

Ques1) Creating docker file

```
Dockerfile - DevOps-Challenge - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
DEVOPS-CHALLENGE
  static
  templates
  tests
  .env
  .gitignore
  Dockerfile
  hello.py
  LICENSE
  README.md
  requirements.txt
Dockerfile u x requirements.txt
Dockerfile > ...
2
3 WORKDIR /app
4
5 COPY . .
6
7 RUN pip install -r requirements.txt
8
9 ENV ENVIRONMENT=PROD HOST=localhost PORT=8000
10
11 EXPOSE 8000
12
13 CMD ["python3", "hello.py"]
14
15
```

```
salma@salma-TravelMate-P645-S:~/Documents/Helm/project/DevOps-Challenge$ docker build -t python-app:v1.0 .
Sending build context to Docker daemon 109.1kB
Step 1/7 : FROM python:3.7-alpine
manifest for python:3.7-alpine not found: manifest unknown: manifest unknown
salma@salma-TravelMate-P645-S:~/Documents/Helm/project/DevOps-Challenge$ docker build -t python-app:v1.0 .
Sending build context to Docker daemon 109.1kB
Step 1/7 : FROM python:3.7-alpine
3.7-alpine: Pulling from library/python
530afca65c2c: Pull complete
cc8c14b1a767: Pull complete
1f40cdc4db0c: Pull complete
b2dc9f78b277: Pull complete
4ee9d4fed49e: Pull complete
Digest: sha256:2480a780ee151626a1783f207ab9e90f5ea42a7a534745376020a8e9a698656b
Status: Downloaded newer image for python:3.7-alpine
----> 87f9d411ee65
Step 2/7 : WORKDIR /app
----> Running in ae1241508476
Removing intermediate container ae1241508476
> 42a0b0e34cf7
Step 3/7 : COPY . .
----> b4c06ab53a01
Step 4/7 : RUN pip install -r requirements.txt
----> Running in 4e401a99c3c1
Collecting redis==3.0.1
  Downloading redis-3.0.1-py2.py3-none-any.whl (51 kB)

```

```
salma@salma-TravelMate-P645-S:~/Documents/Helm/project/DevOps-Challenge$ docker images
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE
python-app           v1.0         d9e89083381c     15 seconds ago  58.2MB
```

```
salma@salma-TravelMate-P645-S:~/Documents/Helm/project/DevOps-Challenge$ docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: salmatolba
Password:
WARNING! Your password will be stored unencrypted in /home/salma/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
salma@salma-TravelMate-P645-S:~/Documents/Helm/project/DevOps-Challenge$ docker tag python-app:v1.0 salmatolba-python-app:v1.0
salma@salma-TravelMate-P645-S:~/Documents/Helm/project/DevOps-Challenge$ docker tag python-app:v1.0 salmatolba/python-app:v1.0
salma@salma-TravelMate-P645-S:~/Documents/Helm/project/DevOps-Challenge$ docker push salmatolba/python-app:v1.0
The push refers to repository [docker.io/salmatolba/python-app]
932fc04f8d6b: Pushed
080c023235b3: Pushed
f2dbbfff513d8: Pushed
7ed14f14c0d3: Mounted from library/python
d6219b31634f: Mounted from library/python
8aee288c0534: Mounted from library/python
dc6b8d77c79b: Mounted from library/python
ec34frc1d526: Mounted from library/python
v1.0: digest: sha256:d34066e770d0b113ba0fa3d743c93e27c07d5c6e62d20c43d9dc65dea24e9fe6 size: 1994
```

