

GUI DEVOPS Task

By lourdez parker

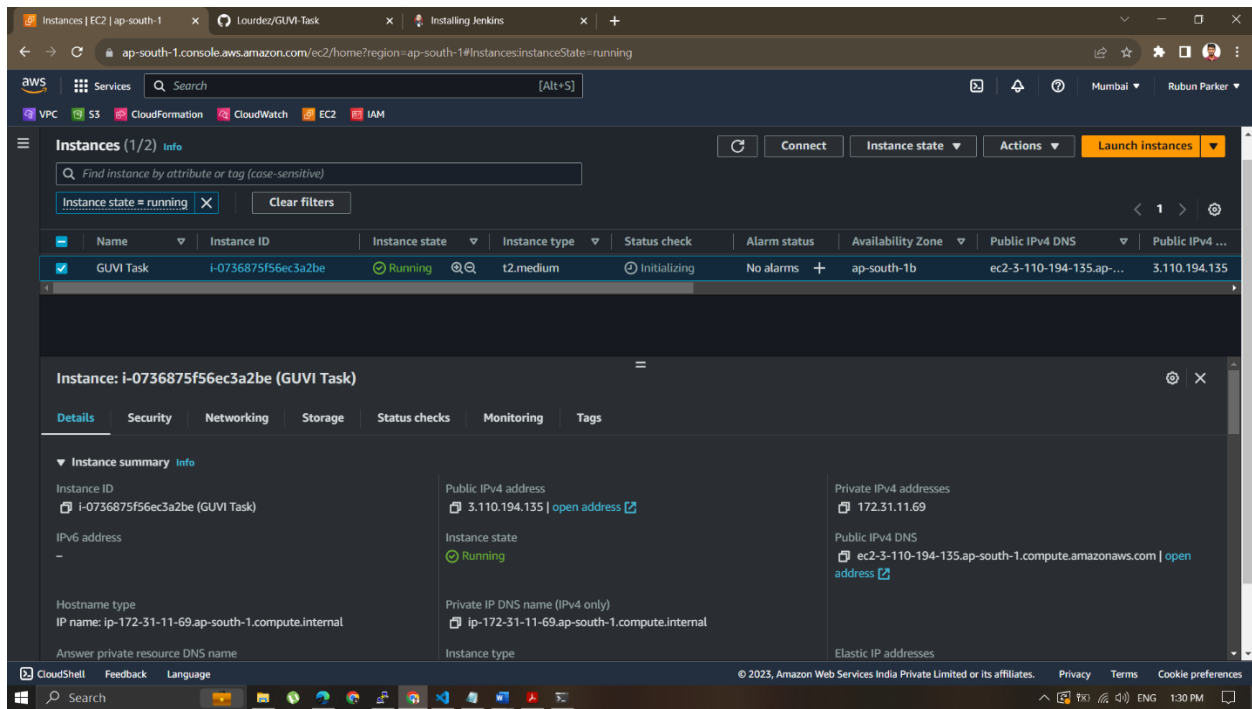
Devops Project

Motive of this Task

1. Create a small web application to display “**Hello GUVI GEEK**”.
2. Push this application to a specific folder of the given GitHub repository.
3. Create a job in Jenkins and make a build this application.
4. On Every Commit, it must Build a pipeline of the Application.
5. If needed Use Pipeline as a Code, for Building the entire pipeline.
6. Using Jenkins and Docker Plugin, create an Image of the developed web application.
7. Push the Image Finally to the Docker Hub and send the URL image of the Docker.

Steps:

Create an EC2 instance with ubuntu AMI – t2. medium – HTTP(80), HTTPS(443),SSH(22) open port



Login into the EC2 instance machine using putty

1. Username: ubuntu (for aws Linux : ec2-user)
2. password: created Key Pair

install the prerequisites.

