Setting Up Jenkins Pipeline to Deploy Docker Swarm
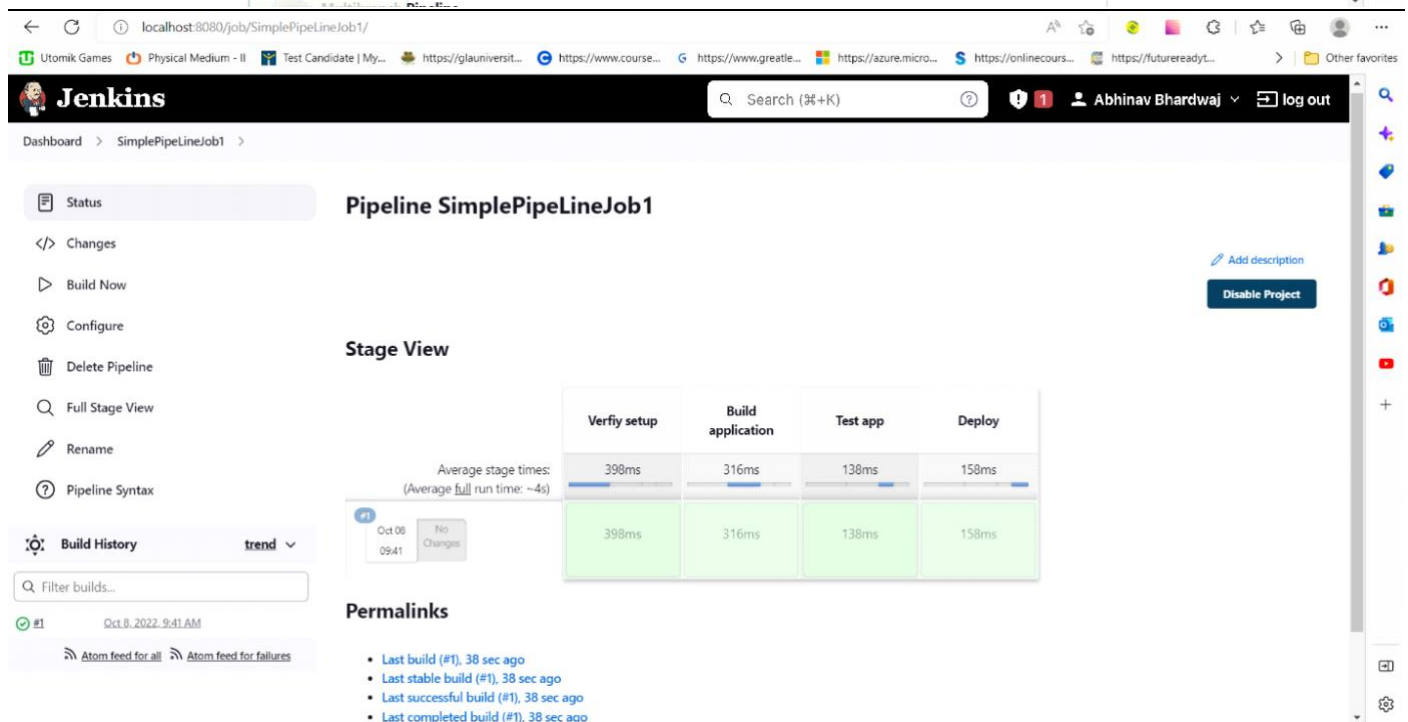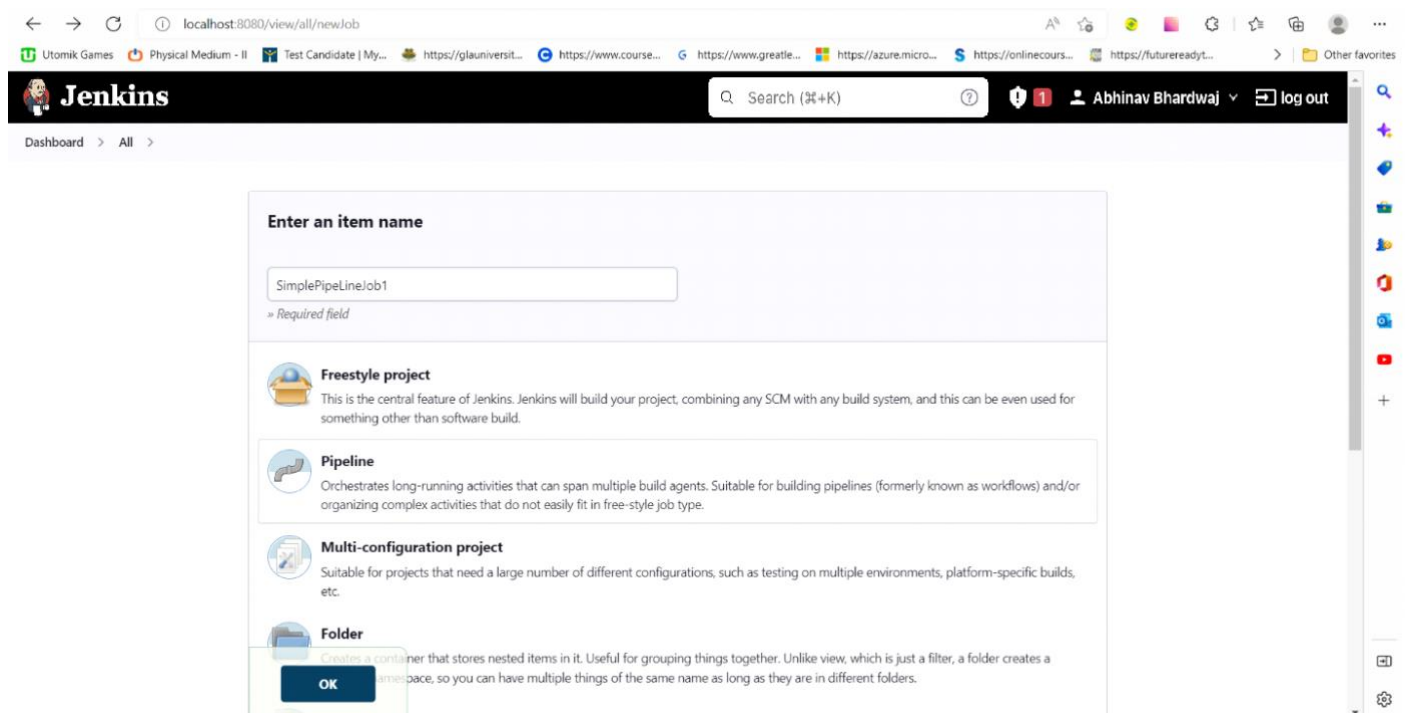
Creating a Pipeline in Jenkins :-

```
my-alpine                    latest      8dee897d8326   8 weeks ago   5.54MB
alpine                       latest      9c6f07244728   8 weeks ago   5.54MB

C:\Users\as954>docker run -d -p 80:80 my-angular123
87a48fe7e48c6f23874ae71fba283cfbe4997d5e0246a9de577db24bb2f5e071

C:\Users\as954>docker ps
CONTAINER ID   IMAGE                      COMMAND                CREATED          STATUS               PORTS                                              NAMES
87a48fe7e48c   my-angular123              "/docker-entrypoint..."  2 minutes ago    Up About a minute    0.0.0.0:80->80/tcp                                 beautiful_visvesvaraya
85bdebe670fb   jenkins/jenkins:lts-jdk11  "/usr/bin/tini -- /u..."  10 hours ago     Up 9 hours           0.0.0.0:8080->8080/tcp, 0.0.0.0:50000->50000/tcp   keen_banzai

C:\Users\as954>docker run -d -p 81:80 my-angular123
66b566629f001578bb9d6891cf55f0772558bfdf81e806c0548b0ec0ac8d0da4

C:\Users\as954>docker run -d -p 83:80 my-angular123
ee0836fd182d90ca3213cc032751004655f3d842b376c95b19e3628d9f853dda

C:\Users\as954>docker ps
CONTAINER ID   IMAGE                      COMMAND                CREATED           STATUS          PORTS                                              NAMES
ee0836fd182d   my-angular123              "/docker-entrypoint..."  8 minutes ago     Up 8 minutes    0.0.0.0:83->80/tcp                                 sleepy_fermat
66b566629f00   my-angular123              "/docker-entrypoint..."  8 minutes ago     Up 8 minutes    0.0.0.0:81->80/tcp                                 priceless_shannon
23dc314a0d5a   my-angular123:latest       "/docker-entrypoint..."  11 minutes ago    Up 11 minutes   80/tcp                                             heuristic_colden
87a48fe7e48c   my-angular123              "/docker-entrypoint..."  17 minutes ago    Up 16 minutes   0.0.0.0:80->80/tcp                                 beautiful_visvesvaraya
85bdebe670fb   jenkins/jenkins:lts-jdk11  "/usr/bin/tini -- /u..."  10 hours ago      Up 9 hours      0.0.0.0:8080->8080/tcp, 0.0.0.0:50000->50000/tcp   keen_banzai

C:\Users\as954>
```

