

## Assignment

### Application Deployment with Docker, Kubernetes, and CI/CD

**Name :** Selmi Nazeeb

**Github url :** [SelmiNazeeb/spring-boot-hello-world: A simple Spring Boot app to send hello world message to a user](#)

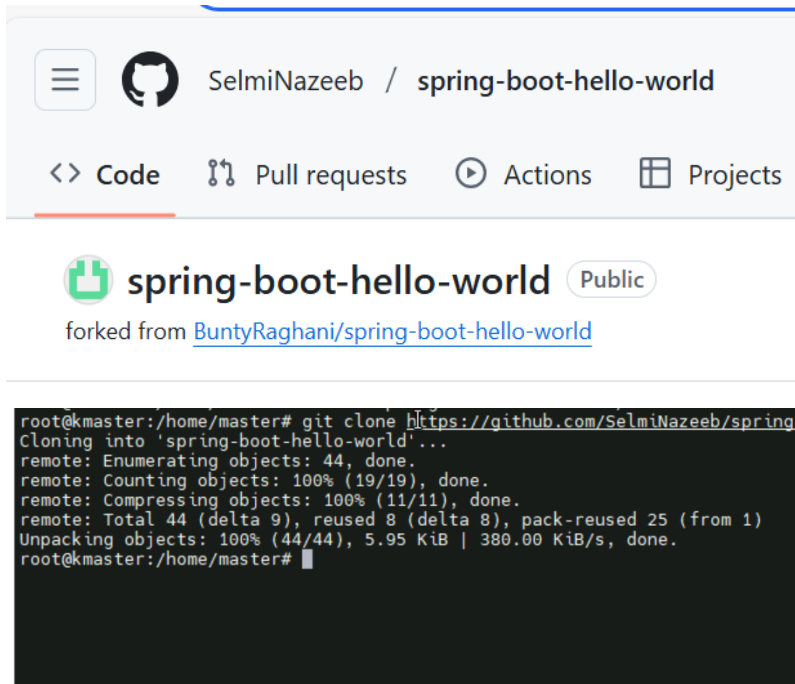
**Dockerhub:** <https://hub.docker.com/repository/docker/selmi1999/spring-boot-hello-world>

