

Capstone Project

Banking and Finance

FinanceMe is a Global leading Banking and Financial services provider based out of Germany. The company offers products and services like Banking, Funds Management, Loans, Debit Cards and Credits Cards, Investment Banking etc. Initially the company was using a Monolithic application architecture, As the company grown, it started facing difficulties in managing the application infrastructure and application deployments and Scaling of application when the traffic load increases.

FinanceMe has decided to opt for microservice architecture for its applications and decided to go DevOps by implementing necessary automations using CICD.

FinanceMe has decided to use AWS as primary cloud services provider to create servers, databases and application deployments. The company's goal is to deliver the product updates frequently to production automatically with High quality & Reliability. They also want to accelerate software delivery speed, quality and reducing feedback time between developers and testers. Currently, they are facing following problems, because of various technologies involved in the project.

- ✓ Building Complex Monolithic Application is difficult.
- ✓ Manual efforts to test various components/modules of the project
- ✓ Incremental builds are difficult to manage, test and deploy.

- ✓ It was not possible to scale up individual modules independently.
- ✓ Creation of infrastructure and configure it manually is very time consuming
- ✓ Continuous manual monitoring the application is quite challenging.

you need to implement Continuous Integration & Continuous Deployment using following tools:

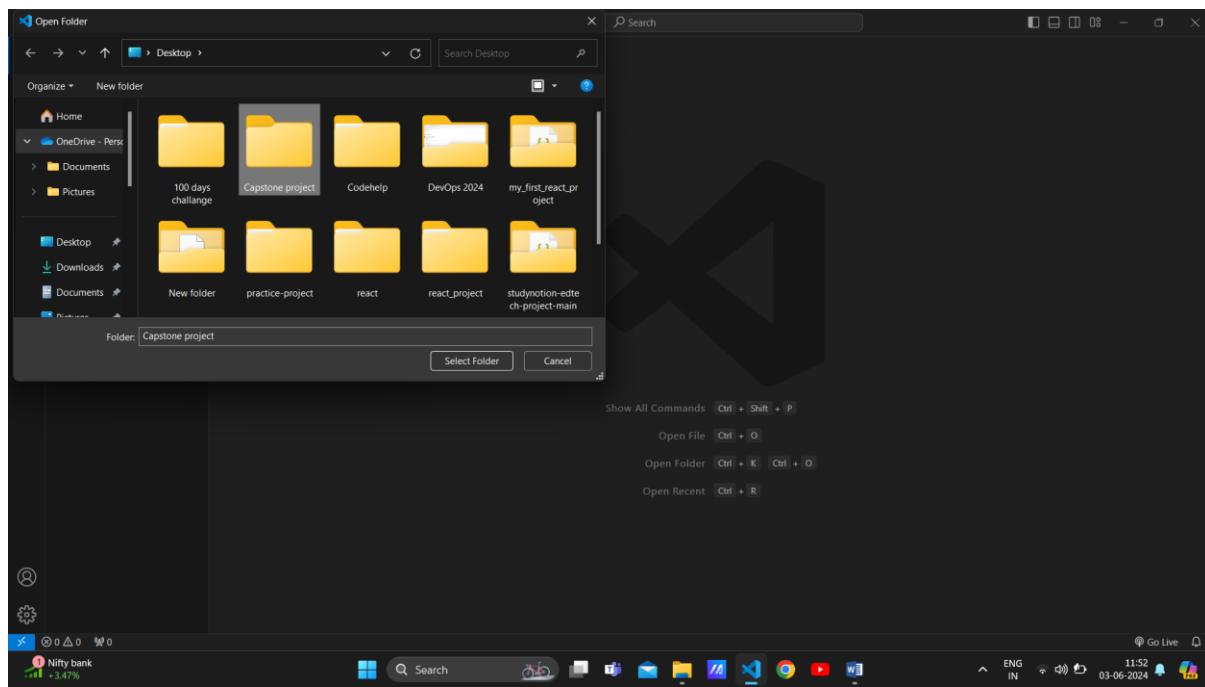
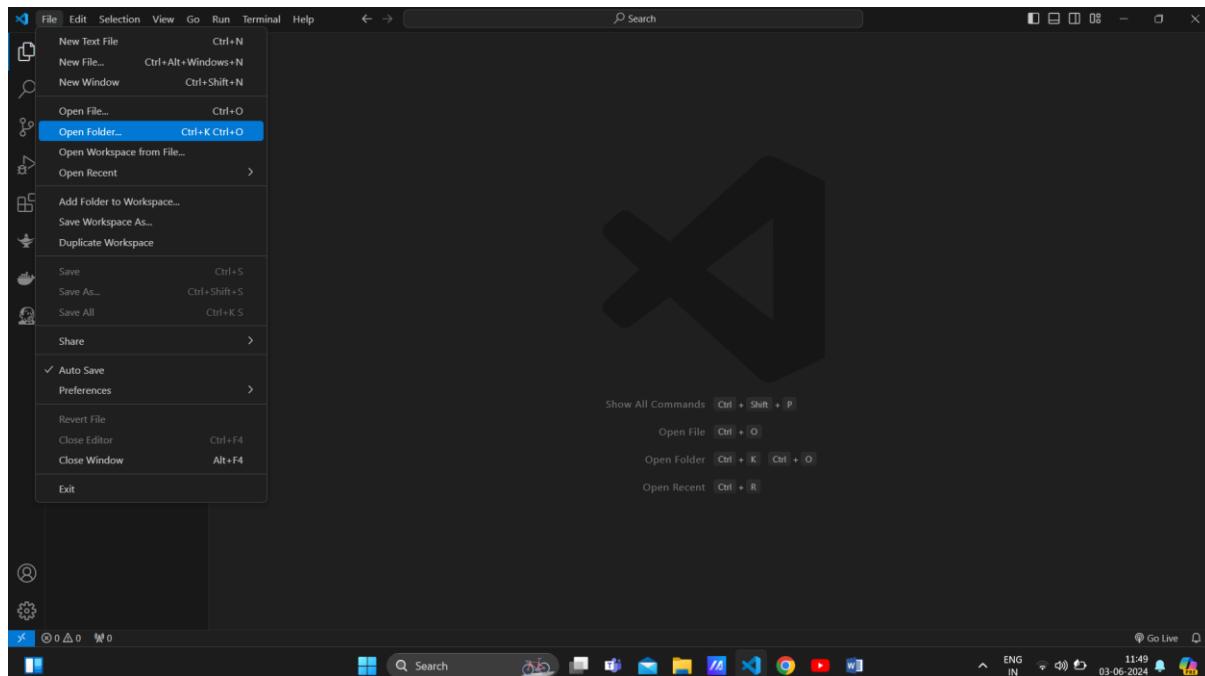
- ✓ Git - For version control for tracking changes in the code files
- ✓ Maven – For Continuous Build
- ✓ Jenkins - For continuous integration and continuous deployment
- ✓ Docker - For deploying containerized applications
- ✓ Ansible - Configuration management tools
- ✓ Selenium - For automating tests on the deployed web application
- ✓ Terraform - For creation of infrastructure.
- ✓ Prometheus and Grafana – For Automated Monitoring and Report Visualization

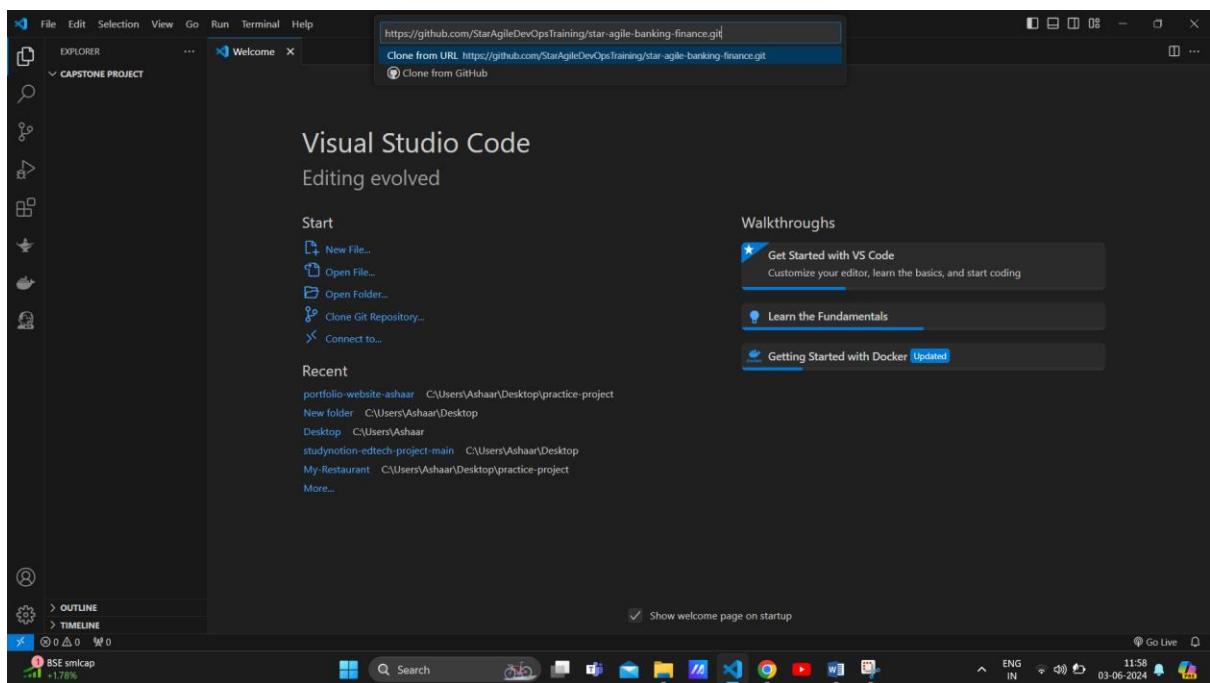
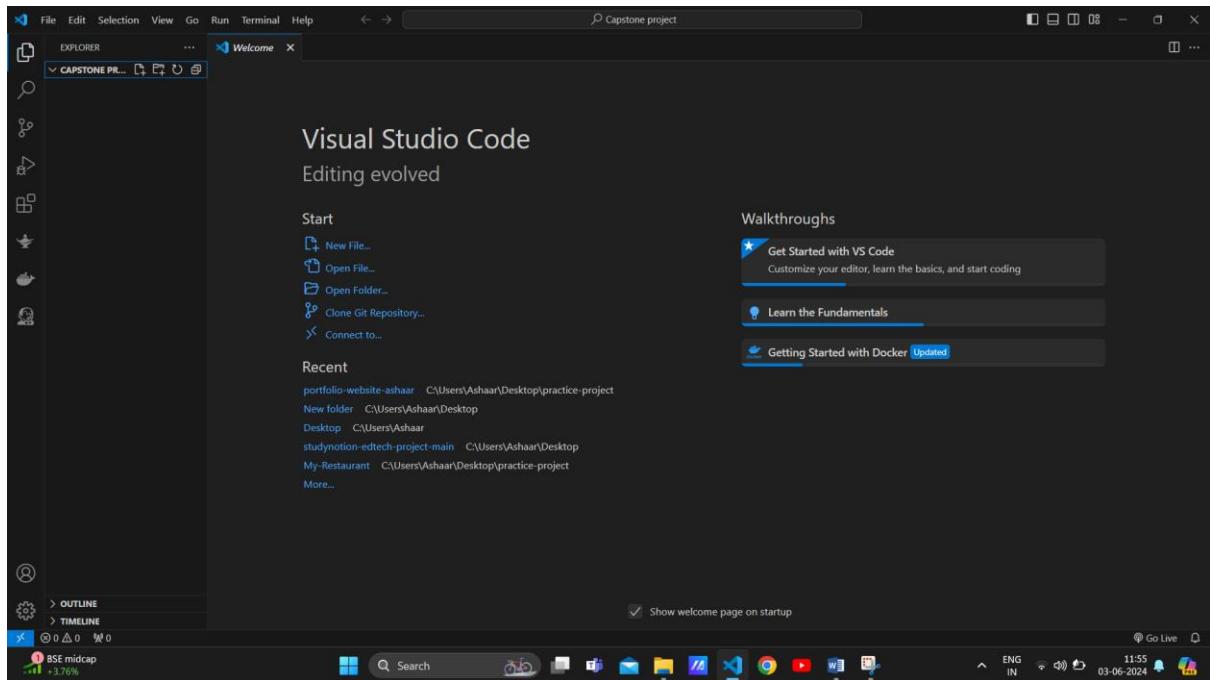
Continuous monitoring server must be configured to monitor the test as well as prod server using Prometheus and Grafana