salmatolba > Repositories > python-app > v1.0

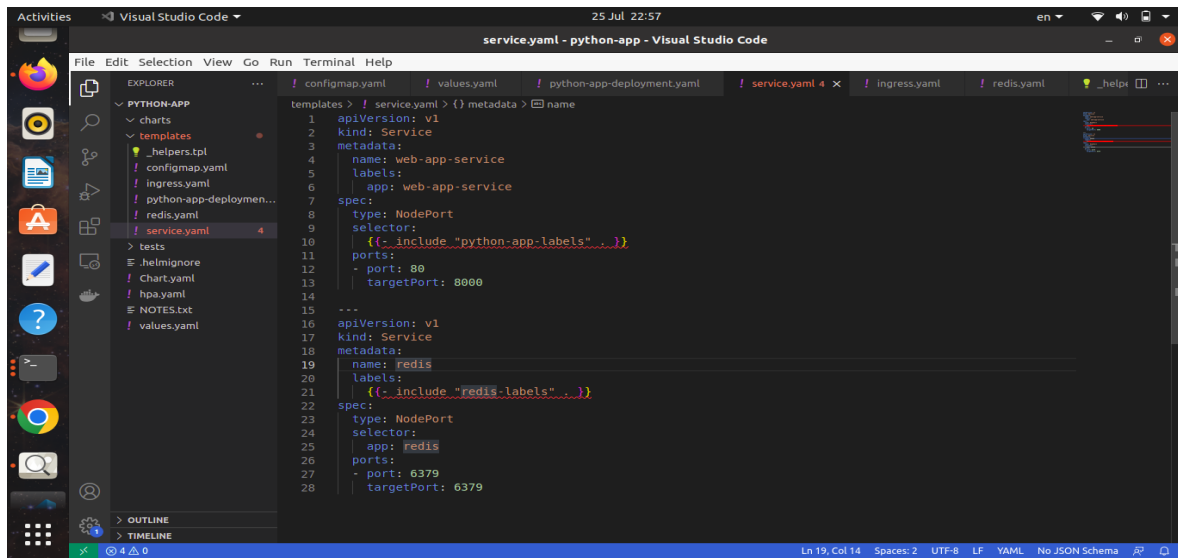


salmatolba/python-app:v1.0

DIGEST: sha256:d34066e770d0b113ba0fa3d743c93e27c07d5c6e62d28c43d9dc65dea24e9fe6

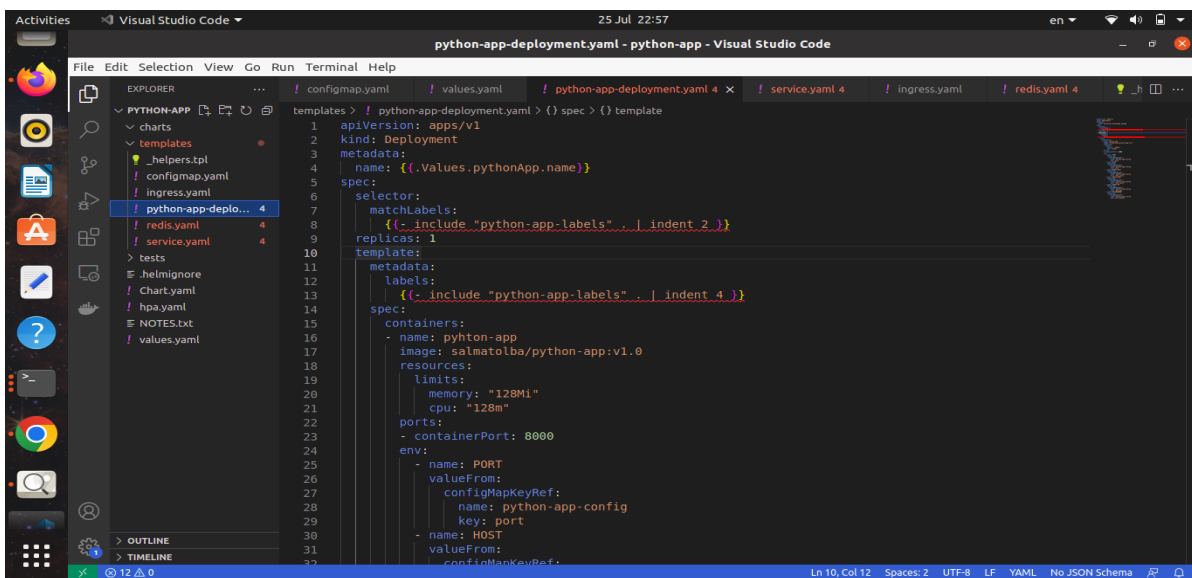
OS/ARCH	COMPRESSED SIZE	LAST PUSHED
linux/amd64	21.68 MB	3 hours ago by salmatolba