1. git – apt install git
2. java- apt install default-jdk
3. docker- apt install docker.io
4. maven- apt install maven
5. 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

```
root@ip-172-31-11-69: /home/ubuntu
root@ip-172-31-11-69:/home/ubuntu# git --version
git version 2.34.1
root@ip-172-31-11-69:/home/ubuntu# java -version
openjdk version "11.0.20.1" 2023-08-24
OpenJDK Runtime Environment (build 11.0.20.1+1-post-Ubuntu-0ubuntu22.04)
OpenJDK 64-bit Server VM (build 11.0.20.1+1-post-Ubuntu-0ubuntu22.04, mixed mode, sharing)
root@ip-172-31-11-69:/home/ubuntu# mvn -version
Apache Maven 3.6.3
Maven home: /usr/share/maven
Java version: 11.0.20.1, vendor: Ubuntu, runtime: /usr/lib/jvm/java-11-openjdk-amd64
Default locale: en, platform encoding: UTF-8
OS name: "linux", version: "5.19.0-1025-aws", arch: "amd64", family: "unix"
root@ip-172-31-11-69:/home/ubuntu# systemctl status jenkins
● jenkins.service - Jenkins Continuous Integration Server
   Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2023-09-13 08:15:11 UTC; 1min 22s ago
     Main PID: 6584 (java)
       Tasks: 45 (limit: 4686)
        Memory: 1.2G
          CPU: 53.638s
      CGroup: /system.slice/jenkins.service
              └─6584 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins

Sep 13 08:14:47 ip-172-31-11-69 jenkins[6584]: bc6292d4870841e0ba13cc76cd9a27c6
Sep 13 08:14:47 ip-172-31-11-69 jenkins[6584]: This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Sep 13 08:14:47 ip-172-31-11-69 jenkins[6584]: *****
Sep 13 08:14:47 ip-172-31-11-69 jenkins[6584]: *****
Sep 13 08:14:47 ip-172-31-11-69 jenkins[6584]: *****
Sep 13 08:15:11 ip-172-31-11-69 jenkins[6584]: 2023-09-13 08:15:11.237+0000 [id=30] INFO jenkins.InitReac
Sep 13 08:15:11 ip-172-31-11-69 jenkins[6584]: 2023-09-13 08:15:11.258+0000 [id=22] INFO hudson.lifecycle
Sep 13 08:15:11 ip-172-31-11-69 systemd[1]: Started Jenkins Continuous Integration Server.
Sep 13 08:15:12 ip-172-31-11-69 jenkins[6584]: 2023-09-13 08:15:12.152+0000 [id=46] INFO h.m.DownloadServ
Sep 13 08:15:12 ip-172-31-11-69 jenkins[6584]: 2023-09-13 08:15:12.153+0000 [id=46] INFO hudson.util.Ret
[lines 1-20/20 (END)]...skipping...
● jenkins.service - Jenkins Continuous Integration Server
   Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2023-09-13 08:15:11 UTC; 1min 22s ago
     Main PID: 6584 (java)
       Tasks: 45 (limit: 4686)
        Memory: 1.2G
          CPU: 53.638s
      CGroup: /system.slice/jenkins.service
              └─6584 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080

Sep 13 08:14:47 ip-172-31-11-69 jenkins[6584]: bc6292d4870841e0ba13cc76cd9a27c6
Sep 13 08:14:47 ip-172-31-11-69 jenkins[6584]: This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Sep 13 08:14:47 ip-172-31-11-69 jenkins[6584]: *****
Sep 13 08:14:47 ip-172-31-11-69 jenkins[6584]: *****
Sep 13 08:14:47 ip-172-31-11-69 jenkins[6584]: *****
Sep 13 08:15:11 ip-172-31-11-69 jenkins[6584]: 2023-09-13 08:15:11.237+0000 [id=30] INFO jenkins.InitReactorRunner$1onAttained: Completed initialization
```

Set home path to Java and maven by adding the below script in /etc/profile

```
JAVA_HOME="/usr/lib/jvm/java-11-openjdk-amd64"
```

```
export JAVA_HOME
```

```
export PATH=$PATH:$JAVA_HOME/bin
```

```
M2_HOME="/usr/share/maven"
```

```
export M2_HOME
```

```
export PATH=$PATH:M2_HOME/bin
```

Copy the public IP From the ec2 instance console and paste it in a new tab with port number :8080.

