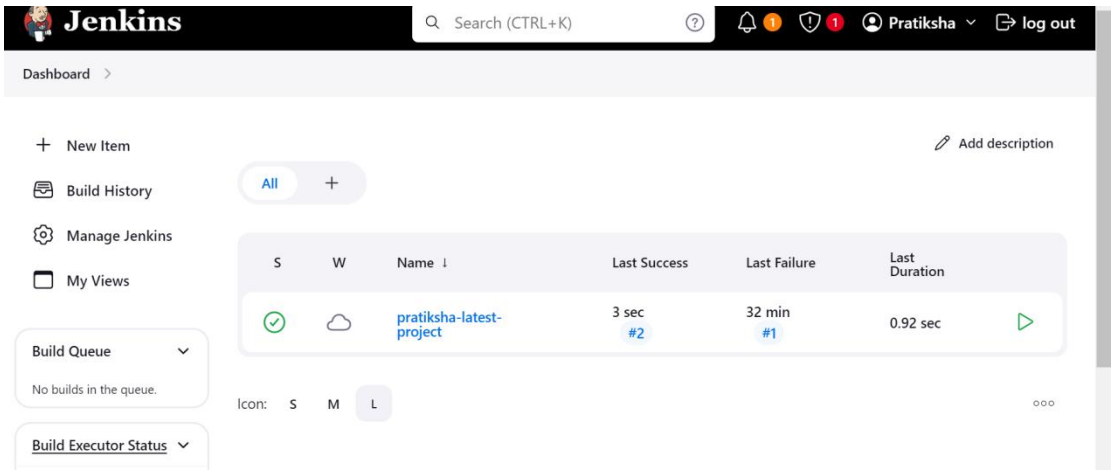
DevOps Project

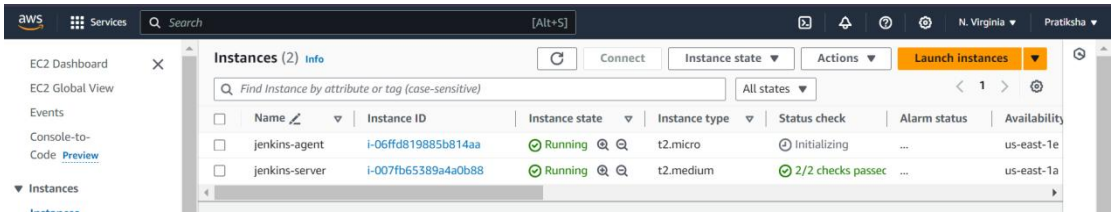


Requirements : CI/CD pipeline System

- Git - local version control system.
- GitHub - As Distributed version control system.
- Jenkins - Continous Integration tool.
- Anisible - Configuration Management & Deployment tool.
- Docker -Containerization

✧ Setup Jenkins Server

- Setup a Linux EC2 instance
- Install Java
- Install Jenkins• Start Jenkins
- Access Web UI on port 8080

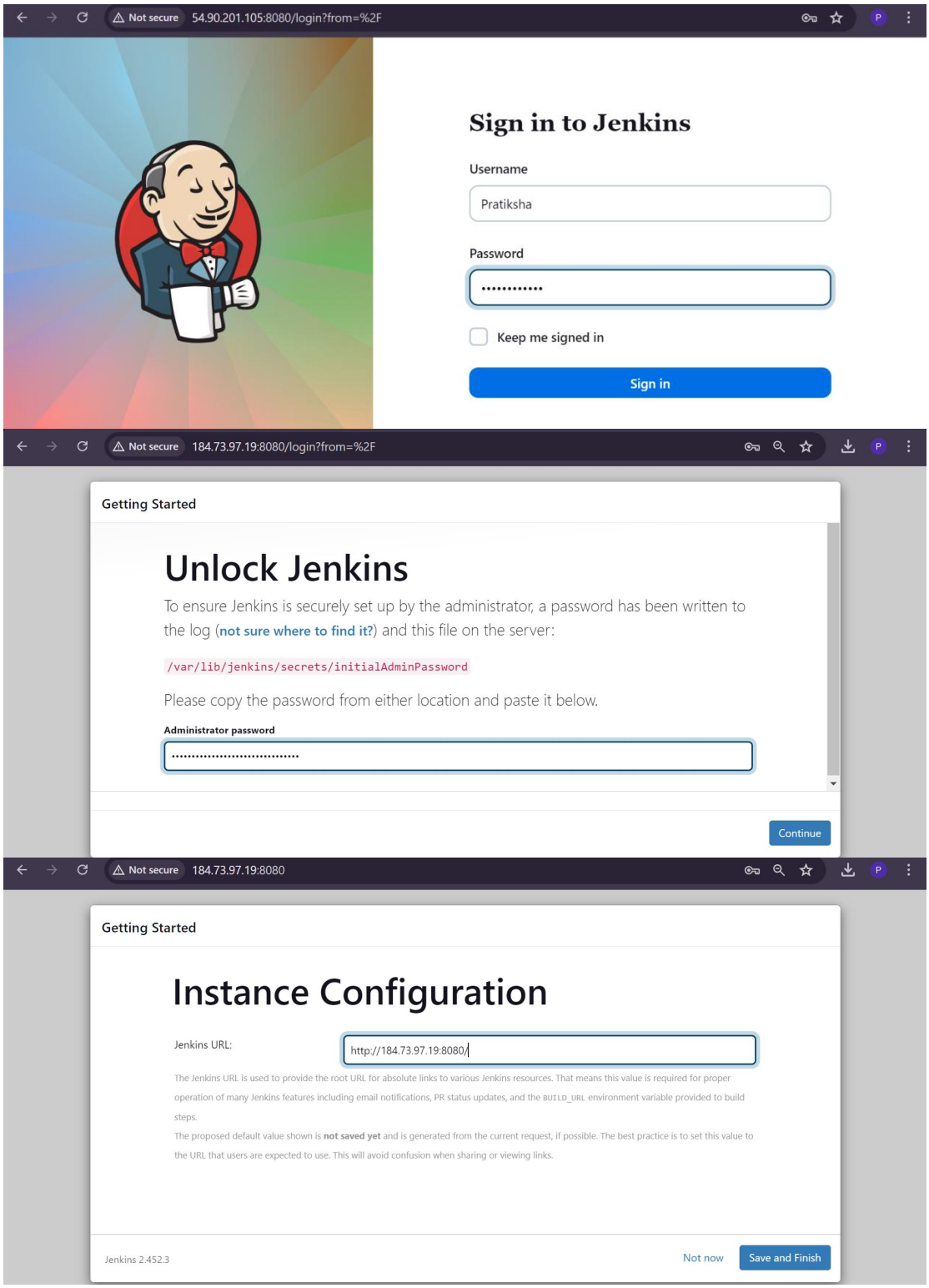


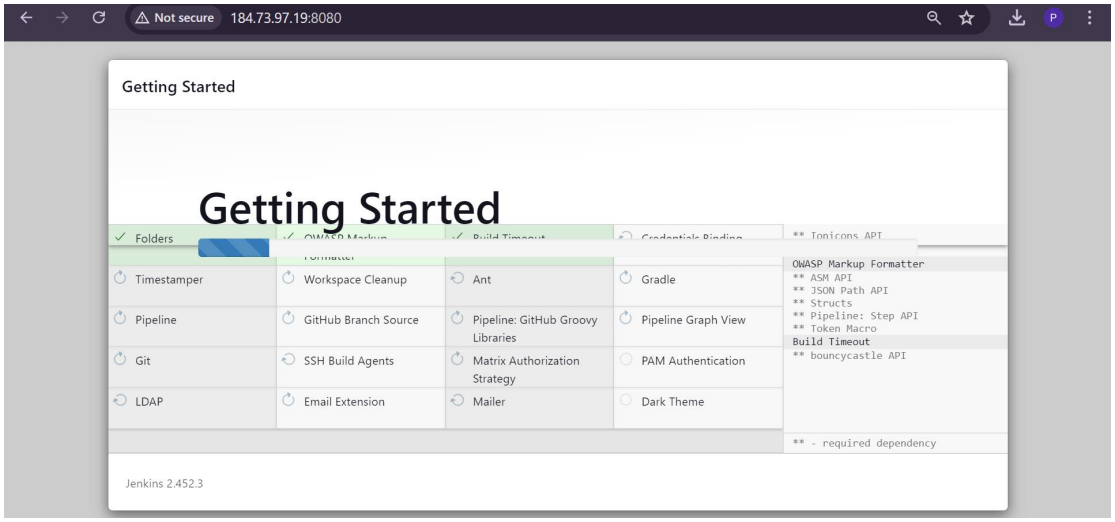
Installation of Jenkins:

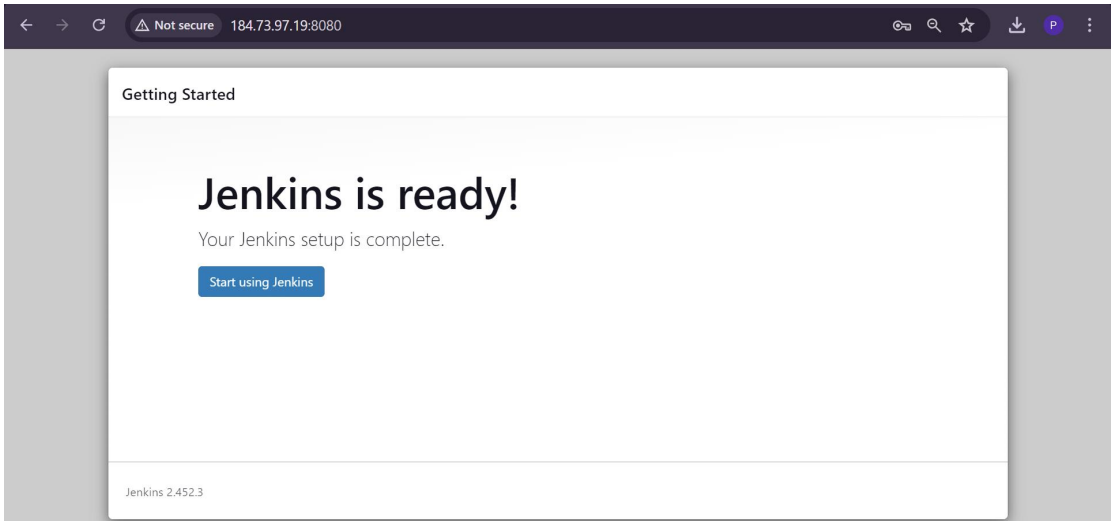
```
Installed products updated.

Installed:
  gpm-libs-1.20.7-29.el9.x86_64                          unzip-6.0-56.el9.x86_64
  vim-common-2:8.2.2637-20.el9_1.x86_64                  vim-enhanced-2:8.2.2637-20.el9_1.x86_64
  vim-filesystem-2:8.2.2637-20.el9_1.noarch              wget-1.21.1-7.el9.x86_64

Complete!
[root@ip-172-31-34-69 ~]#
[root@ip-172-31-34-69 ~]# wget -O /etc/yum.repos.d/jenkins.repo http://pkg.jenkins-ci.org/redhat-stable/jenkins.repo
--2024-07-27 11:55:57--  http://pkg.jenkins-ci.org/redhat-stable/jenkins.repo
Resolving pkg.jenkins-ci.org (pkg.jenkins-ci.org)... 52.202.51.185
Connecting to pkg.jenkins-ci.org (pkg.jenkins-ci.org)|52.202.51.185|:80... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://pkg.jenkins.io/redhat-stable/jenkins.repo [following]
--2024-07-27 11:55:57--  https://pkg.jenkins.io/redhat-stable/jenkins.repo
Resolving pkg.jenkins.io (pkg.jenkins.io)... 146.75.38.133, 2a04:4e42:79::645
Connecting to pkg.jenkins.io (pkg.jenkins.io)|146.75.38.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 85
Saving to: ‘/etc/yum.repos.d/jenkins.repo’

/etc/yum.repos.d/jenkins.rep 100%[=========================================>]      85  --.-KB/s    in 0s

2024-07-27 11:55:58 (2.83 MB/s) - ‘/etc/yum.repos.d/jenkins.repo’ saved [85/85]

[root@ip-172-31-34-69 ~]#  rpm --import https://pkg.jenkins.io/redhat-stable/jenkins.io.key
```

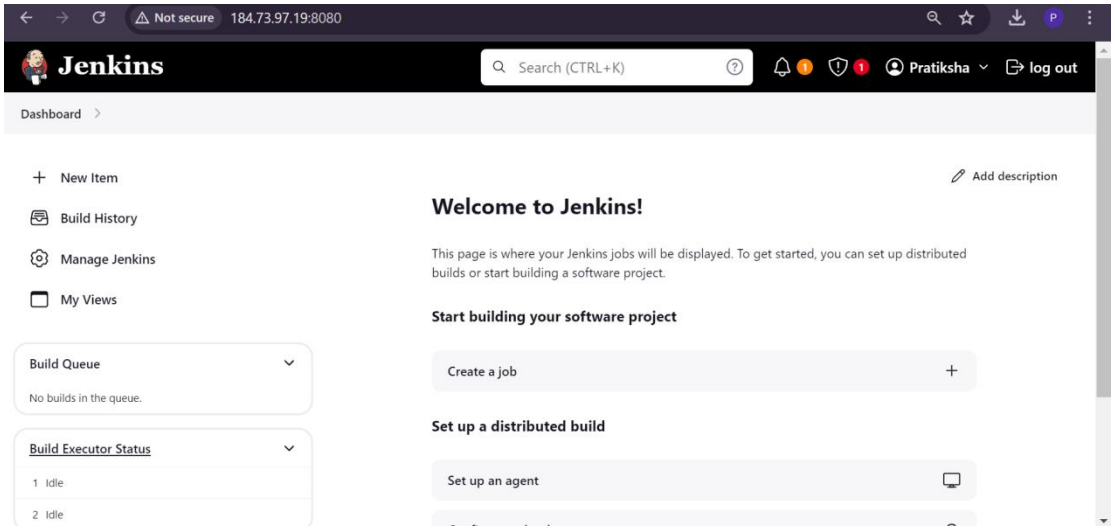
```
root@ip-172-31-34-69:~
[root@ip-172-31-34-69 ~]# yum install jenkins -y
Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered with an entitlement server. You can use "rhc" or "subscription-manager" to register.

Jenkins-stable                                                                  190 kB/s |  29 kB     00:00
Dependencies resolved.
================================================================================================================
 Package                 Architecture            Version                       Repository                 Size
================================================================================================================
Installing:
 jenkins                 noarch                  2.452.3-1.1                   jenkins                    89 M

Transaction Summary
================================================================================================================
Install  1 Package

Total download size: 89 M
Installed size: 89 M
Downloading Packages:
jenkins-2.452.3-1.1.noarch.rpm                                                   29 MB/s |  89 MB     00:03
----------------------------------------------------------------------------------------------------------------
Total                                                                            29 MB/s |  89 MB     00:03
Running transaction check
Transaction check succeeded.
Running transaction test
```