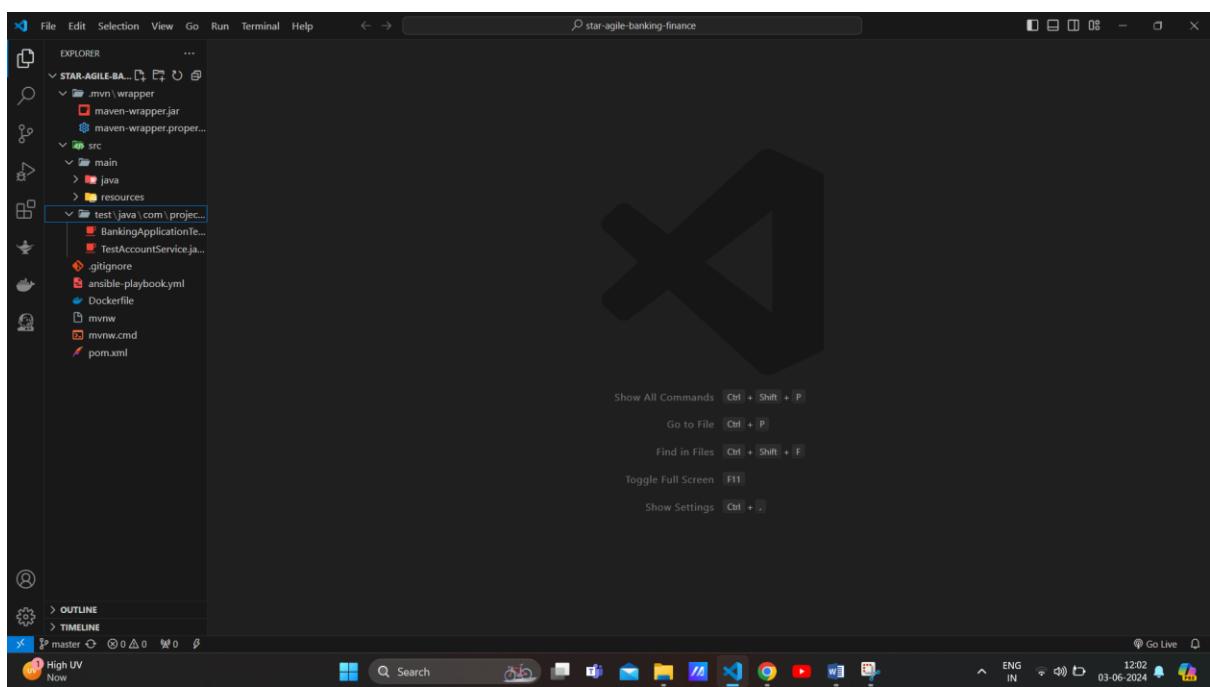
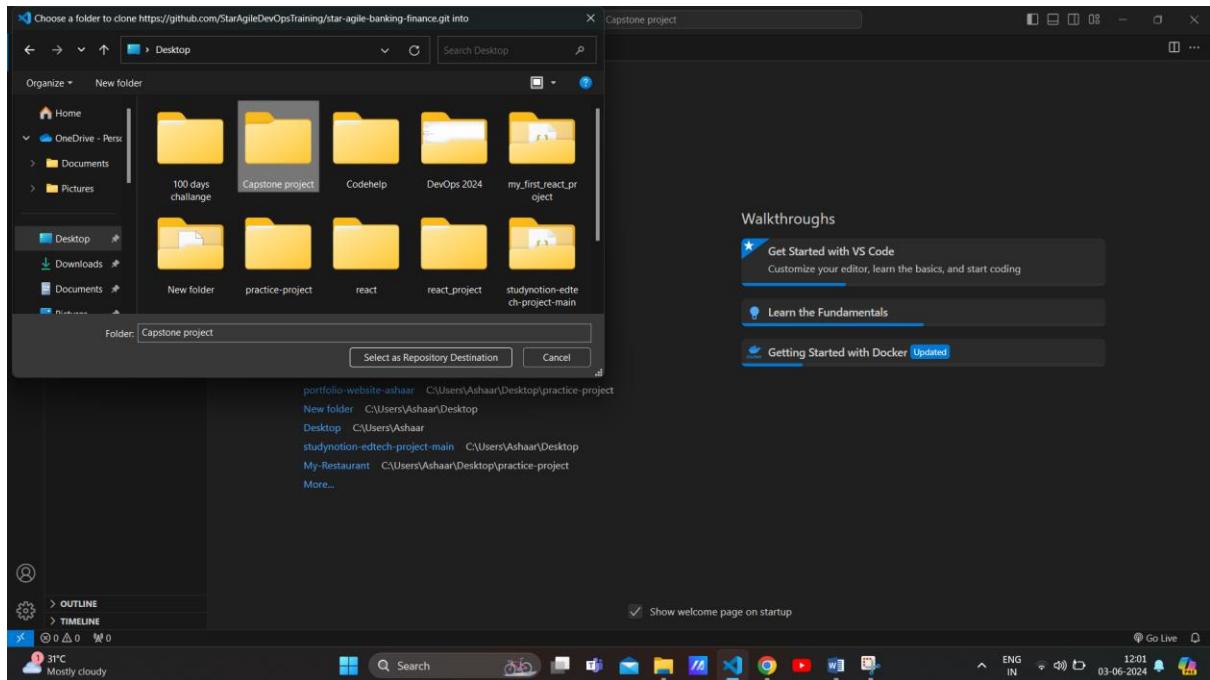
should be configured to display a dashboard with following metrics.

1. CPU utilization
2. Disk Space Utilization
3. Total Available Memory

1. Development Perspective:







```
PS C:\Users\Ashaar\Desktop\Capstone project\star-agile-banking-Finance> mvn clean
[INFO] Scanning for projects...
[INFO] [INFO] < com.project.staragile:banking >-----
[INFO] Building banking 0.0.1-SNAPSHOT
[INFO] From pom.xml
[INFO] [jar]
● Downloading from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-maven-plugin/2.7.4/spring-boot-maven-plugin-2.7.4.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-maven-plugin/2.7.4/spring-boot-maven-plugin-2.7.4.pom (3.1 kB at 10 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-maven-plugin/2.7.4/spring-boot-maven-plugin-2.7.4.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-maven-plugin/2.7.4/spring-boot-maven-plugin-2.7.4.jar (107 kB at 1.4 MB/s)
)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-clean-plugin/3.2.0/maven-clean-plugin-3.2.0.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-clean-plugin/3.2.0/maven-clean-plugin-3.2.0.pom (5.3 kB at 161 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/35/maven-plugins-35.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/35/maven-plugins-35.pom (9.9 kB at 291 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/35/maven-parent-35.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/35/maven-parent-35.pom (45 kB at 1.3 MB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/25/apache-25.pom
```

```
PS C:\Users\Ashaar\Desktop\Capstone project\star-agile-banking-Finance> mvn package
[INFO] Scanning for projects...
[INFO] [INFO] < com.project.staragile:banking >-----
[INFO] Building banking 0.0.1-SNAPSHOT
[INFO] From pom.xml
[INFO] [jar]
● Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/23/apache-23.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/23/apache-23.pom (18 kB at 512 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/commons-io/commons-io/2.6/commons-io-2.6.pom
Downloaded from central: https://repo.maven.apache.org/maven2/commons-io/commons-io/2.6/commons-io-2.6.pom (14 kB at 407 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/commons/commons-parent/42/commons-parent-42.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/commons/commons-parent/42/commons-parent-42.pom (68 kB at 1.7 MB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/18/apache-18.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/18/apache-18.pom (16 kB at 423 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-utils/3.3.4/maven-shared-utils-3.3.4.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-utils/3.3.4/maven-shared-utils-3.3.4.jar (153 kB at 2.8 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/commons-io/2.6/commons-io-2.6.jar
Downloaded from central: https://repo.maven.apache.org/maven2/commons-io/2.6/commons-io-2.6.jar (215 kB at 4.2 MB/s)
[INFO] [INFO] BUILD SUCCESS
[INFO] [INFO] -----
[INFO] Total time: 1.943 s
[INFO] Finished at: 2024-06-03T12:07:28+05:30
[INFO] -----
```

The screenshot shows the VS Code interface with the title bar "star-agile-banking-finance". The Explorer sidebar on the left displays the project structure under "STAR-AGILE-BANKING-FINANCE". The terminal tab at the bottom has the command "mvn package" running, showing Maven dependency download logs:

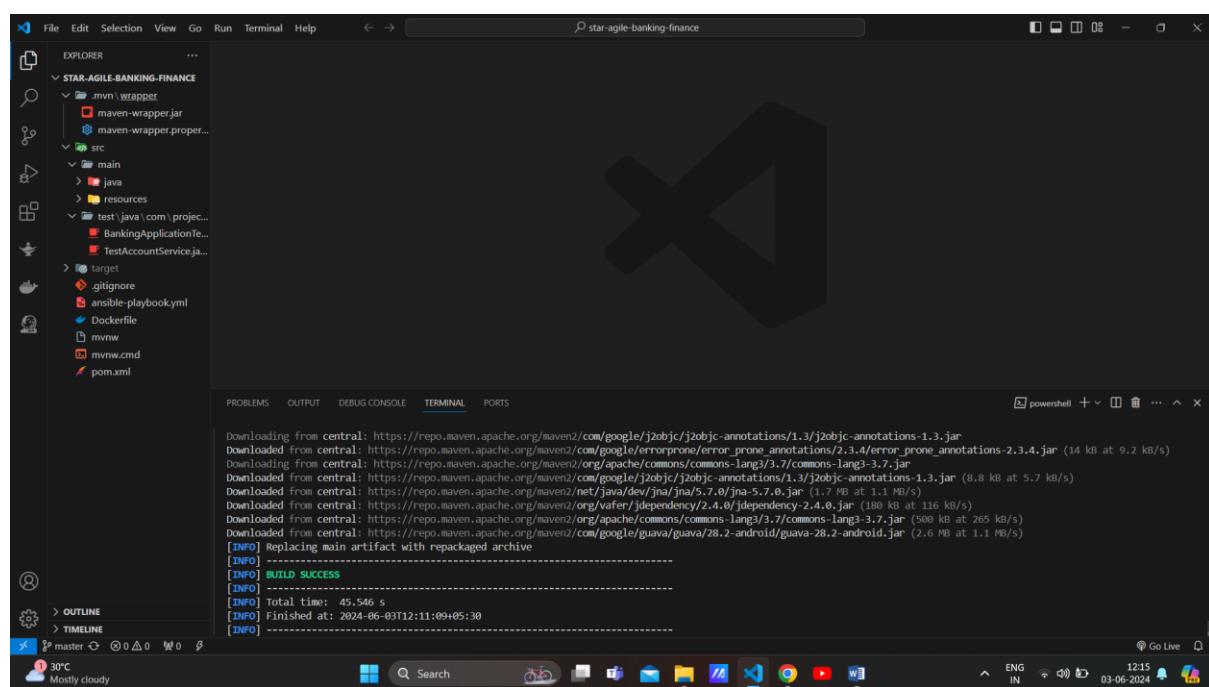
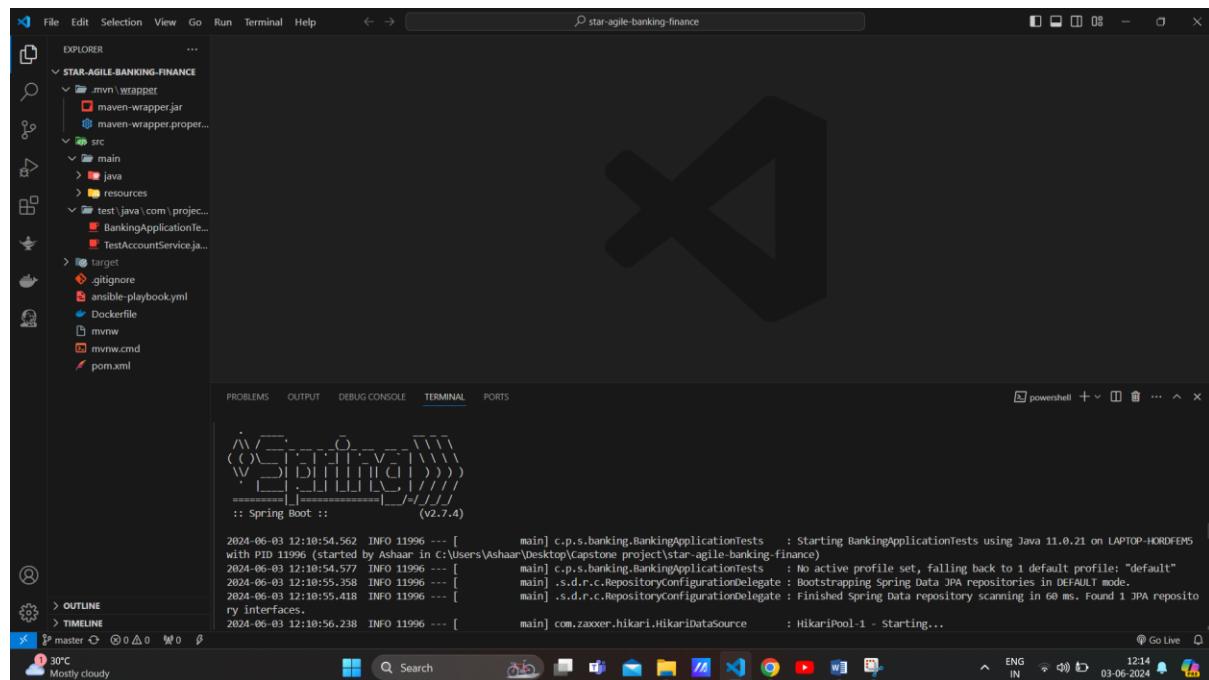
```
void-conflict-with-guava.jar (2.2 kB at 1.5 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/com/google/errorprone/error_prone_annotations/2.3.4/error_prone_annotations-2.3.4.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/checkerframework/checker-compat-qual/2.5.5/checker-compat-qual-2.5.5.jar (5.9 kB at 3.9 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/com/google/errorprone/error_prone_annotations/1.3/j2objc-annotations-1.3.jar
Downloaded from central: https://repo.maven.apache.org/maven2/com/google/errorprone/error_prone_annotations/2.3.4/error_prone_annotations-2.3.4.jar (14 kB at 9.2 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/commons/commons-lang3/3.7/commons-lang3-3.7.jar
Downloaded from central: https://repo.maven.apache.org/maven2/com/google/j2objc/j2objc-annotations/1.3/j2objc-annotations-1.3.jar (8.8 kB at 5.7 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/net/java/dev/jna/jna/5.7.0/jna-5.7.0.jar (1.7 MB at 1.1 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/vafer/jdependency/2.4.0/jdependency-2.4.0.jar (18 kB at 116 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/commons/commons-lang3/3.7/commons-lang3-3.7.jar (500 kB at 265 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/com/google/guava/guava/28.2-android/guava-28.2-android.jar (2.6 MB at 1.1 MB/s)
[INFO] Replacing main artifact with repackaged archive
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 45.546 s
[INFO] Finished at: 2024-06-03T12:11:09+05:30
[INFO]
```

The status bar at the bottom shows "PS C:\Users\Ashaan\Desktop\Capstone project\star-agile-banking-finance> mvn package".

The screenshot shows the VS Code interface with the title bar "star-agile-banking-finance". The Explorer sidebar on the left displays the project structure under "STAR-AGILE-BANKING-FINANCE". The terminal tab at the bottom has the command "mvn test" running, showing Maven dependency download logs:

```
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/surefire/surefire-junit-platform/2.22.2/surefire-junit-platform-2.22.2.jar (66 kB at 824 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/opentest4j/opentest4j/1.1.1/opentest4j-1.1.1.jar (7.1 kB at 145 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/junit/platform/junit-platform-engine/1.3.1/junit-platform-engine-1.3.1.jar (135 kB at 1.3 MB/s)
[INFO]
[INFO] T E S T S
[INFO]
[INFO] Running com.project.staragile.banking.BankingApplicationTests
12:10:53.695 [main] DEBUG org.springframework.test.context.CacheAwareContextLoaderDelegate - Instantiating CacheAwareContextLoaderDelegate from class [org.springframework.test.context.cache.DefaultCacheAwareContextLoaderDelegate]
12:10:53.695 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating BootstrapContext using constructor [public org.springframework.test.context.support.DefaultBootstrapContext(java.lang.Class,org.springframework.test.context.CacheAwareContextLoaderDelegate)]
```

The status bar at the bottom shows "PS C:\Users\Ashaan\Desktop\Capstone project\star-agile-banking-finance> mvn test".