Creating Helm chart and modify it -Service file



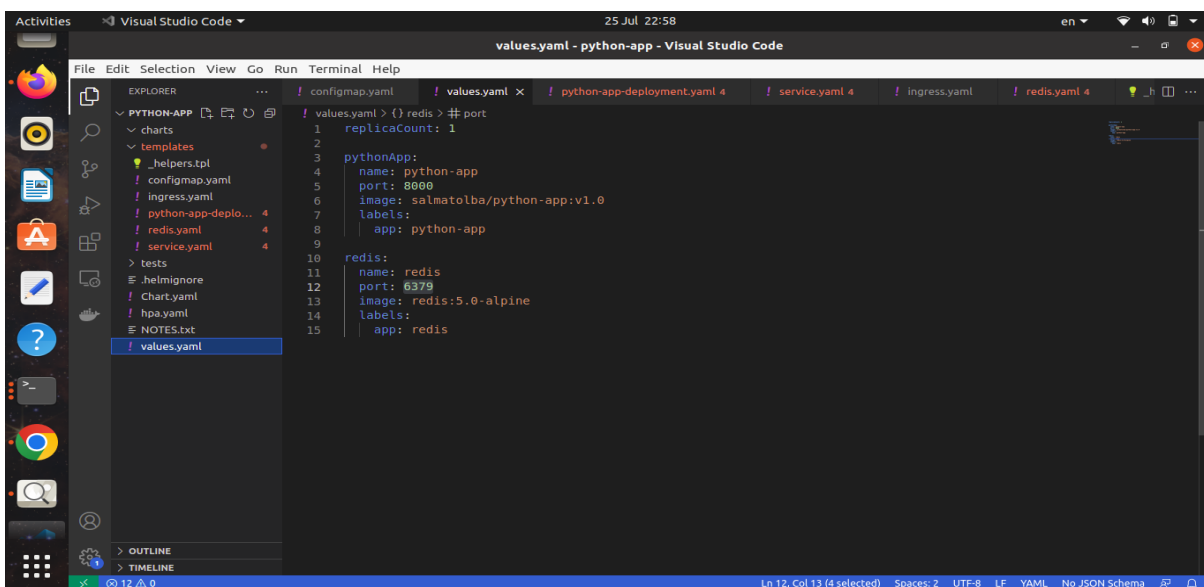
```
1 apiVersion: v1
2 kind: Service
3 metadata:
4   name: web-app-service
5   labels:
6     app: web-app-service
7 spec:
8   type: NodePort
9   selector:
10     {{- include "python-app-labels" . -}}
11   ports:
12     - port: 80
13       targetPort: 8000
14
15 ---
16 apiVersion: v1
17 kind: Service
18 metadata:
19   name: redis
20   labels:
21     {{- include "redis-labels" . -}}
22 spec:
23   type: NodePort
24   selector:
25     app: redis
26   ports:
27     - port: 6379
28       targetPort: 6379
```