Name	Date modified	Type	Size
.angular	10/4/2022 11:55 AM	File folder	
.git	10/4/2022 11:35 AM	File folder	
.vscode	10/4/2022 11:31 AM	File folder	
dist	10/4/2022 11:56 AM	File folder	
node_modules	10/4/2022 11:54 AM	File folder	
src	10/4/2022 11:31 AM	File folder	
.browserslistrc	10/4/2022 11:31 AM	BROWSERSLISTRC...	1 KB
.editorconfig	10/4/2022 11:31 AM	Editor Config Sour...	1 KB
.gitignore	10/4/2022 11:31 AM	Text Document	1 KB
angular	10/4/2022 11:51 AM	JSON Source File	3 KB
Dockerfile	10/4/2022 12:25 PM	File	1 KB
karma.conf	10/4/2022 11:31 AM	JavaScript Source ...	2 KB
package	10/4/2022 11:31 AM	JSON Source File	2 KB
package-lock	10/4/2022 11:35 AM	JSON Source File	775 KB
README	10/4/2022 11:31 AM	Markdown Source ...	2 KB
tsconfig.app	10/4/2022 11:31 AM	JSON Source File	1 KB
tsconfig	10/4/2022 11:31 AM	JSON Source File	1 KB
tsconfig.spec	10/4/2022 11:31 AM	JSON Source File	1 KB

```
MINGW64:/e/Mphasis/Phase 5 Programs/My Image to run Angular project/ang...   —  □  ×

as9540@DESKTOP-5S708S4 MINGW64 /e/Mphasis/Phase 5 Programs/My Image to run Angula
r project/angular-docker (master)
$ ls
Dockerfile     dist/           package-lock.json   tsconfig.app.json
README.md      karma.conf.js   package.json        tsconfig.json
angular.json   node_modules/   src/                tsconfig.spec.json

as9540@DESKTOP-5S708S4 MINGW64 /e/Mphasis/Phase 5 Programs/My Image to run Angula
r project/angular-docker (master)
$
```

```
my-alpine                    latest      8dee897d8326   8 weeks ago   5.54MB
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CONTAINER ID   IMAGE                      COMMAND                CREATED          STATUS               PORTS                                              NAMES
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C:\Users\as954>docker ps
CONTAINER ID   IMAGE                      COMMAND                CREATED           STATUS          PORTS                                              NAMES
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66b566629f00   my-angular123              "/docker-entrypoint..."  8 minutes ago     Up 8 minutes    0.0.0.0:81->80/tcp                                 priceless_shannon
23dc314a0d5a   my-angular123:latest       "/docker-entrypoint..."  11 minutes ago    Up 11 minutes   80/tcp                                             heuristic_colden
87a48fe7e48c   my-angular123              "/docker-entrypoint..."  17 minutes ago    Up 16 minutes   0.0.0.0:80->80/tcp                                 beautiful_visvesvaraya