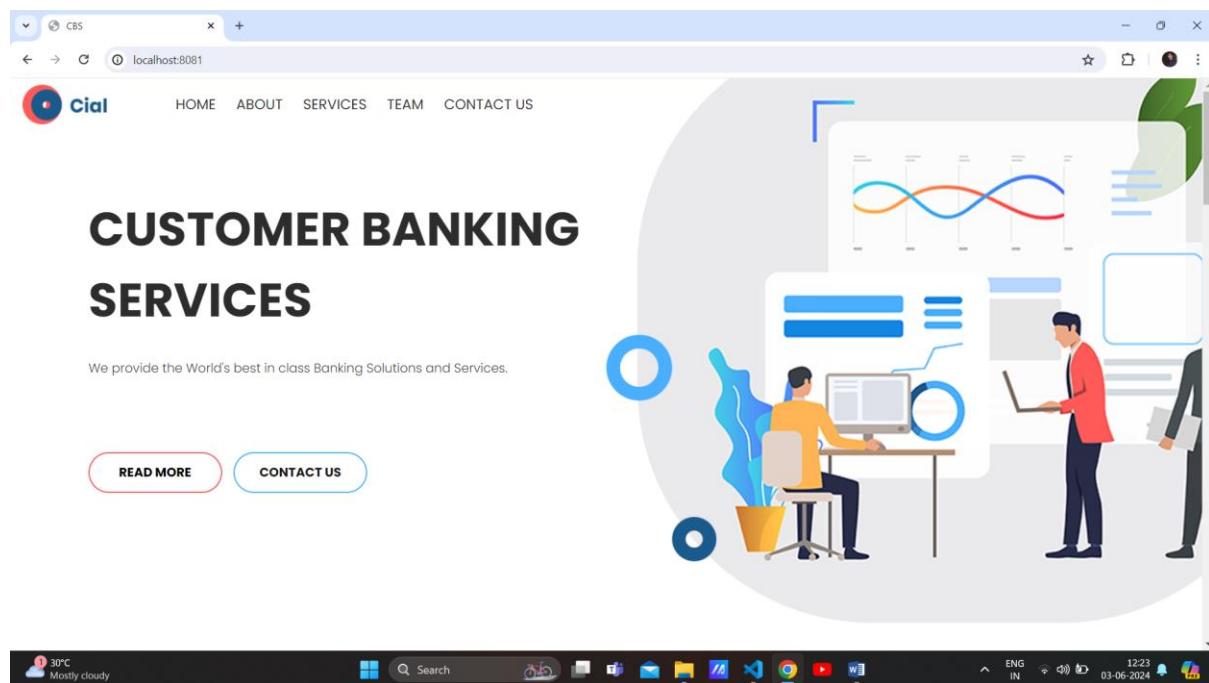


The screenshot shows the VS Code interface with the following details:

- File Explorer:** Displays the project structure under "STAR-AGILE-BANKING-FINANCE".
- Terminal:** Shows the command `java -jar banking-0.0.1-SNAPSHOT.jar` being run.
- Status Bar:** Shows system information like battery level (30%), temperature (30°C), and network status.

Terminal Output:

```
PS C:\Users\Ashaan\Desktop\Capstone project\star-agile-banking-finance\target> java -jar banking-0.0.1-SNAPSHOT.jar
```



WELCOME TO CUSTOMER BANKING SERVICES

The world class banking services that we provide are current and savings accounts, loan and mortgage services, wealth management, providing Credit and Debit Cards, Overdraft services.

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WHAT WE DO

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ADVISOR

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FINANCIAL

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OUR TEAM AND EXPERTS

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Readable

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Content

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demo@gmail.com

About Financial

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The screenshot shows a Java web application project named "STAR-AGILE-BANKING-FINANCE" in an IDE. The code editor displays the "index.html" file, which contains the HTML structure for a banking services page. The terminal tab shows the output of the application starting up, indicating successful initialization.

```
src > main > resources > static > index.html < html > < body > < div.services_section.layout_padding > < div.container > < div.row > < div.col-md-8 > < h1.services_taital >
  2   <html lang="en">
  3     <body>
  4       <div class="header_section">
  5         <div class="header_left">
  6           <div class="banner_main">
  7             <p> We provide the World's best in class Banking Solutions and Services. </p>
  8             <div class="btn_main">
  9               <div class="more_bt"><a href="#">Read More </a></div>
 10               <div class="contact_bt"><a href="#">Contact Us</a></div>
 11             </div>
 12           </div>
 13         </div>
 14       <div class="header_right">
 15         
 16       </div>
 17     </div>
 18   </div>
 19   <!--header section end -->
 20   <!--about section start -->
 21   <div class="services_section layout_padding">
 22     <div class="container">
 23       <div class="row">
 24         <div class="col-md-8">
 25           <h1 class="services_taital"> WELCOME TO CUSTOMER BANKING SERVICES  DONE  PROJECT BY ASHAAR </h1>
 26           <p class="services_text">
 27             The world class banking services that we provide are current and savings accounts, loan and mortgage services, wealth management, providing credit and Debit Cards, Overdraft services.
 28           </p>
 29           <div class="moremore_bt"><a href="#">Read More </a></div>
 30         </div>
 31       </div>
 32     </div>
 33   </div>
 34 </div>
 35 </div>
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```

This screenshot shows the same Java web application project in the IDE. The code editor displays the "index.html" file, but the content of the file has been modified or updated compared to the first screenshot. The terminal tab shows the output of the application starting up, indicating successful initialization.

```
src > main > resources > static > index.html < html > < body > < div.services_section.layout_padding > < div.container > < div.row > < div.col-md-8 > < h1.services_taital >
  2   <html lang="en">
  3     <body>
  4       <div class="header_section">
  5         <div class="header_left">
  6           <div class="banner_main">
  7             <div class="more_bt"><a href="#"> # >read More </a></div>
  8             <div class="contact_bt"><a href="#">Contact Us</a></div>
  9           </div>
 10         </div>
 11       <div class="header_right">
 12         
 13       </div>
 14     </div>
 15   </div>
 16   <!--header section end -->
 17   <!--about section start -->
 18   <div class="services_section layout_padding">
 19     <div class="container">
 20       <div class="row">
 21         <div class="col-md-8">
 22           <h1 class="services_taital"> SYED ASHAAR BANKING PROJECT </h1>
 23           <p class="services_text">
 24             The world class banking services that we provide are current and savings accounts, loan and mortgage services, wealth management, providing credit and Debit Cards, Overdraft services.
 25           </p>
 26           <div class="moremore_bt"><a href="#">Read More </a></div>
 27         </div>
 28       </div>
 29     </div>
 30   </div>
 31 </div>
 32 </div>
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```

File Edit Selection View Go Run Terminal Help

banking-finance-project

EXPLORER

BANKING-FINANCE-PROJECT

- .mvn
- src
- main
- java
- resources
- static
- css
- images
- js
- index.html
- services.html
- team.html

templates

application.properties

test

.gitignore

ansible-playbook.yml

Dockerfile

.mvnw

.mvnw.cmd

pom.xml

index.html x

```
src > main > resources > static > index.html > html > body > div.services_section.layout_padding > div.container
  2   <html lang="en">
  4     <body>
  42       <div class="header_section">
  43         <div class="header_left">
  44           <nav class="navbar navbar-expand-lg navbar-light bg-light">
  77             </div>
  78           </div>
  79           <div class="banner_main">
  80             <h1 class="banner_taital">Syed Ashaar Banking <br />Services</h1>
  81             <p class="banner_text">
  82               We provide the World's best in class Banking Solutions and Services.
  83             </p>
  84             <div class="btn_main">
  85               <div class="more_bt"><a href="#">Read More </a></div>
  86               <div class="contact_bt"><a href="#">Contact Us</a></div>
  87             </div>
  88           </div>
  ...
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\Ashaar\Desktop\Capstone project\banking-finance-project> git init
Initialized empty GIT repository in C:/Users/Ashaar/Desktop/Capstone project/banking-finance-project/.git/
PS C:\Users\Ashaar\Desktop\Capstone project\banking-finance-project> git add .
warning: in the working copy of '.gitignore', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of '.mvnw', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'Dockerfile', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'ansible-playbook.yml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'mvnw', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'mvnw.cmd', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'pom.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'src/main/java/com/project/stargle/banking/Account.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'src/main/java/com/project/stargle/banking/AccountController.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'src/main/java/com/project/stargle/banking/AccountRepository.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'src/main/java/com/project/stargle/banking/AccountService.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'src/main/java/com/project/stargle/banking/BankingApplication.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'src/main/resources/application.properties', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'src/main/resources/static/css/minimize.css', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'src/main/resources/static/css/bootstrap-grid.css', LF will be replaced by CRLF the next time Git touches it
```

powerShell + -

In 97 Col 30 Spaces:2 UTF-8 CRLF HTML Go Live Previewer

BSE midcap +4.18%

1258 ENG IN 03-06-2024 10:45 AM

File Edit Selection View Go Run Terminal Help

index.html

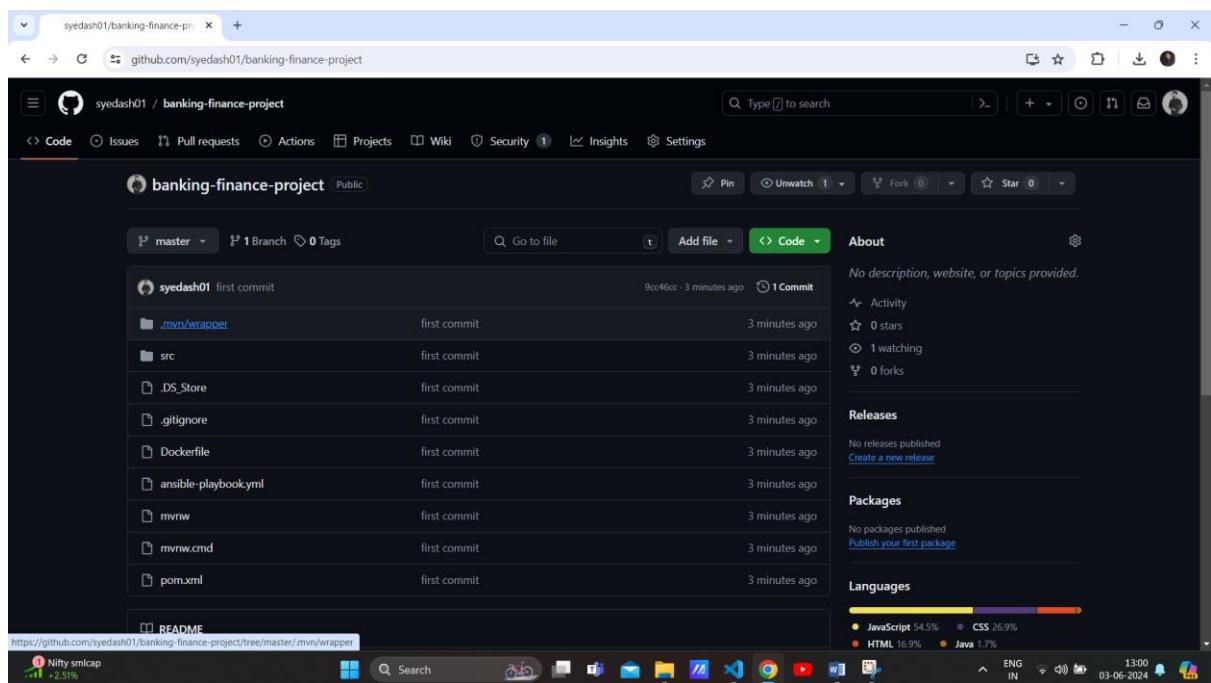
```
src > main > resources > static > index.html > html > body > div.services_section.layout_padding > div.container
  2   <html lang="en">
  40    <body>
  42      <div class="header_section">
  43        <div class="header_left">
  44          <nav class="navbar navbar-expand-lg navbar-light bg-light">
  45            <!-->
  46          </div>
  47        </nav>
  48        <div class="banner_main">
  49          <h1 class="banner_taital">Syed Ashaar Banking <br />Services</h1>
  50          <p class="banner_text">
  51            We provide the World's best in class Banking Solutions and Services.
  52          </p>
  53          <div class="btn_main">
  54            <div class="more_bt"><a href="#">Read More </a></div>
  55            <div class="contact_bt"><a href="#">Contact Us</a></div>
  56          </div>
  57        </div>
  58      </div>
  59    </body>
  60  </html>
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\Ashaar\Desktop\Capstone project\banking-finance-project> git push -u origin master
Enumerating objects: 125, done.
Counting objects: 100% (125/125), done.
Delta compression using up to 8 threads
Compressing objects: 100% (113/113), done.
Writing objects: 100% (125/125), 2.19 kB | 1.46 MiB/s, done.
Total 125 (delta 17), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (17/17), done.
To https://github.com/syedash01/banking-finance-project.git
 * [new branch]      master -> master
branch 'master' set up to track 'origin/master'.
PS C:\Users\Ashaar\Desktop\Capstone project\banking-finance-project>
```

