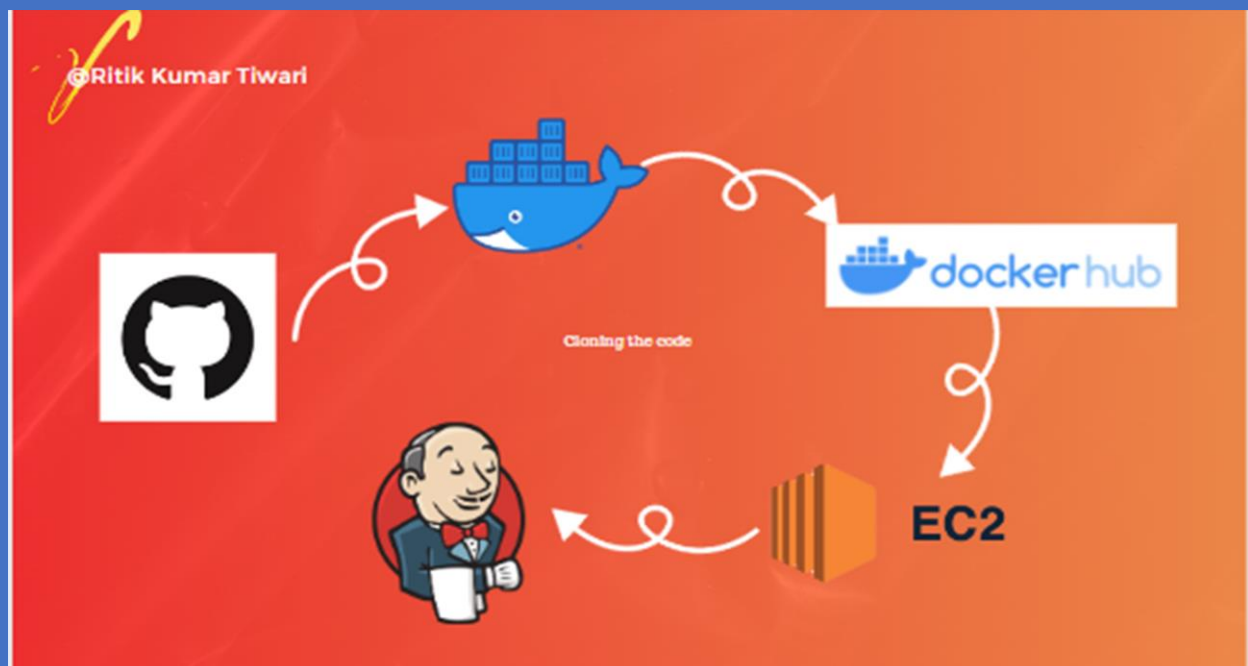


CI/CD: Note-App Deployment using Declarative Pipeline

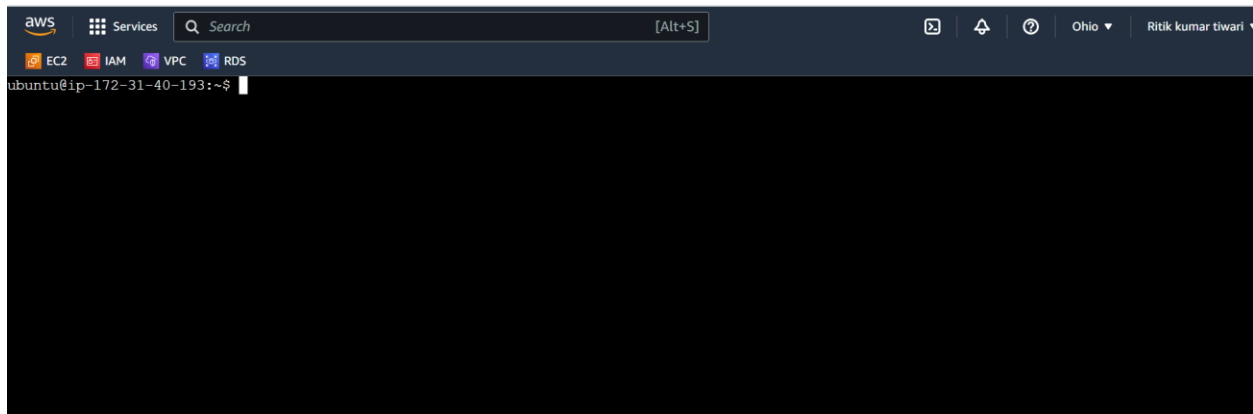
LINKEDIN: <https://www.linkedin.com/in/ritikktiwari/>



AWS EC2 Instance

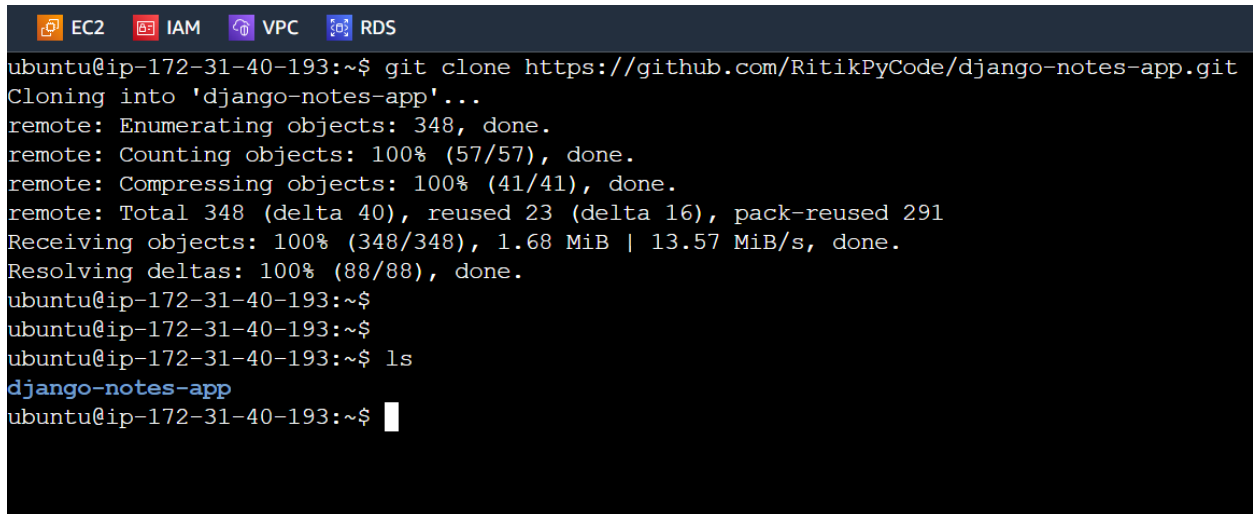
- Go to AWS Console
- Select ubuntu Operating system
- Instances(running)
- Launch instances

GitHub URL: <https://github.com/RitikPyCode/django-notes-app>



i-0a8d825057065217b (Jenkins-Declarative)

PublicIPs: 18.117.216.230 PrivateIPs: 172.31.40.193



```
ubuntu@ip-172-31-40-193:~$ cd django-notes-app/
ubuntu@ip-172-31-40-193:~/django-notes-app$ ls
Dockerfile      README.md      db.sqlite3      manage.py      notesapp      requirements.txt
'Project code'  api           docker-compose.yml  mynotes       procfile      staticfiles
ubuntu@ip-172-31-40-193:~/django-notes-app$
```

