

Kubernetes Assignment – 2
Rolling out and Rolling back Deployments
- BY Swapnil Jadhav

A&B is a Leading Business Services & Solution Provider company in the market, for one of their clients, they need a Java Developer, who is pro-efficient in developing Java Microservices using Spring Boot.

Based on your skills, Company has shortlisted your profile and proposed your profile to the client. The client would like to evaluate your skills and have given you an assignment to complete, based on the evaluation, client will confirm.

You are required to do following tasks :

1. Go to [Spring Initializr](#).
2. Choose following configuration :
 - a. Project : Maven
 - b. Spring Boot : 2.7.3
 - c. Group name : com.star.agile.assignment
 - d. Name : springboot-demo
 - e. Artifact : springboot-demo
 - f. Packaging : Jar
 - g. Java : 8 or 11
3. In the dependency section, choose following dependency
 - a. Spring Web
 - b. Spring Data JPA
4. Click on Explore and verify the pom.xml that all the selected dependencies are present.
5. Click on download to download the Spring Boot Project Template. (springboot-demo.jar)
6. Import the downloaded project in Eclipse.
7. Add the file index.html with some HTML code in the static folder under resources of the project.
8. Write the Dockerfile to create the image and tag it as 1.0.
9. Push the Image to Docker Hub.
10. Setup the Kubernetes minikube single node cluster on an AWS EC2 Ubuntu instance.

11. Write a deployment to deploy the application as POD using Kubectl.
12. Create the node port service to expose the deployed container to the outside world.
13. Verify the application over browser.

14. Add a Hello world.html to the Spring Boot Application.
15. Build the docker image and give the tag as 2.0 this time.
16. Roll out the deployment of the 2.0 version.

17. Verify the app that new version has been deployed.

18. Rollback the deployment to the old version.
19. Verify the version and try to access the helloworld.html, It should not be accessible anymore.

eclipse-workspace - demospingboot-demo-2/src/main/resources/static/index.html - Eclipse IDE

File Edit Source Navigate Search Project Run Window Help

Project Explorer

- > _pasted_code_
- > calculator sample [calculator sample master]
- > demo [boot]
- > demospingboot-demo-2 [boot]
 - > src/main/java
 - > src/main/resources
 - > src/test/java
 - > JRE System Library [JavaSE-17]
 - > Maven Dependencies
 - > src
 - > main
 - > java
 - > resources
 - > static
 - > index.html
 - > templates
 - > application.properties
 - > test
 - > target
 - > HELP.md
 - > mvnw
 - > mvnw.cmd
 - > pom.xml
 - > dockersdemo
 - > DWP Assignment 1
 - > my_assignment
 - > pds
 - > php1
 - > phpsample
 - > pysample
 - > sample
 - > Servers
 - > springboot-demo [boot]
 - > SSproject1 [boot] [SSproject1 master]

Declaration Console

terminated- demospingboot-demo-2 - DemospingbootDemo2Application [Spring Boot App] C:\Users\jadhav\Downloads\eclipse-jee-2022-12-R-win32-x86_64\eclipse\plugins\org.eclipse.just.openjdk.hotspot.jre.full.win32.x86_64.jre\jre\bin\java.exe

Spring Boot (v3.0.4)

```
2023-03-22T09:04:38.663+05:30 INFO 17848 --- [main] c.s.a.a.d.DemospingbootDemo2Application : Starting DemospingbootDemo2Application us:
2023-03-22T09:04:38.669+05:30 INFO 17848 --- [main] c.s.a.a.d.DemospingbootDemo2Application : No active profile set, falling back to 1 de
2023-03-22T09:04:39.570+05:30 INFO 17848 --- [main] .s.d.r.c.RepositoryConfigurationDelegate : Bootstrapping Spring Data JPA repositories
2023-03-22T09:04:39.611+05:30 INFO 17848 --- [main] .s.d.r.c.RepositoryConfigurationDelegate : Finished Spring Data repository scanning i
2023-03-22T09:04:40.414+05:30 INFO 17848 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8080 (htt
2023-03-22T09:04:40.432+05:30 INFO 17848 --- [main] o.apache.catalina.core.StandardService : Starting service [Tomcat]
2023-03-22T09:04:40.433+05:30 INFO 17848 --- [main] o.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/10.
2023-03-22T09:04:40.614+05:30 INFO 17848 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplication
2023-03-22T09:04:40.615+05:30 INFO 17848 --- [main] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization
2023-03-22T09:04:40.816+05:30 INFO 17848 --- [main] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Starting...
```

