Academic Year: 2025-26 **Semester: V**

Class / Branch: TEIT

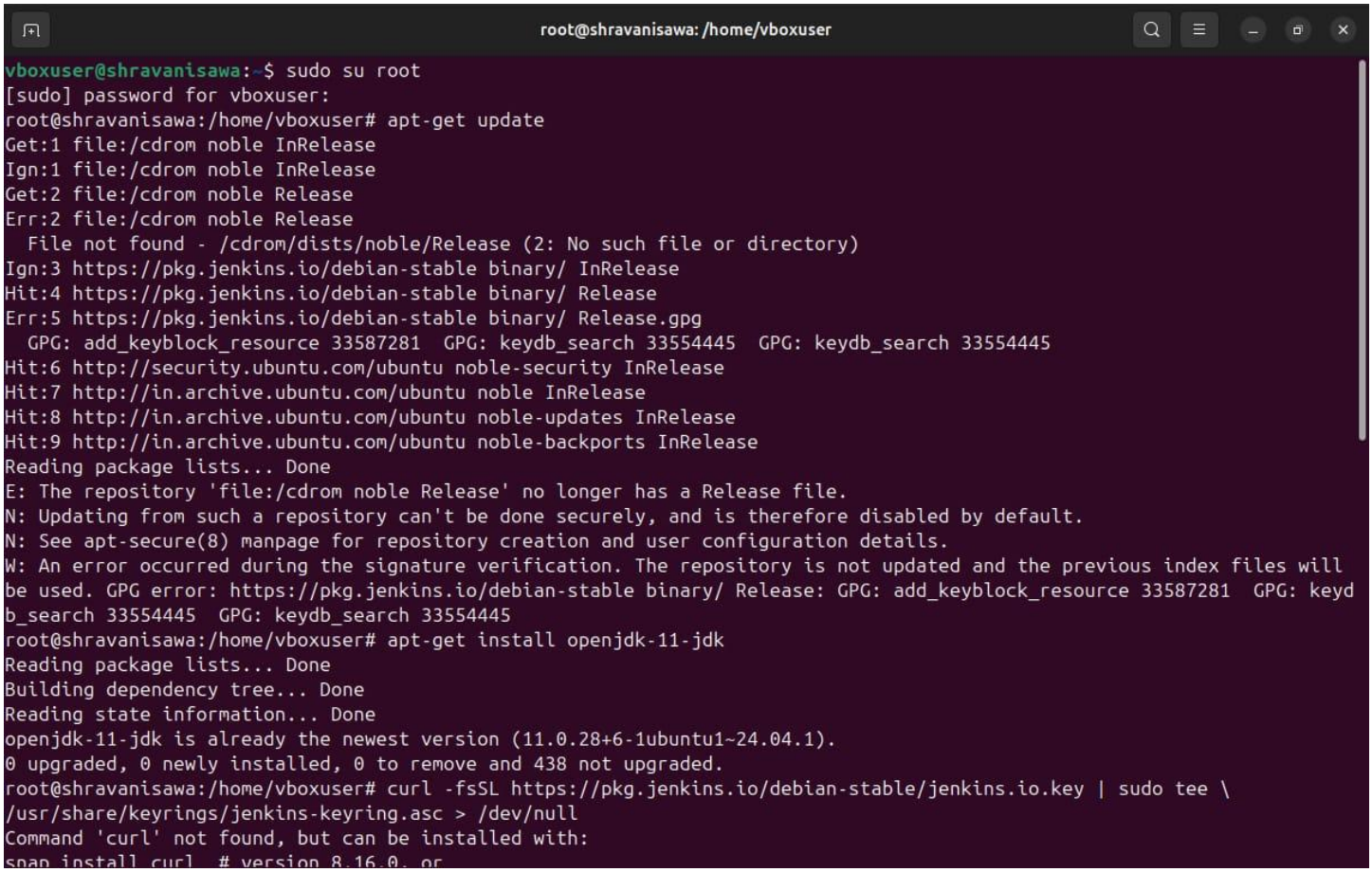
Subject: DevOps Lab

Name of Instructor: Prof. Sujata Oak

Name: Shravani Sawant
Moodle Id: 24204018
Roll No: 17

Experiment No. 5

Aim: To create and build a CI/CD pipeline in Jenkins to test and deploy an application over the tomcat server.