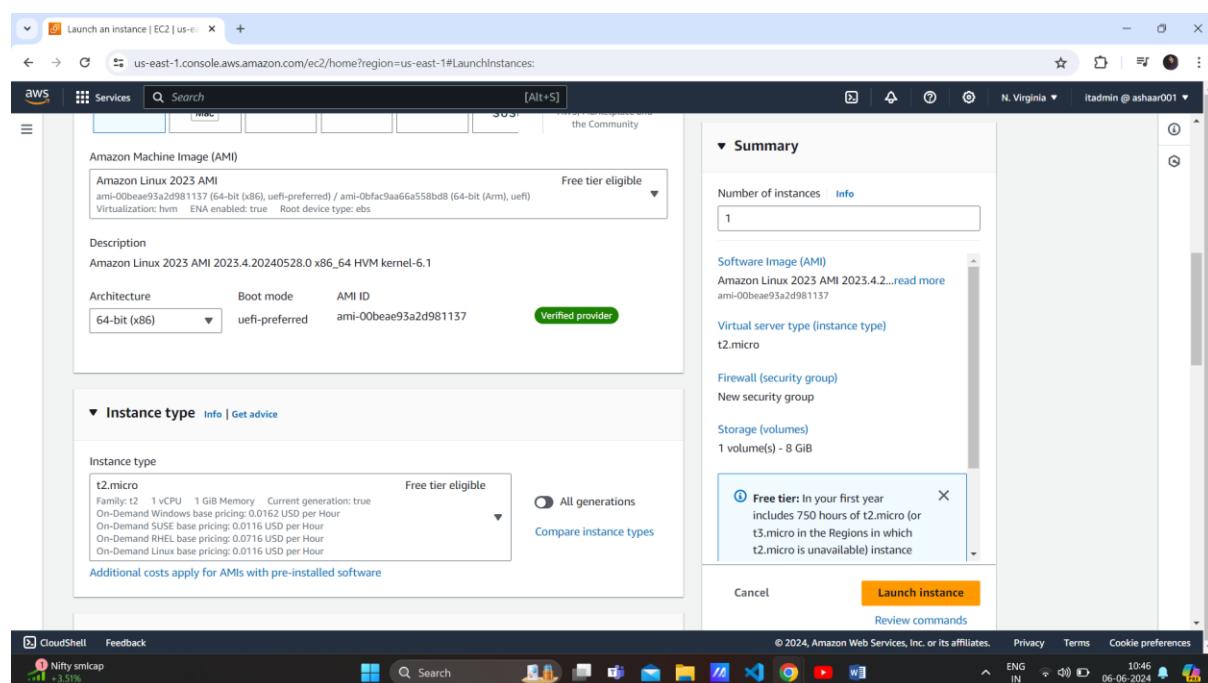
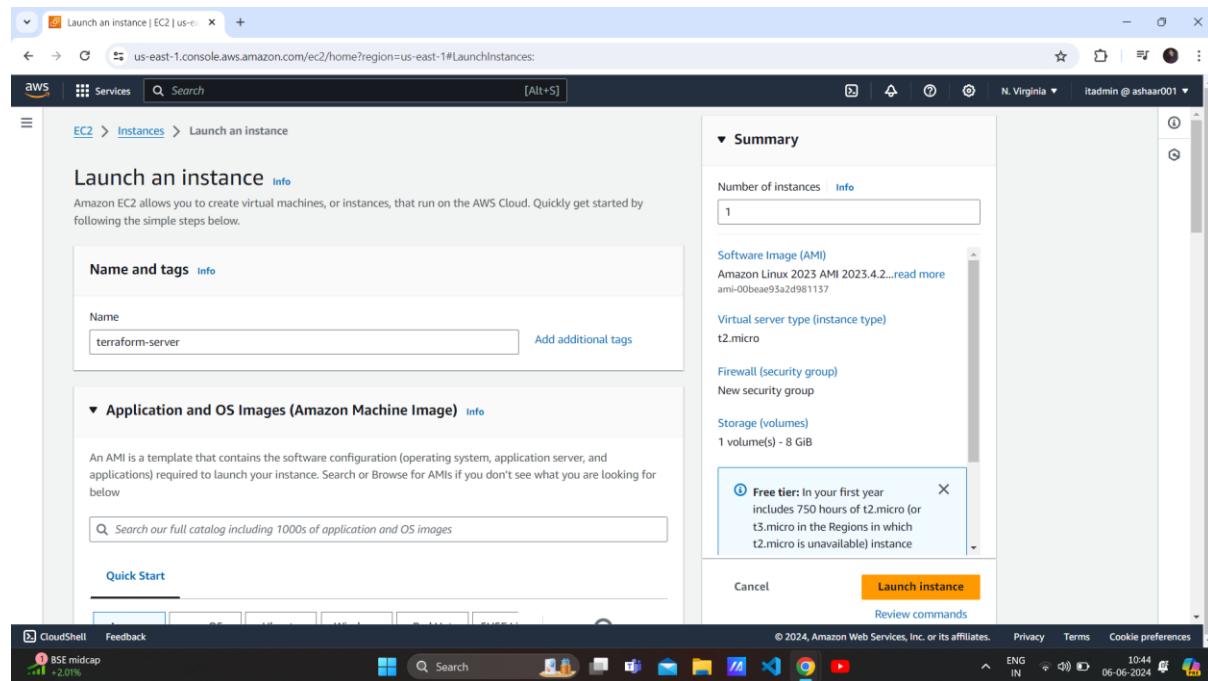
OUTLINE TIMELINE

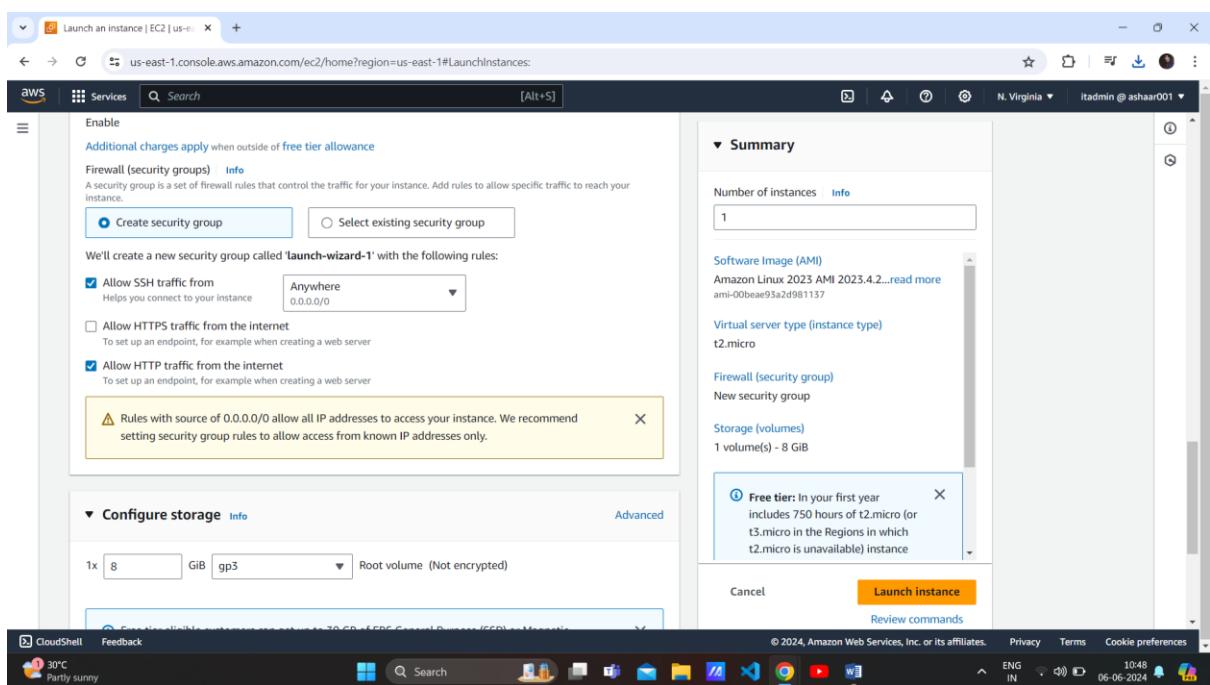
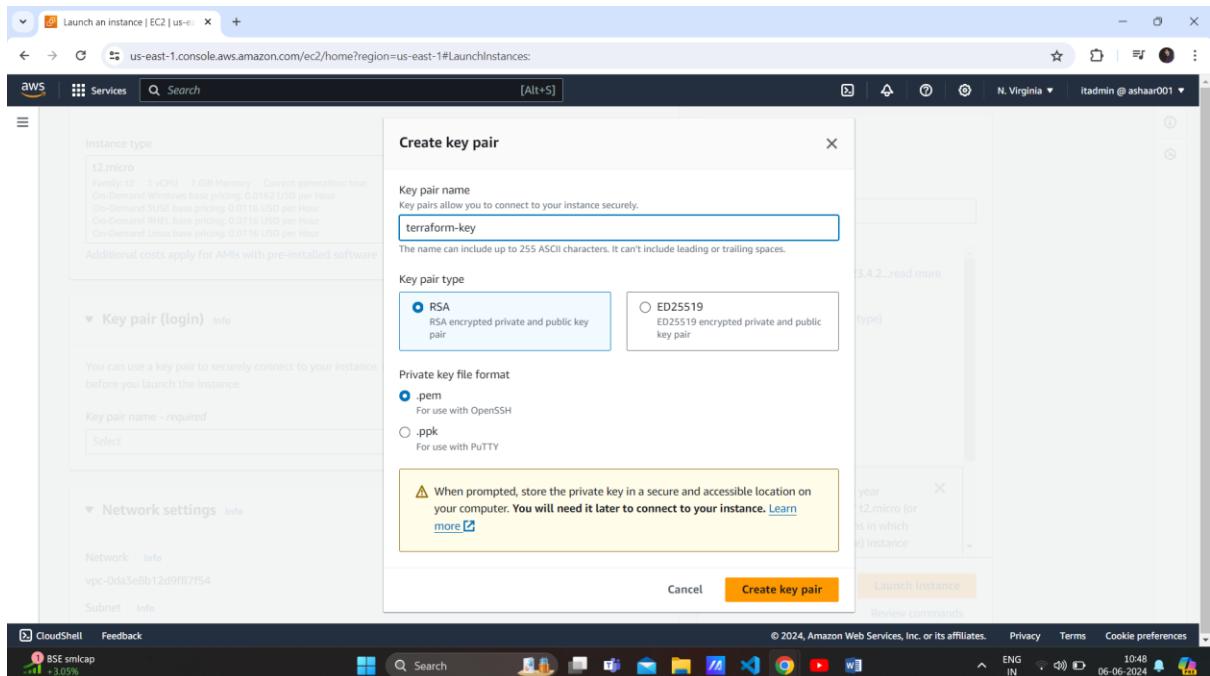
30°C Light rain



2. DevOps Perspective:

1. Creating terraform Ec2 instances and installing terraform into that instance.





The screenshot shows the AWS EC2 Instances page. The left sidebar is collapsed. The main content area displays a table titled "Instances (1) Info". A single row is present, showing an instance named "terraform-server" with the ID "i-09f5af002c2681b00". The instance is listed as "Running" with the type "t2.micro" and status "Initializing". The table includes columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, and Public IPv4 DNS. Below the table, a modal window titled "Select an instance" is open, listing the same instance. The bottom of the screen shows a Windows taskbar with various icons and system status.

The screenshot shows an EC2 Instance Connect session. The title bar indicates "EC2 Instance Connect | us-east-1". The main content is a terminal window displaying a Linux prompt. The user has run the command "sudo su" and is now root. They have also run "yum update -y". The bottom of the screen shows a Windows taskbar with various icons and system status.

Instances | EC2 | us-east-1 EC2 Instance Connect | us-east-1

```
(ec2-user@ip-172-31-17-130 ~]$ sudo su
[root@ip-172-31-17-130 ec2-user]# yum update -y
Last metadata expiration check: 0:04:17 ago on Thu Jun  6 05:20:31 2024.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-17-130 ec2-user]# sudo yum install -y yum-utils shadow-utils
Last metadata expiration check: 0:08:28 ago on Thu Jun  6 05:20:31 2024.
Package dnf-utils-4.3.0-13.amzn2023.0.4.noarch is already installed.
Package shadow-utils-2:4.9-12.amzn2023.0.4.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-17-130 ec2-user]# sudo yum-config-manager --add-repo https://rpm.releases.hashicorp.com/AmazonLinux/hashicorp.repo
Adding repo from: https://rpm.releases.hashicorp.com/AmazonLinux/hashicorp.repo
[root@ip-172-31-17-130 ec2-user]# sudo yum -y install terraform
Hashicorp Stable - x86_64
Dependencies resolved.

-----
```

Package	Architecture	Version	Repository	Size
terraform	x86_64	1.8.5-1	hashicorp	26

i-09f5af002c2681b00 (terraform-server)

PublicIPs: 54.160.233.169 PrivateIPs: 172.31.17.130

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Instances | EC2 | us-east-1 EC2 Instance Connect | us-east-1

```
Installing : perl-lib-0.65-477.amzn2023.0.6.x86_64
Installing : perl-TermReadKey-2.38-9.amzn2023.0.2.x86_64
Installing : perl-File-Find-1.37-477.amzn2023.0.6.noarch
Installing : perl-Error-1.10.17029-5.amzn2023.0.2.noarch
Installing : perl-Git-2.40.1-1.amzn2023.0.3.noarch
Installing : git-2.40.1-1.amzn2023.0.3.x86_64
Installing : terraform-1.8.5-1.x86_64
Running scriptlet: terraform-1.8.5-1.x86_64
Verifying : git-2.40.1-1.amzn2023.0.3.x86_64
Verifying : git-core-2.40.1-1.amzn2023.0.3.x86_64
Verifying : git-core-doc-2.40.1-1.amzn2023.0.3.noarch
Verifying : perl-Error-1.10.17029-5.amzn2023.0.2.noarch
Verifying : perl-File-Find-1.37-477.amzn2023.0.6.noarch
Verifying : perl-Git-2.40.1-1.amzn2023.0.3.noarch
Verifying : perl-TermReadKey-2.38-9.amzn2023.0.2.x86_64
Verifying : perl-lib-0.65-477.amzn2023.0.6.x86_64
Verifying : terraform-1.8.5-1.x86_64

Installed:
git-2.40.1-1.amzn2023.0.3.x86_64
perl-Error-1.10.17029-5.amzn2023.0.2.noarch
perl-TermReadKey-2.38-9.amzn2023.0.2.x86_64

git-core-2.40.1-1.amzn2023.0.3.x86_64
perl-File-Find-1.37-477.amzn2023.0.6.noarch
perl-lib-0.65-477.amzn2023.0.6.x86_64

git-core-doc-2.40.1-1.amzn2023.0.3.noarch
perl-Git-2.40.1-1.amzn2023.0.3.noarch
terraform-1.8.5-1.x86_64

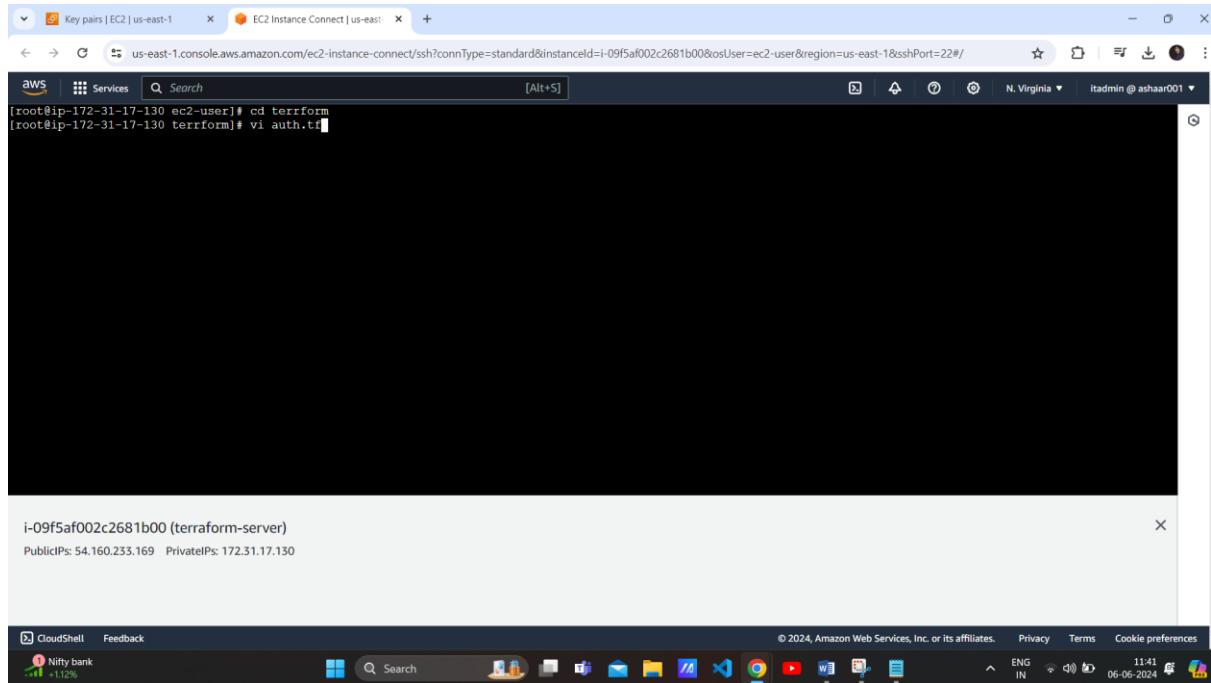
Complete!
[root@ip-172-31-17-130 ec2-user]# terraform --version
terraform v1.8.5
on linux_amd64
[root@ip-172-31-17-130 ec2-user]#
```

i-09f5af002c2681b00 (terraform-server)