85bdebe670fb   jenkins/jenkins:lts-jdk11  "/usr/bin/tini -- /u..."  10 hours ago      Up 9 hours      0.0.0.0:8080->8080/tcp, 0.0.0.0:50000->50000/tcp   keen_banzai

C:\Users\as954>docker stop ee0836fd182d
ee0836fd182d

C:\Users\as954>docker stop 66b566629f00
66b566629f00

C:\Users\as954>docker stop 23dc314a0d5a
23dc314a0d5a

C:\Users\as954>docker stop 87a48fe7e48c
87a48fe7e48c

C:\Users\as954>docker ps
CONTAINER ID   IMAGE                      COMMAND                CREATED         STATUS        PORTS                                              NAMES
85bdebe670fb   jenkins/jenkins:lts-jdk11  "/usr/bin/tini -- /u..."  10 hours ago    Up 9 hours    0.0.0.0:8080->8080/tcp, 0.0.0.0:50000->50000/tcp   keen_banzai

C:\Users\as954>
```

```
Command Prompt

Microsoft Windows [Version 10.0.19044.2006]
(c) Microsoft Corporation. All rights reserved.

C:\Users\as954>docker images
REPOSITORY                        TAG          IMAGE ID       CREATED        SIZE
jenkins/jenkins                   lts-jdk11    3728f8fc7302   26 hours ago   463MB
my-angular123                     latest       454d13740d80   2 days ago     142MB
anujsinghsaxena/my-angular123     1.0          454d13740d80   2 days ago     142MB
my-spring-app                     latest       fbd8936807e9   2 days ago     672MB
my-mybusybox                      latest       4617797a0b75   3 weeks ago    1.24MB
busybox                           latest       2bd29714875d   3 weeks ago    1.24MB
my-alpine                         latest       8dee897d8326   8 weeks ago    5.54MB
alpine                            latest       9c6f07244728   8 weeks ago    5.54MB

C:\Users\as954>docker run -d -p 80:80 my-angular123
87a48fe7e48c6f23874ae71fba283cfbe4997d5e0246a9de577db24bb2f5e071

C:\Users\as954>docker ps
CONTAINER ID   IMAGE                        COMMAND                CREATED         STATUS             PORTS                                              NAMES
87a48fe7e48c   my-angular123                "/docker-entrypoint…"  2 minutes ago   Up About a minute  0.0.0.0:80->80/tcp                                 beautiful_visvesvaraya
85bdebe670fb   jenkins/jenkins:lts-jdk11    "/usr/bin/tini -- /u…" 10 hours ago    Up 9 hours         0.0.0.0:8080->8080/tcp, 0.0.0.0:50000->50000/tcp   keen_banzai

C:\Users\as954>docker run -d -p 81:80 my-angular123
66b566629f001578bb9d6891cf55f0772558bfdf81e806c0548b0ec0ac8d0da4

C:\Users\as954>docker run -d -p 83:80 my-angular123
ee0836fd182d90ca3213cc032751004655f3d842b376c95b19e3628d9f853dda

C:\Users\as954>
```

