

# Document for Employee Management System

## Procedure:

### 1. Steps To create Docker file:

- a. Install Docker on machine.
- b. Create project. In order to create first Docker application,

### 2. Steps to create docker image:

- a. Create a Base Container
- b. Inspect Images
- c. Inspect Containers
- d. Start the Container
- e. Modify the Running Container
- f. Create an Image from a Container

Creating a image by using command

- **docker build -t image-name .**

- g. Tag the Image

- **docker tag image-name user-name/image-name**

- h. Create Images with Tags

- i. After creating a image, push that image into docker hub using below commands

- **docker push user-name/image-name**

### 3. Steps to create docker-compose file:

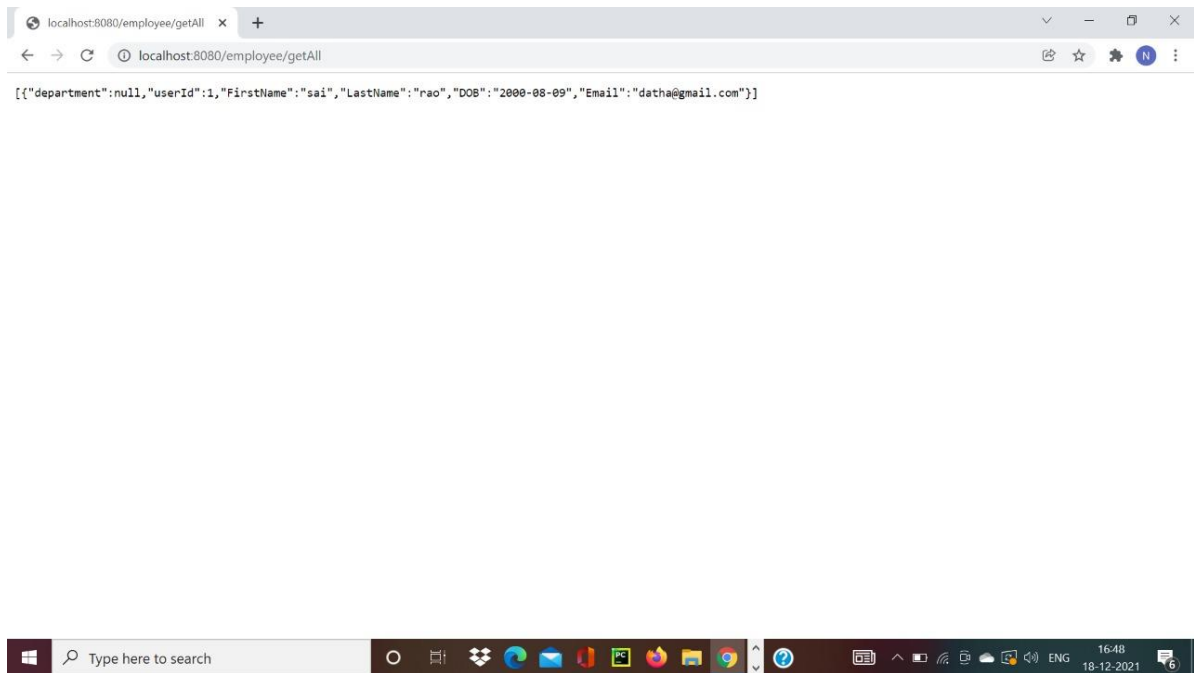
- a. create the new docker-compose.yml file with the command:
- b. create a docker-compose file