PublicIPs: 54.160.233.169 PrivateIPs: 172.31.17.130

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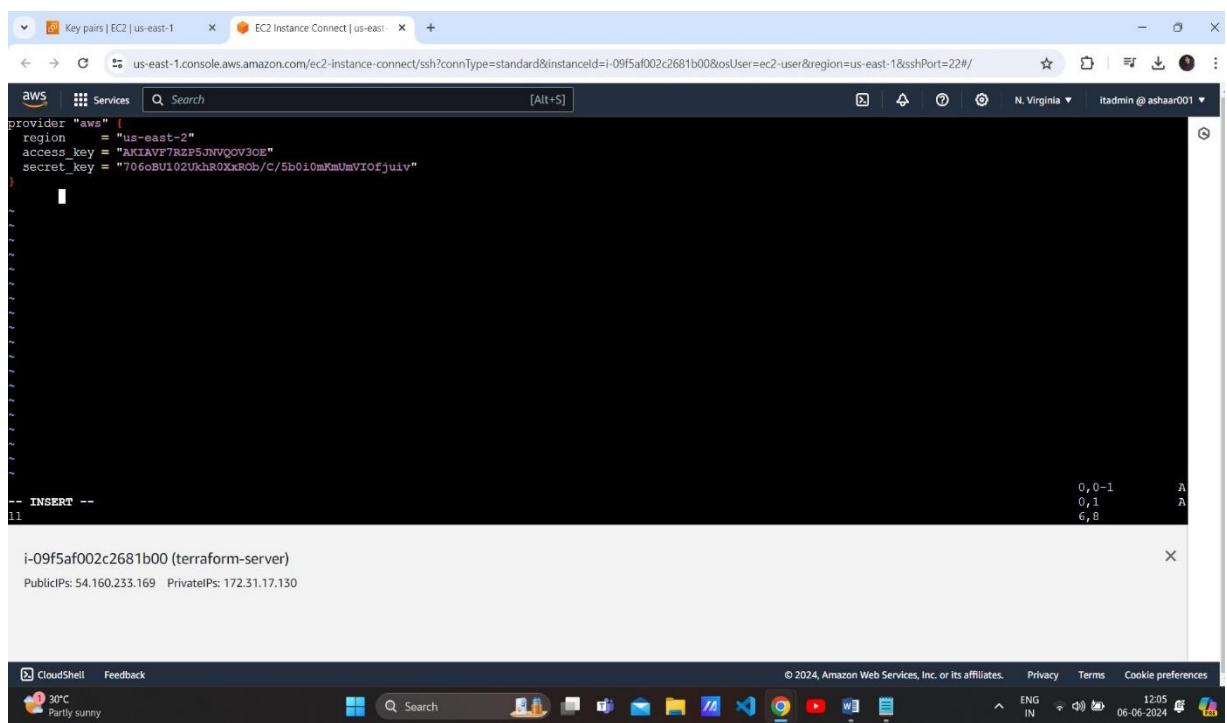
2. Creating two machine with terraform



```
[root@ip-172-31-17-130 ec2-user]# cd terraform
[root@ip-172-31-17-130 terraform]# vi auth.tf
```

i-09f5af002c2681b00 (terraform-server)
PublicIPs: 54.160.233.169 PrivateIPs: 172.31.17.130

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```
provider "aws" {
  region      = "us-east-2"
  access_key  = "AKIAV7RZP5JNVQOV3OE"
  secret_key  = "706oBU102UkhR0XxRob/c/5b0i0mKmUmVIOfjuiv"
}

-- INSERT --
11
```

i-09f5af002c2681b00 (terraform-server)
PublicIPs: 54.160.233.169 PrivateIPs: 172.31.17.130

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```

Key pairs | EC2 | us-east-1 x EC2 Instance Connect | us-east-1 x
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-09f5af002c2681b00&osUser=ec2-user&region=us-east-1&sshPort=22/
[Alt+S] N. Virginia itadmin @ ashhaar01

aws Services Search [root@ip-172-31-17-130 terraform]# terraform init
Initializing the backend...
Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v5.52.0...
- Installed hashicorp/aws v5.52.0 (signed by HashiCorp)

Terraform has created a lock file .terraform.lock.hcl to record the provider selections it made above. Include this file in your version control repository so that Terraform can guarantee to make the same selections by default when you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see any changes that are required for your infrastructure. All Terraform commands should now work.

If you ever set or change modules or backend configuration for Terraform, rerun this command to reinitialize your working directory. If you forget, other commands will detect it and remind you to do so if necessary.
[root@ip-172-31-17-130 terraform]# terraform apply --auto-approve

i-09f5af002c2681b00 (terraform-server)
Public IPs: 54.160.233.169 Private IPs: 172.31.17.150

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30°C Partly sunny 12:11 06-06-2024 ENG IN

```

Vi Ec2.tf

```
resource "aws_vpc" "my_vpc" {
    cidr_block = "172.16.0.0/16"
```

```
tags = {
```

```
    Name = "tf-example"
```

```
}
```

```
}
```

```
resource "aws_subnet" "my_subnet" {
```

```
    vpc_id      = aws_vpc.my_vpc.id
```

```
    cidr_block   = "172.16.10.0/24"
```

```
    availability_zone = "us-east-1b"
```

```
tags = {
```

```
    Name = "tf-example"
```

```
}

}

resource "aws_network_interface" "foo" {

subnet_id = aws_subnet.my_subnet.id

private_ips = ["172.16.10.100"]

tags = {

  Name = "primary_network_interface"

}

}

resource "aws_instance" "t2_medium" {

ami      = "ami-04b70fa74e45c3917"

instance_type = "t2.medium"

key_name = "Dev-nvir"

network_interface {

  network_interface_id = aws_network_interface.foo.id

  device_index      = 0

}

credit_specification {

  cpu_credits = "standard"

}

}
```

```

resource "aws_instance" "t2_micro" {

ami      = "ami-04b70fa74e45c3917"
instance_type = "t2.micro"
key_name = "node-key"

network_interface {

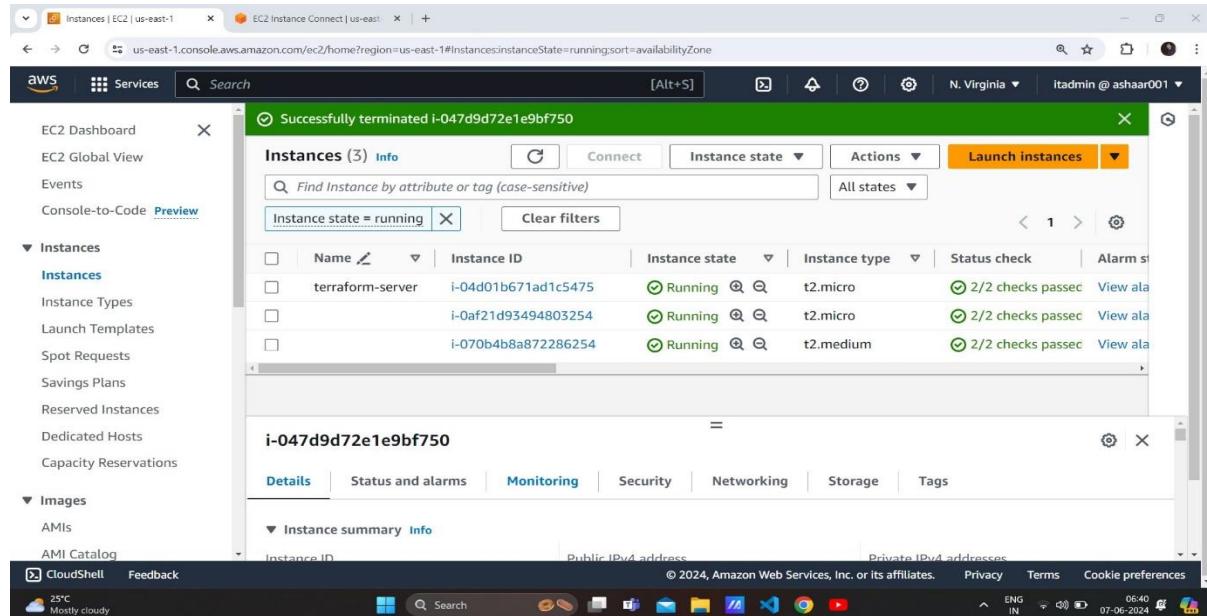
network_interface_id = aws_network_interface.foo.id
device_index      = 0
}

credit_specification {

cpu_credits = "standard"
}
}

```

terraform apply -auto-approve



2. Installing java, maven, docker, Jenkins and ansible in master server.

- **apt install maven -y**
- **apt install openjdk-17-jdk -y**
- **apt install docker.io -y**

//ansible.sh

```
#!/bin/bash

sudo apt update

sudo apt install software-properties-common

sudo add-apt-repository --yes --update ppa:ansible/ansible

sudo apt install ansible
```