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ sudo apt-get update
Hit:1 http://us-east-2.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://us-east-2.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://us-east-2.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
ubuntu@ip-172-31-40-193:~/django-notes-app$
```

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ sudo apt install docker.io
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  bridge-utils containerd dns-root-data dnsmasq-base pigz runc ubuntu-fan
Suggested packages:
  ifupdown aufs-tools cgroupfs-mount | cgroup-lite debootstrap docker-doc rinse zfs-fuse | zfsutils
The following NEW packages will be installed:
  bridge-utils containerd dns-root-data dnsmasq-base docker.io pigz runc ubuntu-fan
```

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ docker --version
Docker version 20.10.21, build 20.10.21-0ubuntu1~22.04.3
ubuntu@ip-172-31-40-193:~/django-notes-app$
```

Ubuntu has not docker permission:

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ docker ps
Got permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get "http://%2F1.24/containers/json": dial unix /var/run/docker.sock: connect: permission denied
ubuntu@ip-172-31-40-193:~/django-notes-app$ whoami
ubuntu
ubuntu@ip-172-31-40-193:~/django-notes-app$
```

We need to modify the user permission and append the ubuntu user in docker group:

Then reboot your system once and wait for few minutes.

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ sudo usermod -aG docker $USER
```

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ sudo reboot
ubuntu@ip-172-31-40-193:~/django-notes-app$
```

```

ubuntu@ip-172-31-40-193:~/django-notes-app$ ls
Dockerfile      README.md      db.sqlite3      manage.py      notesapp      requirements.txt
'Project code'  api           docker-compose.yml  mynotes      procfile      staticfiles
ubuntu@ip-172-31-40-193:~/django-notes-app$ cat Dockerfile
FROM python:3.9

WORKDIR /app/backend

COPY requirements.txt /app/backend
RUN pip install -r requirements.txt

COPY . /app/backend

EXPOSE 8000

CMD python /app/backend/manage.py runserver 0.0.0.0:8000
ubuntu@ip-172-31-40-193:~/django-notes-app$

```

Docker file:

FROM python:3.9

WORKDIR /app/backend

COPY requirements.txt /app/backend

RUN pip install -r requirements.txt

COPY . /app/backend

EXPOSE 8000

CMD python /app/backend/manage.py runserver 0.0.0.0:8000

We have successfully built.

```

ubuntu@ip-172-31-40-193:~/django-notes-app$ docker build -t notes-app .
Sending build context to Docker daemon  8.389MB
Step 1/7 : FROM python:3.9
3.9: Pulling from library/python
d52e4f012db1: Extracting [=====>]  49.55MB/49.55MB
7dd206bea61f: Download complete
2320f9be4a9c: Download complete
6e5565e0ba8d: Download complete
d3797e13cc41: Download complete
9421d62bef94: Download complete
19d7d75bfdca: Download complete
67f28346abde: Download complete

```

Jenkins Installation Pre-requisites.

```
sudo apt update
sudo apt install openjdk-17-jre
java -version
sudo apt-get update
```

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ java -version
openjdk version "17.0.7" 2023-04-18
OpenJDK Runtime Environment (build 17.0.7+7-Ubuntu-0ubuntu122.04.2)
OpenJDK 64-Bit Server VM (build 17.0.7+7-Ubuntu-0ubuntu122.04.2, mixed mode, sharing)
ubuntu@ip-172-31-40-193:~/django-notes-app$
```

Installation of Jenkins

```
curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key | sudo tee \
```

```
/usr/share/keyrings/jenkins-keyring.asc > /dev/null
```

```
echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \
```

```
https://pkg.jenkins.io/debian-stable binary/ | sudo tee \
```

```
/etc/apt/sources.list.d/jenkins.list > /dev/null
```

```
sudo apt-get update
```

```
sudo apt-get install Jenkins
```

```
service Jenkins status
```

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ service jenkins status
• jenkins.service - Jenkins Continuous Integration Server
   Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2023-07-10 19:21:21 UTC; 58s ago
     Main PID: 5902 (java)
       Tasks: 44 (limit: 1141)
      Memory: 289.6M
         CPU: 38.728s
    CGroup: /system.slice/jenkins.service
            └─5902 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080
```

Now you need to go to your Browser and paste the public IP address of your server

eg: <http://PublicIP:8080/>

Jenkins runs on 8080 port.

If port is not enabled, then you need to enable that port: 3000 on your aws security group:

Steps:

Instances (1) Info

Find instance by attribute or tag (case-sensitive)

Connect

Instance state

Actions

Launch instances

< 1 >

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
<input type="checkbox"/>	Jenkins-Declar...	i-0a8d825057065217b	Running	t2.micro	2/2 checks passed	No alarms	us-east-2c	ec2-18-

Details Security Networking Storage Status checks Monitoring Tags

▼ Security details

IAM Role

-

Owner ID

703252462768

Launch time

Sat Jul 08 2023 12:23:51 GMT+0530 (India Standard Time)

Security groups

sg-0dec91fb1ec1a7373 (launch-wizard-8)

▼ Inbound rules

Filter rules

< 1 >

Name	Security group rule ID	Port range	Protocol	Source
-	sgr-09c64e53392029127	443	TCP	0.0.0.0/0

[Alt+S] Ohio Ritik kumar tiwari

Inbound rules Outbound rules Tags

You can now check network connectivity with Reachability Analyzer

Run Reachability Analyzer

Inbound rules (3)

Manage tags Edit inbound rules

Filter security group rules

< 1 >

<input type="checkbox"/>	Name	Security group rule...	IP version	Type	Protocol
<input type="checkbox"/>	-	sgr-09c64e533920291...	IPv4	HTTPS	TCP
<input type="checkbox"/>	-	sgr-0a4dd123f47ddff5f	IPv4	HTTP	TCP
<input type="checkbox"/>	-	sgr-05f13d01737e7c4d2	IPv4	SSH	TCP

Custom TCP

TCP

8080

My IP

106.194.20.34/32

Delete

Add rule

CancelPreview changesSave rules

✓

Inbound security group rules successfully modified on security group (sg-0cf60b2c1719850f2 | launch-wizard-9)

▶ Details

Paste it on your browser: <http://Public1:8080/>

Getting Started

Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log (not sure where to find it?) and this file on the server:

```
/var/lib/jenkins/secrets/initialAdminPassword
```

Please copy the password from either location and paste it below.

Administrator password

Continue

Copy and Cat this command with sudo permission:

`/var/lib/jenkins/secrets/initialAdminPassword`, you will get initial password.