index.html x demospingboot-demo-2/pom.xml

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="ISO-8859-1">
5 <title>swapnil's Assignment</title>
6 </head>
7 <body>
8 <h1>Myself swapnil jadhav and I have completed my assignment</h1>
9
10 <p>kindly check my assignment</p>
11 </body>
12 </html>
```

target

New +

Sort View ...

Downloads > demospingboot-demo-2 > demospingboot-demo-2 > target

Name	Date modified	Type	Size
Today			
demospingboot-demo-2-0.0.1-SNAPSHOT	22-03-2023 09:09	Executable Jar File	41,188 KB
demospingboot-demo-2-0.0.1-SNAPSHOT.jar.original	22-03-2023 09:09	ORIGINAL File	4 KB
maven-archiver	22-03-2023 09:09	File folder	
test-classes	22-03-2023 09:08	File folder	
generated-test-sources	22-03-2023 09:08	File folder	
classes	22-03-2023 09:08	File folder	
generated-sources	22-03-2023 09:08	File folder	
maven-status	22-03-2023 09:08	File folder	

8 Items

```
MINGW64/c/Users/jadha/Downloads/demospringboot-demo-2/demospringboot-demo-2
[INFO] --- jar:3.3.0:jar (default-jar) @ demospringboot-demo-2 ---
[INFO] Building jar: C:\Users\jadha\Downloads\demospringboot-demo-2\demospringbo
ot-demo-2\target\demospringboot-demo-2-0.0.1-SNAPSHOT.jar
[INFO] --- spring-boot:3.0.4:repackage (repackage) @ demospringboot-demo-2 ---
[INFO] Replacing main artifact with repackaged archive
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 7.635 s
[INFO] Finished at: 2023-03-22T09:09:01+05:30
[INFO] -----

Swapnil@SJ-Laptop MINGW64 ~/Downloads/demospringboot-demo-2/demospringboot-demo-2
$ cat Dockerfile
FROM openjdk:17
COPY /target/demospringboot-demo-2-0.0.1-SNAPSHOT.jar /demo.jar
EXPOSE 8080
ENTRYPOINT ["java","-jar","/demo.jar"]

Swapnil@SJ-Laptop MINGW64 ~/Downloads/demospringboot-demo-2/demospringboot-demo-2
$ docker build -t swapnil9519/kubass:1.0
"docker build" requires exactly 1 argument.
See 'docker build --help'.

Usage: docker build [OPTIONS] PATH | URL | -

Build an image from a Dockerfile

Swapnil@SJ-Laptop MINGW64 ~/Downloads/demospringboot-demo-2/demospringboot-demo-2
$ docker build -t swapnil9519/kubass:1.0 .
#1 [internal] load build definition from Dockerfile
#1 sha256:3c999a87336df227a874cf9a39c1af6202c815a5a4a6142c331b6f4aaaa5727
#1 transferring dockerfile: 32B 0.0s done
#1 DONE 0.1s
```

```
MINGW64/c/Users/jadha/Downloads/demospringboot-demo-2/demospringboot-demo-2
#5 [1/2] FROM docker.io/library/openjdk:17@sha256:528707081fdb9562eb819128a9f85ae7fe000e2fbaeaf9f87662e7b3f38cb7d8
#5 sha256:78196c97cd0cbb2a440f0aa7eed5aa03f7b97943dd0eea3fb3c64123f413b47f
#5 CACHED

#7 [2/2] COPY /target/demospringboot-demo-2-0.0.1-SNAPSHOT.jar /demo.jar
#7 sha256:7bb4f4b1211aaa59a79d0ef440aa6e76238f5ab17ae770c0aebc6c55801158c4
#7 DONE 1.2s