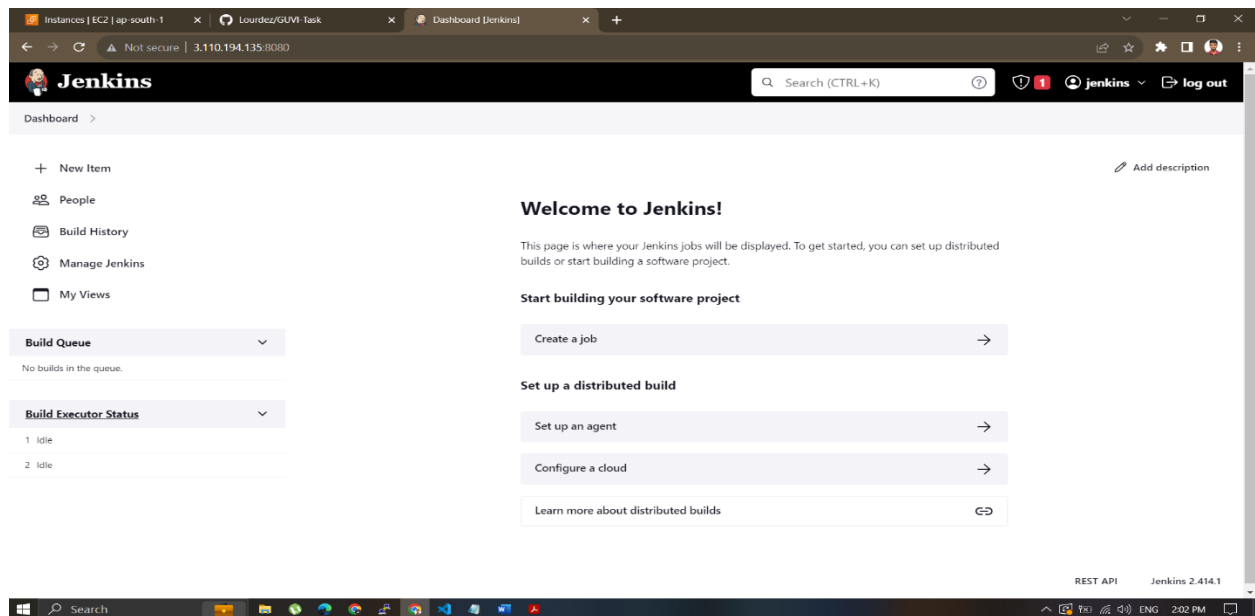
To access the Jenkins

View the initialAdminPassword from the location- /var/lib/Jenkins/secrets/initialAdminPassword.