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
5c3d4da49bdb41d0b005456e08c0d49b
ubuntu@ip-172-31-40-193:~/django-notes-app$
```

Please copy the password from either location and paste it below.

Administrator password

.....

Select suggested.

Getting Started



Customize Jenkins

Plugins extend Jenkins with additional features to support many different needs.

Install suggested plugins

Install plugins the Jenkins community finds most useful.

Select plugins to install

Select and install plugins most suitable for your needs.

Jenkins 2.401.2

Getting Started

<div>✓ Folders</div>	Formatter			Folders
<div>⌄ Timestamper</div>	<div>⌄ Workspace Cleanup</div>	<div>⌄ Ant</div>	<div>⌄ Gradle</div>	<div>** bouncycastle API</div>
<div>⌄ Pipeline</div>	<div>⌄ GitHub Branch Source</div>	<div>⌄ Pipeline: GitHub Groovy Libraries</div>	<div>⌄ Pipeline: Stage View</div>	
<div>⌄ Git</div>	<div>⌄ SSH Build Agents</div>	<div><input type="radio"/> Matrix Authorization Strategy</div>	<div>⌄ PAM Authentication</div>	
<div>⌄ LDAP</div>	<div>⌄ Email Extension</div>	<div>⌄ Mailer</div>		
				<div>** - required dependency</div>

Jenkins 2.401.2

Create your username and Password:

Getting Started

Create First Admin User

Username

Password

Confirm password

Jenkins 2.401.2

[Skip and continue as admin](#)

[Save and Continue](#)

Confirm password

Full name

E-mail address

Jenkins 2.401.2

[Skip and continue as admin](#)

[Save and Continue](#)

Save and Finish

Getting Started

Instance Configuration

Jenkins URL:

The Jenkins URL is used to provide the root URL for absolute links to various Jenkins resources. That means this value is required for proper operation of many Jenkins features including email notifications, PR status updates, and the BUILD_URL environment variable provided to build steps.

The proposed default value shown is **not saved yet** and is generated from the current request, if possible. The best practice is to set this value to the URL that users are expected to use. This will avoid confusion when sharing or viewing links.

Jenkins 2.401.2

Not now

Save and Finish

Start using Jenkins

Getting Started

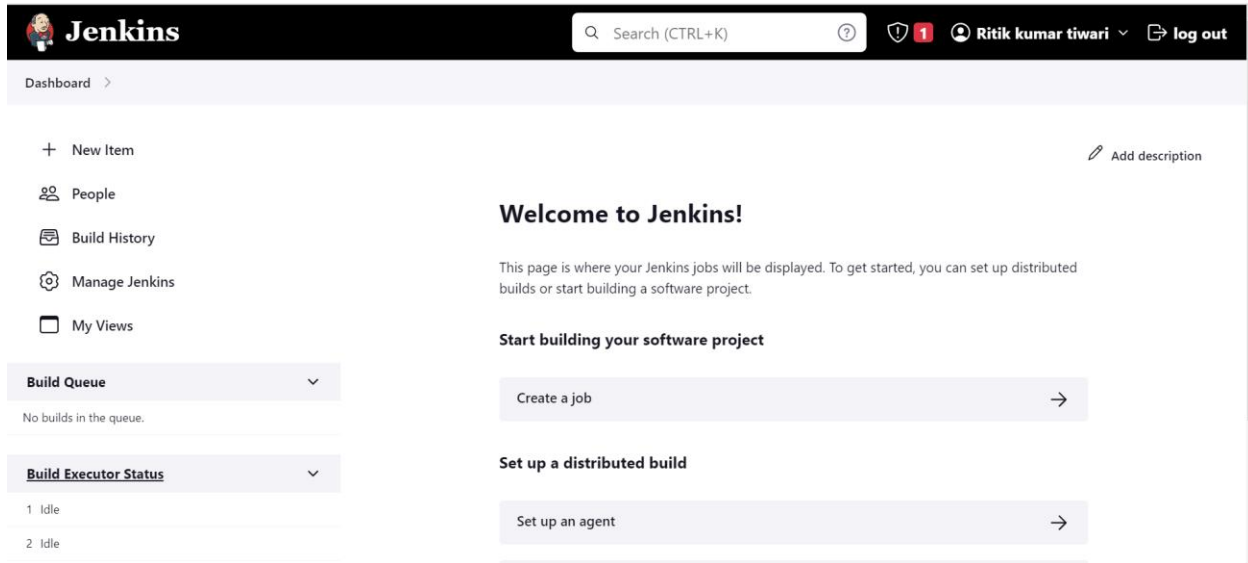
Jenkins is ready!

Your Jenkins setup is complete.

Start using Jenkins

Jenkins 2.401.2

Dashboard layout



The screenshot shows the Jenkins Dashboard interface. At the top is a black header with the Jenkins logo, a search bar (Search (CTRL+K)), a help icon, a notification badge (1), the user name 'Ritik kumar tiwari', and a 'log out' button. Below the header is a light purple navigation bar with 'Dashboard' and a right arrow. The main content area is divided into two columns. The left column contains a sidebar with links: '+ New Item', 'People', 'Build History', 'Manage Jenkins', and 'My Views'. Below these are two expandable sections: 'Build Queue' (showing 'No builds in the queue.') and 'Build Executor Status' (showing two 'Idle' executors). The right column features a 'Welcome to Jenkins!' section with a description: 'This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.' Below this is a 'Start building your software project' section with two buttons: 'Create a job' and 'Set up a distributed build', each with a right arrow.

Welcome to Jenkins!

This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.

Start building your software project

Create a job



Set up a distributed build

Set up an agent



notes-aap-cicd

» Required field

**Freestyle project**

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

**Pipeline**

Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

**Multi-configuration project**

Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

**Folder**

Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a namespace, so you can have multiple things of the same name as long as they are in different folders.

**Configure**

General



Advanced Project Options



Pipeline

General

Enabled



Description

This is a ci/cd pipeline for Notes-App.

[Plain text] [Preview](#)☐ Discard old builds ?☐ Do not allow concurrent builds☐ Do not allow the pipeline to resume if the controller restarts☒ **GitHub project**

Project url ?



RitikPyCode / django-notes-app

Q Type to search

<> Code

Pull requests

Actions

Projects

Wiki

Security

Insights

Settings



django-notes-app

Public

forked from LondheShubham153/django-notes-app

Pin

Watch 0

main

1 branch

0 tags

Go to file

Add file

<> Code

This branch is 2 commits ahead, 4 commits behind LondheShubham153:main



RitikPyCode Update Project code



api

first commit



mynotes

Update index.html



notesapp

deployment initial



staticfiles

deployment initial



.gitignore

first commit

Clone

HTTPS

SSH

GitHub CLI

https://github.com/RitikPyCode/django-notes-a



Use Git or checkout with SVN using the web URL.

Open with GitHub Desktop

Download ZIP

GitHub project

Project url ?

https://github.com/RitikPyCode/django-notes-app.git

Advanced ^

Edited

Display name ?

Notes-App

Build Triggers

- ☐ Build after other projects are built ?
- ☐ Build periodically ?
- ☒ GitHub hook trigger for GITScm polling ?
- ☐ Poll SCM ?
- ☐ Quiet period ?
- ☐ Trigger builds remotely (e.g., from scripts) ?

This is pipeline structure, where all steps are there. Code, Build, push to Docker Hub, Deploy

Script ?

```
1 pipeline {  
2   agent any  
3  
4   stages{  
5  
6     stage("Code"){  
7  
8     }  
9     stage("Build"){  
10  
11    }  
12    stage("Push to Docker Hub"){  
13  
14    }  
15    stage("Deploy"){  
16  
17    }  
18  }  
19 }
```

try sample Pipeline... ▾

This is Groovy syntax, and it's the structure of Declarative Pipeline , Let me show you the output of every stages.

Script ?