//jenkin.sh

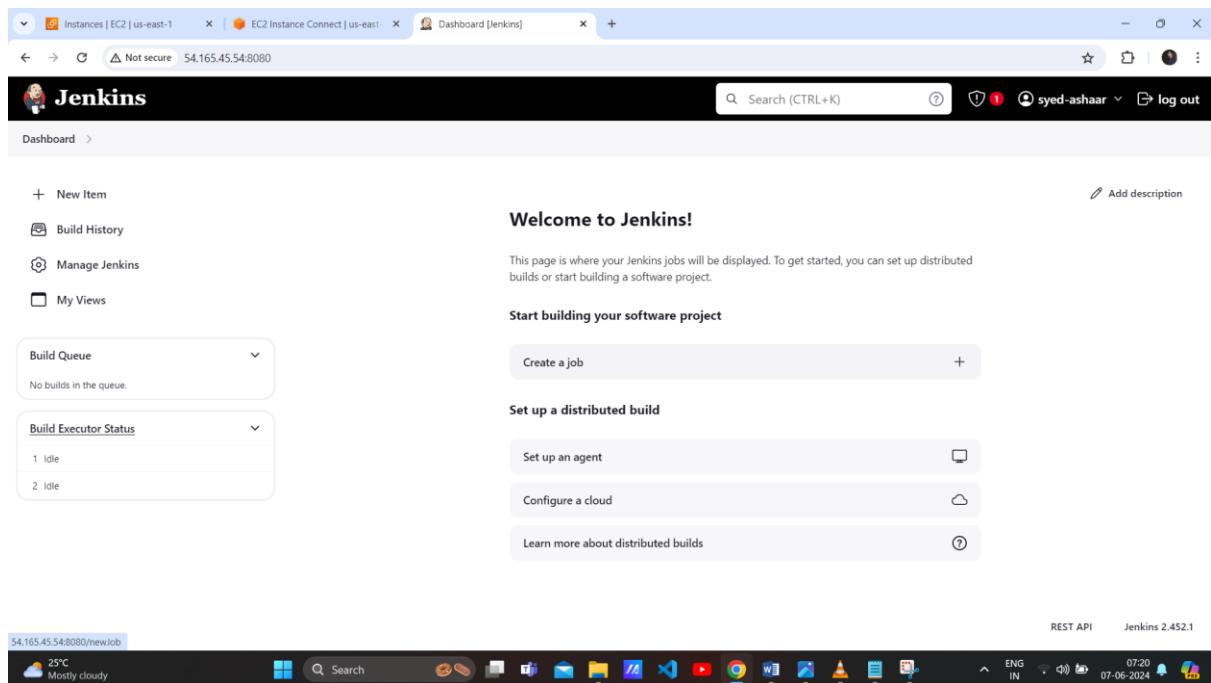
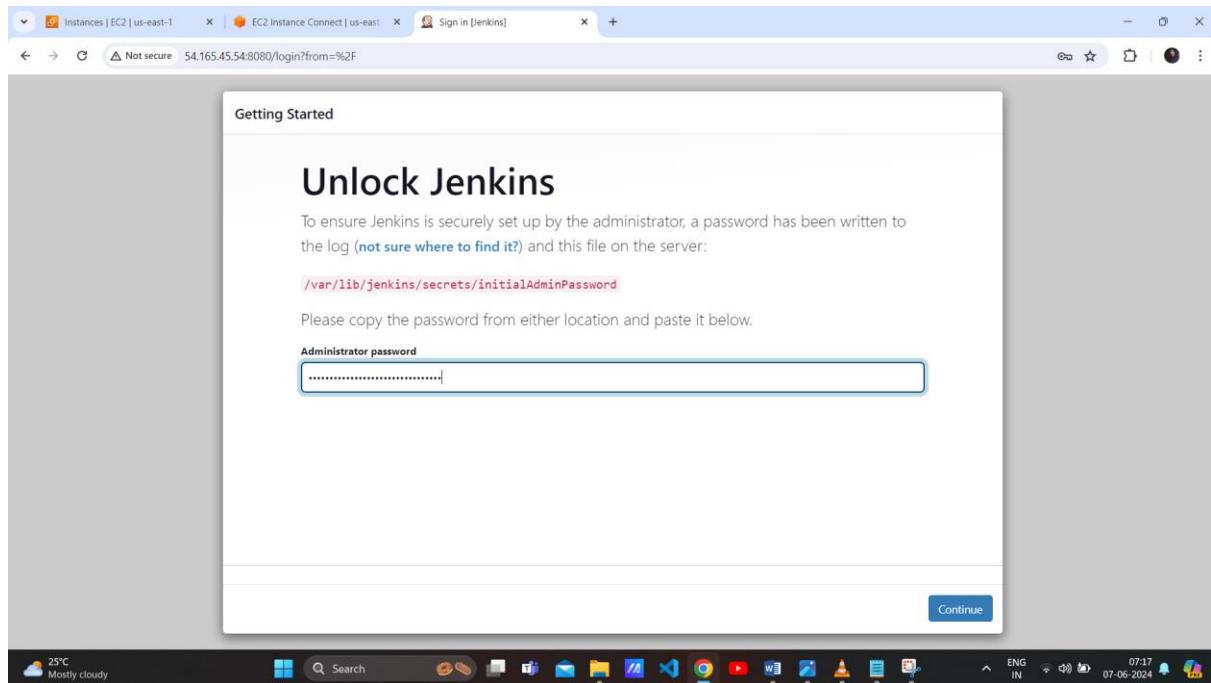
```
#!/bin/bash

sudo wget -O /usr/share/keyrings/jenkins-keyring.asc \
https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key

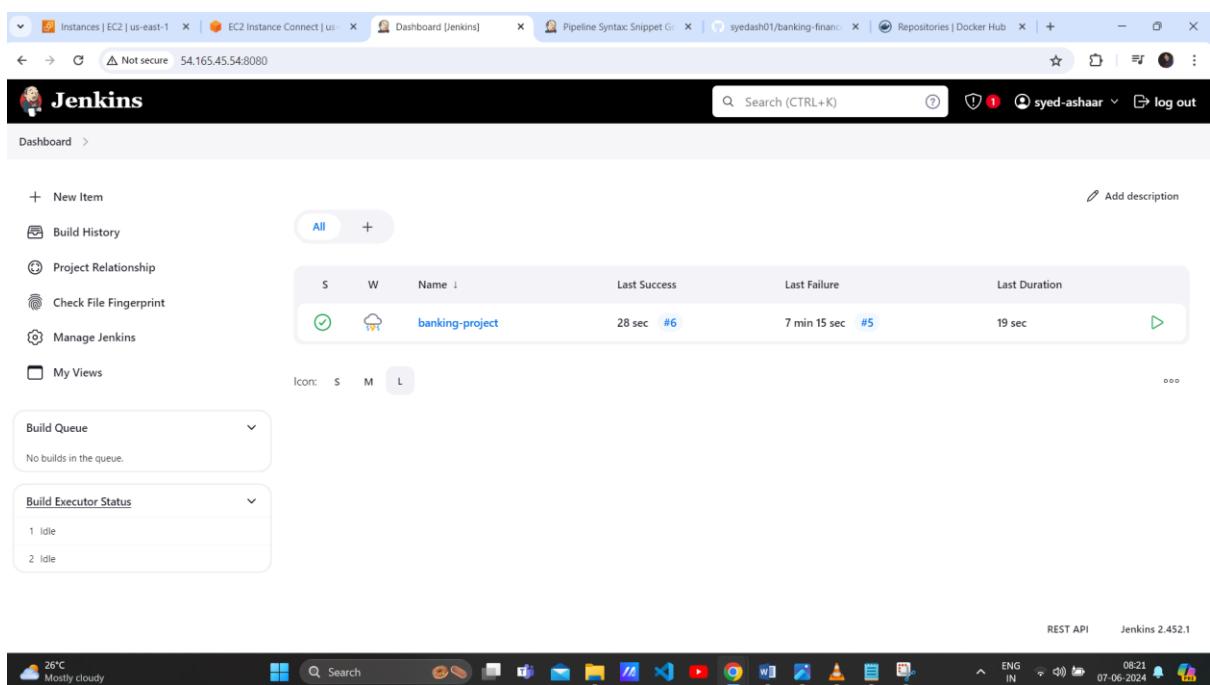
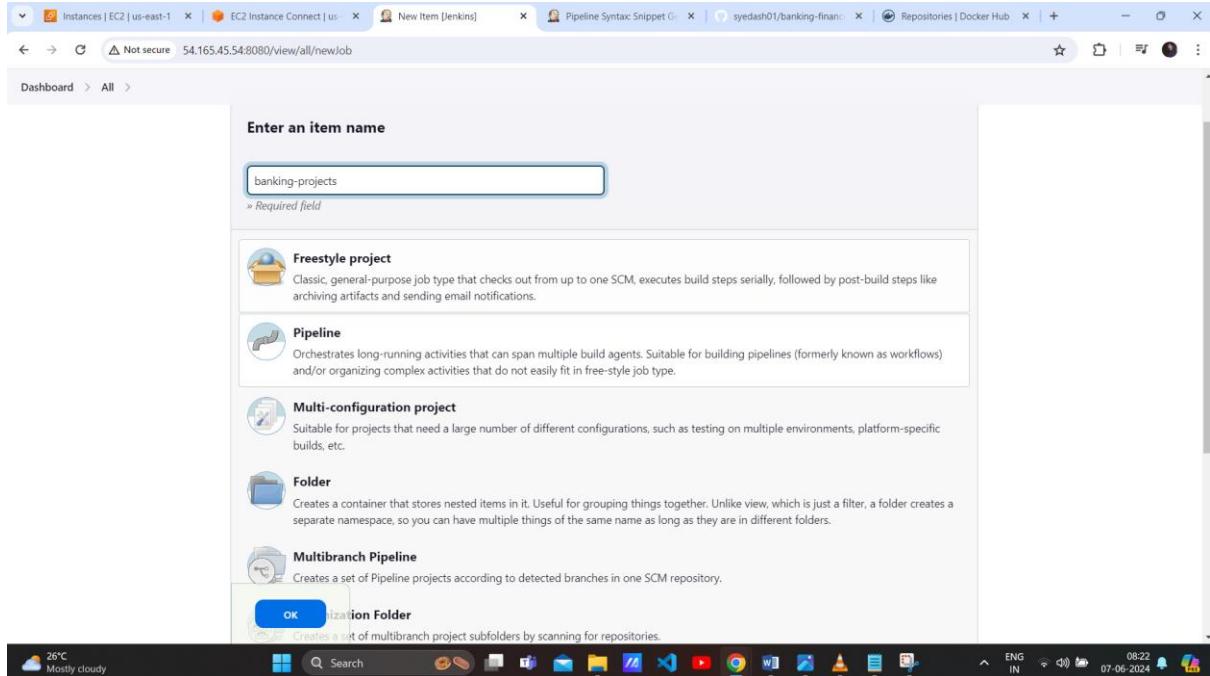
echo "deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc]" \
https://pkg.jenkins.io/debian-stable binary/ | sudo tee \
/etc/apt/sources.list.d/jenkins.list > /dev/null

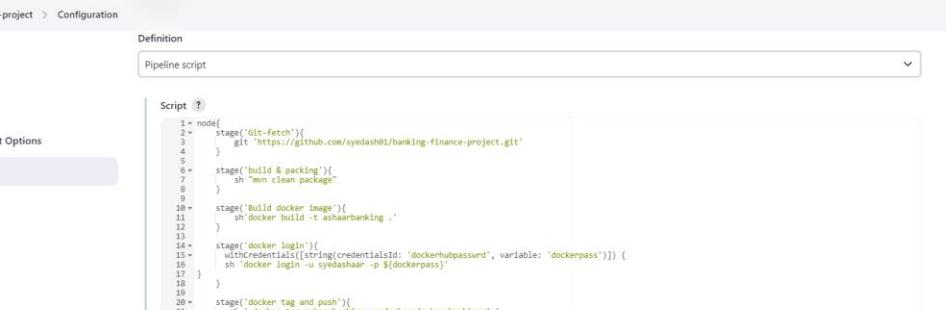
sudo apt-get update

sudo apt-get install jenkins
```



Creating and running Jenkins CI/CD pipeline and deploying on host-server.





The screenshot shows the Jenkins Pipeline configuration page for a project named 'banking-project'. The pipeline script is defined in Groovy syntax:

```
script {
    node{
        stage('Git-Fetch'){
            git 'https://github.com/syedash01/banking-finance-project.git'
        }
        stage('build & packing'){
            sh "mvn clean package"
        }
        stage('Build docker image'){
            sh 'docker build -t ashaarbanking .'
        }
        stage('docker login'){
            withCredentials([string(credentialsId: 'dockernhubpassword', variable: 'dockerpass')]) {
                sh 'docker login syedashhaar -p ${dockerpass}'
            }
        }
        stage('docker tag and push'){
            sh 'docker tag ashaarbanking syedashhaar/ashaarbanking:1'
            sh 'docker push syedashhaar/ashaarbanking:1'
        }
        stage('deploy on host-server'){
            ansiblePlaybookbecome: true, credentialsId: 'ansible-config', disableHostKeyChecking: true, installation: 'ansible', inventory: '/etc/ansible/hosts'
        }
    }
}
```

Below the script, there is a checkbox labeled 'Use Groovy Sandbox' which is checked.

Add Jenkins user to docker group

Usermod -aG docker Jenkins

Build now

The screenshot shows a browser window with multiple tabs open. The active tab is titled "Console Output" and displays Jenkins pipeline logs. The logs show the pipeline starting, running on Jenkins, and performing a git fetch operation from a GitHub repository. The GitHub URL in the logs is <https://github.com/syedash01/banking-finance-project.git>. The Jenkins instance is running on port 8080, as indicated by the URL in the address bar.

```
Started by user syed-ashaar
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/banking-project
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Git-fetch)
[Pipeline] git
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/banking-project/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/syedash01/banking-finance-project.git # timeout=10
Fetching upstream changes from https://github.com/syedash01/banking-finance-project.git
> git --version # timeout=10
> git -version # git version 2.43.0'
> git fetch --tags --force --progress -- https://github.com/syedash01/banking-finance-project.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision 9cb3a11cd0f04281ae26592e0b05409917aa09e9 (refs/remotes/origin/master)
> git config core.sparsecheckout # timeout=10
> git checkout -f 9cb3a11cd0f04281ae26592e0b05409917aa09e9 # timeout=10
> git branch -a -v --no-abbrev # timeout=10
> git branch -D master # timeout=10
> git checkout -b master 9cb3a11cd0f04281ae26592e0b05409917aa09e9 # timeout=10
Commit message: "#"
> git rev-list --no-walk 9cb3a11cd0f04281ae26592e0b05409917aa09e9 # timeout=10
[Pipeline] }
```

```
[0;1;34mINFO[0m] Using 'UTF-8' encoding to copy filtered resources.
[0;1;34mINFO[0m] Using 'UTF-8' encoding to copy filtered properties files.
[0;1;34mINFO[0m] Copying 1 resource
[0;1;34mINFO[0m] Copying 81 resources
[0;1;34mINFO[0m]
[0;1;34mINFO[0m] [1m-- [0;32mmaven-compiler-plugin:3.10.1:compile@[m @ [0;36mbanking@[0;1m --[m
[0;1;34mINFO[0m] Changes detected - recompiling the module!
[0;1;34mINFO[0m] Compiling 5 source files to /var/lib/jenkins/workspace/banking-project/target/classes
[0;1;34mINFO[0m]
[0;1;34mINFO[0m] [1m-- [0;32mmaven-resources-plugin:3.2.0:testResources@[m @ [0;36mbanking@[0;1m --[m
[0;1;34mINFO[0m] Using 'UTF-8' encoding to copy filtered resources.
[0;1;34mINFO[0m] skip non existing resourceDirectory /var/lib/jenkins/workspace/banking-project/src/test/resources
[0;1;34mINFO[0m]
[0;1;34mINFO[0m] [1m-- [0;32mmaven-compiler-plugin:3.10.1:testCompile@[m @ [0;36mbanking@[0;1m --[m
[0;1;34mINFO[0m] Changes detected - recompiling the module!
[0;1;34mINFO[0m] Compiling 2 source files to /var/lib/jenkins/workspace/banking-project/target/test-classes
[0;1;34mINFO[0m]
[0;1;34mINFO[0m] [1m-- [0;32mmaven-surefire-plugin:2.22.2:test@[m @ [0;36mbanking@[0;1m --[m
[0;1;34mINFO[0m]
[0;1;34mINFO[0m] -----
[0;1;34mINFO[0m] T E S T S
[0;1;34mINFO[0m] -----
[0;1;34mINFO[0m] Running com.project.staragile.banking@[1mTestAccountService@[m
03:51:26.381 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating CacheAwareContextLoaderDelegate from class [org.springframework.test.context.cache.DefaultCacheAwareContextLoaderDelegate]
03:51:26.397 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating BootstrapContext using constructor [public org.springframework.test.context.support.DefaultBootstrapContext([java.lang.Class,org.springframework.test.context.CacheAwareContextLoaderDelegate])]
03:51:26.444 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating TestContextBootstrapper for test class [com.project.staragile.banking.TestAccountService] from class [org.springframework.boot.test.context.SpringBootTestContextBootstrapper]
03:51:26.460 [main] INFO org.springframework.boot.test.context.SpringBootTestContextBootstrapper - Neither @ContextConfiguration nor @ContextHierarchy found for test class [com.project.staragile.banking.TestAccountService], using SpringBootTestContextBootstrapper
03:51:26.460 [main] DEBUG org.springframework.test.context.support.AbstractContextLoader - Did not detect default resource location for test class [com.project.staragile.banking.TestAccountService]; class path resource [com/project/staragile/banking/TestAccountService-context.xml] does not exist
```

```
Instances | EC2 | us-east-1 x EC2 Instance Connect | us- x banking-project #12 Con... banking-finance-project/... x Repositories | Docker Hub x CBS x + - _  
Not secure 54.165.45.54:8080/job/banking-project/12/console  
  
Dashboard > banking-project > #12  
  
2024-06-07 03:51:31.385 INFO 10582 --- [ionShutdownHook] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown initiated...  
2024-06-07 03:51:31.389 INFO 10582 --- [ionShutdownHook] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown completed.  
[[],1;34mINFO[m] Results:  
[[],1;34mINFO[m]  
[[],1;34mINFO[m] [l;1;32mTests run: 2, Failures: 0, Errors: 0, Skipped: 0@[m  
[[],1;34mINFO[m]  
[[],1;34mINFO[m]  
[[],1;34mINFO[m] [l;1;32mmain artifian with repackaged archive  
[[],1;34mINFO[m]  
[[],1;34mINFO[m] [l;1m--- [l;0;32mmaven-jar-plugin:3.2.2:jar@m[l;1m(default-jar)@m @ [36mbanking@[0;1m ---@[m  
[[],1;34mINFO[m] Building jar: /var/lib/jenkins/workspace/banking-project/target/banking-0.0.1-SNAPSHOT.jar  
[[],1;34mINFO[m]  
[[],1;34mINFO[m] [l;0;32mspring-boot-maven-plugin:2.7.4:repackage@m[l;1m(repackage)@m @ [36mbanking@[0;1m ---@[m  
[[],1;34mINFO[m] Replacing main artifact with repackaged archive  
[[],1;34mINFO[m] [l;1m-----@[m  
[[],1;34mINFO[m] [l;1;2mBUILD SUCCESS@!m  
[[],1;34mINFO[m] [l;1m-----@[m  
[[],1;34mINFO[m] Total time: 11.016 s  
[[],1;34mINFO[m] Finished at: 2024-06-07T03:51:33Z  
[[],1;34mINFO[m] [l;1m-----@[m  
[Pipeline] ]  
[Pipeline] // stage  
[Pipeline] stage  
[Pipeline] { [Build docker image]  
[Pipeline] sh  
+ docker build -t ashaarbanking .  
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.  
Install the buildx component to build images with BuildKit:  
https://docs.docker.com/go/buildx/  
  
Sending build context to Docker daemon 58.54kB  
  
Step 1/4 : FROM openjdk:11  
--> 474932d998b7  
Step 2/4 : ARG JAR_FILE=target/*.jar
```

```
Instances | EC2 | us-east-1 < EC2 Instance Connect | us- < banking-project #12 Con... banking-finance-project/... Repositories | Docker Hub x CBS x + -
```