Access Web UI on port 8080:

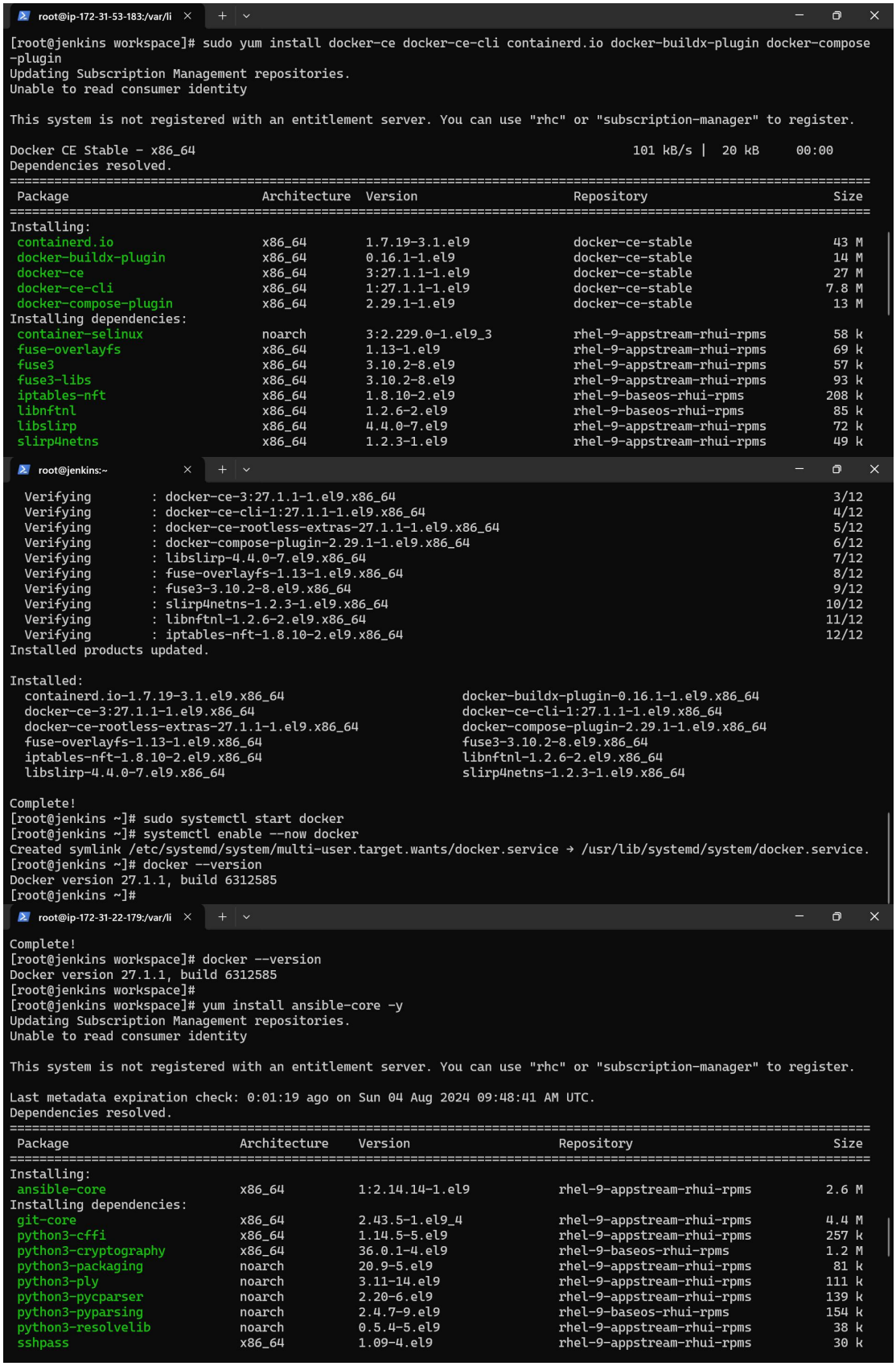



Not secure
184.73.97.19:8080
Getting Started
Getting Started
Folders
Timestamper
Workspace Cleanup
Ant
Gradle
Pipeline
GitHub Branch Source
Pipeline: GitHub Groovy Libraries
Pipeline Graph View
Git
SSH Build Agents
Matrix Authorization Strategy
PAM Authentication
LDAP
Email Extension
Mailer
Dark Theme
OWASP Markup Formatter
** ASM API
** JSON Path API
** Structs
** Pipeline: Step API
** Token Macro
Build Timeout
** bouncycastle API
** - required dependency
Jenkins 2.452.3


Not secure
184.73.97.19:8080
Getting Started
Jenkins is ready!
Your Jenkins setup is complete.
Start using Jenkins
Jenkins 2.452.3


Not secure
184.73.97.19:8080
Jenkins
Search (CTRL+K)
Pratiksha
log out
Dashboard
New Item
Build History
Manage Jenkins
My Views
Build Queue
No builds in the queue.
Build Executor Status
1 Idle
2 Idle
Add description
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

Installation of Ansible and Docker:



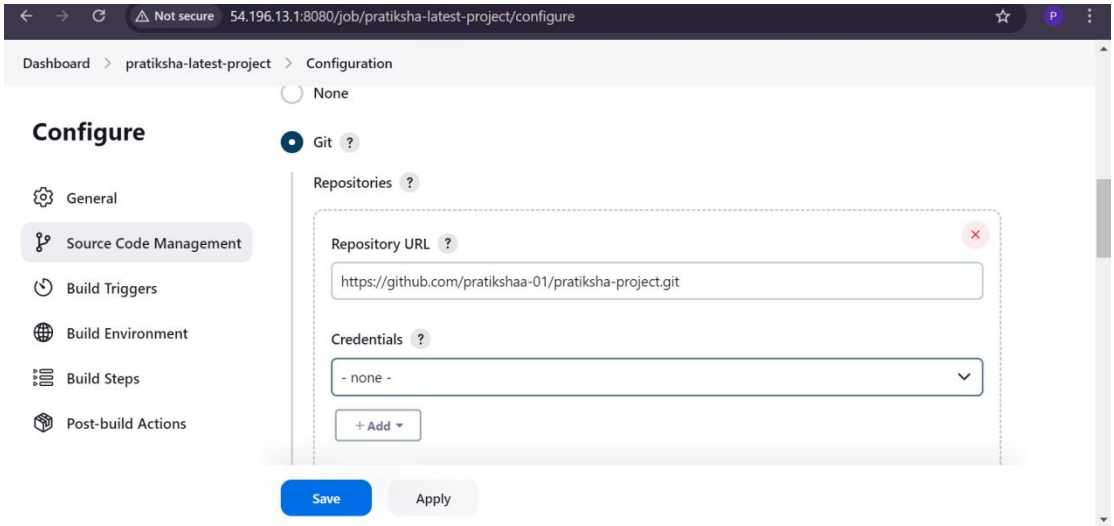
Dockerfile:

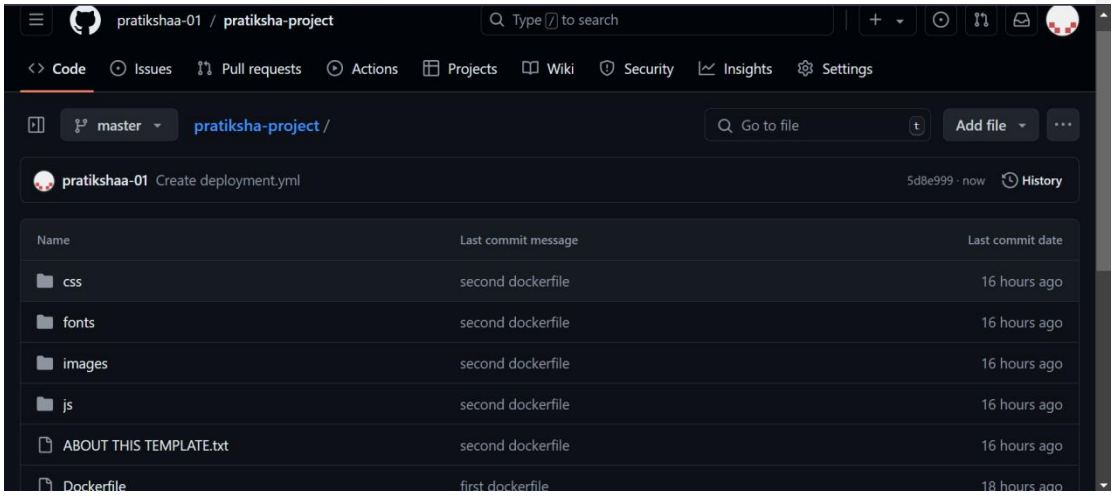
root@ip-172-31-22-179:/var/li

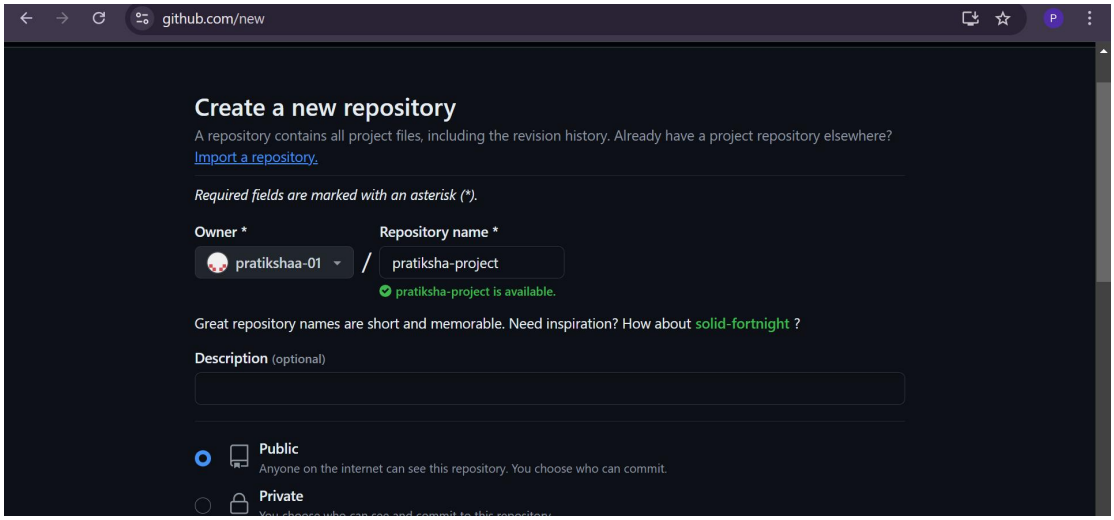
```
FROM    redhat/ubi9
RUN     yum install httpd -y
COPY . /var/www/html
EXPOSE  80
CMD     ["httpd", "-DFOREGROUND"]
```

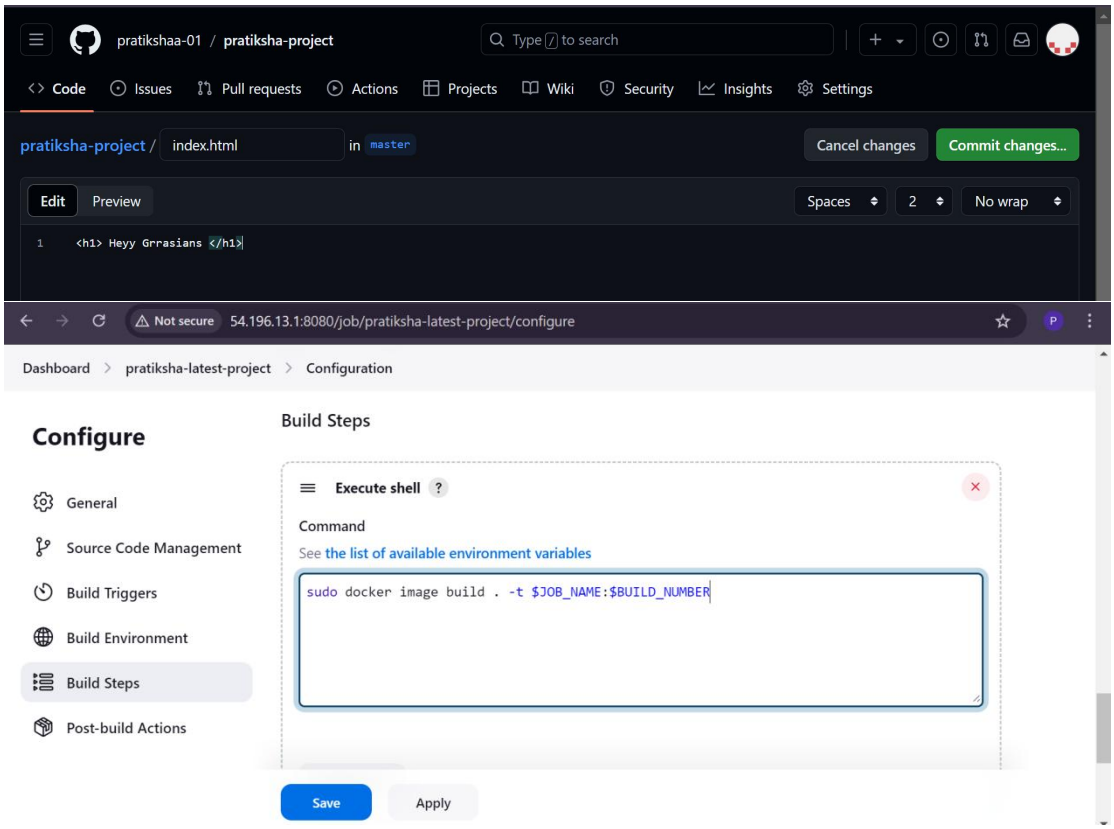
root@ip-172-31-22-179:/var/li

```
[root@jenkins pratiksha-project]# docker image build -t pratu-image .
[+] Building 12.5s (8/8) FINISHED                                                docker:default
 => [internal] load build definition from Dockerfile                                      0.0s
 => => transferring dockerfile: 198B                                                      0.0s
 => [internal] load metadata for docker.io/redhat/ubi9:latest                             0.4s
 => [internal] load .dockerignore                                                         0.0s
 => => transferring context: 2B                                                           0.0s
 => [1/3] FROM docker.io/redhat/ubi9:latest@sha256:1ee4d8c50d14d9c9e9229d9a039d793fcbc9aa803806d194c957a397cf  6.2s
 => => resolve docker.io/redhat/ubi9:latest@sha256:1ee4d8c50d14d9c9e9229d9a039d793fcbc9aa803806d194c957a397cf  0.0s
 => => sha256:1ee4d8c50d14d9c9e9229d9a039d793fcbc9aa803806d194c957a397cf1d2b17 1.47kB / 1.47kB  0.0s
 => => sha256:763f30167f92ec2af02bf7f09e75529de66e98f05373b88bef3c631cdcc39ad8 429B / 429B      0.0s
 => => sha256:159a1e67312ef50059357047ebe2a365afea904504fca9561abb385ecd942d62 6.43kB / 6.43kB  0.0s
 => => sha256:cc296d75b61273dcb0db7527435a4c3bd03f7723d89a94d446d3d52849970460 79.43MB / 79.43MB  1.2s
 => => extracting sha256:cc296d75b61273dcb0db7527435a4c3bd03f7723d89a94d446d3d52849970460        4.8s
 => [internal] load build context                                                         0.0s
 => => transferring context: 23.23kB                                                      0.0s
 => [2/3] RUN YUM install httpd -y                                                        5.4s
 => [3/3] COPY . /var/www/html                                                            0.1s
 => exporting to image                                                                    0.3s
 => => exporting layers                                                                   0.3s
 => => writing image sha256:7a100ad9184bde6128b86d878e814a8a6bec6c22b6021bfaa27563c4c7ecb422  0.0s
 => => naming to docker.io/library/pratu-image                                            0.0s
[root@jenkins pratiksha-project]#
```