```
1 pipeline {  
2   agent any  
3  
4   stages{  
5  
6     stage("Code"){  
7       steps{  
8         echo "Cloning the code from github"  
9       }  
10    }  
11    stage("Build"){  
12      steps{  
13        echo "Building the Images"  
14      }  
15    }  
16    stage("Push to Docker Hub"){  
17      steps{  
18        echo "Pushing to the code on docker HUB"  
19      }  
20    }  
21    stage("Deploy"){  
22      steps{  
23        echo "Deploying the container"  
24      }  
25    }  
26  }
```

Save

Apply

pipeline {

agent any

stages{

stage("Code"){

steps{

echo "Cloning the code from github"

}

}

stage("Build"){

steps{

echo "Building the Images"

}

}

```

stage("Push to Docker Hub"){
    steps{
        echo "Pushing to the code on docker HUB"
    }
}

stage("Deploy"){
    steps{
        echo "Deploying the container"
    }
}
}

```

Click on Build Now,

Dashboard > notes-aap-cicd >

Status

</> Changes

▶ Build Now

⚙️ Configure

🗑️ Delete Pipeline

🔍 Full Stage View

🌐 GitHub

✎ Rename

🔗 Pipeline Syntax

Pipeline notes-aap-cicd

This is a ci/cd pipeline for Notes-App.

✎ Edit description

Disable Project

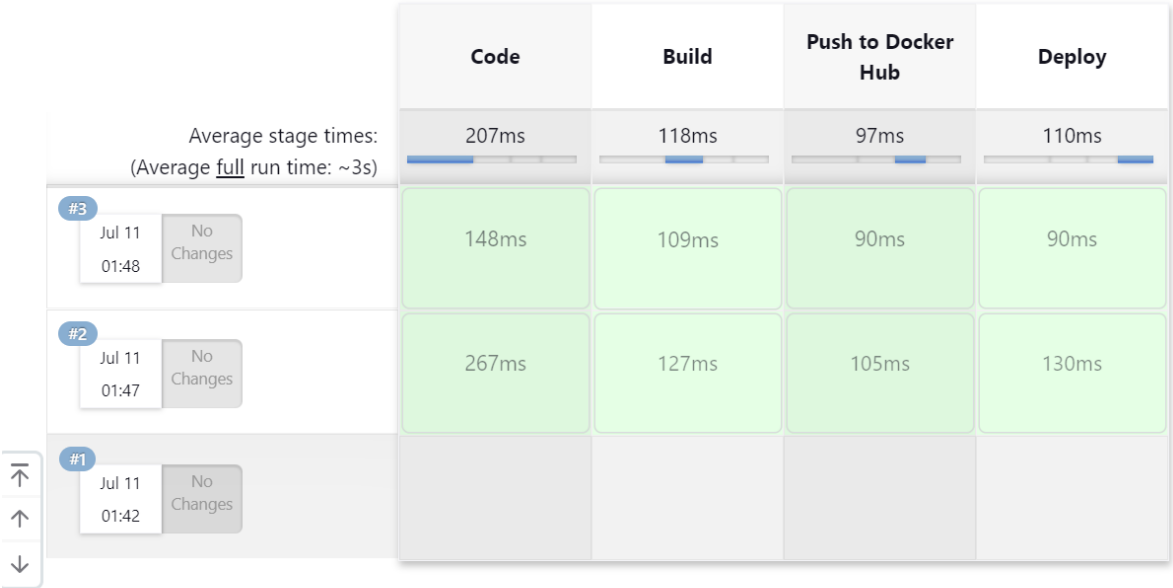
Stage View

No data available. This Pipeline has not yet run.

Permalinks

Code, Build, Push to Docker HUB, Deploy

Stage View



Permalinks

Finally, Demo has been completed.

Check now if your pipeline running fine. Because we have to check every stage. If we get any error, we will do troubleshooting no problem.

SAVE and BUILD NOW

```
1 pipeline {  
2   agent any  
3  
4   stages{  
5  
6     stage("Code"){  
7       steps{  
8         echo "Cloning the code from github"  
9         git url:"https://github.com/RitikPyCode/django-notes-app.git", branch:"main"  
10      }  
11    }  
12  
13    stage("Build"){  
14      steps{  
15        echo "Building the Images"  
16        sh "docker build -t my-note-app ."  
17      }  
18    }  
19  
20    stage("Push to Docker Hub"){  
21      steps{  
22        echo "Pushing to the code on docker HUB"  
23      }  
24    }  
25  
26    stage("Deploy"){  
27      steps{  
28        echo "Deploying the container"  
29      }  
30    }  
31  }
```

Cloning the Code

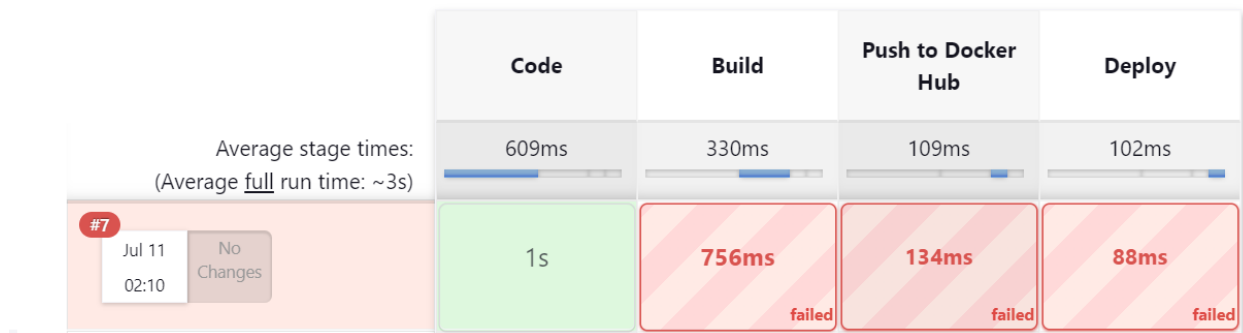
```
pipeline {  
  agent any  
  
  stages{  
  
    stage("Code"){  
      steps{  
        echo "Cloning the code from github"  
        git url:"https://github.com/RitikPyCode/django-notes-app.git", branch:"main"  
      }  
    }  
  
    stage("Build"){
```

```

steps{
  echo "Building the Images"
  sh "docker build -t my-note-app ."
}
}
stage("Push to Docker Hub"){
  steps{
    echo "Pushing to the code on docker HUB"
  }
}
stage("Deploy"){
  steps{
    echo "Deploying the container"
  }
}
}

```

Stage View



First Stage has been completed successfully.

/var/lib/jenkins/workspace/notes-aap-cicd

Started by user Ritik kumar tiwari

[Pipeline] Start of Pipeline

[Pipeline] node

Running on Jenkins in /var/lib/jenkins/workspace/notes-aap-cicd

[Pipeline] {

[Pipeline] stage

[Pipeline] { (Code)

Building the Images

[Pipeline] sh

+ docker build -t my-note-app .

Got permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Post

"http://%2Fvar%2Frun%2Fdocker.sock/v1.24/build?

buildargs=%7B%7D&cachefrom=%5B%5D&cgroupparent=&cpuperiod=0&cpuquota=0&cpusetcpus=&cpusetmems=&cpushares=0&dockerfile=Dockerfile&labels=%7B%7D&memory=0&memswap=0&networkmode=default&rm=1&shmsize=0&t=my-note-app&target=&ulimits=null&version=1": dial unix /var/run/docker.sock: connect: permission denied

[Pipeline] }

[Pipeline] // stage

[Pipeline] stage

[Pipeline] { (Code to Docker Hub)

Go to this path /var/lib/jenkins/workspace/notes-aap-cicd . all files are here.