**Deployment.yaml :** [spring-boot-hello-world/deployment.yaml at main · SelmiNazeeb/spring-boot-hello-world](#)

**Service.yaml:** [spring-boot-hello-world/service.yaml at main · SelmiNazeeb/spring-boot-hello-world](#)

#### TASK 1

1. Fork and clone a sample application repository

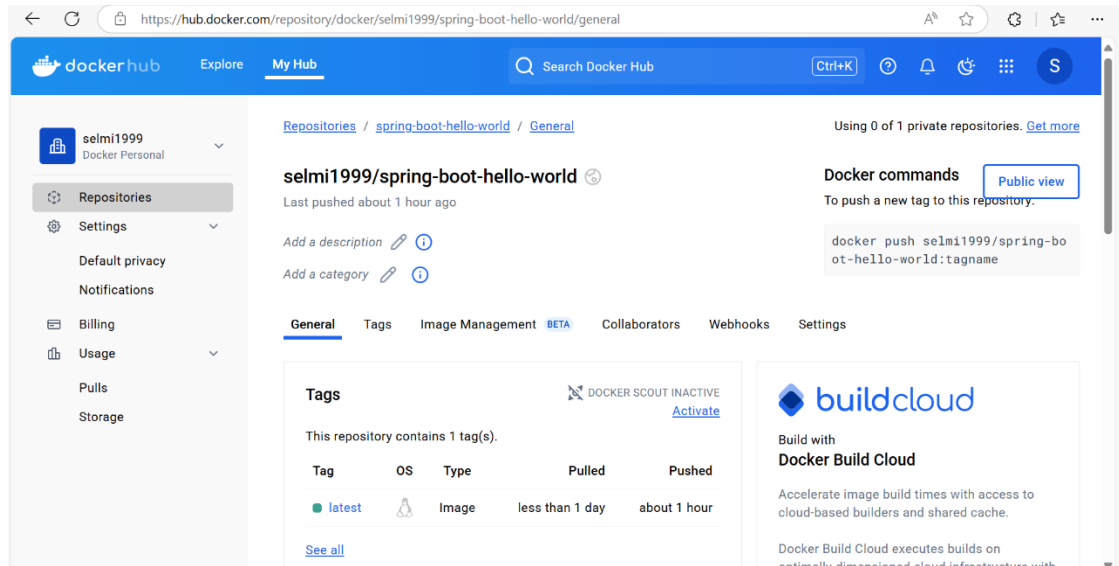


The screenshot displays the GitHub interface for the repository 'spring-boot-hello-world' by user 'SelmiNazeeb'. The repository is marked as 'Public' and is a fork of 'BuntyRaghani/spring-boot-hello-world'. Below the repository name, there are tabs for 'Code', 'Pull requests', 'Actions', and 'Projects'. The 'Code' tab is selected, showing a green 'clone' button. Below the repository information, a terminal window shows the command to clone the repository: `root@kmaster:/home/master# git clone https://github.com/SelmiNazeeb/spring-boot-hello-world`. The terminal output shows the cloning process: `Cloning into 'spring-boot-hello-world'...`, `remote: Enumerating objects: 44, done.`, `remote: Counting objects: 100% (19/19), done.`, `remote: Compressing objects: 100% (11/11), done.`, `remote: Total 44 (delta 9), reused 8 (delta 8), pack-reused 25 (from 1)`, `Unpacking objects: 100% (44/44), 5.95 KiB | 380.00 KiB/s, done.`, and `root@kmaster:/home/master#`.

```
^Croot@kmaster:/home/master/spring-boot-hello-world# docker run -d -p 9090:8080 spring-boot-hello-world
a796b60f2201180aa123469b134f3ecfb0317c89bfa9204e3311ba93e2d8a06
root@kmaster:/home/master/spring-boot-hello-world# curl http://localhost:9090/hello
Hello, world!root@kmaster:/home/master/spring-boot-hello-world#
```

#### 4. Push the image to docker hub

```
root@kmaster:/home/master/spring-boot-hello-world# docker tag spring-boot-hello-world selmi1999/spring-boot-hello-world:latest
root@kmaster:/home/master/spring-boot-hello-world# docker push selmi1999/spring-boot-hello-world:latest
The push refers to repository [docker.io/selmi1999/spring-boot-hello-world]
42700f4cbb92: Pushed
d3533269056a: Pushed
4a31297e6baa: Pushed
822032205b9c: Pushed
93509ae705ea: Pushed
8f5df01935a3: Pushed
08000c18d16d: Pushed
latest: digest: sha256:48e1a7ca0bd6a95c92d6c78eb423af6f5ddb3f0562aae808e8ef6c43b85654f4 size: 1785
root@kmaster:/home/master/spring-boot-hello-world#
```