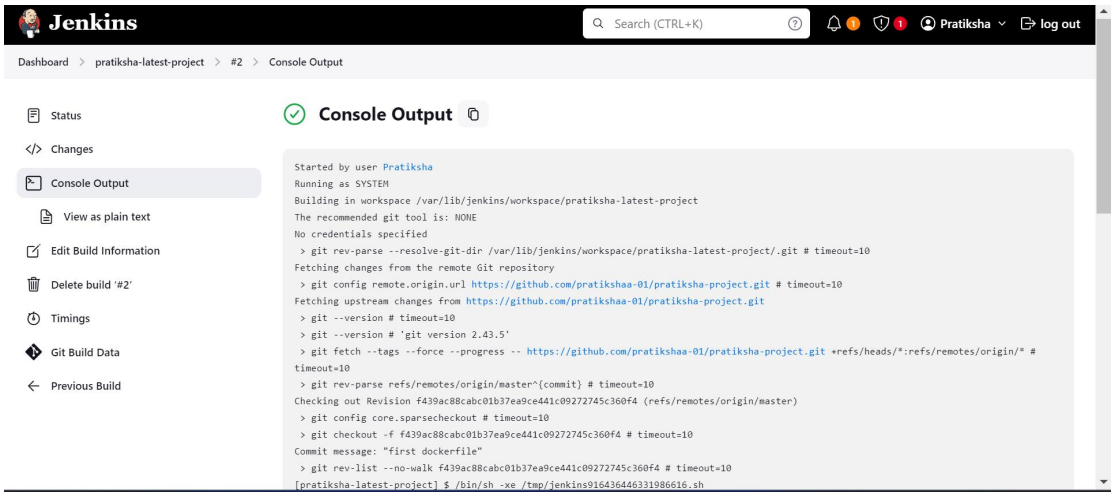


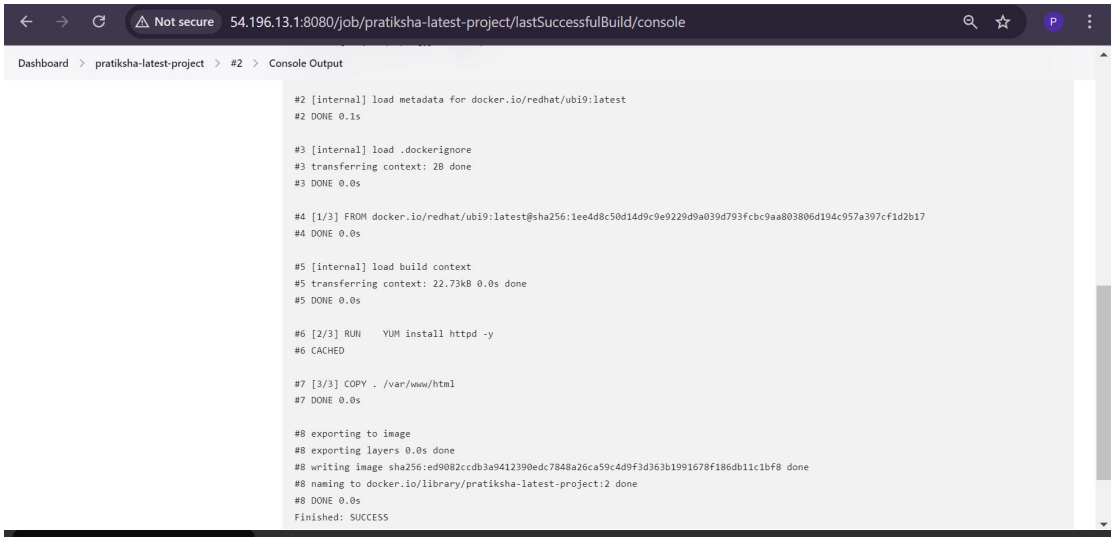

github.com/new
Create a new repository
A repository contains all project files, including the revision history. Already have a project repository elsewhere?
Import a repository.
Required fields are marked with an asterisk (*).
Owner *
pratikshaa-01
Repository name *
pratiksha-project
pratiksha-project is available.
Great repository names are short and memorable. Need inspiration? How about solid-fortnight ?
Description (optional)
Public
Anyone on the internet can see this repository. You choose who can commit.
Private

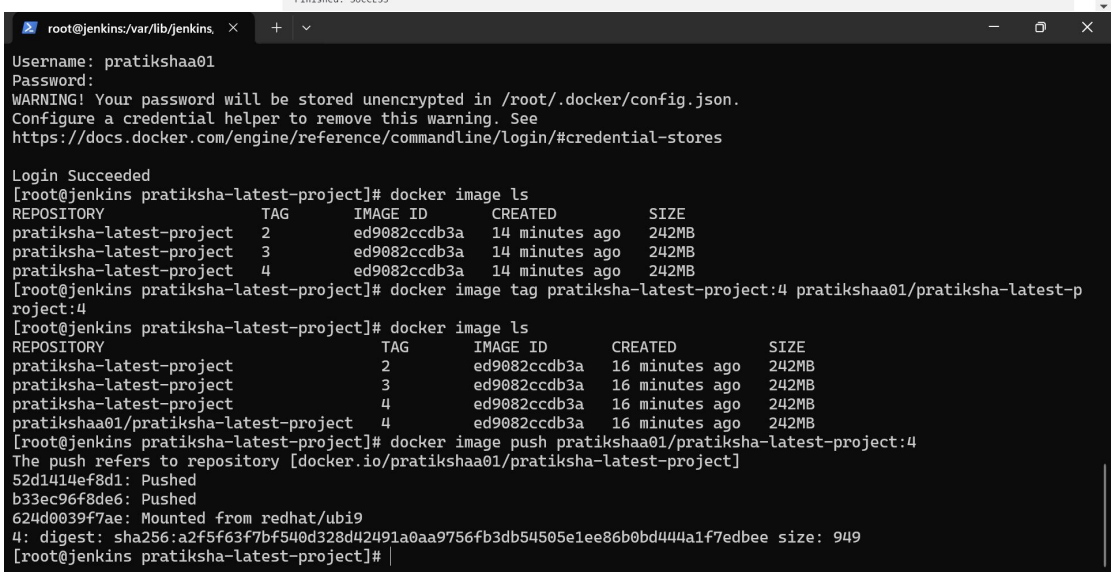

pratikshaa-01 / pratiksha-project
Type / to search
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
pratiksha-project / index.html in master
Cancel changes
Commit changes...
Edit
Preview
Spaces
2
No wrap
1 <h1> Heyy Grrasians </h1>
Not secure
54.196.13.1:8080/job/pratiksha-latest-project/configure
Dashboard > pratiksha-latest-project > Configuration
Configure
General
Source Code Management
Build Triggers
Build Environment
Build Steps
Post-build Actions
Build Steps
Execute shell
Command
See the list of available environment variables
sudo docker image build . -t $JOB_NAME:$BUILD_NUMBER
Save
Apply