```
ubuntu@ip-172-31-40-193:~$ cd /var/lib/jenkins/workspace/notes-aap-cicd
ubuntu@ip-172-31-40-193:/var/lib/jenkins/workspace/notes-aap-cicd$ ls
Dockerfile      README.md      db.sqlite3      manage.py      notesapp      requirements.txt
'Project code'  api           docker-compose.yml  mynotes      procfile      staticfiles
ubuntu@ip-172-31-40-193:/var/lib/jenkins/workspace/notes-aap-cicd$
```

```
ubuntu@ip-172-31-40-193:/var/lib/jenkins/workspace/notes-aap-cicd$ sudo usermod -aG docker jenkins
ubuntu@ip-172-31-40-193:/var/lib/jenkins/workspace/notes-aap-cicd$ sudo reboot
ubuntu@ip-172-31-40-193:/var/lib/jenkins/workspace/notes-aap-cicd$
```

sudo usermod -aG docker jenkins

sudo reboot

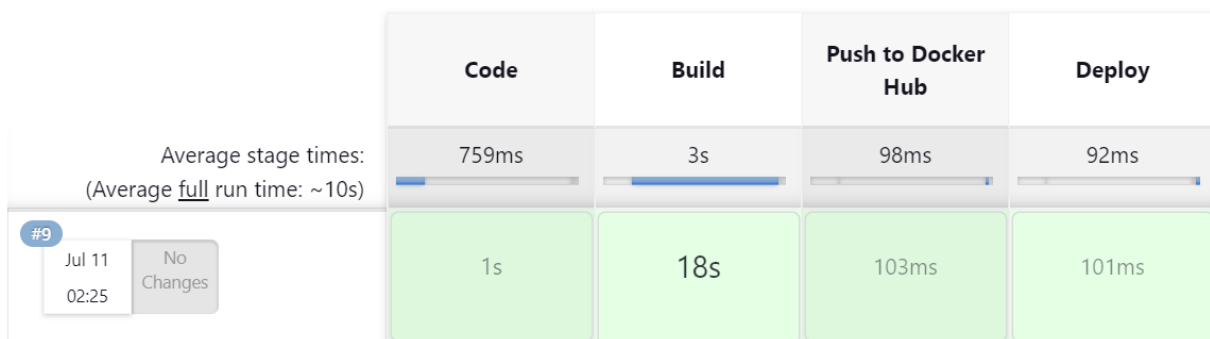
Please refresh the Jenkins software then build now again, you will pass all the stages successfully.



Console Output

```
Started by user Ritik kumar tiwari
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/notes-aap-cicd
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Code)
[Pipeline] sh
  git clone https://github.com/ritik-kumar/notes-aap-cicd.git
[Pipeline] sh
  mvn clean install
[Pipeline] sh
  docker build -t notes-aap-cicd .
[Pipeline] sh
  docker push notes-aap-cicd
[Pipeline] sh
  docker run --rm notes-aap-cicd
[Pipeline] }
```


Stage View



Now Pushing the code from DOCKER HUB.

First you have to sign In or Signup yourself on docker hub: <https://hub.docker.com/>

DockerCon 2023: Our annual developer event is back – online & in person. [Learn more.](#)




[Explore](#) [Pricing](#) [Sign In](#) [Register](#)

Build and Ship any Application Anywhere

Docker Hub is the world's easiest way to create, manage, and deliver your team's container applications.

Get Started Today for Free

Already have an account? [Sign In](#)

 
☐ Send me occasional product updates and announcements.
☐ I agree to the [Subscription Service Agreement](#), [Privacy Policy](#), and [Data Processing Terms](#).

```
ubuntu@ip-172-31-40-193:/$ 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: ritikt2023
Password:
WARNING! Your password will be stored unencrypted in /home/ubuntu/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store


Login Succeeded
ubuntu@ip-172-31-40-193:/$
```


Draw-back related credentials, issue has been resolved below:

sh "docker login", then creds but if we type all the creds then it will be publicly, then we have devops concept: environment variable, it will not show you your creds.




First go to Jenkins Dashboard > Manage Jenkins > Security: Credentials > click on system

Stores scoped to Jenkins

P	Store ↓	Domains
	System	(global)

 **Jenkins**


Search (CTRL+K) ?

 1  Ritik kumar tiwari  log out


Dashboard > Manage Jenkins > Credentials > System >

System




[+ Add domain](#)

Domain ↓	Description
 Global credentials (unrestricted)	Credentials that should be available irrespective of domain specification to requirements matching.

Icon: ☐ S ☐ M ☒ L

 **Jenkins**

Search (CTRL+K) ?

 1  Ritik kumar tiwari  log out

Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted) >

Global credentials (unrestricted)

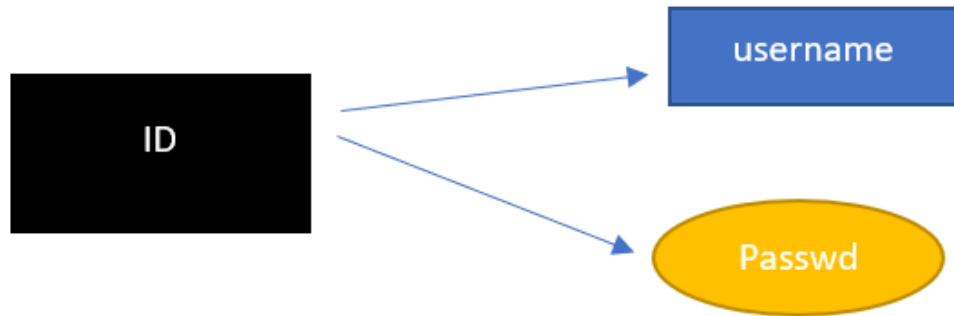
[+ Add Credentials](#)

Credentials that should be available irrespective of domain specification to requirements matching.

ID	Name	Kind	Description
This credential domain is empty. How about adding some credentials?			

Icon: ☐ S ☐ M ☒ L

We need to assign ID for username and password, because if anyone ask then we can give our ID no. which contains username and password.



Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted) >

New credentials

Kind

Username with password

Scope ?

Global (Jenkins, nodes, items, all child items, etc)

Username ?

ritikt2023

☐ Treat username as secret ?

ritikt2023


☐ Treat username as secret ?

Password ?
.....




ID ?
dockerhub123

Description ?
This is my dockerhub credentials

Create

 **Jenkins**

Search (CTRL+K) ?



 1  Ritik kumar tiwari  log out

Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted) >

Global credentials (unrestricted)

[+ Add Credentials](#)

Credentials that should be available irrespective of domain specification to requirements matching.

ID	Name	Kind	Description
 dockerhub123	ritikt2023/***** (This is my dockerhub credentials)	Username with password	This is my dockerhub credentials 

Icon: S M L

Now back to dashboard and come in configuration

```
pipeline {
```

```
  agent any
```

```
  stages{
```

```
    stage("Code"){
```

```
      steps{
```

```
        echo "Cloning the code from github"
```

```
        git url:"https://github.com/RitikPyCode/django-notes-app.git", branch:"main"
```

```
    }  
  }  
  stage("Build"){  
    steps{  
      echo "Building the Images"  
      sh "docker build -t my-note-app ."  
    }  
  }  
  stage("Push to Docker Hub"){  
    steps{  
      echo "Pushing to the code on docker HUB"  
      withCredentials([usernamePassword(credentialsId:"dockerhub123", passwordVariable:  
"dockerhubPass", usernameVariable:"dockerhubUser"))]{  
        sh "docker login -u ${env.dockerhubUser} -p ${env.dockerhubPass}"  
      }  
    }  
  }  
  stage("Deploy"){  
    steps{  
      echo "Deploying the container"  
    }  
  }  
}
```

Stage View

	Code	Build	Push to Docker Hub	Deploy
Average stage times: (Average <u>full</u> run time: ~9s)	747ms	3s	262ms	91ms
#10 Jul 11 03:12 No Changes	689ms	2s	1s	87ms

Now we are going to push our image on docker hub using declarative pipeline.