```
root@shravanisawa: /home/vboxuser
     Tasks: 38 (limit: 2278)
    Memory: 323.1M (peak: 367.3M)
       CPU: 2min 6.876s
    CGroup: /system.slice/jenkins.service
            └─9117 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkin>

Sep 14 07:44:01 shravanisawa jenkins[9117]: f8fd0a76091646e39c55245d8c960ca2
Sep 14 07:44:01 shravanisawa jenkins[9117]: This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Sep 14 07:44:01 shravanisawa jenkins[9117]: ************************************************************
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Sep 14 07:44:14 shravanisawa jenkins[9117]: 2025-09-14 07:44:14.053+0000 [id=30]        INFO        jenkins.InitReactor>
Sep 14 07:44:14 shravanisawa jenkins[9117]: 2025-09-14 07:44:14.075+0000 [id=23]        INFO        hudson.lifecycle.Li>
Sep 14 07:44:14 shravanisawa systemd[1]: Started jenkins.service - Jenkins Continuous Integration Server.
Sep 14 07:44:16 shravanisawa jenkins[9117]: 2025-09-14 07:44:16.395+0000 [id=47]        INFO        h.m.DownloadService>
Sep 14 07:44:16 shravanisawa jenkins[9117]: 2025-09-14 07:44:16.396+0000 [id=47]        INFO        hudson.util.Retrier>
lines 1-20/20 (END)
[1]+  Stopped                 sudo systemctl status jenkins
root@shravanisawa:/home/vboxuser# sudo ufw allow 8080
Skipping adding existing rule
Skipping adding existing rule (v6)
root@shravanisawa:/home/vboxuser# sudo ufw status
Status: active

To                         Action      From
--                         ------      ----