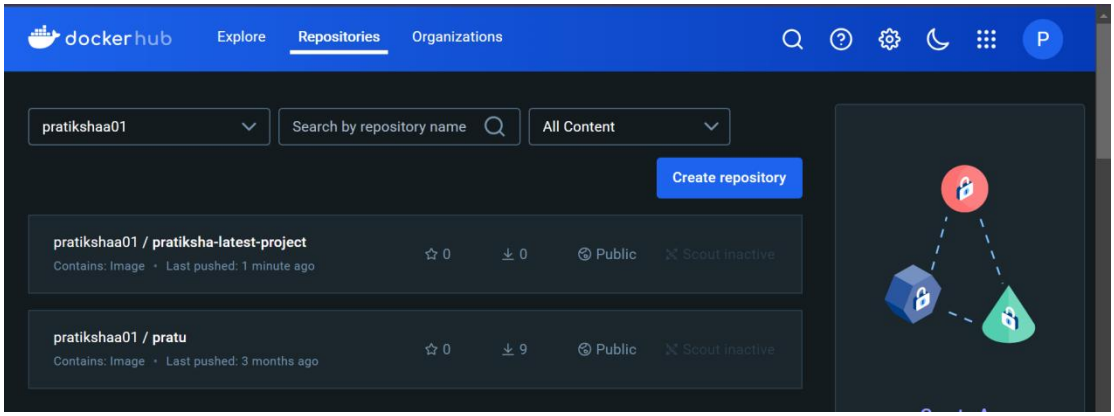
```
root@ip-172-31-22-179:/var/li
REPOSITORY   TAG       IMAGE ID   CREATED   SIZE
[root@jenkins pratiksha-project]# cd ..
[root@jenkins workspace]# ls
Pratiksha_Job  pratiksha-project
[root@jenkins workspace]# cd pratiksha-project/
[root@jenkins pratiksha-project]# ls
Dockerfile  index.html
[root@jenkins pratiksha-project]# git status
On branch master
Your branch is up to date with 'origin/master'.

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        Dockerfile

nothing added to commit but untracked files present (use "git add" to track)
[root@jenkins pratiksha-project]# git add .
[root@jenkins pratiksha-project]# git commit -m "first dockerfile"
[master f439ac8] first dockerfile
 Committer: root <root@jenkins.com>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly. Run the
following command and follow the instructions in your editor to edit
your configuration file:

    git config --global --edit

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

 1 file changed, 6 insertions(+)
```

```
root@ip-172-31-22-179:/var/li
Username for 'https://github.com': pratikshaa-1
Password for 'https://pratikshaa-1@github.com':
[root@jenkins pratiksha-project]# git push origin master
Username for 'https://github.com': pratikshaa-01
Password for 'https://pratikshaa-01@github.com':
remote: Support for password authentication was removed on August 13, 2021.
remote: Please see https://docs.github.com/get-started/getting-started-with-git/about-remote-repositories#cloning-wi
th-https-urls for information on currently recommended modes of authentication.
fatal: Authentication failed for 'https://github.com/pratikshaa-01/pratiksha-project.git/'
[root@jenkins pratiksha-project]# git push origin master
Username for 'https://github.com': pratikshaa-01
Password for 'https://pratikshaa-01@github.com':
remote: Permission to pratikshaa-01/pratiksha-project.git denied to pratikshaa-01.
fatal: unable to access 'https://github.com/pratikshaa-01/pratiksha-project.git/': The requested URL returned error:
 403
[root@jenkins pratiksha-project]# git push origin master
Username for 'https://github.com': pratikshaa-01
Password for 'https://pratikshaa-01@github.com':
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 2 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 377 bytes | 377.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/pratikshaa-01/pratiksha-project.git
   ba5d1bf..f439ac8  master -> master
[root@jenkins pratiksha-project]#
```



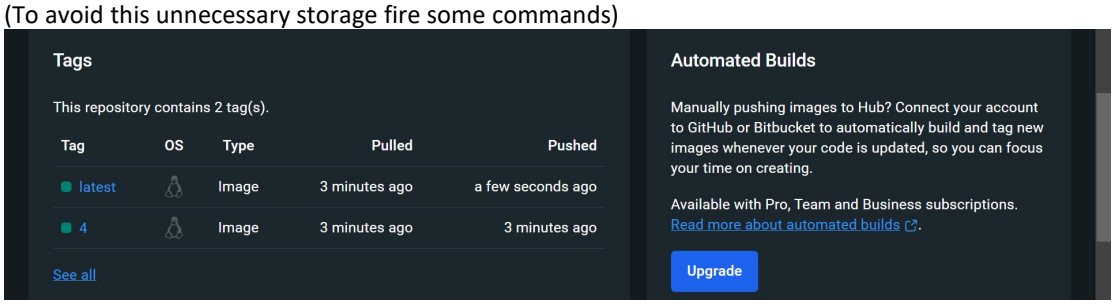

Not secure
54.196.13.1:8080/job/pratiksha-latest-project/lastSuccessfulBuild/console
Dashboard > pratiksha-latest-project > #2 > Console Output
#2 [internal] load metadata for docker.io/redhat/ubi9:latest
#2 DONE 0.1s
#3 [internal] load .dockerignore
#3 transferring context: 2B done
#3 DONE 0.0s
#4 [1/3] FROM docker.io/redhat/ubi9:latest@sha256:1ee4d8c50d14d9c9e9229d9a039d793fcbc9aa803806d194c957a397cf1d2b17
#4 DONE 0.0s
#5 [internal] load build context
#5 transferring context: 22.73kB 0.0s done
#5 DONE 0.0s
#6 [2/3] RUN YUM install httpd -y
#6 CACHED
#7 [3/3] COPY . /var/www/html
#7 DONE 0.0s
#8 exporting to image
#8 exporting layers 0.0s done
#8 writing image sha256:ed9082ccdb3a9412390edc7848a26ca59c4d9f3d363b1991678f186db11c1bf8 done
#8 naming to docker.io/library/pratiksha-latest-project:2 done
#8 DONE 0.0s
Finished: SUCCESS