Creating a image by using command

- **docker build -t image-name .**

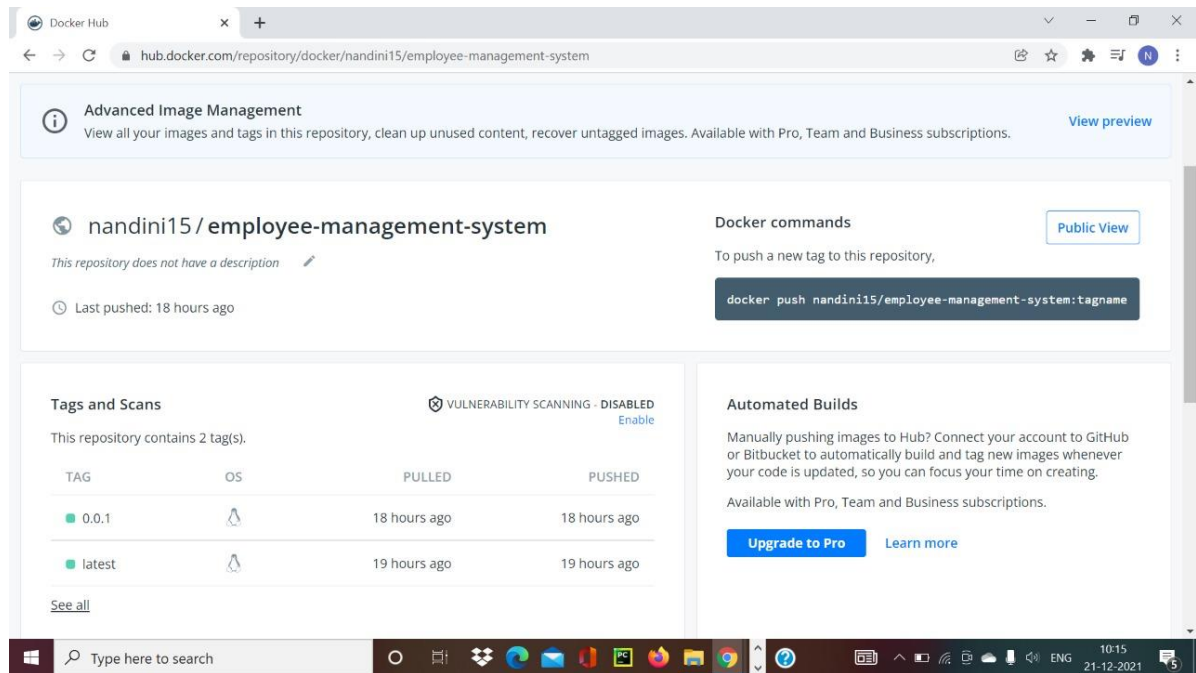
- **docker-compose up**





#### 4. Push the images on the docker hub

- a. First login into Docker hub
  - b. To create a repository, sign into Docker Hub, click on Repositories then Create Repository:
  - c. Pushing a Docker container image to Docker Hub
  - d. push that image into Docker hub using below commands
- **docker tag image-name username/image-name**
  - **docker push username/image-name**



## 5. Create the manifest files(yaml):

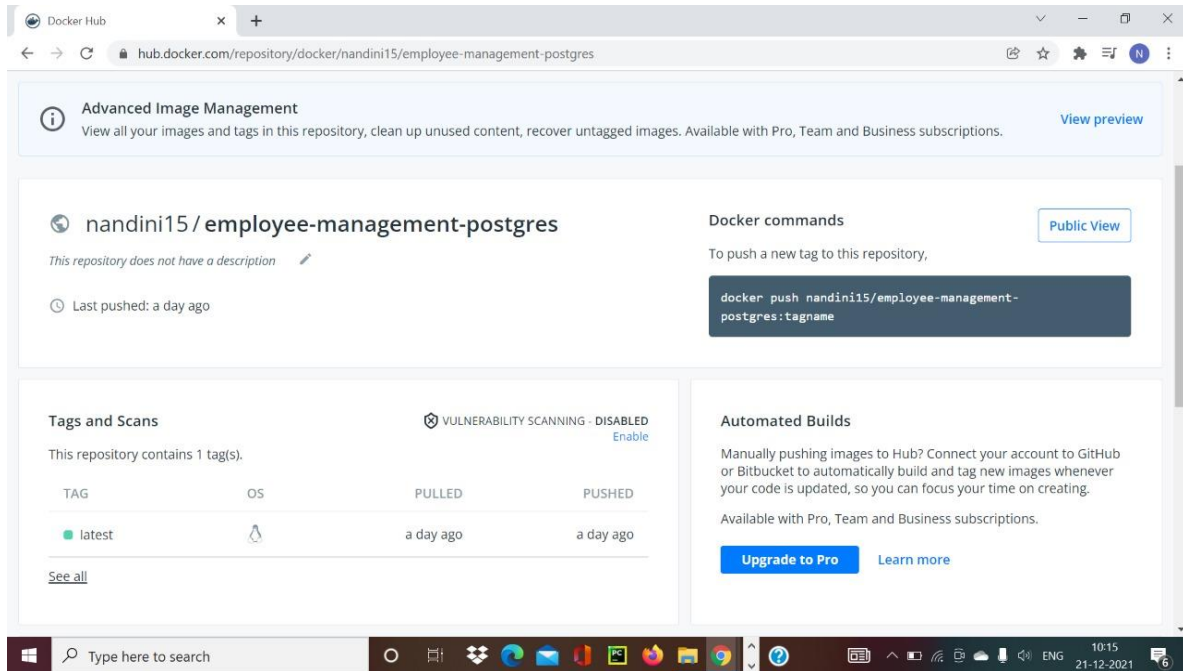
- a. change the application properties
- b. write yaml files
- c. deployment.yaml
- d. postgres-credentials.yaml
- e. postgres-configmap.yaml
- f. postgres-deployment.yaml
- g. again build the jar
- h. In cmd start the minikube

