Installation and setup instructions:-

1. Docker image creation and pushing it to DockerHub.
    a. Install docker desktop from https://hub.docker.com.
    b. Create a file in the same folder called Dockerfile, and write the following content in it.
        i. FROM tomcat:9.0-jdk15
        ii. COPY Swaroop645.war /usr/local/tomcat/webapps/
    c. Place the docker file in the same location as WAR file.
    d. Use this command: 'docker build --tag <name>:<tag_name> in the terminal, you can use whatever name and tag you want.
    e. Validate the image is properly working by running 'docker run -it -p 8182:8080 <name>:<tag_name>
    f. On the command line, login to docker using 'docker login -u <your username>'
    g. Verify that your image is on Docker Hub. Your image is accessible from the internet
2. Installing Rancher on AWS
    a. Create an EC2 instance, with Ubuntu 20.04 LTS,
    b. Under Instance Type choose t2.medium,
    c. Click Next until you get to the 'Security Group'. You need to add ports 443 and 80 to 0.0.0.0/0
    d. Click 'Review and Launch' and then Launch. Make sure you save your pem/ppk key.
    e. Once you are in the instance, updated it by running: 'sudo apt-get update'
    f. Install docker: 'sudo apt install docker.io and verify that docker is installed by running 'docker -v'
    g. Run this docker command using 'sudo docker run --privileged=true -d --restart=unlessstopped -p 80:80 -p 443:443 rancher/rancher
3. Starting a Rancher cluster
    a. In the Rancher home page, click on 'Add Cluster'
    b. I chose Amazon EC2 as cloud provider.
    c. Give your cluster a name, create a template for your master/etc/worker nodes. I used the same templates for all nodes types. Click on "Add node".
    d. You will need to create a user from your AWS account that can create and manage EC2 instances. For that you will need to go back to the AWS console and click on Service and IAM.

    e. Click on ‘Add User’, give it a name, and click on ‘Programmatic access to get the Access key and Secret key. Click Next into permission and click on ‘Attach Existing Policy directly’. Add the following permission ‘AdministratorAccess’.
    f. Click Next until you Reach ‘Create User’. Make sure you save the Access Key and Secret Key
    g. Copy both keys to the screen on step d. and choose the appropriate region.
    h. Give a name to the template and click on Create, Give a name to the template.
    i. Leave all the rest as default and click Create. Rancher will take some time to provision your cluster.
    j. Once the cluster is ready, you will be able to see the health worker nodes under your cluster.
4. Installing jenkins on AWS Instance
    a. Take ssh to Amazon EC2 instance, using the ppk key.
    b. Install openjdk in the instance using the command ‘sudo apt install openjdk-11-jdk’.
    c. Download the jenkins debian package using the ‘wget -q -O - https://pkg.jenkins.io/debian/jenkins.io.key | sudo apt-key add –’
    d. sudo sh -c 'echo deb http://pkg.jenkins.io/debian-stable binary /sources.list.d/jenkins.list'/sources.list.d/jenkins.list'
    e. Now install jenkins in the instance ‘sudo apt install jenkins’.
5. Installing Kubectl on the ubuntu machine.
    a. sudo snap install kubectl
    b. sudo snap install kubectl --classic
    c. sudo usermod -aG docker jenkins
    d. sudo su jenkins
    e. sudo service jenkins restart
6.
7. Deploying the docker image to rancher
    a. In rancher, click on top left side and chose your cluster.
    b.