## TASK 2

### 1. Create deployment.yaml

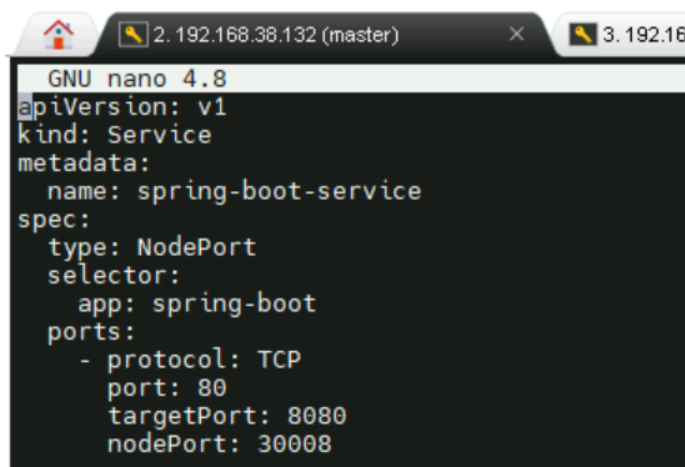
```
GNU nano 4.8 deployment.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: spring-boot
  name: spring-boot
spec:
  replicas: 1
  selector:
    matchLabels:
      app: spring-boot
  template:
    metadata:
      labels:
        app: spring-boot
    spec:
      containers:
      - image: selmi1999/spring-boot-hello-world:latest
        name: spring-boot-hello-world
        ports:
        - containerPort: 8080
```

```

root@kmaster:/home/master/spring-boot-hello-world# nano deployment.yaml
root@kmaster:/home/master/spring-boot-hello-world# kubectl apply -f deployment.yaml
deployment.apps/spring-boot created
root@kmaster:/home/master/spring-boot-hello-world# kubectl get pod
NAME                                READY   STATUS             RESTARTS   AGE
spring-boot-5f48f85d58-q7prt       0/1     ContainerCreating   0           12s
root@kmaster:/home/master/spring-boot-hello-world# kubectl get pod
NAME                                READY   STATUS             RESTARTS   AGE
spring-boot-5f48f85d58-q7prt       1/1     Running             0           30s
root@kmaster:/home/master/spring-boot-hello-world# kubectl get deploy
NAME    READY   UP-TO-DATE   AVAILABLE   AGE
spring-boot  1/1     1            1           2m21s
root@kmaster:/home/master/spring-boot-hello-world#

```

## 2. Expose deployment to Nodeport service and curl



```

GNU nano 4.8
apiVersion: v1
kind: Service
metadata:
  name: spring-boot-service
spec:
  type: NodePort
  selector:
    app: spring-boot
  ports:
    - protocol: TCP
      port: 80
      targetPort: 8080
      nodePort: 30008

```

```

root@kmaster:/home/master/spring-boot-hello-world# curl http://192.168.38.132:30008/hello
Hello, World!root@kmaster:/home/master/spring-boot-hello-world# nano service.yaml
root@kmaster:/home/master/spring-boot-hello-world# kubectl get service
NAME                TYPE        CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
kubernetes          ClusterIP   10.96.0.1     <none>          443/TCP          17d
spring-boot-service NodePort    10.109.12.151 <none>          80:30008/TCP     7m41s
root@kmaster:/home/master/spring-boot-hello-world# curl http://192.168.38.132:30008/hello
Hello, World!root@kmaster:/home/master/spring-boot-hello-world#

```

## TASK 3

### 1. Scale up the deployment to 3 replicas

```

root@kmaster:/home/master/spring-boot-hello-world# kubectl scale deployment spring-boot --replicas=3
deployment.apps/spring-boot scaled
root@kmaster:/home/master/spring-boot-hello-world# kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
spring-boot-5f48f85d58-6ddlf       1/1     Running   0           86m
spring-boot-5f48f85d58-b572f       1/1     Running   0           8s
spring-boot-5f48f85d58-q7prt       1/1     Running   0           89m
root@kmaster:/home/master/spring-boot-hello-world# kubectl get deploy
NAME    READY   UP-TO-DATE   AVAILABLE   AGE
spring-boot  3/3     3            3           89m

```

## 2. Scale down the deployment to 1 replica

```
root@kmaster:/home/master/spring-boot-hello-world# kubectl scale deployment spring-boot --replicas=1
deployment.apps/spring-boot scaled
root@kmaster:/home/master/spring-boot-hello-world# kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
spring-boot-5f48f85d58-b572f        1/1     Running   0           38s
root@kmaster:/home/master/spring-boot-hello-world# kubectl get deploy
NAME    READY   UP-TO-DATE   AVAILABLE   AGE
spring-boot  1/1     1             1           90m
```

Activate Windows  
Go to Settings to activate Windows.