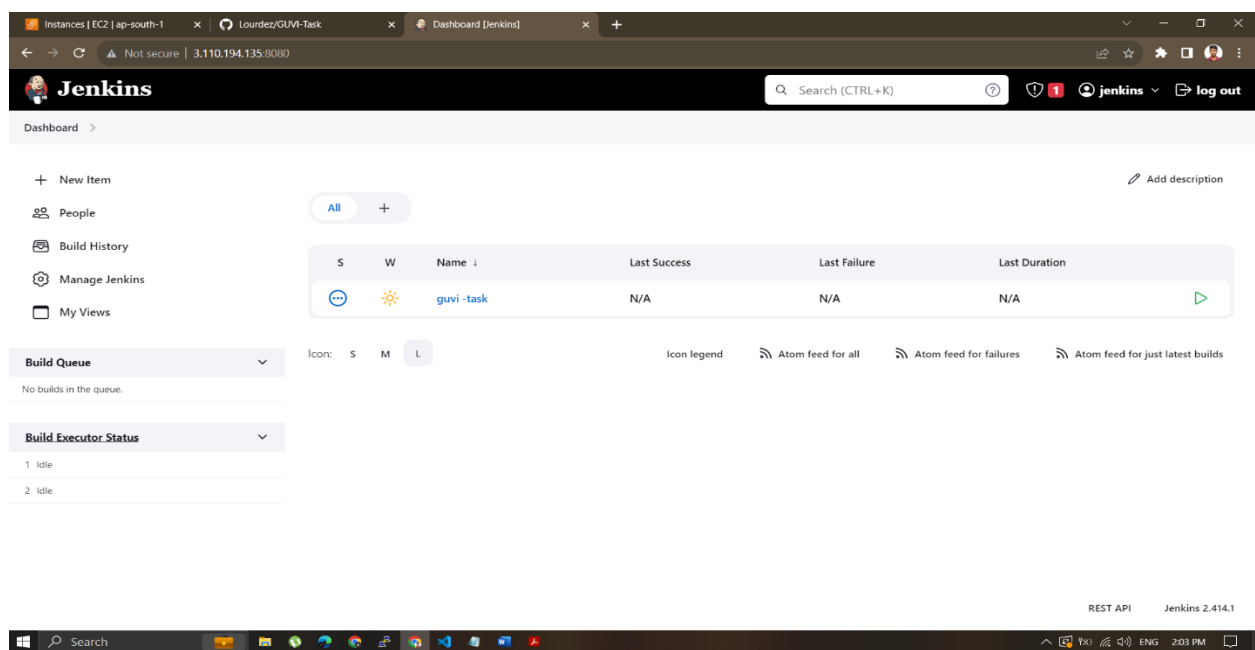
Install the suggested Plugins.

Create username and password.

And Finish set jenkins



Create a new pipeline project “guvi task”



Next step is to give pipeline goovy script and build the project

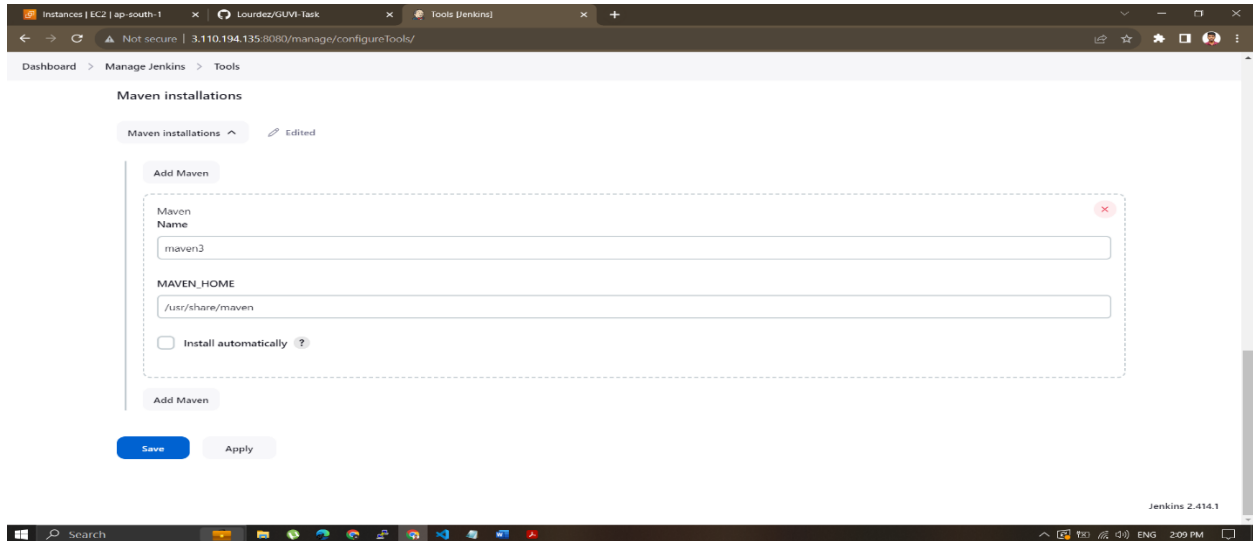
Before the next setp do the prerequisites.