#8 exporting to image
#8 sha256:e8c613e07b0b7ff33893b694f7759a10d42e180f2b4dc349fb57dc6b71dcab00
#8 exporting layers
#8 exporting layers 0.3s done
#8 writing image sha256:dfc5d9b5811fbf2e29fdb83a967a534c808815740f263afa8602dee993adee79 done
#8 naming to docker.io/swapnil9519/kubass:1.0 0.0s done
#8 DONE 0.4s

Swapnil@SJ-Laptop MINGW64 ~/Downloads/demospringboot-demo-2/demospringboot-demo-2
$ winpty docker login
Authenticating with existing credentials...
Login Succeeded

Logging in with your password grants your terminal complete access to your account.
For better security, log in with a limited-privilege personal access token. Learn more at https://docs.docker.com/go/access-tokens/

Swapnil@SJ-Laptop MINGW64 ~/Downloads/demospringboot-demo-2/demospringboot-demo-2
$ docker push swapnil9519/kubass:1.0
The push refers to repository [docker.io/swapnil9519/kubass]
f8b20a59939e: Preparing
dc9fa3d8b576: Preparing
27ee19dc88f2: Preparing
c8dd97366670: Preparing
27ee19dc88f2: Mounted from swapnil9519/kubass2
c8dd97366670: Mounted from swapnil9519/kubass2
dc9fa3d8b576: Mounted from swapnil9519/kubass2
f8b20a59939e: Pushed
1.0: digest: sha256:bdabe421b2c40390fd5708da6e24051b11b322b442568a98d18be5706c8fea5 size: 1166

Swapnil@SJ-Laptop MINGW64 ~/Downloads/demospringboot-demo-2/demospringboot-demo-2
$
```

swapnil9519/kubass general | D: xNew tabswapnil's Assignment+

https://hub.docker.com/repository/docker/swapnil9519/kubass/general

swapnil9519/kubass

Description

This repository does not have a description

Last pushed: a few seconds ago

Docker commands

To push a new tag to this repository,

docker push swapnil9519/kubass:tagname

Public View

Tags

IMAGE INSIGHTS INACTIVE

Activate

This repository contains 1 tag(s).

Tag	OS	Type	Pulled	Pushed
1.0		Image	---	5 minutes ago

See all

Go to Advanced Image Management

Automated Builds

Manually pushing images to Hub? Connect your account to GitHub or Bitbucket to automatically build and tag new images whenever your code is updated, so you can focus your time on creating.

Available with Pro, Team and Business subscriptions. [Read more about automated builds.](#)

Upgrade

README

Repository description is empty. [Click here to edit.](#)

swapnil9519/kubass general | D: xNew tabswapnil's Assignment+

127.0.0.1:54230

ENG IN22-03-202309:26

Myself swapnil jadhav and I have completed my assignment

kindly check my assignment

swapnil9519/kubass general | D: xNew tabswapnil's Assignment+

127.0.0.1:54230

ENG IN22-03-202309:27

eclipse-workspace - demoringboot-demo-2/src/main/resources/static/index.html - Eclipse IDE

File Edit Refactor Source Navigate Search Project Run Window Help

Project Explorer

- > _pasted_code
- > > calculator sample [calculator sample master]
- > demo [boot]
- > demoringboot-demo-2 [boot]
 - > src/main/java
 - > src/main/resources
 - > src/test/java
 - > JRE System Library [JavaSE-17]
 - > Maven Dependencies
 - > src
 - > main
 - > java
 - > resources
 - > static
 - > index.html
 - > templates
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 - > my_assignment
 - > pds
 - > php1
 - > phpsample
 - > pysample
 - > sample
 - > Servers
 - > springboot-demo [boot]
 - > SSproject1 [boot] [SSproject1 master]

Declaration Console