Pushing images to the docker

```
C:\WINDOWS\system32\cmd.exe

omsreeja/my-angular         1.0        9bcad77edd72   3 days ago    142MB
my-spring                   latest     34d3f9235052   3 days ago    672MB
omsreeja/my-spring          1.0        34d3f9235052   3 days ago    672MB
<none>                      <none>     fe1e64193689   3 days ago    654MB
<none>                      <none>     b7e049395e51   4 days ago    672MB
akashkale/my-spring-boot123 1.0        17d3891d63bc   4 days ago    672MB
my-busybox                  latest     2e09bb852fe7   3 weeks ago   1.24MB
busybox                     latest     2bd29714875d   3 weeks ago   1.24MB
<none>                      <none>     26a5ed36d42e   3 weeks ago   1.24MB
alpine                      latest     9c6f07244728   8 weeks ago   5.54MB
my-alpine                   latest     8dee897d8326   8 weeks ago   5.54MB

C:\javafsd\javademos\MyImages\MultiContainer\Frontend\product-frontend>docker tag product-app omsreeja/product-app:1.0

C:\javafsd\javademos\MyImages\MultiContainer\Frontend\product-frontend>docker push omsreeja/product-app:1.0
The push refers to repository [docker.io/omsreeja/product-app]
9e39231483ca: Pushed
6b5aaff44254: Mounted from library/openjdk
53a0b163e995: Mounted from library/openjdk
b626401ef603: Mounted from omsreeja/my-spring
9b55156abf26: Mounted from omsreeja/my-spring
293d5db30c9f: Mounted from omsreeja/my-spring
03127cdb479b: Mounted from omsreeja/my-spring
9c742cd6c7a5: Mounted from omsreeja/my-spring
1.0: digest: sha256:2af5e59350c57c78e54be1c0cee5c99fdfc20e3daa972c040d108278503d003f size: 2007

C:\javafsd\javademos\MyImages\MultiContainer\Frontend\product-frontend>
```

```
busybox                          latest        2bd29714875d    3 weeks ago     1.24MB
my-busybox                       latest        2e09bb852fe7    3 weeks ago     1.24MB
my-alpine                        latest        8dee897d8326    8 weeks ago     5.54MB
alpine                           latest        9c6f07244728    8 weeks ago     5.54MB

C:\javafsd\javademos\MyImages\MultiContainer\Frontend\product-frontend>docker tag product-frontend-app omsreeja/product-
frontend-app:1.0

C:\javafsd\javademos\MyImages\MultiContainer\Frontend\product-frontend>docker push omsreeja/product-frontend-app:1.0
The push refers to repository [docker.io/omsreeja/product-frontend-app]
047347f44df9: Pushed
d6a3537fc36a: Mounted from library/nginx
819eb3a45632: Mounted from library/nginx
5eda6fa69be4: Mounted from library/nginx
6f4f3ce1dca0: Mounted from library/nginx
58a06a0d345c: Mounted from library/nginx
fe7b1e9bf792: Mounted from library/nginx
1.0: digest: sha256:8775ba2a9d912e87caad1869cf6e13d6ffb0cf780e38027b1d8e8f5d185de527 size: 1779

C:\javafsd\javademos\MyImages\MultiContainer\Frontend\product-frontend>docker images
REPOSITORY                       TAG           IMAGE ID        CREATED         SIZE
product-frontend-app             latest        a42b574e5e54    40 minutes ago  142MB
omsreeja/product-frontend-app    1.0           a42b574e5e54    40 minutes ago  142MB
product-app                      latest        d1562e4daf4c    49 minutes ago  544MB
jenkins/jenkins                  lts-jdk11     3728f8fc7302    44 hours ago    463MB
my-angular                       latest        9bcad77edd72    3 days ago      142MB
omsreeja/my-angular              1.0           9bcad77edd72    3 days ago      142MB
my-spring                        latest        34d3f9235052    3 days ago      672MB
```

