AWS under the name Jenkins giving 29gb storage and t2.medium. In the security groups settings edit the inbound rules and add the port 8080.
2. Open the ubuntu machine by giving an ssh command.
3. Then run the following commands to install jenkins in the ubuntu machine.
    a. ‘curl -fsSL https://pkg.jenkins.io/debian/jenkins.io-2023.key | sudo tee \
    /usr/share/keyrings/jenkins-keyring.asc’ > /dev/null
    b. ‘echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \https://pkg.jenkins.io/debian binary/ | sudo tee \
    /etc/apt/sources.list.d/jenkins.list’ > /dev/null
    c. ‘sudo apt-get update’ - this will update all the necessary changes in the ubuntu machine
    d. ‘sudo apt-get install fontconfig openjdk-11-jre’ - This will add the jre environment to the ubuntu machine.
    e. ‘sudo apt-get install jenkins’ - This is the command to install jenkins.
    f. ‘sudo systemctl start jenkins.service’ - This will start the service of the jenkins.
    g. ‘sudo systemctl status jenkins’ - This will get the status of the jenkins.
    h. ‘sudo ufw allow 8080’ - is used to allow incoming connections on port 8080 through the Ubuntu firewall (ufw).
    i. ‘sudo ufw enable’ - is used to enable the Ubuntu firewall (ufw) on the system.
    j. ‘sudo ufw status’ - is used to check the status of the Ubuntu firewall on the system.
    k. ‘sudo cat /var/lib/jenkins/secrets/initialAdminPassword’ - This will show the initial password.
    l. ‘sudo su jenkins’ - this will allow us inside jenkins.
    m. ‘groups jenkins’ - This shows the current.
    n. ‘mkdir ~/.kube’ - is used to create a directory named '.kube' in the home directory of the current user.
    o. ‘cd ~/.kube’ - Go to the directory
    p. ‘nano config’ - Open the config file and all the contents which we downloaded from the cluster.

q. ‘chmod 600 ~/.kube/config’ - This is used to change the permissions of the 'config' file located in the '.kube' directory in the home directory of the current user.
r. ‘kubectl config current-context’ - If everything is installed properly we should get the cluster name
s. Inside the jenkins let us install the following
    i. ‘sudo apt-get install openjdk-8-jdk’ - Install jdk
    ii. ‘sudo apt-get update’ - Get update
    iii. ‘sudo apt install docker.io’ - Install docker
t. Now exit the jenkins and in the ubuntu machine do the following things:
    i. sudo usermod -aG docker jenkins
    ii. groups jenkins

TASK 3 Set up in Jenkins:

1. Create a new pipeline under the “New items” tab.
2. Now configure the pipeline which we have created.
3. Go to the general folder, select the github project option and add the page url.
4. In the build triggers section select the ‘github hook trigger’ and change the necessary settings in github.
5. Select the poll scm and add the value * 1 * * * - So that every time jenkins pull is done the survey page gets updated automatically.
6. Under the pipeline section select the ‘Pipeline script from scm’ .
7. Under scm select git, add URL of the git, and credentials.
8. In the scripts path section, use Jenkins (Jenkins file will be in the root directory).
9. Now after the pipeline is set, Go to the ‘manage jenkins’ tab in the main dashboard, add the necessary plugins - Docker plugin, Docker pipeline, Cloudbees docker build and publish plugin, Rancher, Build time stamp.
10. Now, under the Manage jenkins tab, go to Manage credential and add both credentials of github and dockerhub(username and password).
11. Finally, go to the pipeline and click on the ‘Build Now’ button, wait for all the stages to get compiled and then open the public IP address of the rancher and then add the name of the war file to get the Survey page.