-Deployment file



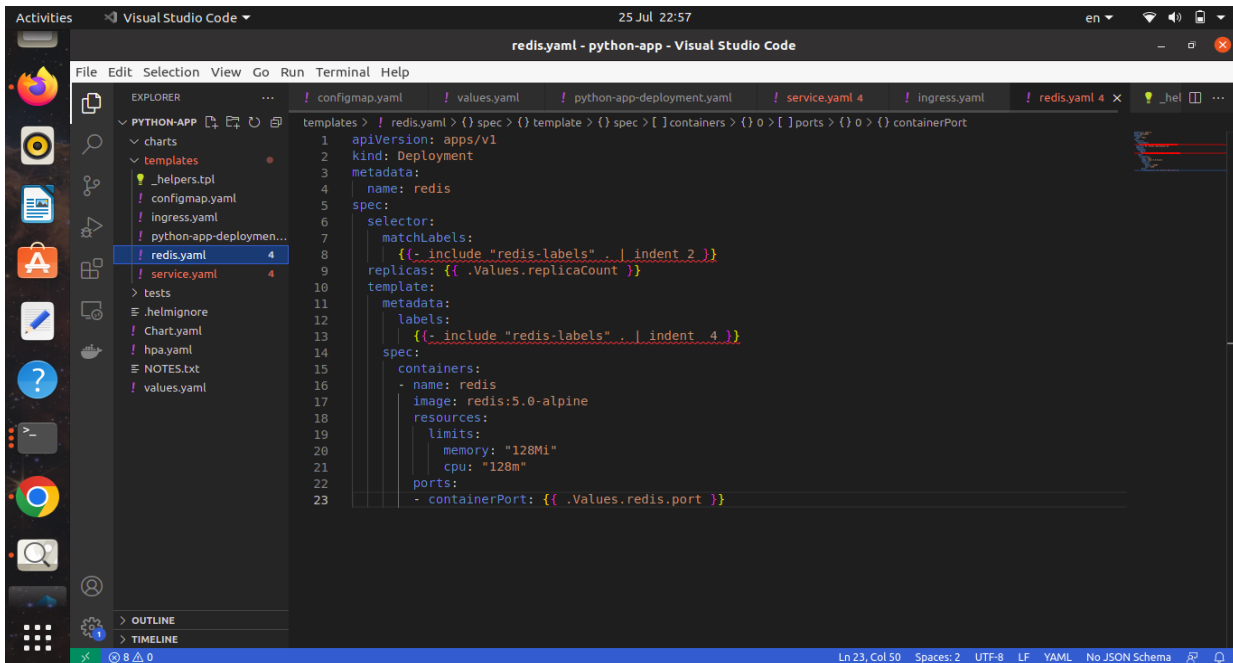
```
1 apiVersion: apps/v1
2 kind: Deployment
3 metadata:
4   name: {{ .Values.pythonApp.name }}
5 spec:
6   selector:
7     matchLabels:
8       {{- include "python-app-labels" . | indent 2 }}
9   replicas: 1
10  template:
11    metadata:
12      labels:
13        {{- include "python-app-labels" . | indent 4 }}
14    spec:
15      containers:
16        - name: python-app
17          image: salmatoiba/python-app:v1.0
18          resources:
19            limits:
20              memory: "128Mi"
21              cpu: "128m"
22          ports:
23            - containerPort: 8000
24          env:
25            - name: PORT
26              valueFrom:
27                configMapKeyRef:
28                  name: python-app-config
29                  key: port
30            - name: HOST
31              valueFrom:
32                configMapKeyRef:
```

-My values



```
1 values.yaml > {} redis > # port
2 replicaCount: 1
3
4 pythonApp:
5   name: python-app
6   port: 8000
7   image: salmatoiba/python-app:v1.0
8   labels:
9     app: python-app
10
11 redis:
12   name: redis
13   port: 6379
14   image: redis:5.0-alpine
15   labels:
16     app: redis
```