1. Install maven integration plugin

dashboard>mange jenkins>plugins>available plugins>maven integration

2. Set path to jenkins

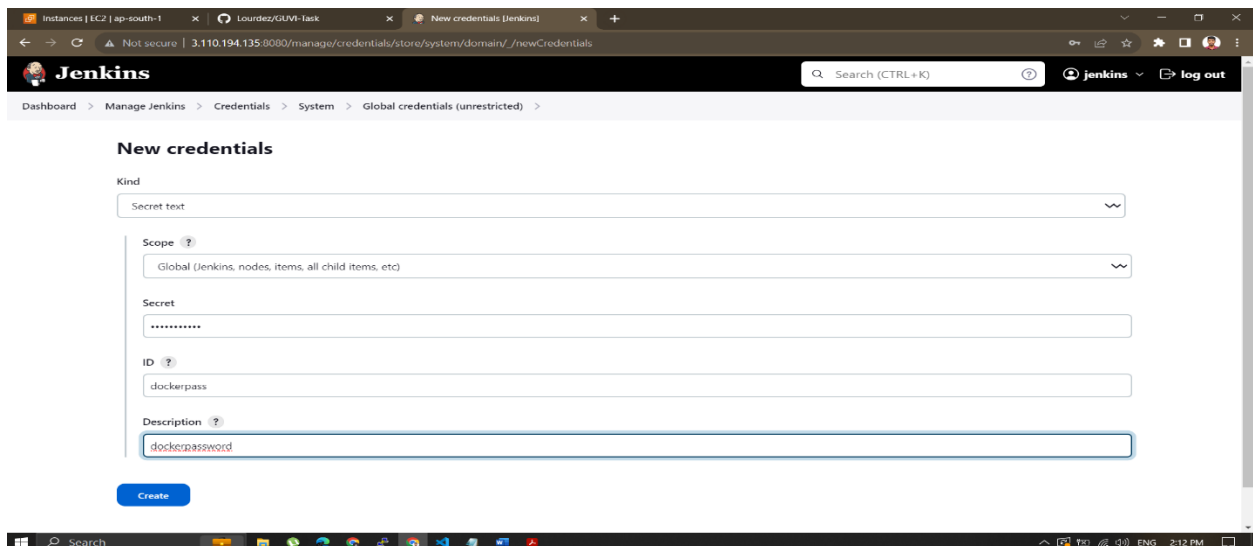
dashboard>mange jenkins>tools.maven>add maven



The screenshot shows the Jenkins 'Maven installations' configuration page. The page has a breadcrumb trail: Dashboard > Manage Jenkins > Tools. The title is 'Maven installations'. Below the title, there is a section 'Maven installations' with a sub-header 'Add Maven'. Inside this section, there is a form with two input fields: 'Maven Name' with the value 'maven3' and 'MAVEN_HOME' with the value '/usr/share/maven'. There is also a checkbox 'Install automatically' which is unchecked. At the bottom of the form, there are 'Save' and 'Apply' buttons. The Jenkins version 'Jenkins 2.414.1' is visible in the bottom right corner.

3. Give docker credentials

dashboard>mange jenkins>credentials>system>global credentials. Secret text



The screenshot shows the Jenkins 'New credentials' configuration page. The page has a breadcrumb trail: Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted). The title is 'New credentials'. Below the title, there is a form with several fields: 'Kind' with the value 'Secret text', 'Scope' with the value 'Global (jenkins, nodes, items, all child items, etc)', 'Secret' with a masked value '*****', 'ID' with the value 'dockerpass', and 'Description' with the value 'dockerpassword'. At the bottom of the form, there is a 'Create' button. The Jenkins version 'Jenkins 2.414.1' is visible in the bottom right corner.