```
pipeline {
  agent any

  stages{

    stage("Code"){
      steps{
        echo "Cloning the code from github"
        git url:"https://github.com/RitikPyCode/django-notes-app.git", branch:"main"

      }
    }

    stage("Build"){
      steps{
        echo "Building the Images"
        sh "docker build -t my-note-app ."
      }
    }

    stage("Push to Docker Hub"){
```

```

steps{
  echo "Pushing to the code on docker HUB"

  withCredentials([usernamePassword(credentialsId:"dockerhub123", passwordVariable:
"dockerhubPass", usernameVariable:"dockerhubUser"))]{

    sh "docker tag my-note-app ${env.dockerhubUser}/my-note-app:latest" (we have to tag our old
image then add username)

    sh "docker login -u ${env.dockerhubUser} -p ${env.dockerhubPass}"

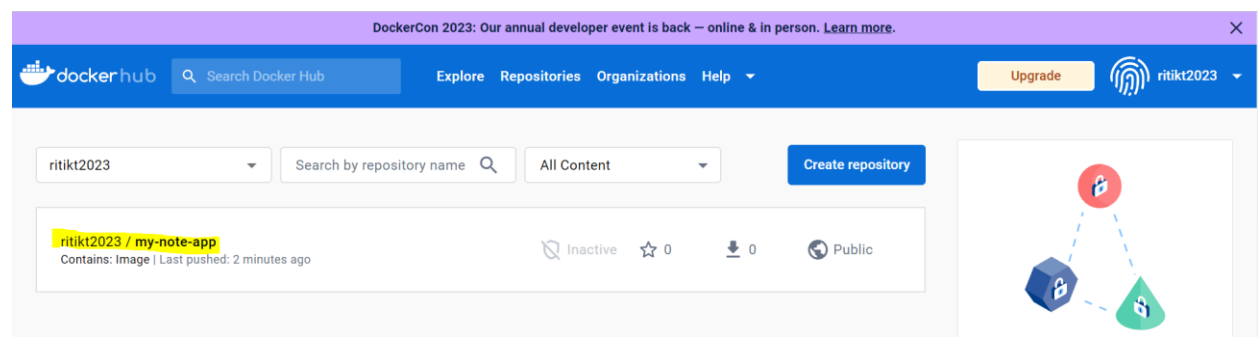
    sh "docker push ${env.dockerhubUser}/my-note-app:latest"

  }
}

stage("Deploy"){
  steps{
    echo "Deploying the container"
  }
}
}

```

Now refresh your docker hub website:



Stage Deploy:

```
sh "docker run -d -p 8000:8000 ritikt2023/my-note-app:latest"
```

```
stage("Deploy"){
  steps{
    echo "Deploying the container"
    sh "docker run -d -p 8000:8000 ritikt2023/my-note-app:latest"
  }
}
```

ritikt2023 > Repositories > my-note-app > General

Using 0 of 1 private repositories. [Get more](#)

General Tags Builds Collaborators Webhooks Settings

General

ritikt2023 / my-note-app

Description

This repository does not have a description [✎](#)

Docker commands [Public View](#)

To push a new tag to this repository,

```
docker push ritikt2023/my-note-app:tagname
```

Last pushed: 7 minutes ago

Add 8000 port where your application will run.

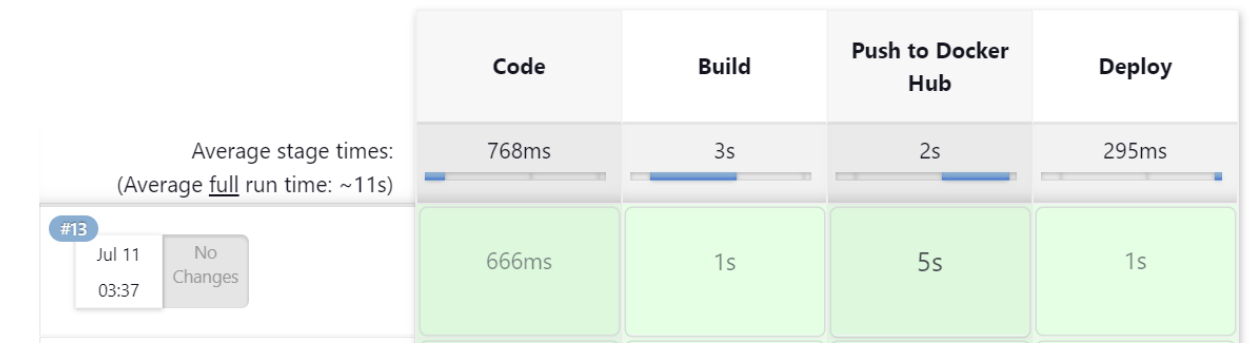
sgr-0818b93bcc461c925

Custom TCP ▼ TCP 8000 Custom ▼ Q

49.36.171.135/32 X

Dele te

Stage View



Application has been deployed. You can check with your public Ip address with 8000 ports. Eg:
<http://18.117.216.230:8000/>

My Notes

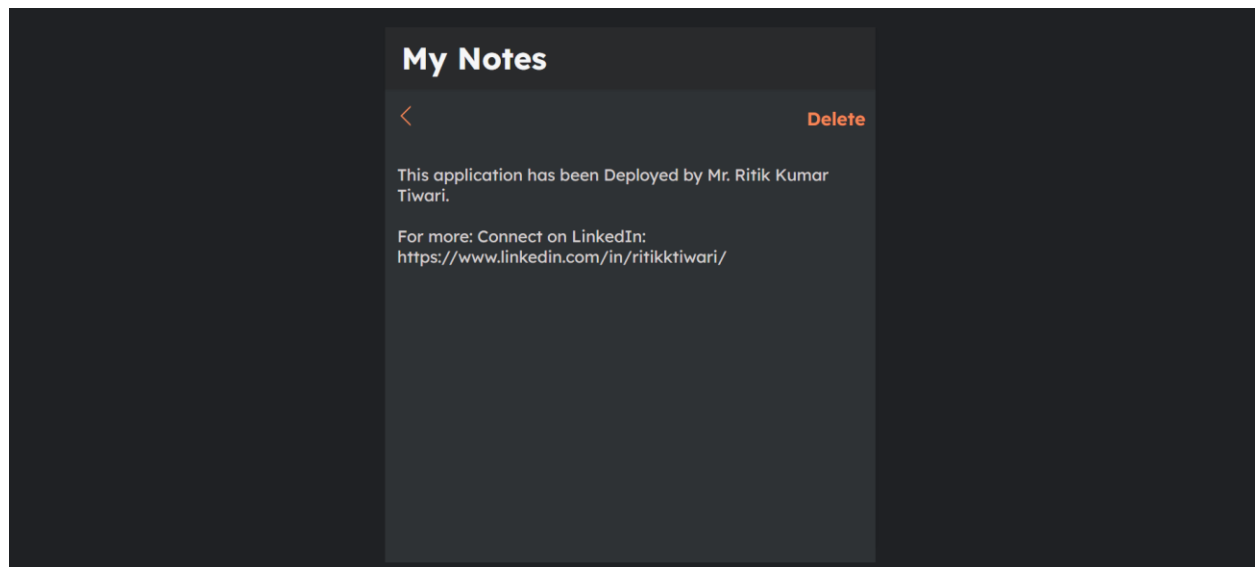
Notes 6

This application has been...
For more: Connect on LinkedIn:
<https://www.linkedin.com/in/ritikkti...>
7/11/2023

Note #5
Does the time not update or something? tests
1/21/2023

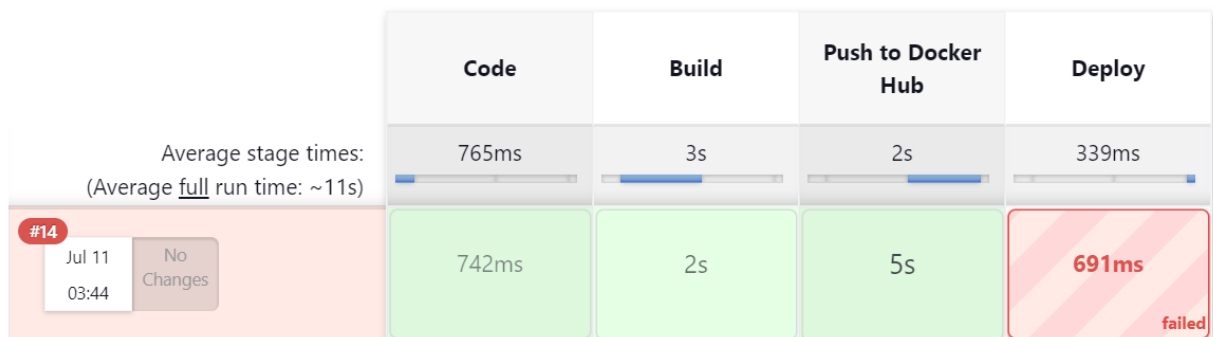
Note #4
Looks like everything is working so far This is a test update
ev...
1/20/2023

The image shows a dark-themed application window titled 'My Notes'. It features a list of notes. The first note is a general announcement with a LinkedIn link. The subsequent notes are numbered and contain specific observations or tests. A plus sign icon is visible at the bottom right, indicating a button to add new notes.



If you are going to build now again then pipeline will get failed. The reason is Port is already allocated

Stage View



✗ Console Output