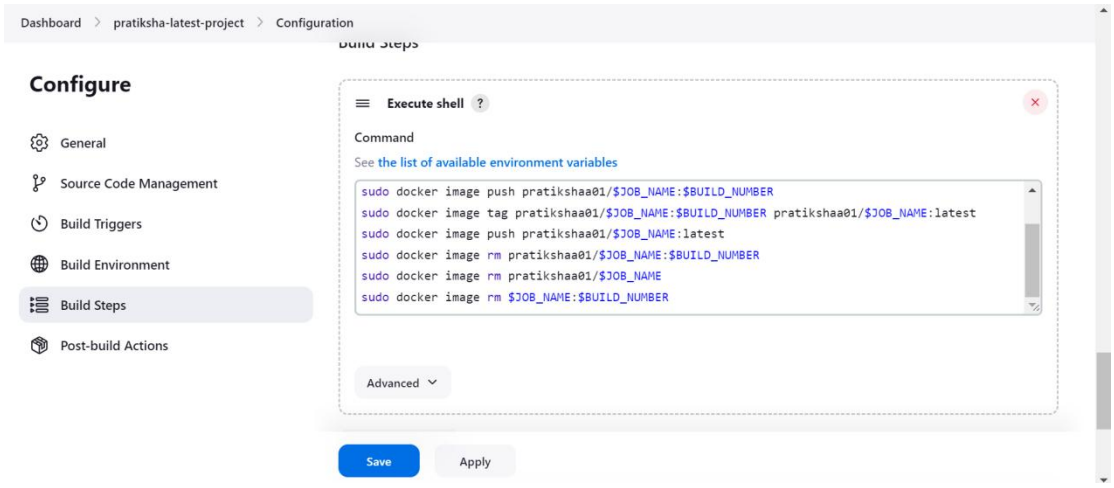

root@jenkins:/var/lib/jenkins
Username: pratikshaa01
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credential-stores
Login Succeeded
[root@jenkins pratiksha-latest-project]# docker image ls
REPOSITORY TAG IMAGE ID CREATED SIZE
pratiksha-latest-project 2 ed9082ccdb3a 14 minutes ago 242MB
pratiksha-latest-project 3 ed9082ccdb3a 14 minutes ago 242MB
pratiksha-latest-project 4 ed9082ccdb3a 14 minutes ago 242MB
[root@jenkins pratiksha-latest-project]# docker image tag pratiksha-latest-project:4 pratikshaa01/pratiksha-latest-project:4
[root@jenkins pratiksha-latest-project]# docker image ls
REPOSITORY TAG IMAGE ID CREATED SIZE
pratiksha-latest-project 2 ed9082ccdb3a 16 minutes ago 242MB
pratiksha-latest-project 3 ed9082ccdb3a 16 minutes ago 242MB
pratiksha-latest-project 4 ed9082ccdb3a 16 minutes ago 242MB
pratikshaa01/pratiksha-latest-project 4 ed9082ccdb3a 16 minutes ago 242MB
[root@jenkins pratiksha-latest-project]# docker image push pratikshaa01/pratiksha-latest-project:4
The push refers to repository [docker.io/pratikshaa01/pratiksha-latest-project]
52d1414ef8d1: Pushed
b33ec96f8de6: Pushed
624d0039f7ae: Mounted from redhat/ubi9
4: digest: sha256:a2f5f63f7bf540d328d42491a0aa9756fb3db54505e1ee86b0bd444a1f7edbee size: 949
[root@jenkins pratiksha-latest-project]#


dockerhub
Explore
Repositories
Organizations
P
pratikshaa01
Search by repository name
All Content
Create repository
pratikshaa01 / pratiksha-latest-project
Contains: Image • Last pushed: 1 minute ago
0
0
Public
Scout inactive
pratikshaa01 / pratu
Contains: Image • Last pushed: 3 months ago
0
9
Public
Scout inactive

```
root@jenkins:/var/lib/jenkins
[root@jenkins pratiksha-latest-project]# docker image ls
REPOSITORY                                TAG       IMAGE ID       CREATED          SIZE
pratikshaa01/pratiksha-latest-project   4         ed9082ccdb3a   18 minutes ago   242MB
pratiksha-latest-project                2         ed9082ccdb3a   18 minutes ago   242MB
pratiksha-latest-project                3         ed9082ccdb3a   18 minutes ago   242MB
pratiksha-latest-project                4         ed9082ccdb3a   18 minutes ago   242MB
[root@jenkins pratiksha-latest-project]# docker image tag pratiksha-latest-project:4 pratikshaa01/pratiksha-latest-p
roject:latest
[root@jenkins pratiksha-latest-project]# docker image ls
REPOSITORY                                TAG       IMAGE ID       CREATED          SIZE
pratiksha-latest-project                2         ed9082ccdb3a   19 minutes ago   242MB
pratiksha-latest-project                3         ed9082ccdb3a   19 minutes ago   242MB
pratiksha-latest-project                4         ed9082ccdb3a   19 minutes ago   242MB
pratikshaa01/pratiksha-latest-project   4         ed9082ccdb3a   19 minutes ago   242MB
pratikshaa01/pratiksha-latest-project   latest    ed9082ccdb3a   19 minutes ago   242MB
[root@jenkins pratiksha-latest-project]# docker image push pratikshaa01/pratiksha-latest-project:latest
The push refers to repository [docker.io/pratikshaa01/pratiksha-latest-project]
52d1414ef8d1: Layer already exists
b33ec96f8de6: Layer already exists
624d0039f7ae: Layer already exists
latest: digest: sha256:a2f5f63f7bf540d328d42491a0aa9756fb3db54505e1ee86b0bd444a1f7edbee size: 949
[root@jenkins pratiksha-latest-project]#
```

(To avoid this unnecessary storage fire some commands)

