

SWE645 - Assignment 2 - Part 2

Team Members:

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Build & Push a docker image:

- 1) Create a repository in docker hub
- 2) Create your war file (we are using the war file from previous submission)
- 3) Create your Dockerfile (It doesn't have extension):

```
FROM tomcat
ADD <war_file_name>.war /usr/local/tomcat/webapps/
EXPOSE 8080
CMD ["catalina.sh", "run"]
```

Eg:

```
FROM tomcat
LABEL maintainer="aindoori@gmu.edu"
ADD SWE645HW2_2_aindoori.war /usr/local/tomcat/webapps/
EXPOSE 8080
CMD ["catalina.sh", "run"]
```

- 4) Create a folder
- 5) Paste the war and docker file in that folder
- 6) Open cmd from that folder
- 7) Run: docker login -u "user_name" -p "password" docker.io
- 8) Run: docker build -t <name_of_image>:<tag_name> .
 - a) docker build -t swe645p2:v1 .
- 9) Run: docker run -d -it --rm -p 80:8080 <name_of_image>:<tag_name>
 - a) docker run -d -it --rm -p 80:8080 swe645p2:v1
- 10) Run: docker ps
- 11) Copy the container ID
- 12) Run: docker commit <container_id> <docker_hud_id>/<docker_hub_repo>:<tag_name>
 - a) docker commit 672d031323d8 aindoori/swe645p2:v3
- 13) Run: docker push <docker_hud_id>/<docker_hub_repo>:<tag_name>
 - a) docker push aindoori/swe645p2:v3

Container Orchestration using Kubernetes:

- 1) Create an EKS cluster and install kubectl using the following AWS docs:
<https://docs.aws.amazon.com/eks/latest/userguide/getting-started.html>
- 2) Once your cluster is up, to verify, enter the following command in the terminal:

kubectl get nodes

The Output must be similar to:

```
C:\Windows\System32>kubectl get nodes
NAME                                STATUS    ROLES    AGE    VERSION
ip-192-168-111-41.ec2.internal      Ready    <none>   3d3h   v1.14.7-eks-1861c5
ip-192-168-128-46.ec2.internal      Ready    <none>   3d3h   v1.14.7-eks-1861c5
ip-192-168-240-49.ec2.internal      Ready    <none>   3d3h   v1.14.7-eks-1861c5
```

- 3) Create your .yaml file.
 - a) The yaml file contains instructions to deploy the image from your docker-hub repository into your cluster.
 - b) It also contains instructions to create a load-balancer service whose external IP can be used to access the deployed application.
 - c) An example yaml file can be: [swe645deploy_docs.yaml](#).
 - 4) Deploy your application using the following command:
- 5) Wait until your application is deployed and running in the pods. To check the status of the pods, use the following command:

kubectl get pods

Output might look similar to:

```
C:\Windows\System32>kubectl get pods
NAME                                READY    STATUS    RESTARTS   AGE
swe645p2-deployment-59b796d46b-6skbn 1/1      Running    0           5h52m
swe645p2-deployment-59b796d46b-8kgdf 0/1      Pending    0           5h52m
swe645p2-deployment-59b796d46b-nk6b6 0/1      Pending    0           5h52m
```

- 6) Once the pods are running your application use the following command to get the external IP address to access it:

kubectl get svc

Output might look similar to:

```
C:\Windows\System32>kubectl get svc
NAME            TYPE        CLUSTER-IP    EXTERNAL-IP                                PORT(S)    AGE
kubernetes      ClusterIP   10.100.0.1     <none>                                     443/TCP    3d6h
swe645p2-service LoadBalancer 10.100.102.19 a728cef77f69a11e9873a12f4987d8c5-2092827629.us-east-1.elb.amazonaws.com 80:30203/TCP 28h
```

- 7) Copy the External-IP for the Load-Balancer, paste it in a browser and hit 'enter'. You can now see your application deployed in AWS EKS.
- 8) We did this and deployed the application. For our application Public IP is :
http://a40d8b4c8f6cd11e9952e020c48fbcc8-2012269217.us-east-1.elb.amazonaws.com/HW1_SWE645/

AWS URLs:

Aditya Indoori (G01129724): <http://aindoori.s3-website-us-east-1.amazonaws.com>

Prashant Sahu(G01149803): <http://swe645-fall19-prashantsahu.s3-website-us-east-1.amazonaws.com>

Gaurav Bahl (G01057667) : <http://swe642.s3-website-us-east-1.amazonaws.com/>

Pushkal Reddy (G01166539): <http://swe645-pushkal.s3-website-us-east-1.amazonaws.com>

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