```
+ docker run -d -p 8000:8000 ritikt2023/my-note-app:latest
d152e277452511e1b64d912d0ee2e256086e0548054d01192bfff60220a02c3b
docker: Error response from daemon: driver failed programming external connectivity on endpoint clever_wescoff
(29b80c912703e74ebb29884312baf342a1504b77b443bdd2cc17099abf5656ee): Bind for 0.0.0.0:8000 failed: port is already
allocated.
```

Docker Compose is a tool that was developed to help define and share multi-container applications. With Compose, we can create a YAML file to define the services and with a single command, can spin everything up or tear it all down.

Install the DOCKER-COMPOSE

`sudo apt-get install docker-compose`

```
ubuntu@ip-172-31-40-193:/$ sudo apt-get install docker-compose
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  python3-docker python3-dockerpty python3-docopt python3-dotenv python3-texttable python3-websocket
The following NEW packages will be installed:
  docker-compose python3-docker python3-dockerpty python3-docopt python3-dotenv python3-texttable python3-websocket
0 upgraded, 7 newly installed, 0 to remove and 75 not upgraded.
Need to get 290 kB of archives.
```

```
ubuntu@ip-172-31-40-193:/$ docker-compose -version
docker-compose version 1.29.2, build unknown
ubuntu@ip-172-31-40-193:/$
```

It's type of yml file where are the things are explained.

Code	Blame	6 lines (6 loc) · 86 Bytes
1	version :	"3.3"
2	services :	
3	web :	
4	build :	.
5	ports :	
6	-	"8000:8000"

Container or image ko down kiya aur phir up kiya inhi code se.

If we are going to run that application with the help of docker-compose what will happen, it will throw error,

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ docker-compose up -d
Creating network "django-notes-app_default" with the default driver
Building web
Sending build context to Docker daemon 8.389MB
Step 1/7 : FROM python:3.9
----> 1d7821476b67
Step 2/7 : WORKDIR /app/backend
----> Using cache
```

for this error we need to kill running container.

```
ERROR: for django-notes-app_web_1 Cannot start service web: driver failed programming external connectivity on endpoint django-notes-app_web_1 (920397336b9aab01f6291ef6accd4034ee1a0e51c6292ad885d17124365203): Bind for 0.0.0.0:8000 failed: port is already allocated
ERROR: for web Cannot start service web: driver failed programming external connectivity on endpoint django-notes-app_web_1 (920397336b9aab01f6291ef6accd4034ee1a0e51c6292ad885d17124365203): Bind for 0.0.0.0:8000 failed: port is already allocated
ERROR: Encountered errors while bringing up the project.
ubuntu@ip-172-31-40-193:~/django-notes-app$
```

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
7d65280937fd   e4call1059a74  "/bin/sh -c 'python ..." 46 minutes ago Up 46 minutes 0.0.0.0:8000->8000/tcp, :::8000->8000/tcp suspicious_cla
rke
ubuntu@ip-172-31-40-193:~/django-notes-app$ docker kill 7d65280937fd
7d65280937fd
ubuntu@ip-172-31-40-193:~/django-notes-app$
```

Now run `docker-compose up -d`, this will decide automatically, image or container name.

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ docker-compose up -d
Starting django-notes-app_web_1 ... done
ubuntu@ip-172-31-40-193:~/django-notes-app$ docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
df250b605130   django-notes-app_web  "/bin/sh -c 'python ..." 5 minutes ago Up 17 seconds 0.0.0.0:8000->8000/tcp, :::8000->8000/tcp django-
notes-app_web_1
ubuntu@ip-172-31-40-193:~/django-notes-app$
```

Now there is no container after down

```
ubuntu@ip-172-31-40-193:~/django-notes-app$ docker-compose down
Stopping django-notes-app_web_1 ... done
Removing django-notes-app_web_1 ... done
Removing network django-notes-app_default
ubuntu@ip-172-31-40-193:~/django-notes-app$ docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
ubuntu@ip-172-31-40-193:~/django-notes-app$
```

This is the solution of above error. Let me add this code in groovy syntax.

```

    }
    stage("Deploy"){
      steps{
        echo "Deploying the container"
        sh "docker-compose down && docker-compose up -d"
      }
    }
  }
}

```

Stage View

	Code	Build	Push to Docker Hub	Deploy
Average stage times: (Average <u>full</u> run time: ~13s)	825ms	3s	3s	680ms
#15 Jul 11 04:30 No Changes	691ms	1s	4s	3s

My Notes

Notes
5

Note #5

Does the time not update or something? tests
1/21/2023

Note #4

Looks like everything is working so far This is a test update ok
ev...
1/20/2023

Note #3

This is a new note now REACT is integrated with Django!
1/20/2023

Note #2

Lets change the little bit docker-compose file: build replace with image, now we are taking images from docker hub.