## 6. Deploy the application on Kubernetes environment:

Change the directory using the command **cd k8s** ( In folder k8s yaml files are created)

- a. write the below deployment commands

- **kubectrl create -f deployment.yaml**
- **kubectrl create -f postgres-credentials.yaml**
- **kubectrl create -f postgres-configmap.yaml**
- **kubectrl create -f postgres-deployment.yaml**



**b. After succesful deployment ,forward the port**

- **kubectrl port-forward svc/image-name 9094:8080**

```
C:\Windows\System32\cmd.exe - kubectl port-forward svc/employee-management-postgres 9094:8080
replicaset.apps/postgres-6f4cd8968f 1 1 1 45s

C:\Users\HP\Downloads\Final\SPRINT-EmployeeManagementSystem\k8s>kubectl get all
NAME READY STATUS RESTARTS AGE
pod/deployment-5b9b568c54-64tz5 1/1 Running 4 (12m ago) 6d1h
pod/deployment-5b9b568c54-dkxsh 1/1 Running 4 (12m ago) 6d1h
pod/deployment-5b9b568c54-jsm4r 1/1 Running 4 (12m ago) 6d1h
pod/deployment-5b9b568c54-msb7j 1/1 Running 4 (12m ago) 6d1h
pod/deployment-5b9b568c54-xgjb2 1/1 Running 4 (12m ago) 6d1h
pod/employee-management-postgres-7cb9bd67db-66wdg 1/1 Running 1 (3m18s ago) 4m40s
pod/employee-management-postgres-7cb9bd67db-rgy9r 1/1 Running 1 (3m13s ago) 4m40s
pod/employee-management-postgres-7cb9bd67db-wmswh 1/1 Running 1 (3m8s ago) 4m40s
pod/postgres-6f4cd8968f-jl6kr 1/1 Running 0 3m38s
pod/voting-app-pod 1/1 Running 4 (12m ago) 5d20h

NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
service/employee-management-postgres ClusterIP 10.102.233.74 <none> 8080/TCP 4m40s
service/kubernetes ClusterIP 10.96.0.1 <none> 443/TCP 10d
service/postgres ClusterIP None <none> 5432/TCP 3m39s

NAME READY UP-TO-DATE AVAILABLE AGE
deployment.apps/deployment 5/5 5 5 9d
deployment.apps/employee-management-postgres 3/3 3 3 4m40s
deployment.apps/postgres 1/1 1 1 3m38s

NAME DESIRED CURRENT READY AGE
replicaset.apps/deployment-5b9b568c54 5 5 5 6d1h
replicaset.apps/deployment-796b5fd4f6 0 0 0 9d
replicaset.apps/employee-management-postgres-7cb9bd67db 3 3 3 4m40s
replicaset.apps/postgres-6f4cd8968f 1 1 1 3m38s

C:\Users\HP\Downloads\Final\SPRINT-EmployeeManagementSystem\k8s>kubectl port-forward svc/employee-management-postgres 9094:8080
Forwarding from 127.0.0.1:9094 -> 8080
Forwarding from [::1]:9094 -> 8080
Handling connection for 9094
Handling connection for 9094
```

```
localhost:9094/employee/getAll x +
localhost:9094/employee/getAll
[{"department":{"departId":1,"dName":"developertester"},"userId":1,"FirstName":"sai","LastName":"rao","DOB":"2000-08-09","Email":"datha@gmail.com"}]
```