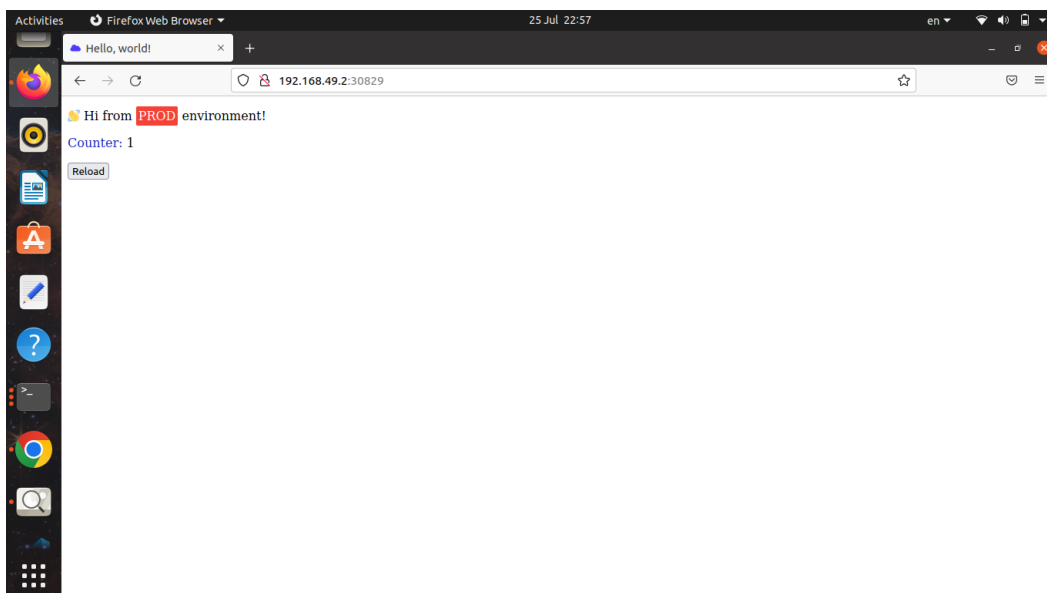
-Redis file



Installing helm chart // check pods status // get my node ip

```
salma@salma-TravelMate-P645-S:~/Documents/Helm/project/python-app$ helm install pythonapp .
NAME: pythonapp
LAST DEPLOYED: Mon Jul 25 22:54:26 2022
NAMESPACE: default
STATUS: deployed
REVISION: 1
TEST SUITE: None
salma@salma-TravelMate-P645-S:~/Documents/Helm/project/python-app$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
myjenkins-0                         2/2     Running   2 (2m18s ago)    32m
print-envvars-greeting               0/1     CrashLoopBackOff   437 (45s ago)    36d
python-app-5c784d46b8-qr895         1/1     Running   0           12s
red                                  1/1     Running   6 (2m18s ago)    36d
redis-5fd8fd9c88-tjz7s              1/1     Running   0           12s
test                                 1/1     Running   7 (2m18s ago)    36d
salma@salma-TravelMate-P645-S:~/Documents/Helm/project/python-app$ kubectl get node -o wide
NAME                STATUS   ROLES          AGE   VERSION   INTERNAL-IP   EXTERNAL-IP   OS-IMAGE             KERNEL-VERSION
minikube            Ready   control-plane, 37d   v1.23.3   192.168.49.2   <none>        Ubuntu 20.04.2 LTS   5.15.0-41-generic
docker://20.10.12
salma@salma-TravelMate-P645-S:~/Documents/Helm/project/python-app$ minikube service web-app-service --url
http://192.168.49.2:30829
```

open node ip on port 30829



Ques2)

Deploy Jenkins Chart on the cluster and login to jenkins

```
Activities Visual Studio Code 25 Jul 22:23 en
Get Started - Jenkins - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
JENKINS
salma@salma-TravelMate-P645-S:~/Documents/Helm/jenkins$ helm repo add jenkins https://charts.jenkins.io
"jenkins" has been added to your repositories
salma@salma-TravelMate-P645-S:~/Documents/Helm/jenkins$ helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "jenkins" chart repository
Update Complete. Happy Helming!
salma@salma-TravelMate-P645-S:~/Documents/Helm/jenkins$ helm upgrade --install myjenkins jenkins/jenkins
Release "myjenkins" does not exist. Installing it now.
NAME: myjenkins
LAST DEPLOYED: Mon Jul 25 22:22:22 2022
NAMESPACE: default
STATUS: deployed
REVISION: 1
NOTES:
1. Get your 'admin' user password by running:
   kubectl exec --namespace default -it svc/myjenkins -c jenkins -- /bin/cat /run/secrets/additional/chart-admin-password && ec
   ho
2. Get the Jenkins URL to visit by running these commands in the same shell:
   echo http://127.0.0.1:8080
   kubectl --namespace default port-forward svc/myjenkins 8080:8080
3. Login with the password from step 1 and the username: admin
4. Configure security realm and authorization strategy
5. Use Jenkins Configuration as Code by specifying configsScripts in your values.yaml file, see documentation: http://configur
   ation-as-code and examples: https://github.com/jenkinsci/configuration-as-code-plugin/tree/master/demos
For more information on running Jenkins on Kubernetes, visit:
https://cloud.google.com/solutions/jenkins-on-container-engine
For more information about Jenkins Configuration as Code, visit:
https://jenkins.io/projects/jcasc/
NOTE: Consider using a custom image with pre-installed plugins
salma@salma-TravelMate-P645-S:~/Documents/Helm/jenkins$ helm show values jenkins/jenkins
# Default values for jenkins.
# This is a YAML-formatted file.
# Declare name/value pairs to be passed into your templates.
```

```
salma@salma-TravelMate-P645-S:~/Documents/Helm/jenkins$ kubectl exec --namespace default -it svc/myjenkins -c jenkins -- /bin/
cat /run/secrets/additional/chart-admin-password && echo
ArHTFU8rg35N5quPMG3dDQ
```

```
salma@salma-TravelMate-P645-S:~/Documents/Helm/jenkins$ kubectl --namespace default port-forward svc/myjenkins 8090:8080
Forwarding from 127.0.0.1:8090 -> 8080
Forwarding from [::1]:8090 -> 8080
Handling connection for 8090
Handling connection for 8090
Handling connection for 8090
Handling connection for 8090
Handling connection for 8090
Handling connection for 8090
Handling connection for 8090
Handling connection for 8090
Handling connection for 8090
Handling connection for 8090
```