4. Login into docker hub in virtual machine.
5. Change permission to docker.sock in virtual machine using this command
`chmod777 /var/run/docker.sock`

write the below groovy script in Jenkins project

```
node{
    stage('SCM Checkout'){
        git 'https://github.com/Lourdez/GUVI'
    }
    stage('maven-buildstage'){
        def mvnHome = tool name: 'maven3', type: 'maven'
        sh "${mvnHome}/bin/mvn package"
        sh 'mv target/myweb*.war target/newapp.war'
    }
    stage('Build Docker Image'){
        sh 'docker build -t irubunparker/myweb:0.0.2 .'
    }
    stage('Docker Image Push'){
        withCredentials([string(credentialsId: 'dockerpass', variable: 'dockerPassword')]) {
            sh 'docker login -u irubunparker -p ${dockerPassword}'
        }
        sh 'docker push irubunparker/myweb:0.0.2'
    }

    stage('Docker deployment'){
        sh 'docker run -d -p 8090:8080 --name tomcattest irubunparker/myweb:0.0.2'
    }
}
```

Click build now.

The screenshot shows the Jenkins web interface for a pipeline named 'guvi-task'. The left sidebar contains navigation options: Status, Changes, Build Now, Configure, Delete Pipeline, Full Stage View, Rename, and Pipeline Syntax. The main area displays the 'Stage View' with a table of stages and their durations. Below the table, there are 'Permalinks' for various build states. The bottom of the interface shows a 'Build History' section with a list of recent builds.

Stage	Duration
SCM Checkout	725ms
maven-buildstage	3s
Build Docker Image	307ms
Docker Image Push	14s
Remove Previous Container	303ms
Docker deployment	553ms

Average stage times: (Average full run time: ~20s)

Permalinks:

- Last build (#3), 2 min 11 sec ago
- Last stable build (#3), 2 min 11 sec ago
- Last successful build (#3), 2 min 11 sec ago
- Last failed build (#2), 7 min 47 sec ago
- Last unsuccessful build (#2), 7 min 47 sec ago

Build History:

Build	Time
#4	13 Sep 2023, 09:03
#3	13 Sep 2023, 09:01
#2	13 Sep 2023, 08:55
#1	13 Sep 2023, 08:52