8080                       ALLOW       Anywhere
8080 (v6)                  ALLOW       Anywhere (v6)

root@shravanisawa:/home/vboxuser# sudo ufw enable
Firewall is active and enabled on system startup
root@shravanisawa:/home/vboxuser#
```

```
root@shravanisawa: /home/vboxuser
b_search 33554445  GPG: keydb_search 33554445
root@shravanisawa:/home/vboxuser# sudo apt-get install jenkins
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
jenkins is already the newest version (2.516.2).
0 upgraded, 0 newly installed, 0 to remove and 438 not upgraded.
root@shravanisawa:/home/vboxuser# sudo systemctl start jenkins.service
root@shravanisawa:/home/vboxuser# sudo systemctl status jenkins
● jenkins.service - Jenkins Continuous Integration Server
     Loaded: loaded (/usr/lib/systemd/system/jenkins.service; enabled; preset: enabled)
     Active: active (running) since Sun 2025-09-14 07:44:14 UTC; 57min ago
   Main PID: 9117 (java)
      Tasks: 38 (limit: 2278)
     Memory: 323.1M (peak: 367.3M)
        CPU: 2min 6.876s
     CGroup: /system.slice/jenkins.service
             └─9117 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkin>

Sep 14 07:44:01 shravanisawa jenkins[9117]: f8fd0a76091646e39c55245d8c960ca2
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Sep 14 07:44:16 shravanisawa jenkins[9117]: 2025-09-14 07:44:16.395+0000 [id=47]        INFO        h.m.DownloadService>
Sep 14 07:44:16 shravanisawa jenkins[9117]: 2025-09-14 07:44:16.396+0000 [id=47]        INFO        hudson.util.Retrier>
lines 1-20/20 (END)