Dashboard > banking-project > #12

```
[Pipeline] stage
[Pipeline] | (Build docker image)
[Pipeline] sh
+ docker build -t ashaarbanking .
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
Install the buildx component to build images with BuildKit:
https://docs.docker.com/go/buildx/

Sending build context to Docker daemon 58.54MB

Step 1/4 : FROM openjdk:11
--> 474952d998b7
Step 2/4 : ARG JAR_FILE=target/*.jar
--> Using cache
--> eafad7bc6f5b
Step 3/4 : COPY ${JAR_FILE} app.jar
--> 476414dc8e0
Step 4/4 : ENTRYPOINT ["java","-jar","/app.jar"]
--> Running in b680dca2319f
Removing intermediate container b680dca2319f
--> 101616df43b0
Successfully built 101616df43b0
Successfully tagged ashaarbanking:latest
[Pipeline]
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (docker login)
[Pipeline] withCredentials
Masking supported pattern matches of $dockerpass
[Pipeline] {
[Pipeline] sh
+ docker login -u syedshaar -p ****
WARNING! Using --password via the CLI is insecure. Use --password-stdin.
WARNING! Your password will be stored unencrypted in /var/lib/jenkins/.docker/config.json.
Configuring credential helper to remove this warning. See

```

Instances | EC2 | us-east-1 | EC2 Instance Connect | us- | banking-project #12 Cons... | banking-finance-project/... | Repositories | Docker Hub | CBS

Not secure 54.165.45.54:8080/job/banking-project/12/console

Configure a credential helper to remove this warning. See <https://docs.docker.com/engine/reference/commandline/login/#credentials-store>

Login Succeeded

```
[Pipeline]
[Pipeline] // withCredentials
[Pipeline]
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (docker tag and push)
[Pipeline] sh
+ docker tag ashaarbanking syedashaar/ashaarbanking:1
[Pipeline] sh
+ docker push syedashaar/ashaarbanking:1
The push refers to repository [docker.io/syedashaar/ashaarbanking]
d893f713709b: Preparing
7b7f3078e0db: Preparing
826c3ddb29c: Preparing
b626401ef603: Preparing
9b55156abf26: Preparing
2935db30c9f: Preparing
03127cd479b: Preparing
9c742cd6c7a5: Preparing
03127cd479b: Waiting
2935db30c9f: Waiting
9c742cd6c7a5: Waiting
826c3ddb29c: Layer already exists
9b55156abf26: Layer already exists
7b7f3078e0db: Layer already exists
b626401ef603: Layer already exists
2935db30c9f: Layer already exists
03127cd479b: Layer already exists
9c742cd6c7a5: Layer already exists
d893f713709b: Pushed
1: digest: sha256:a33f2ef4eb04341428721230bc8cb7d5f2d8a2ba26bef7a613c9d0837d20f49c size: 2007
```

26°C Mostly cloudy

Search

ENG IN 09:30 07-06-2024

Instances | EC2 | us-east-1 | EC2 Instance Connect | us- | banking-project #12 Cons... | banking-finance-project/... | Repositories | Docker Hub | CBS

Not secure 54.165.45.54:8080/job/banking-project/12/console

Configure a credential helper to remove this warning. See <https://docs.docker.com/engine/reference/commandline/login/#credentials-store>

Login Succeeded

```
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (deploy on host-server)
[Pipeline] ansiblePlaybook
[banking-project] $ ansible-playbook ansible-playbook.yml -i /etc/ansible/hosts -b --become-user root --private-key /var/lib/jenkins/workspace/banking-project/ssh10845940543592914703.key -u ubuntu

PLAY [Configure Docker on EC2 Instances] ****
TASK [Gathering Facts] ****
ok: [34.235.115.160]

TASK [updating apt] ****
changed: [34.235.115.160]

TASK [Install Docker] ****
changed: [34.235.115.160]

TASK [Start Docker Service] ****
changed: [34.235.115.160]

TASK [Deploy Docker Container] ****
changed: [34.235.115.160]

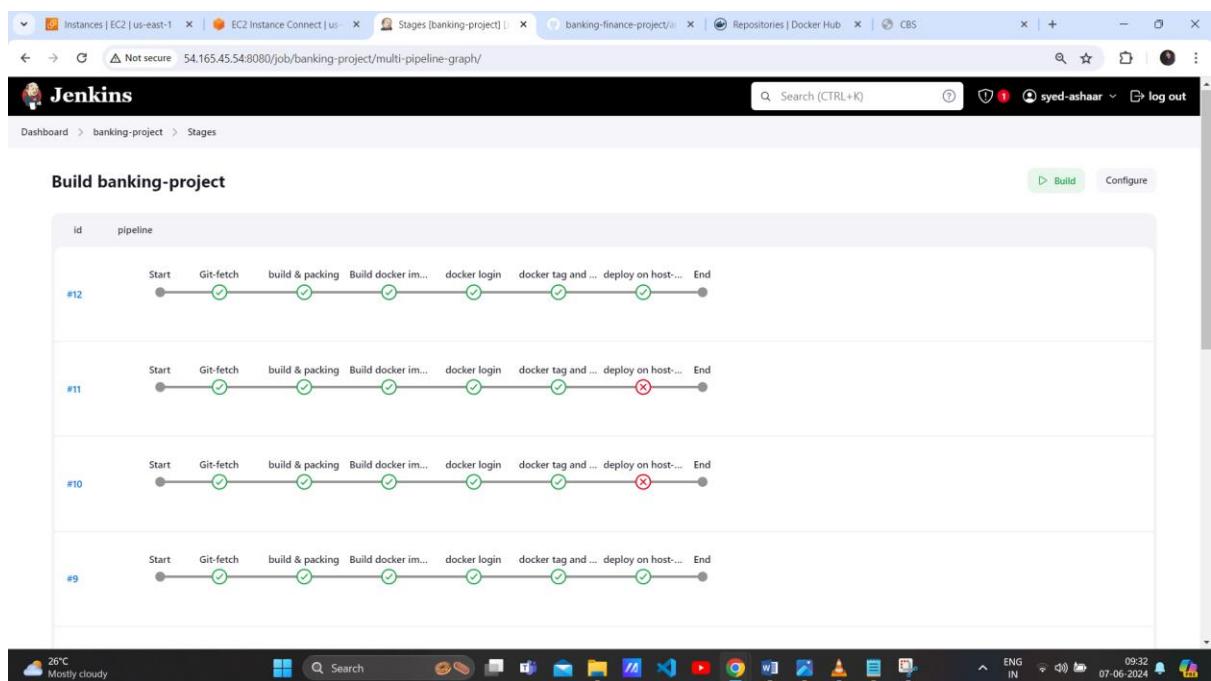
PLAY RECAP ****
34.235.115.160 : ok=5    changed=4    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

[Pipeline]
[Pipeline] // stage
[Pipeline]
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

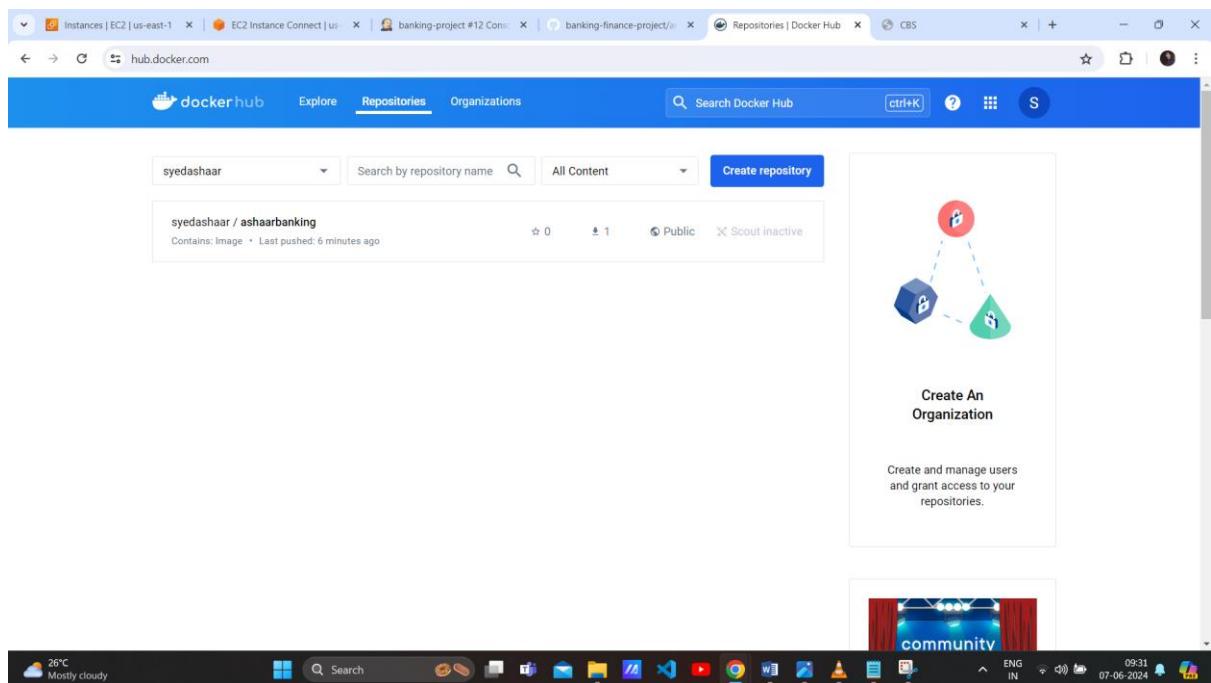
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Search

ENG IN 09:30 07-06-2024



DockerHub Repo



syedashaar/ashaarbanking

Updated 16 minutes ago

This repository does not have a description INCOMPLETE

This repository does not have a category INCOMPLETE

Tags

This repository contains 1 tag(s).

Tag	OS	Type	Pulled	Pushed
1	Image	Image	15 minutes ago	16 minutes ago

[See all](#)

Docker commands

To push a new tag to this repository:

```
docker push syedashaar/ashaarbanking:tagname
```

[Public View](#)

Automated Builds

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

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

[Upgrade](#)

Repository overview INCOMPLETE

An overview describes what your image does and how to run it. It displays in [the public view of your repository](#) once you have pushed some content.

Application running on host server ip on port 8084.

CIAL

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Repositories | Docker Hub

Not secure 34.235.115.160:8084

27°C Mostly cloudy

Using Prometheus and Grafana – For Automated Monitoring and Report Visualization :-

Grafana machine:

```
wget https://dl.grafana.com/enterprise/release/grafana-enterprise-8.4.4.linux-amd64.tar.gz
```

Is

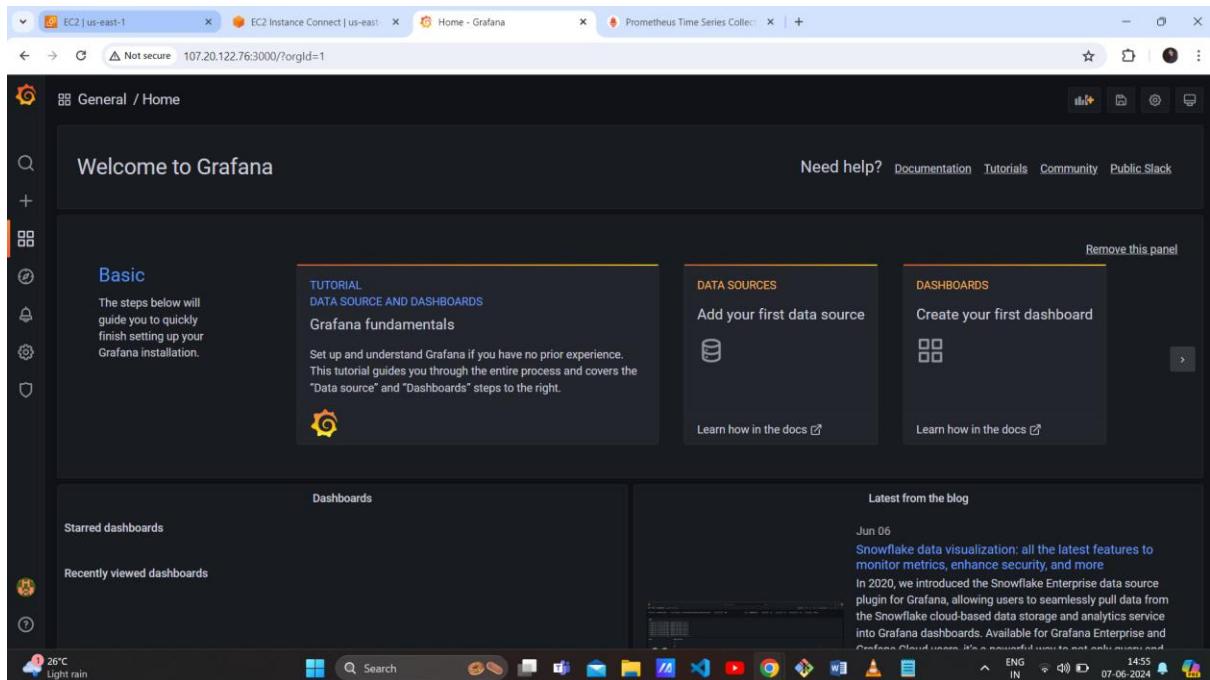
```
tar -zxvf grafana-enterprise-8.4.4.linux-amd64.tar.gz
```

15