To see the desired output, click the below link in a new Tab

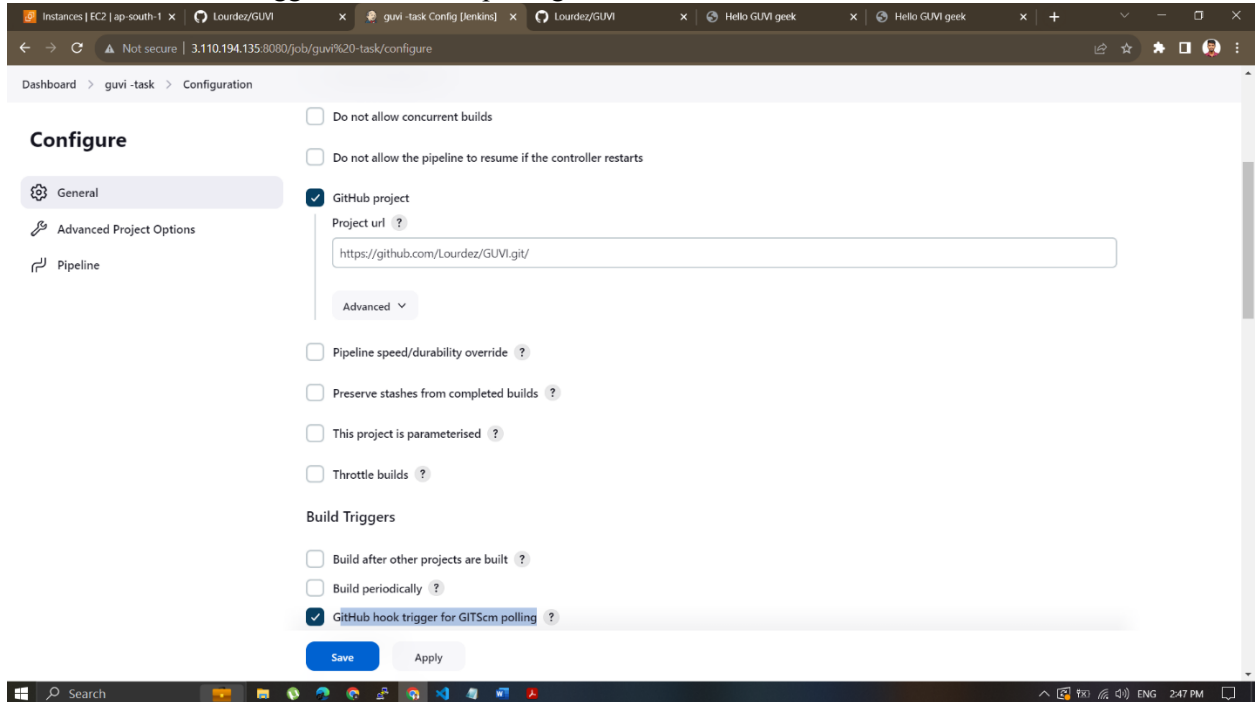
<http://3.110.194.135:8090/newapp/>

NOTE :the public Ip of the virtual machine is 3.110.194.135 and will be deleted after the successful implementation of the project ,because aws t2.medium is not free tier , every time we work this project in a new output machine the result optput will be follow:

The screenshot shows a web browser window with the address bar displaying 'http://3.110.194.135:8090/newapp/'. The main content area of the browser shows the text 'Hello GUVI Geek' in a large, bold, black font. The browser's taskbar at the bottom shows various application icons and the system clock indicating 2:38 PM.

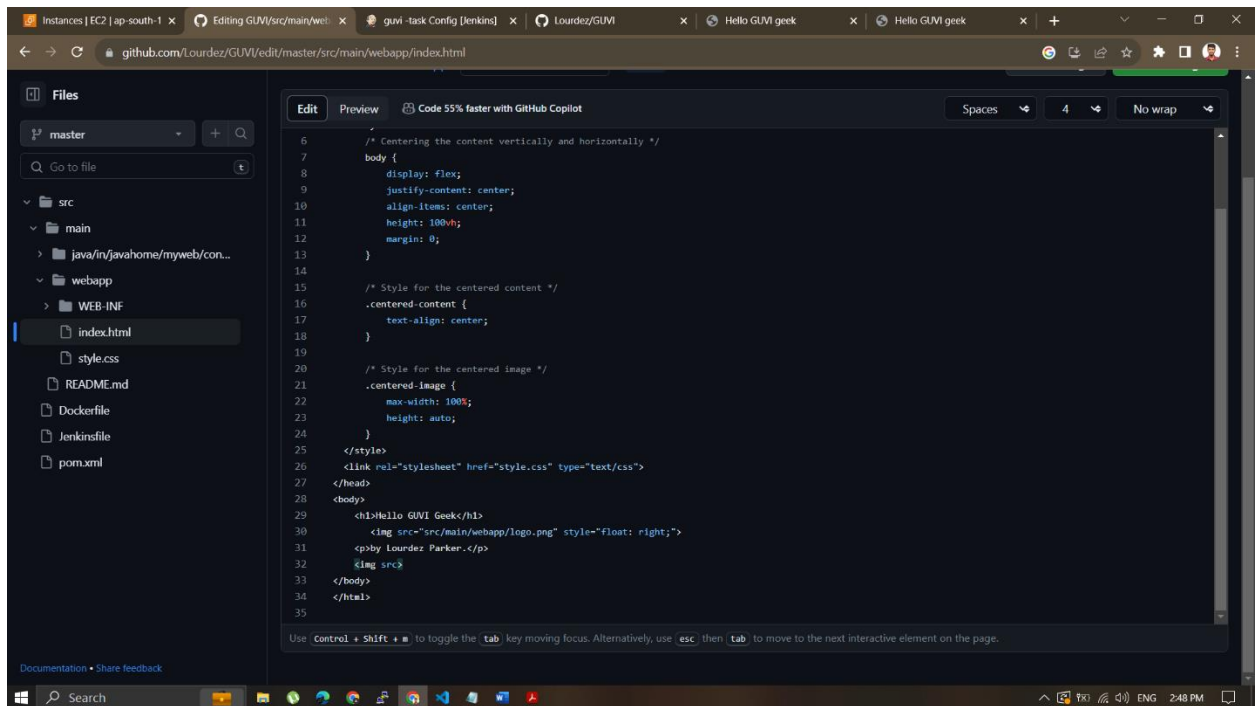
To build this project in every commit in GITHUB public repository follow these steps