```
<terminated> demoringboot-demo-2: DemoringbootDemo2Application [Spring Boot App] C:\Users\jadhav\Downloads\ eclipse-jee-2022-12-R-win32-x86_64\ eclipse\ plugins\ org.eclipse.jdt.openide\ hotspot\ re.full.win32.x86_64
2023-03-22T09:33:04.197+05:30 INFO 7276 --- [ main] o.hibernate.jpa.internal.util.LogHelper : HHH0000204: Processing PersistenceUnitInfo [i
2023-03-22T09:33:04.293+05:30 INFO 7276 --- [ main] org.hibernate.Version : HHH000412: Hibernate ORM core version 6.1.7
2023-03-22T09:33:04.878+05:30 INFO 7276 --- [ main] SQL dialect : HHH000400: Using dialect: org.hibernate.dia
2023-03-22T09:33:05.380+05:30 INFO 7276 --- [ main] o.h.e.t.j.p.i.JtaPlatformInitiator : HHH000490: Using JtaPlatform implementation:
2023-03-22T09:33:05.403+05:30 INFO 7276 --- [ main] j.LocalContainerEntityManagerFactoryBean : Initialized JPA EntityManagerFactory for per
2023-03-22T09:33:05.470+05:30 WARN 7276 --- [ main] JpaBaseConfiguration$JpaWebConfiguration : spring.jpa.open-in-view is enabled by default
2023-03-22T09:33:05.711+05:30 INFO 7276 --- [ main] o.s.b.a.w.s.WelcomePageHandlerMapping : Adding welcome page: class path resource [st
2023-03-22T09:33:06.088+05:30 INFO 7276 --- [ main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8080 (http) with
2023-03-22T09:33:06.109+05:30 INFO 7276 --- [ main] c.s.a.a.d.DemoringbootDemo2Application : Started DemoringbootDemo2Application in 5.
2023-03-22T09:33:16.730+05:30 INFO 7276 --- [nio-8080-exec-1] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring DispatcherServlet 'dispa
2023-03-22T09:33:16.745+05:30 INFO 7276 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet : Completed initialization in 15 ms
2023-03-22T09:33:24.773+05:30 INFO 7276 --- [on(2)-127.0.0.1] io.micronaut.http.servlet.DispatcherServlet : Application shutdown requested.
2023-03-22T09:33:24.789+05:30 INFO 7276 --- [on(2)-127.0.0.1] o.apache.catalina.core.StandardService : Stopping service [Tomcat]
2023-03-22T09:33:24.789+05:30 INFO 7276 --- [on(2)-127.0.0.1] o.a.c.c.C.[Tomcat].[localhost].[/] : Destroying Spring FrameworkServlet 'dispatc
2023-03-22T09:33:24.804+05:30 INFO 7276 --- [on(2)-127.0.0.1] j.LocalContainerEntityManagerFactoryBean : Closing JPA EntityManagerFactory for persist
2023-03-22T09:33:24.820+05:30 INFO 7276 --- [on(2)-127.0.0.1] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown initiated...
2023-03-22T09:33:24.824+05:30 INFO 7276 --- [on(2)-127.0.0.1] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown completed.
```

demoringboot-demo-2/pom.xml index.html X

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="ISO-8859-1">
5 <title>HELLO WORLD</title>
6 </head>
7 <body>
8 <h1>HELLO WORLD</h1>
9 </body>
10 </html>
```

swapnil9519/kubass general | Docker

HELLO WORLD

Deployments | Kubernetes

https://hub.docker.com/repository/docker/swapnil9519/kubass/general

swapnil9519 / kubass

Description

This repository does not have a description

Last pushed: a few seconds ago

Docker commands

To push a new tag to this repository,

```
docker push swapnil9519/kubass:tagname
```

Public View

Tags

IMAGE INSIGHTS INACTIVE

This repository contains 2 tag(s).

Tag	OS	Type	Pulled	Pushed
2.0	linux	Image	---	a few seconds ago
1.0	linux	Image	30 minutes ago	33 minutes ago

See all

Go to Advanced Image Management

Automated Builds

Manually pushing images to Hub? Connect your account to GitHub or Bitbucket to automatically build and tag new images whenever your code is updated, so you can focus your time on creating.