[1]+  Stopped                 sudo systemctl status jenkins
root@shravanisawa:/home/vboxuser#
```
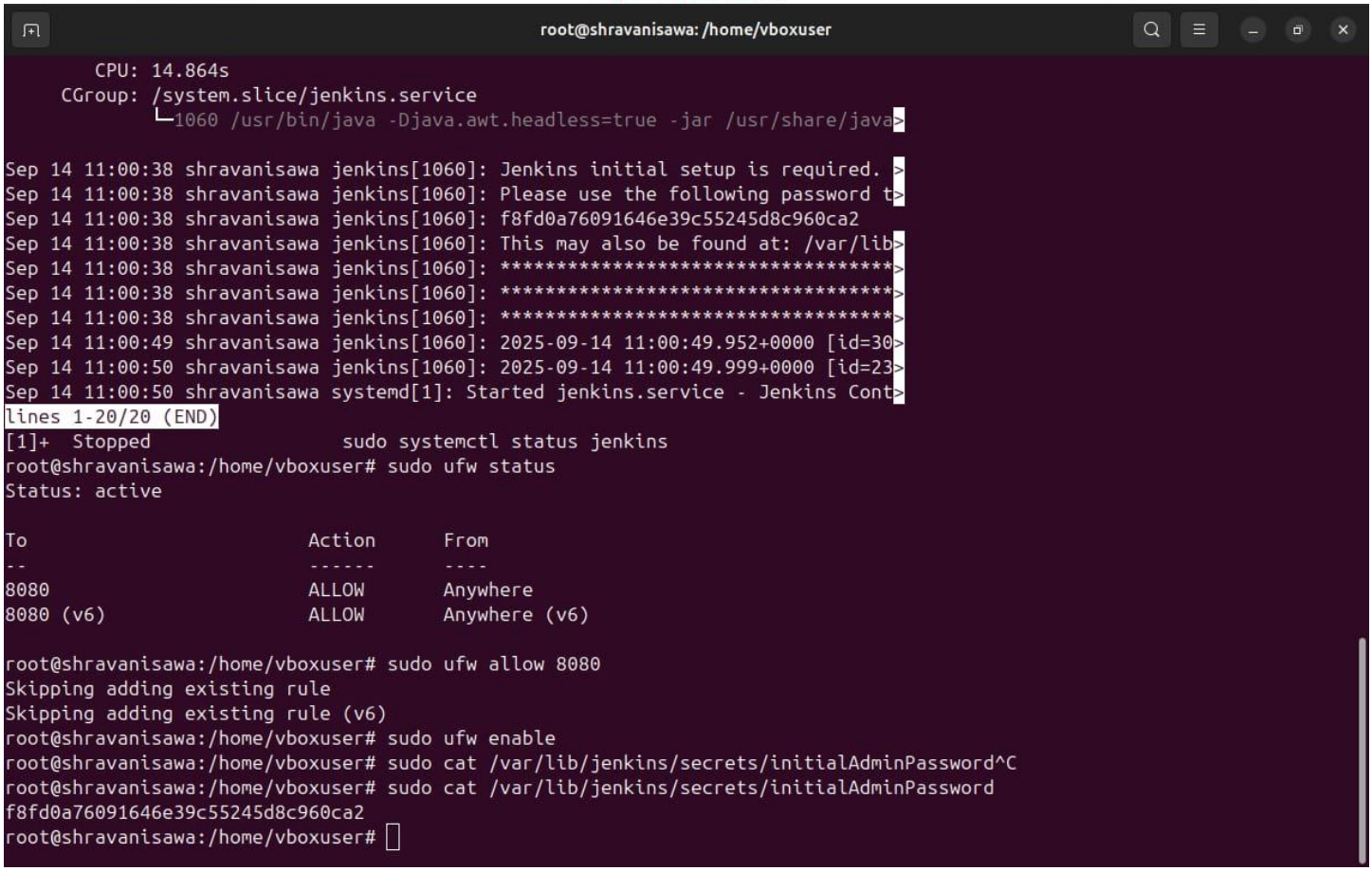
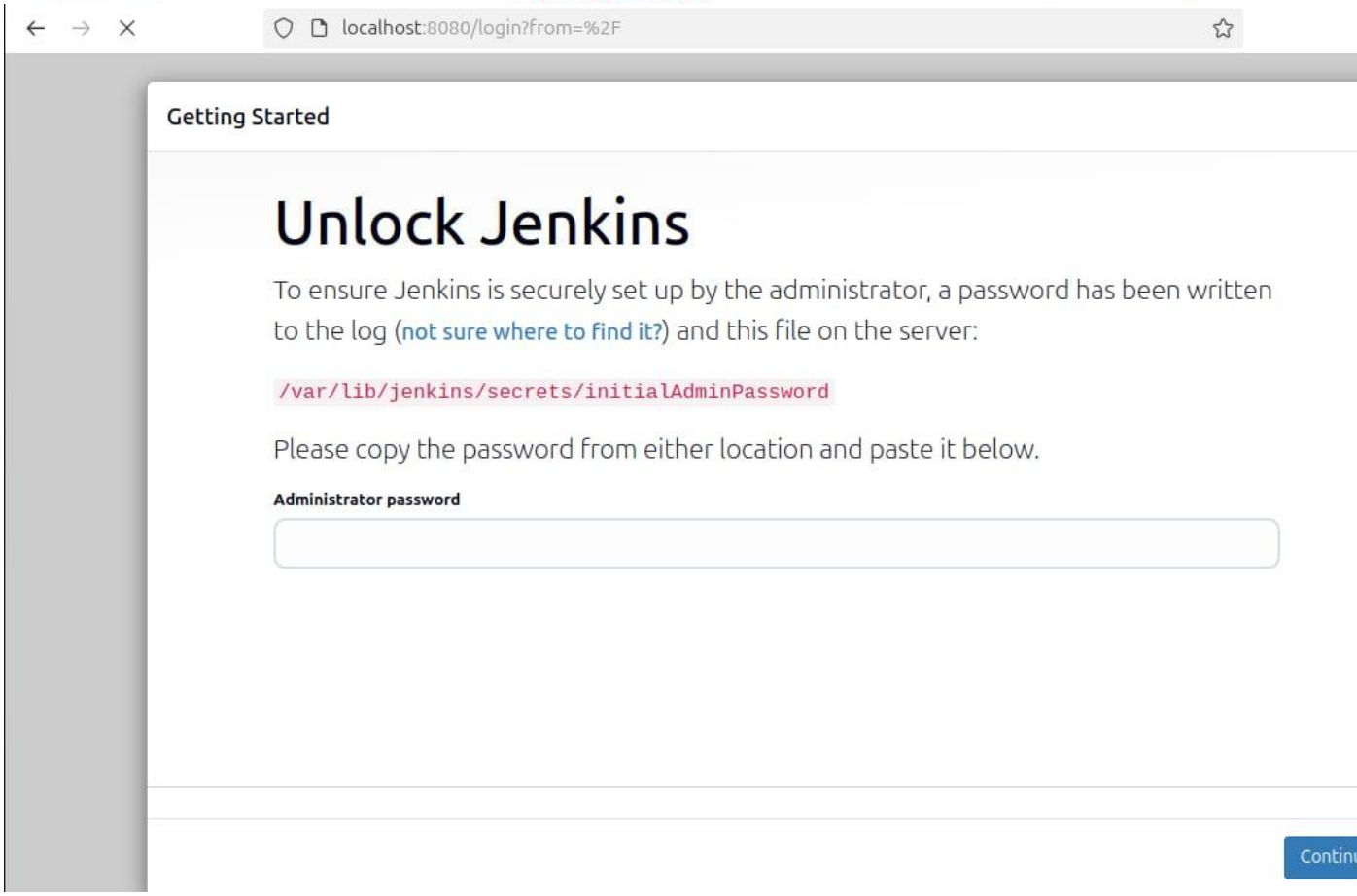
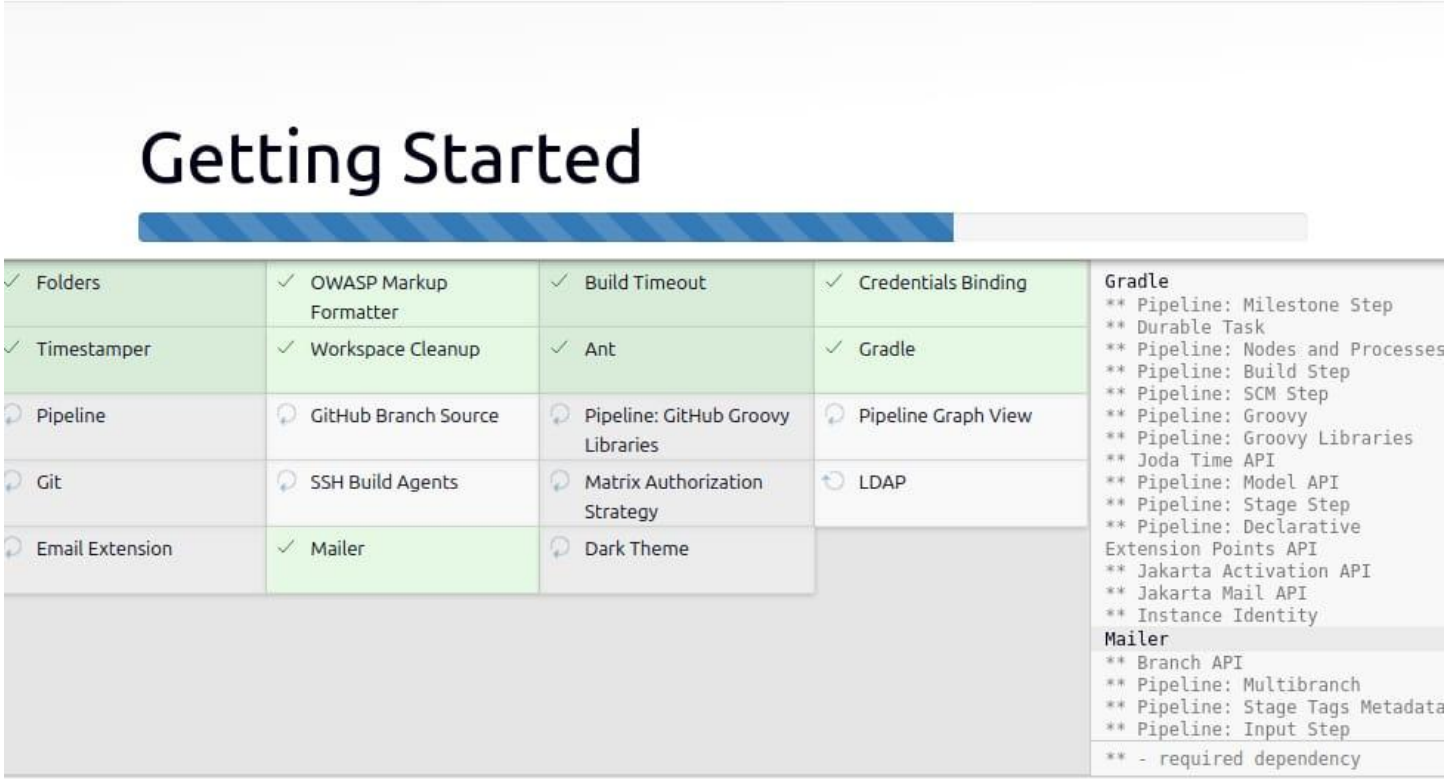
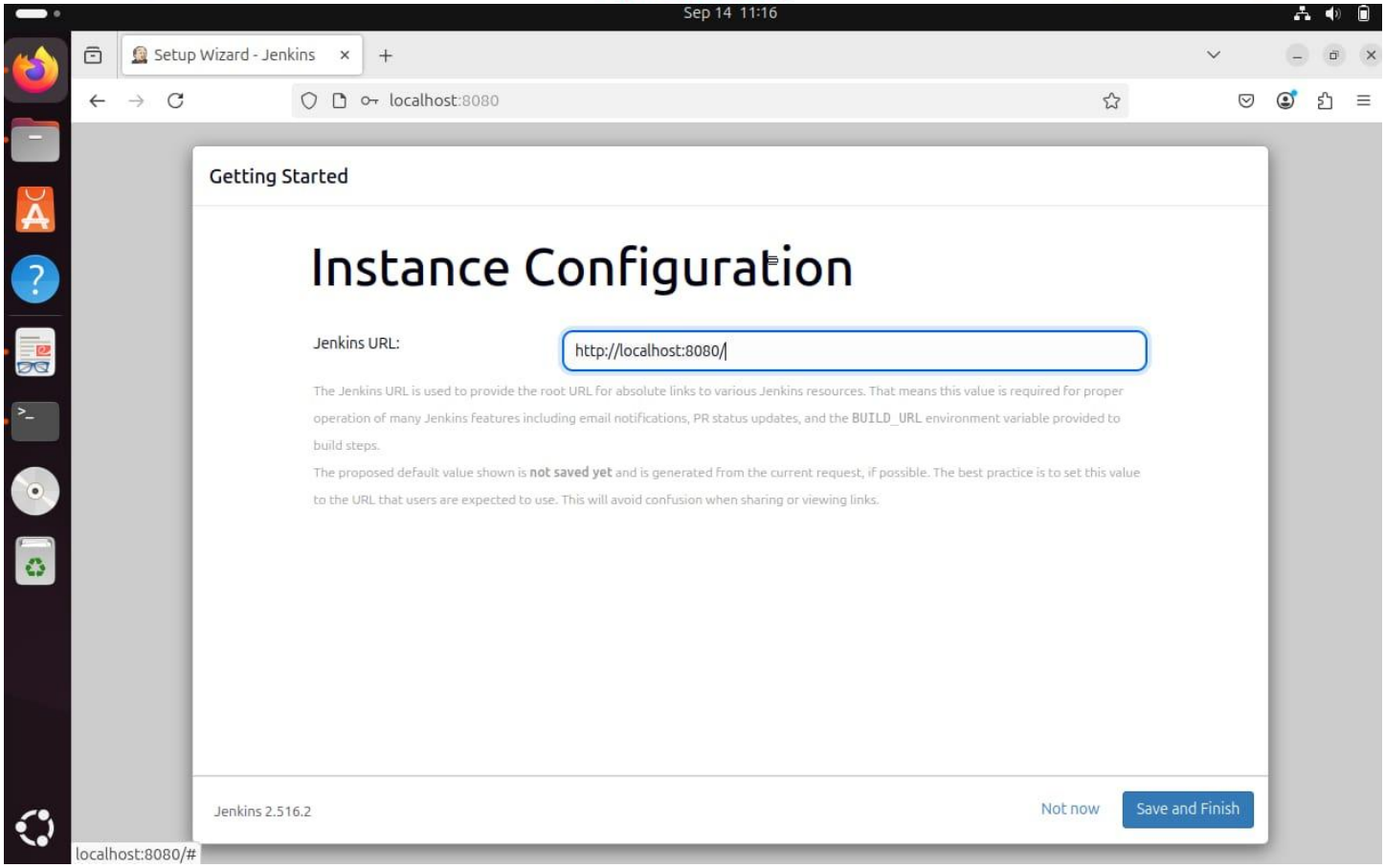
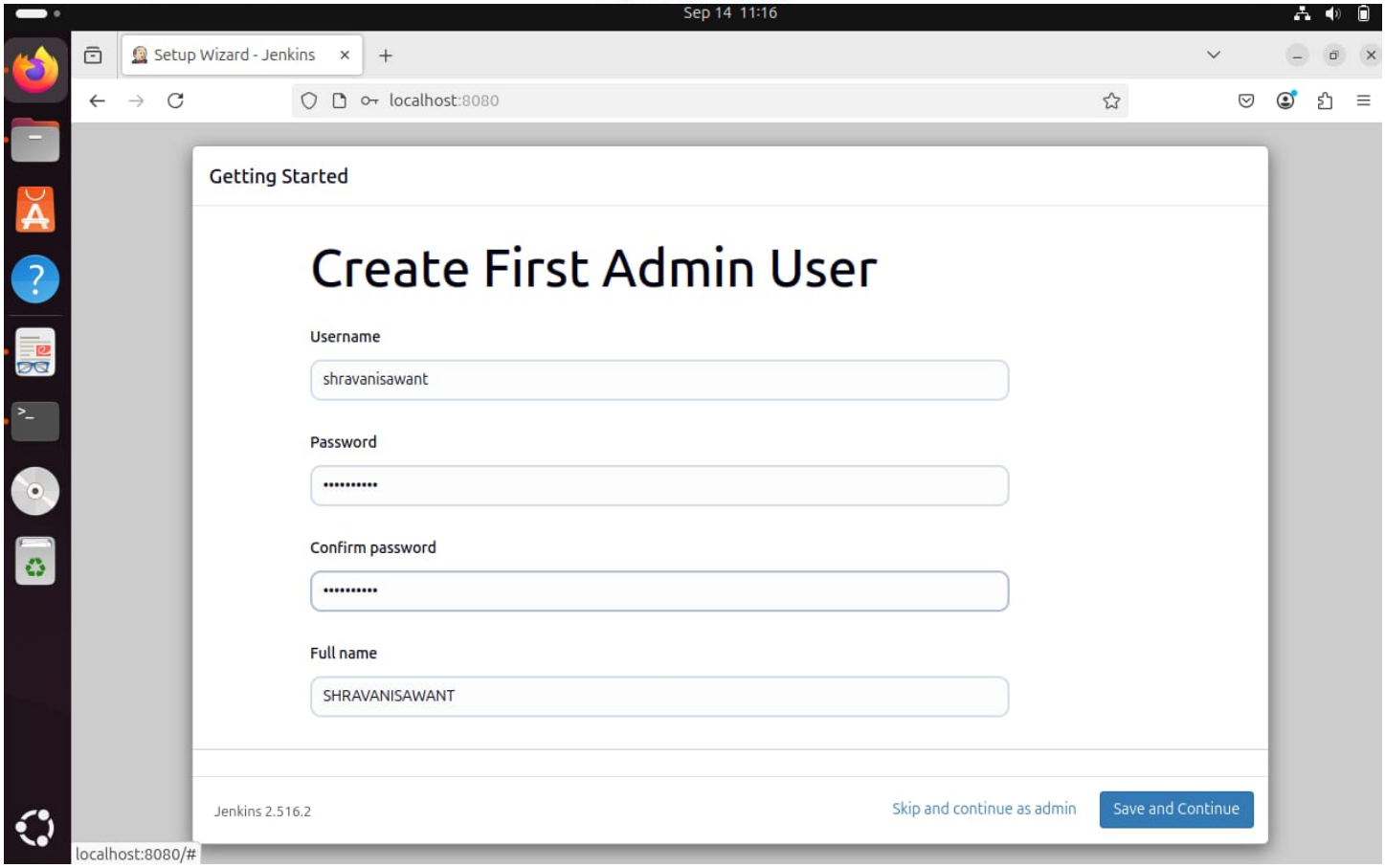


root@shravanisawa: /home/vboxuser
CPU: 14.864s
CGroup: /system.slice/jenkins.service
└─1060 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java>
Sep 14 11:00:38 shravanisawa jenkins[1060]: Jenkins initial setup is required. >
Sep 14 11:00:38 shravanisawa jenkins[1060]: Please use the following password t>
Sep 14 11:00:38 shravanisawa jenkins[1060]: f8fd0a76091646e39c55245d8c960ca2
Sep 14 11:00:38 shravanisawa jenkins[1060]: This may also be found at: /var/lib>