```
cd grafana-8.4.4
```

`./bin/grafana-server`

Grafana servers works on port 3000...so in security group enable port 3000



Installation of Prometheus

wget

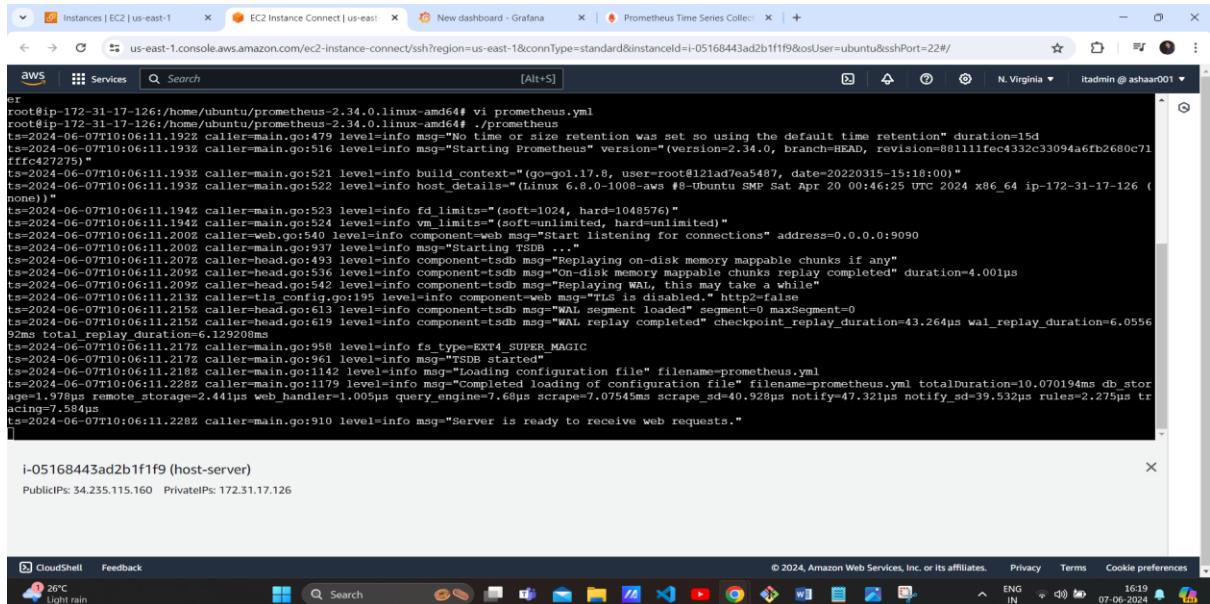
<https://github.com/prometheus/prometheus/releases/download/v2.34.0/prometheus-2.34.0.linux-amd64.tar.gz>

tar zxvf prometheus-2.34.0.linux-amd64.tar.gz

cd prometheus-2.34.0.linux-amd64

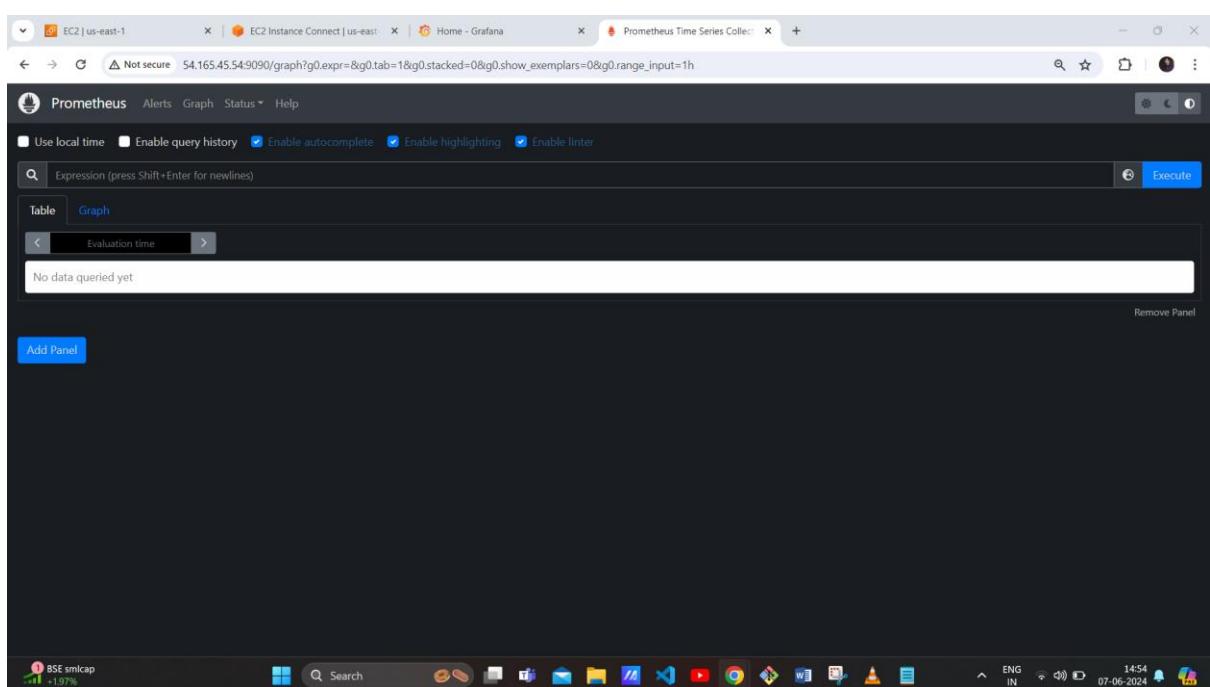
./prometheus

prometheus servers works on port 9090...so in security group enable port 9090



```
root@ip-172-31-17-126:/home/ubuntu/prometheus-2.34.0.linux-amd64# vi prometheus.yml
root@ip-172-31-17-126:/home/ubuntu/prometheus-2.34.0.linux-amd64# ./prometheus
ts=2024-06-07T10:06:11.193Z caller=main.go:416 level=info msg="No time or size retention was set so using the default time retention" duration=15d
ts=2024-06-07T10:06:11.193Z caller=main.go:516 level=info msg="Starting Prometheus" version="2.34.0" branch=HEAD revision=001111fec4332c33094a6fb2680c71fffc427275"
ts=2024-06-07T10:06:11.193Z caller=main.go:521 level=info build_context="(go=gol17.8, user=root@121ad7ea5487, date=20220315-15:18:00)"
ts=2024-06-07T10:06:11.193Z caller=main.go:522 level=info host_details="(Linux 6.8.0-1008-aws #8-Ubuntu SMP Sat Apr 20 00:46:25 UTC 2024 x86_64 ip-172-31-17-126 (none))"
ts=2024-06-07T10:06:11.194Z caller=main.go:523 level=info fd_limits=(soft=1024, hard=1048576)
ts=2024-06-07T10:06:11.194Z caller=main.go:524 level=info vm_limits=(soft=unlimited, hard=unlimited)
ts=2024-06-07T10:06:11.194Z caller=main.go:525 level=info msg="Starting WAL, this may take a while"
ts=2024-06-07T10:06:11.200Z caller=main.go:537 level=info msg="Starting TSDB"
ts=2024-06-07T10:06:11.207Z caller=head.go:493 level=info component=tsdb msg="Replaying on-disk memory mappable chunks if any"
ts=2024-06-07T10:06:11.209Z caller=head.go:536 level=info component=tsdb msg="On-disk memory mappable chunks replay completed" duration=4.001μs
ts=2024-06-07T10:06:11.209Z caller=head.go:542 level=info component=tsdb msg="Replaying WAL, this may take a while"
ts=2024-06-07T10:06:11.213Z caller=tls_config.go:195 level=info component=web msg="TLS is disabled." http2=false
ts=2024-06-07T10:06:11.215Z caller=head.go:613 level=info component=tsdb msg="WAL segment loaded" segment=0 maxSegment=0
ts=2024-06-07T10:06:11.215Z caller=head.go:619 level=info component=tsdb msg="WAL replay completed" checkpoint_replay_duration=43.264μs wal_replay_duration=6.055692ms total_replay_duration=6.29208ms
ts=2024-06-07T10:06:11.217Z caller=main.go:556 level=info fs_type=EXT4_SUPER_MAGIC
ts=2024-06-07T10:06:11.218Z caller=main.go:561 level=info msg="TSDB started"
ts=2024-06-07T10:06:11.218Z caller=main.go:1142 level=info msg="Loading configuration file" filename=prometheus.yml
ts=2024-06-07T10:06:11.228Z caller=main.go:1179 level=info msg="Completed loading of configuration file" filename=prometheus.yml totalDuration=10.070194ms db_storage=1.978μs remote_storage=2.441μs web_handler=1.005μs query_engine=7.68μs scrape=7.07545μs scrape_sd=40.928μs notify=47.321μs notify_sd=39.532μs rules=2.275μs tracing=7.584μs
ts=2024-06-07T10:06:11.228Z caller=main.go:910 level=info msg="Server is ready to receive web requests."
]

i-05168443ad2b1f1f9 (host-server)
Public IPs: 34.235.115.160 Private IPs: 172.31.17.126
```



Prometheus

Alerts Graph Status Help

Use local time Enable query history Enable autocomplete Enable highlighting Enable linter

Expression (press Shift+Enter for newlines) Execute

Table Graph

Evaluation time < >

No data queried yet

Add Panel Remove Panel

BSE smcap +1.97%

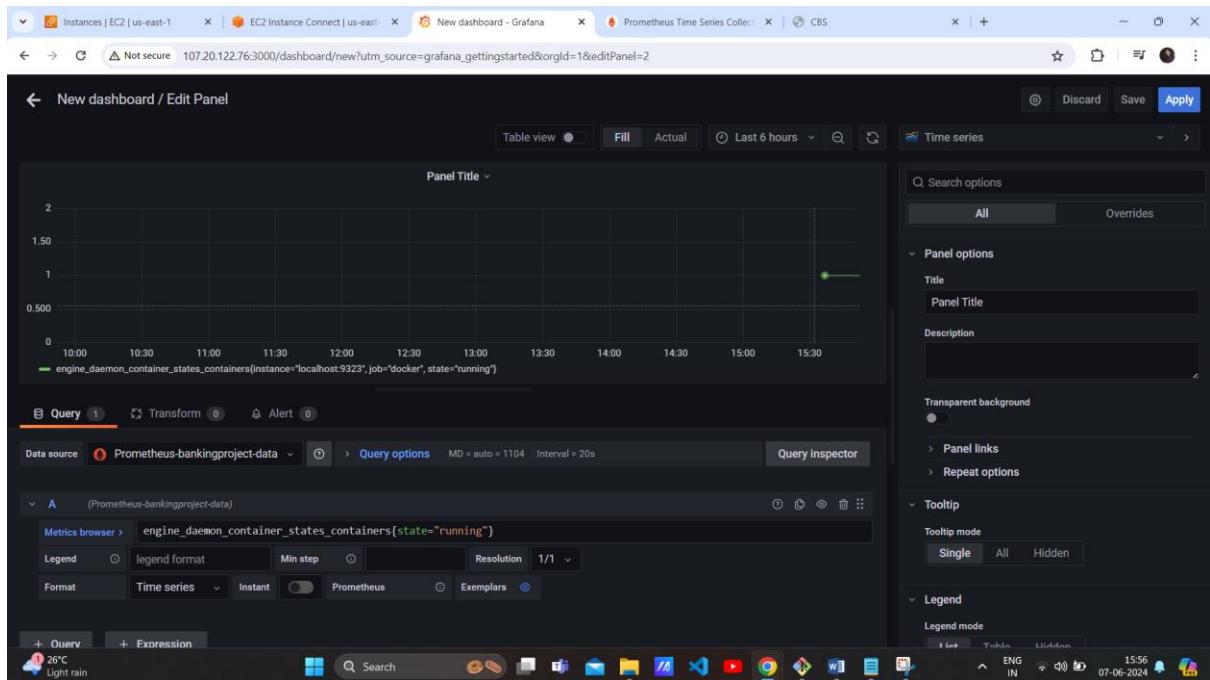
ENG IN 14:54 07-06-2024

Prometheus receive data

The screenshot shows the Prometheus Targets page. It displays two sections: 'docker (1/1 up)' and 'prometheus (1/1 up)'. Both sections show a single target with an 'UP' status. The 'docker' section has a 'Last Scrape' time of -3.437s ago and a 'Scrape Duration' of 3.523ms. The 'prometheus' section has a 'Last Scrape' time of 2.795s ago and a 'Scrape Duration' of 10.286ms. The page includes a search bar and navigation links for Alerts, Graph, Status, and Help.

Adding Data sources in grafana which data is fetching from Prometheus

The screenshot shows the Grafana Data Sources configuration page for a 'Prometheus-bankingproject-data' source. The 'Settings' tab is selected. The 'Name' field is set to 'Prometheus-bankingproject-data'. Under the 'HTTP' section, the 'URL' is set to 'http://34.235.115.160:9090/'. The 'Auth' section contains several toggle options: 'Basic auth' (off), 'With Credentials' (off), 'TLS Client Auth' (off), 'With CA Cert' (off), 'Skip TLS Verify' (off), and 'Forward OAuth identity' (off). The 'Custom HTTP Headers' section is empty. The page includes a search bar and navigation links for Settings and Dashboards.



Grafana monitoring Dashboard