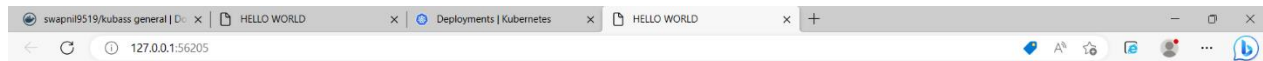
Available with Pro, Team and Business subscriptions. [Read more about automated builds.](#)

Upgrade

README

Repository description is empty. [Click here to edit.](#)

```
Windows PowerShell
PS C:\Users\jadha> cd ../
PS C:\Users> cd ../
PS C:\> cd minikube
PS C:\minikube> kubectl get pod
NAME                                READY   STATUS    RESTARTS   AGE
springboot-68bd6b9f9-g9mwq         1/1     Running   0           14m
PS C:\minikube> kubectl get deployment
NAME    READY   UP-TO-DATE   AVAILABLE   AGE
springboot  1/1     1             1           19m
PS C:\minikube> kubectl rollout history deployment/springboot
deployment.apps/springboot
REVISION  CHANGE-CAUSE
1         <none>
PS C:\minikube> kubectl apply -f Deployment.yml
deployment.apps/springboot configured
PS C:\minikube> kubectl get pod
NAME                                READY   STATUS              RESTARTS   AGE
springboot-5fbd7f76d6-q6b78        0/1     ContainerCreating   0           17s
springboot-68bd6b9f9-g9mwq         1/1     Running             0           27m
PS C:\minikube> kubectl get pod
NAME                                READY   STATUS    RESTARTS   AGE
springboot-5fbd7f76d6-q6b78        1/1     Running   0           66s
springboot-68bd6b9f9-g9mwq         1/1     Terminating 0           28m
PS C:\minikube> minikube service ass-service
-----
| NAMESPACE | NAME      | TARGET PORT | URL                |
|-----|-----|-----|-----|
| default | ass-service | 8080 | http://192.168.49.2:30292 |
|-----|-----|-----|-----|
* Starting tunnel for service ass-service.
-----
| NAMESPACE | NAME      | TARGET PORT | URL                |
|-----|-----|-----|-----|
| default | ass-service | 8080 | http://127.0.0.1:56205 |
|-----|-----|-----|-----|
* Opening service default/ass-service in default browser...
! Because you are using a Docker driver on windows, the terminal needs to be open to run it.
```



HELLO WORLD




```
Windows PowerShell
PS C:\Users> cd ../
PS C:\> cd mnikube
PS C:\mnikube> kubectl get pods
kubectl: The term 'kubectl' is not recognized as the name of a cmdlet, function, script file, or operable program. Check the spelling of the name, or if a path was included, verify that the path is correct and try again.
At line:1 char:1
+ kubectl get pods
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (kubectl:String) [], CommandNotFoundException
+ FullyQualifiedErrorId : CommandNotFoundException

PS C:\mnikube> kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
springboot-5fbd7f76d6-a6b78        1/1     Running   0           3m39s
PS C:\mnikube> kubectl rollout history deployment/springboot
deployment.apps/springboot
REVISION  CHANGE-CAUSE
1         <none>
2         <none>

PS C:\mnikube> kubectl rollout undo deployment/app --to-revision=1
Error from server (NotFound): deployments.apps "app" not found
PS C:\mnikube> kubectl rollout undo deployment/springboot --to-revision=1
deployment.apps/springboot rolled back
PS C:\mnikube> minikube service ass-service
-----
| NAMESPACE | NAME      | TARGET PORT | URL                |
|-----|-----|-----|-----|
| default   | ass-service | 8080        | http://192.168.49.2:30292 |
|-----|-----|-----|-----|
* Starting tunnel for service ass-service.
| NAMESPACE | NAME      | TARGET PORT | URL                |
|-----|-----|-----|-----|
| default   | ass-service | 8080        | http://127.0.0.1:56305 |
|-----|-----|-----|-----|
* Opening service default/ass-service in default browser...
! Because you are using a Docker driver on windows, the terminal needs to be open to run it.
```

swapnil9519/kubass general | D:\> | Deployments | Kubernetes | New tab | swapnil's Assignment

127.0.0.1:56305

Myself swapnil jadhav and I have completed my assignment

kindly check my assignment