## 7. Deploy the application on EKS cluster:

- Create a cluster in EKS with eksctl command



- **eksctl create cluster --name employee-management --version 1.21 --region ap-south-1 --nodegroup-name employee-management -nodegroup --node-type t2.micro --nodes 2**
- **aws eks --region ap-south-1 update-kubeconfig --name employee-management-system**

```

C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19043.1415]
(c) Microsoft Corporation. All rights reserved.

C:\Users\HP\Downloads\final\SPRINT-EmployeeManagementSystem>cd test

C:\Users\HP\Downloads\final\SPRINT-EmployeeManagementSystem\test>eksctl create cluster --name employee-management-system --version 1.21 --region ap-south-1 --nodegroup-name
employee-node-group --node-type t2.micro --nodes 2
2021-12-20 13:03:25 [0] eksctl version 0.76.0
2021-12-20 13:03:25 [0] using region ap-south-1
2021-12-20 13:03:25 [0] setting availability zones to [ap-south-1b ap-south-1a ap-south-1c]
2021-12-20 13:03:25 [0] subnets for ap-south-1b - public:192.168.0.0/19 private:192.168.96.0/19
2021-12-20 13:03:25 [0] subnets for ap-south-1a - public:192.168.32.0/19 private:192.168.128.0/19
2021-12-20 13:03:25 [0] subnets for ap-south-1c - public:192.168.64.0/19 private:192.168.160.0/19
2021-12-20 13:03:25 [0] nodegroup "employee-node-group" will use "" [AmazonLinux2/1.21]
2021-12-20 13:03:25 [0] using Kubernetes version 1.21
2021-12-20 13:03:25 [0] creating EKS cluster "employee-management-system" in "ap-south-1" region with managed nodes
2021-12-20 13:03:25 [0] will create 2 separate CloudFormation stacks for cluster itself and the initial managed nodegroup
2021-12-20 13:03:25 [0] if you encounter any issues, check CloudFormation console or try 'eksctl utils describe-stacks --region=ap-south-1 --cluster=employee-management-sy
stem'
2021-12-20 13:03:25 [0] CloudWatch logging will not be enabled for cluster "employee-management-system" in "ap-south-1"
2021-12-20 13:03:25 [0] you can enable it with 'eksctl utils update-cluster-logging --enable-types={SPECIFY-YOUR-LOG-TYPES-HERE (e.g. all)} --region=ap-south-1 --cluster=e
mployee-management-system'
2021-12-20 13:03:25 [0] Kubernetes API endpoint access will use default of {publicAccess=true, privateAccess=false} for cluster "employee-management-system" in "ap-south-1"
2021-12-20 13:03:25 [0]
2 sequential tasks: { create cluster control plane "employee-management-system",
  2 sequential sub-tasks: {
    wait for control plane to become ready,
    create managed nodegroup "employee-node-group",
  }
}
2021-12-20 13:03:25 [0] building cluster stack "eksctl-employee-management-system-cluster"
2021-12-20 13:03:26 [0] deploying stack "eksctl-employee-management-system-cluster"
2021-12-20 13:03:26 [0] waiting for CloudFormation stack "eksctl-employee-management-system-cluster"
2021-12-20 13:04:26 [0] waiting for CloudFormation stack "eksctl-employee-management-system-cluster"
2021-12-20 13:05:26 [0] waiting for CloudFormation stack "eksctl-employee-management-system-cluster"
2021-12-20 13:06:26 [0] waiting for CloudFormation stack "eksctl-employee-management-system-cluster"
2021-12-20 13:07:27 [0] waiting for CloudFormation stack "eksctl-employee-management-system-cluster"
2021-12-20 13:08:27 [0] waiting for CloudFormation stack "eksctl-employee-management-system-cluster"
2021-12-20 13:09:27 [0] waiting for CloudFormation stack "eksctl-employee-management-system-cluster"
2021-12-20 13:10:27 [0] waiting for CloudFormation stack "eksctl-employee-management-system-cluster"
  
```

- Create the docker image and push on docker hub
- Deploying the application on eks cluster using the following commands

Change the directory using the command **cd test** ( In folder test yaml files are created)