1. Add the link into repository webhook
<http://3.110.194.135:8080/github-webhook>
2. Jenkins>guvi-task>configure>
Add github link in GITHUB project
3. Select GitHub hook trigger for GITScm polling tickbox



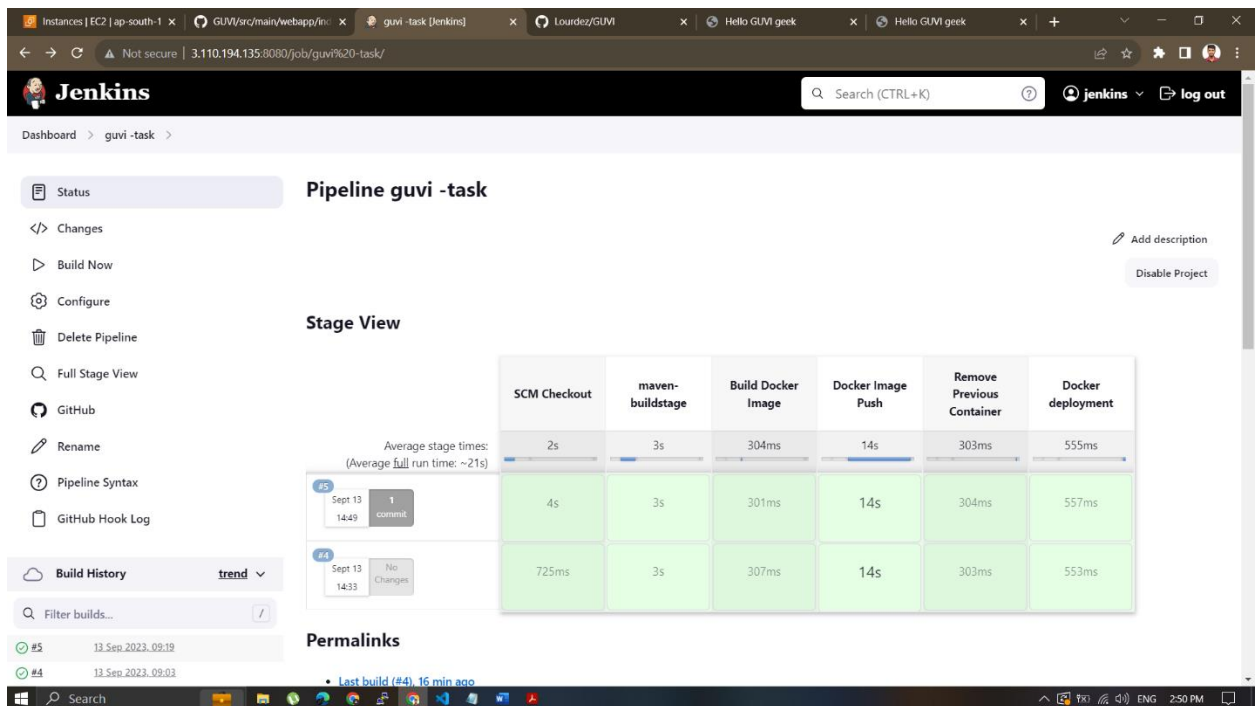
4.

TO check the flow



Updating the html file

The build is success with no error



	SCM Checkout	maven-buildstage	Build Docker Image	Docker Image Push	Remove Previous Container	Docker deployment
Average stage times: (Average full run time: ~21s)	2s	3s	304ms	14s	303ms	555ms
#5 Sept 13 14:49 1 commit	4s	3s	301ms	14s	304ms	557ms
#4 Sept 13 14:33 No Changes	725ms	3s	307ms	14s	303ms	553ms

Permalinks

Last build (#4) 16 min ago

The final OUT PUT