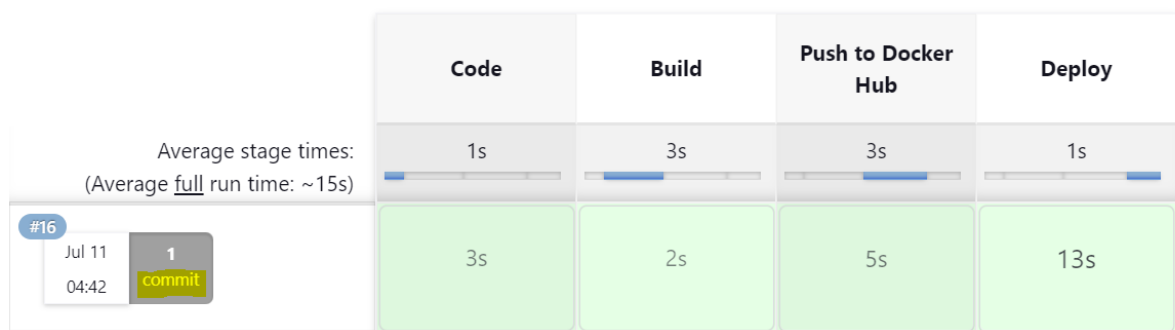
django-notes-app / docker-compose.yml in main

Edit Preview

```
1 version : "3.3"
2 services :
3   web :
4     image : ritikt2023/my-note-app:latest
5     ports :
6       - "8000:8000"
7
```

We have committed few things, now you can run as much as possible, never getting error.

Stage View



This is called robust pipeline.

A Robust Pipeline = Predictability + Power + Profit. The foundation of building a pipeline is about blocking out the time and being committed to focused prospecting.

.....

Now let's try our whole code will come from GitHub. Through adding file **Jenkins files**

Copy whole pipeline code, go to GitHub> add new file> paste same code as Jenkins file> commit it.

Then:

Dashboard > notes-aap-cicd > Configuration

Configure

- General
- Advanced Project Options
- Pipeline

Pipeline

Definition

Pipeline script from SCM

SCM ?

Git

Repositories ?

Repository URL ?

https://github.com/RitikPyCode/django-notes-app.git

Credentials ?

ritikt2023/***** (This is my dockerhub credentials)

Save Apply

Dashboard > notes-aap-cicd > Configuration

Configure

- General
- Advanced Project Options
- Pipeline

Credentials ?

ritikt2023/***** (This is my dockerhub credentials)

Add

Advanced ^ Edited

Name ?

Note-App

Refspec ?

Save Apply

Script Path ?

Jenkins file

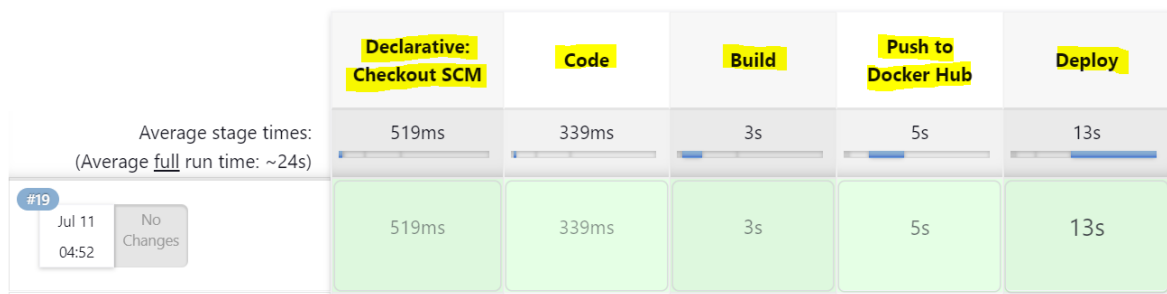
☒ Lightweight checkout ?

[Pipeline Syntax](#)

Save

Apply

Stage View



Application has been deployed successfully.

Webhook concept:

A webhook is a mechanism by which GitHub notifies Jenkins of changes to a repository. Jenkins can then automatically build and test the code in response to the webhook notification.

First edit your inbound rule port no. 8080 , My Ip to Anywhere.

sgr-0bde6acf51a41220f Custom TCP ▼ TCP 8080 Anywh... ▼ Q 0.0.0.0/0 ✕ Delete

Add rule

Cancel Preview changes Save rules

☰ RitikPyCode / django-notes-app 🔍 Type to search |> + ▼ ⌚ 🔍 📧 👤

<> Code 🔗 Pull requests ⌚ Actions 📁 Projects 📖 Wiki 🛡 Security 📊 Insights ⚙ Settings

⚙ General

Access

👤 Collaborators

🔊 Moderation options ▼

Code and automation

🌿 Branches

🏷 Tags

🔧 Rules Beta ▼

⌚ Actions ▼

🔗 Webhooks

📁 Environments

📁 Codespaces

General

Repository name

django-notes-app Rename

☐ Template repository

Template repositories let users generate new repositories with the same directory structure and files. [Learn more about template repositories.](#)

☐ Require contributors to sign off on web-based commits

Enabling this setting will require contributors to sign off on commits made through GitHub's web interface. Signing off is a way for contributors to affirm that their commit complies with the repository's terms, commonly the [Developer Certificate of Origin \(DCO\)](#). [Learn more about signing off on commits.](#)

Default branch

The default branch is considered the "base" branch in your repository, against which all pull requests and code commits are automatically made, unless you specify a different branch.

Jenkins URL in Payload URL section:

Settings

Recent Deliveries

We'll send a POST request to the URL below with details of any subscribed events. You can format you'd like to receive (JSON, `x-www-form-urlencoded`, *etc*). More information can be [documentation](#).

Payload URL *

`http://18.117.216.230:8080/github-webhook/`

Content type

`application/x-www-form-urlencoded` ▾

Secret

Which events would you like to trigger this webhook?

- ☐ Just the push event.
- ☒ Send me **everything**.
- ☐ Let me select individual events.

Which events would you like to trigger this webhook?

- ☐ Just the push event.
- ☒ Send me **everything**.
- ☐ Let me select individual events.

☒ **Active**

We will deliver event details when this hook is triggered.

Add webhook

Webhooks

Add webhook

Webhooks allow external services to be notified when certain events happen. When the specified events happen, we'll send a POST request to each of the URLs you provide. Learn more in our [Webhooks Guide](#).

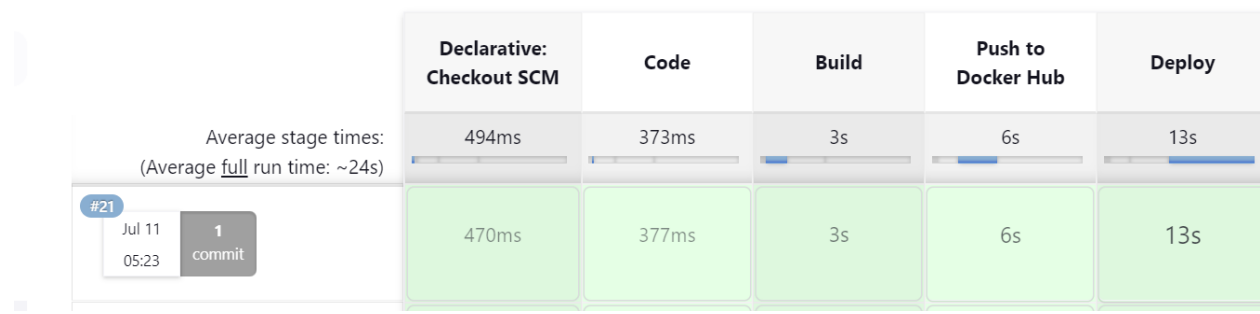
✓ http://18.117.216.230:8080/github-... (all events)

Edit

Delete

Now webhook is configured. If you change any think in code and commit it... that will be triggered automatically, it's called continuous deployment. With out clicking on build now.

Stage View



Author: Ritik Kumar Tiwari

LinkedIn: <https://www.linkedin.com/in/ritikktiwari/>