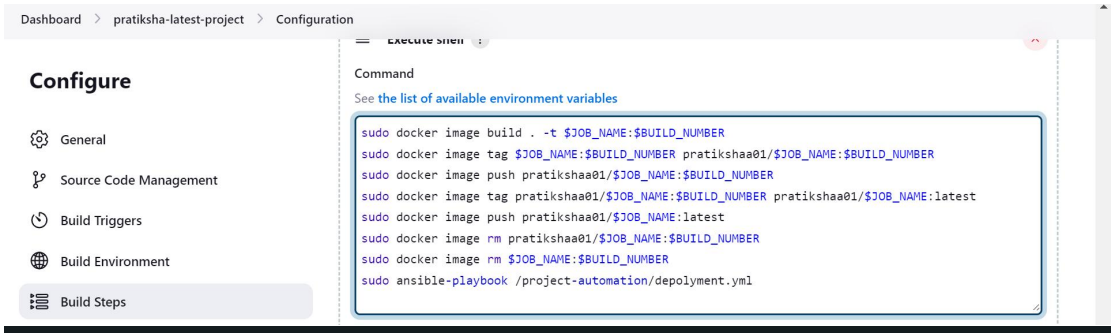


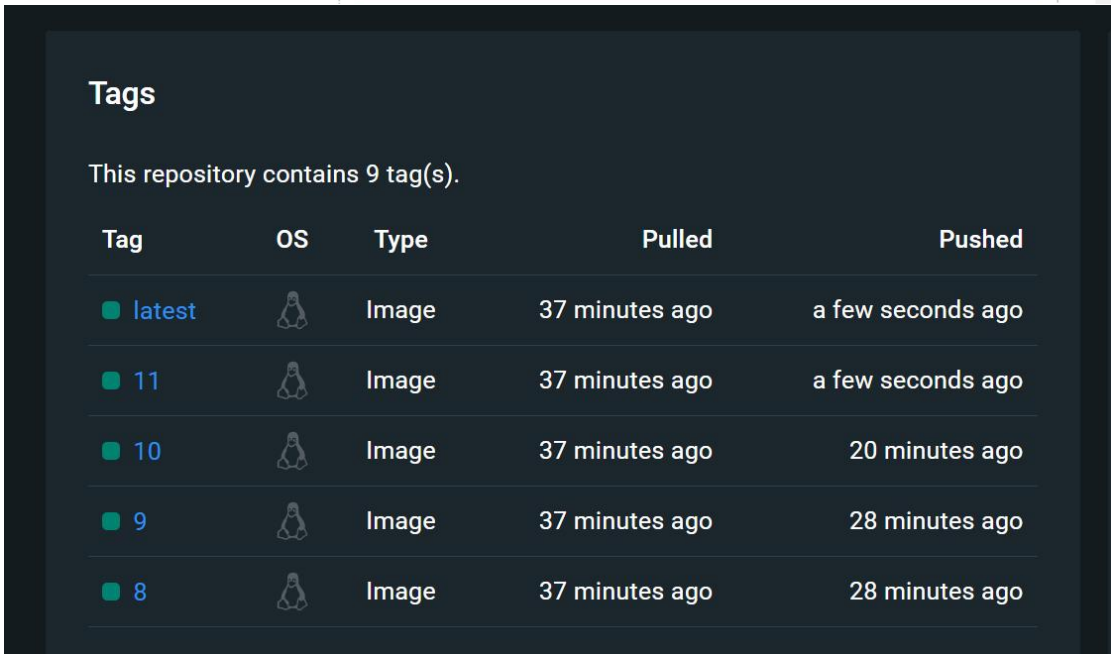


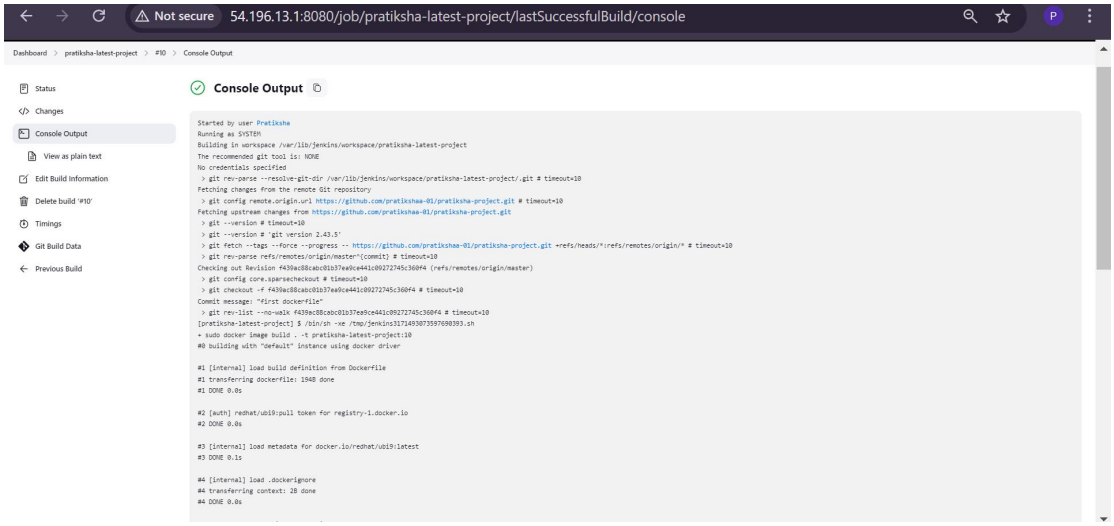

```
root@jenkins:/project-autom
---
- name: Deploying new webapp using last image
  hosts: localhost
  tasks:
    - name: forcefully removing running container
      shell:
        cmd: docker container rm --force webapp
    - name: running a new conatiner with latest image
      shell:
        cmd: docker container run -d --name webapp -p 80:80 pratikshaa01/pratiksha-latest-project
```

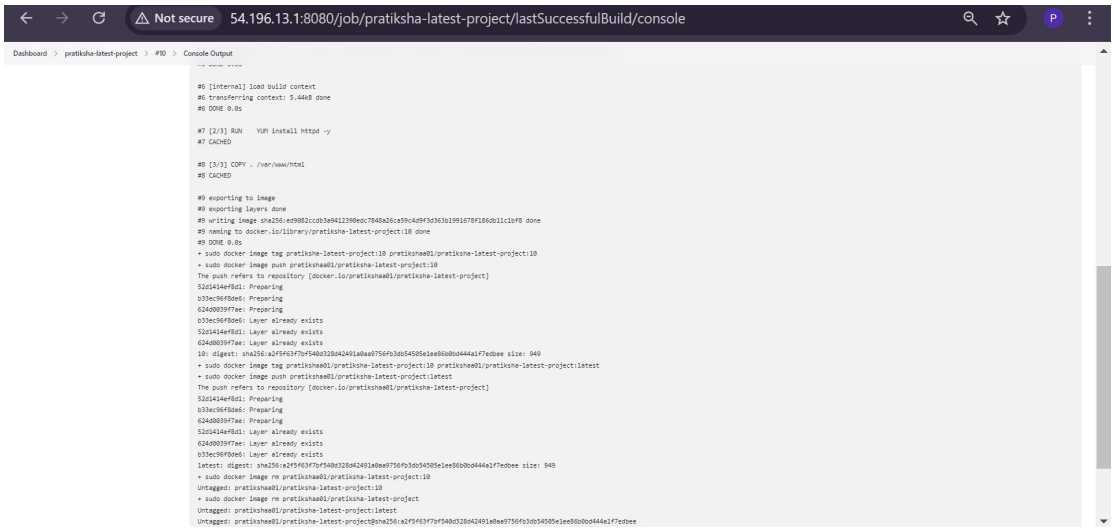
```
[root@jenkins project-automation]# ansible-playbook depolyment.yml
[WARNING]: provided hosts list is empty, only localhost is available. Note that the implicit localhost does not
match 'all'

PLAY [Deploying new webapp using last image] ***********************************************************************

TASK [Gathering Facts] *********************************************************************************************
ok: [localhost]

TASK [forcefully removing running container] ************************************************************************
changed: [localhost]

TASK [running a new conatiner with latest image] ********************************************************************
changed: [localhost]

PLAY RECAP *********************************************************************************************************
localhost                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0


[root@jenkins project-automation]# docker container ls
CONTAINER ID   IMAGE                                  COMMAND                  CREATED          STATUS          PORTS
                          NAMES
c851ffb7102b   pratikshaa01/pratiksha-latest-project   "httpd -DFOREGROUND"   18 seconds ago   Up 17 seconds   0.0.0
.0:80->80/tcp, :::80->80/tcp   webapp
[root@jenkins project-automation]#
```

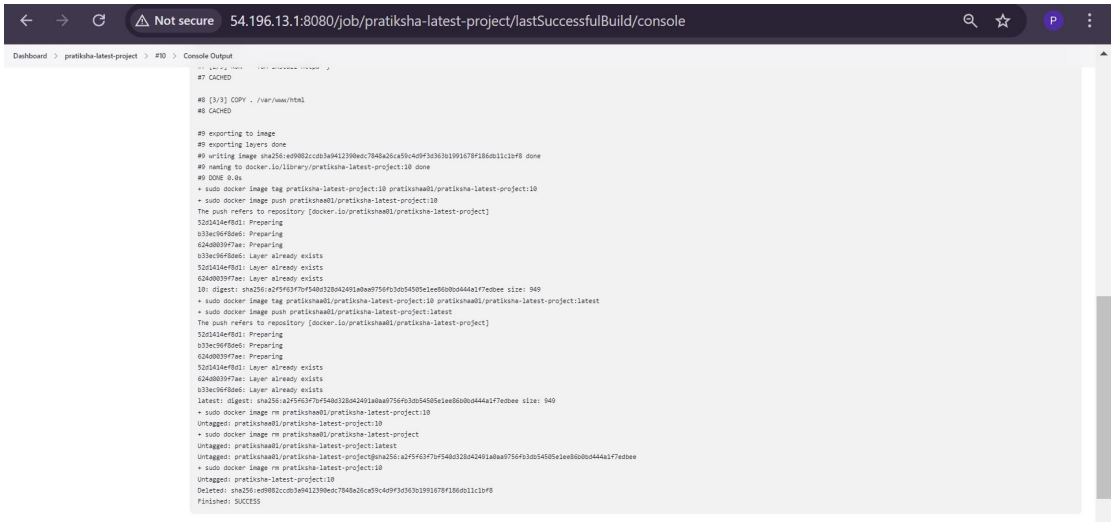
Heyy Grrasians











[You can check project on: https://github.com/pratikshaa-01/pratiksha-project.git]

Project Done By-Pratiksha