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances:instanceState=running

aws ::: Services   Q Search for services, features, blogs, docs, and more   [Option+S]   Mumbai ▼   Abhinav-Bhardwaj ▼

New EC2 Experience
Tell us what you think

EC2 Dashboard
EC2 Global View

Events
Tags
Limits

▼ Instances
  Instances New
  Instance Types
  Launch Templates
  Spot Requests
  Savings Plans
  Reserved Instances New
  Dedicated Hosts

Instances (2) Info   [C]   Connect   Instance state ▼   Actions ▼   **Launch instances** ▼

Q Find instance by attribute or tag (case-sensitive)   ‹ 1 ›   ⚙

Instance state = running ✕   **Clear filters**

☐	Name ▽	Instance ID	Instance state ▽	Instance type ▽	Status check	Alarm status	A
☐	woker-node	i-099c1bac82c9c65f6	⊘ Running ⊕⊖	t2.micro	⏱ Initializing	No alarms +	u
☐	master-node	i-07370d59e7246c29d	⊘ Running ⊕⊖	t2.micro	⊘ 2/2 checks passed	No alarms +	u

═

Select an instance   ⚙ ✕

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Amazon S3 > Buckets

Amazon S3

Buckets
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
Access analyzer for S3

Block Public Access settings for this account

▼ Storage Lens
Dashboards
AWS Organizations settings

Feature spotlight 3

▶ AWS Marketplace for S3

▼ **Account snapshot**
Last updated: Aug 22, 2022 by Storage Lens. Metrics are generated every 24 hours. Learn more

Total storage	Object count	Avg. object size	
1.7 MB	141	12.0 KB	

You can enable advanced metrics in the "default-account-dashboard" configuration.

View Storage Lens dashboard

Buckets (1) Info
Buckets are containers for data stored in S3. Learn more

Copy ARN | Empty | Delete | **Create bucket**

Find buckets by name

Name ▲	AWS Region ▽	Access ▽	Creation date ▽
⦿ akanksha24	US East (N. Virginia) us-east-1	Objects can be public	October 6, 2022, 14:01:33 (UTC+05:30)

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Amazon S3

Buckets
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
Access analyzer for S3

Block Public Access settings for this account

▼ Storage Lens
Dashboards
AWS Organizations settings

Objects | Properties | Permissions | Metrics | Management | Access Points

Objects (1)
Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more

Copy S3 URI | Copy URL | Download | Open | Delete | Actions ▼

Create folder | **Upload**

Find objects by prefix

☑	Name ▲	Type ▽	Last modified ▽	Size ▽	Storage class ▽
☑	docker-compose.yml	yml	October 7, 2022, 12:32:57 (UTC+05:30)	396.0 B	Standard

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```
pathu@sreeja7340 MINGW64 ~/Downloads
$ ssh -i "worker-keys.pem" ec2-user@ec2-54-144-51-103.compute-1.amazonaws.com
The authenticity of host 'ec2-54-144-51-103.compute-1.amazonaws.com (54.144.51.1
03)' can't be established.
ED25519 key fingerprint is SHA256:wzREdf9mV1Irfs1iU/INFWNrFdhMfGui71LiLd8bSac.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-54-144-51-103.compute-1.amazonaws.com' (ED25519)
 to the list of known hosts.

       __|  __|_  )
       _|  (     /    Amazon Linux 2 AMI
      ___|\___|___|

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-31-128 ~]$ client_loop: send disconnect: Connection reset by
 peer

pathu@sreeja7340 MINGW64 ~/Downloads
$ ssh -i "worker-keys.pem" ec2-user@ec2-54-144-51-103.compute-1.amazonaws.com
Last login: Fri Oct  7 07:19:52 2022 from 157.47.28.152
```

```
       __|  __|_  )
       _|  (     /    Amazon Linux 2 AMI
      ___|\___|___|

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-31-128 ~]$ sudo yum install docker
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core                                              | 3.7 kB     00:00
Resolving Dependencies
--> Running transaction check
---> Package docker.x86_64 0:20.10.17-1.amzn2 will be installed
--> Processing Dependency: runc >= 1.0.0 for package: docker-20.10.17-1.amzn2.x8
6_64
--> Processing Dependency: libcgroup >= 0.40.rc1-5.15 for package: docker-20.10.
17-1.amzn2.x86_64
--> Processing Dependency: containerd >= 1.3.2 for package: docker-20.10.17-1.am
zn2.x86_64
--> Processing Dependency: pigz for package: docker-20.10.17-1.amzn2.x86_64
--> Running transaction check
---> Package containerd.x86_64 0:1.6.6-1.amzn2 will be installed
---> Package libcgroup.x86_64 0:0.41-21.amzn2 will be installed
---> Package pigz.x86_64 0:2.3.4-1.amzn2.0.1 will be installed
```