- **kubectl apply -f postgres-storage.yml**
- **kubectl apply -f postgres-secrets.yml**
- **kubectl apply -f postgres-deployment.yml**
- **kubectl apply -f postgres-service.yml**

```
C:\Windows\System32\cmd.exe
configmap "hostname-config" deleted

C:\Users\HP\Downloads\Final\SPRINT-EmployeeManagementSystem\test>kubectl create configmap hostname-config --from-literal=postgres_host=10.100.7.34
configmap/hostname-config created

C:\Users\HP\Downloads\Final\SPRINT-EmployeeManagementSystem\test>kubectl apply -f springboot-deployment.yml
deployment.apps/employee-management-system created

C:\Users\HP\Downloads\Final\SPRINT-EmployeeManagementSystem\test>kubectl apply -f springboot-service.yml
service/employee-management-system created

C:\Users\HP\Downloads\Final\SPRINT-EmployeeManagementSystem\test>kubectl get all
NAME                                READY    STATUS    RESTARTS   AGE
pod/employee-management-system-6c65cb5cbb-lnt8p  1/1      Running   0           37s
pod/postgres-5bdb4fc5f9-dp7vx             1/1      Running   0           3m13s

NAME                                TYPE                CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
service/employee-management-system  LoadBalancer       10.100.173.99   add70ac801ba243aeb316d625f7c4af3-1949687877.ap-south-1.elb.amazonaws.com  8080:31212/TCP   8s
service/kubernetes                  ClusterIP            10.100.0.1      <none>            443/TCP          110m
service/postgres                    NodePort             10.100.7.34     <none>            5432:30743/TCP   3m3s

NAME                                READY    UP-TO-DATE    AVAILABLE    AGE
deployment.apps/employee-management-system  1/1      1              1            38s
deployment.apps/postgres                   1/1      1              1            3m14s

NAME                                DESIRED    CURRENT    READY    AGE
replicaset.apps/employee-management-system-6c65cb5cbb  1          1          1        38s
replicaset.apps/postgres-5bdb4fc5f9                  1          1          1        3m14s

C:\Users\HP\Downloads\Final\SPRINT-EmployeeManagementSystem\test>
```

- **kubectl get all**

- d. Set the config map

- e. Get the Postgres Host IP Address:

- **kubectl get svc postgres -o jsonpath="{.spec.clusterIP}"**

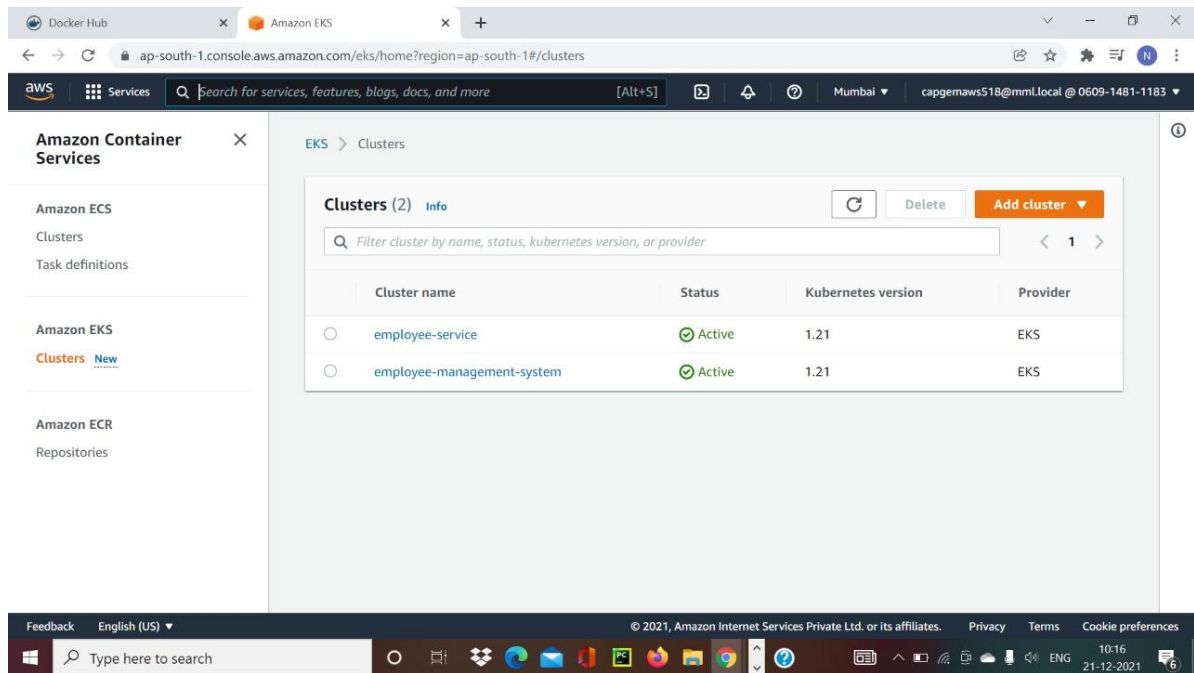
- f. get the IP Address and put in the below command

- **kubectl create configmap hostname-config --from literal=postgres\_host=10.100.7.34**

- **kubectl apply -f springboot-deployment.yml**

- **kubectl apply -f springboot-service.yml**





## EKS Cluster Link:-

<http://add70ac801ba243aeb316d625f7c4af3-1949687877.ap-south-1.elb.amazonaws.com:8080/employee/getAll>