```
  Installing : docker-20.10.17-1.amzn2.x86_64                                       5/5
  Verifying  : docker-20.10.17-1.amzn2.x86_64                                       1/5
  Verifying  : runc-1.1.3-1.amzn2.x86_64                                            2/5
  Verifying  : pigz-2.3.4-1.amzn2.0.1.x86_64                                        3/5
  Verifying  : containerd-1.6.6-1.amzn2.x86_64                                      4/5
  Verifying  : libcgroup-0.41-21.amzn2.x86_64                                       5/5

Installed:
  docker.x86_64 0:20.10.17-1.amzn2

Dependency Installed:
  containerd.x86_64 0:1.6.6-1.amzn2              libcgroup.x86_64 0:0.41-21.amzn2
  pigz.x86_64 0:2.3.4-1.amzn2.0.1               runc.x86_64 0:1.1.3-1.amzn2

Complete!
[ec2-user@ip-172-31-31-128 ~]$ sudo dervice docker start
sudo: dervice: command not found
[ec2-user@ip-172-31-31-128 ~]$ sudo service docker start
Redirecting to /bin/systemctl start docker.service
[ec2-user@ip-172-31-31-128 ~]$ sudo docker swarm join --token SWMTKN-1-161okn1g0
0r6dvs5qz1090liauxhtf4dorq49q07ryn69iz8fl-06v4jgc4ospzfwltxxpq2epry 172.31.94.11
6:2377
```

```
REPOSITORY    TAG        IMAGE ID    CREATED    SIZE
[ec2-user@ip-172-31-94-116 ~]$ sudo docker swarm init
Swarm initialized: current node (vuyzsawryvhiex7wpe82rcbzp) is now a manager.

To add a worker to this swarm, run the following command:

    docker swarm join --token SWMTKN-1-161okn1g00r6dvs5qz1090liauxhtf4dorq49q07r
yn69iz8fl-06v4jgc4ospzfwltxxpq2epry 172.31.94.116:2377

To add a manager to this swarm, run 'docker swarm join-token manager' and follow
 the instructions.

[ec2-user@ip-172-31-94-116 ~]$ ^C
[ec2-user@ip-172-31-94-116 ~]$ sudo docker ls
docker: 'ls' is not a docker command.
See 'docker --help'
[ec2-user@ip-172-31-94-116 ~]$ sudo docker node ls
ID                              HOSTNAME                     STATUS    AVAILABI
LITY   MANAGER STATUS   ENGINE VERSION
onq4l889qj44ysleoae4n132a       ip-172-31-31-128.ec2.internal   Ready     Active
                    20.10.17
vuyzsawryvhiex7wpe82rcbzp *     ip-172-31-94-116.ec2.internal   Ready     Active
```

Code in Angular Project :-

index.html

```html
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8" />
    <title>AngularJenkinsAndDocker</title>
    <base href="/" />
    <meta name="viewport" content="width=device-width, initial-scale=1" />
    <link rel="icon" type="image/x-icon" href="favicon.ico" />
  </head>
  <body>
    <app-root></app-root>
  </body>
</html>
```
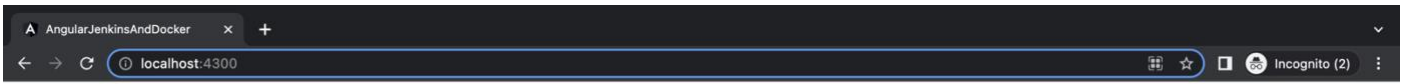
app.component.html

```html
<div>
  <h2>
    This page is created in Angular to show working of deployment using jenkins
    pipelining and Docker.
  </h2>
</div>
```

This page is created in Angular to show working of deployment using jenkins pipelining and Docker.