Sep 14 11:00:38 shravanisawa jenkins[1060]: ************************************>
Sep 14 11:00:38 shravanisawa jenkins[1060]: ************************************>
Sep 14 11:00:38 shravanisawa jenkins[1060]: ************************************>
Sep 14 11:00:49 shravanisawa jenkins[1060]: 2025-09-14 11:00:49.952+0000 [id=30>
Sep 14 11:00:50 shravanisawa jenkins[1060]: 2025-09-14 11:00:49.999+0000 [id=23>
Sep 14 11:00:50 shravanisawa systemd[1]: Started jenkins.service - Jenkins Cont>
lines 1-20/20 (END)
[1]+ Stopped sudo systemctl status jenkins
root@shravanisawa:/home/vboxuser# sudo ufw status
Status: active
To Action From
-- ------ ----
8080 ALLOW Anywhere
8080 (v6) ALLOW Anywhere (v6)
root@shravanisawa:/home/vboxuser# sudo ufw allow 8080
Skipping adding existing rule
Skipping adding existing rule (v6)
root@shravanisawa:/home/vboxuser# sudo ufw enable
root@shravanisawa:/home/vboxuser# sudo cat /var/lib/jenkins/secrets/initialAdminPassword^C
root@shravanisawa:/home/vboxuser# sudo cat /var/lib/jenkins/secrets/initialAdminPassword
f8fd0a76091646e39c55245d8c960ca2
root@shravanisawa:/home/vboxuser#

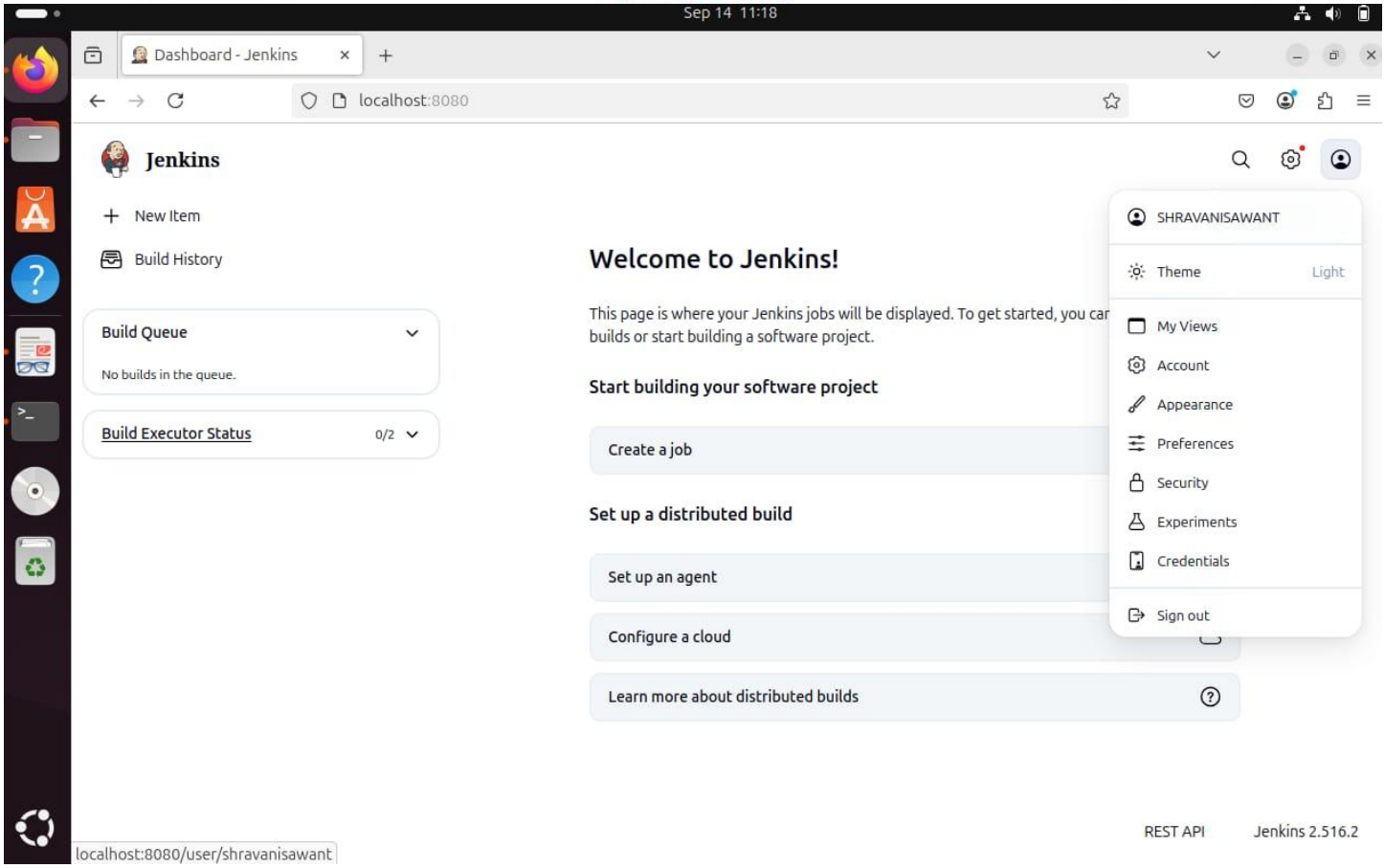

localhost:8080/login?from=%2F
Getting Started
Unlock Jenkins
To ensure Jenkins is securely set up by the administrator, a password has been written to the log (not sure where to find it?) and this file on the server:
/var/lib/jenkins/secrets/initialAdminPassword
Please copy the password from either location and paste it below.
Administrator password

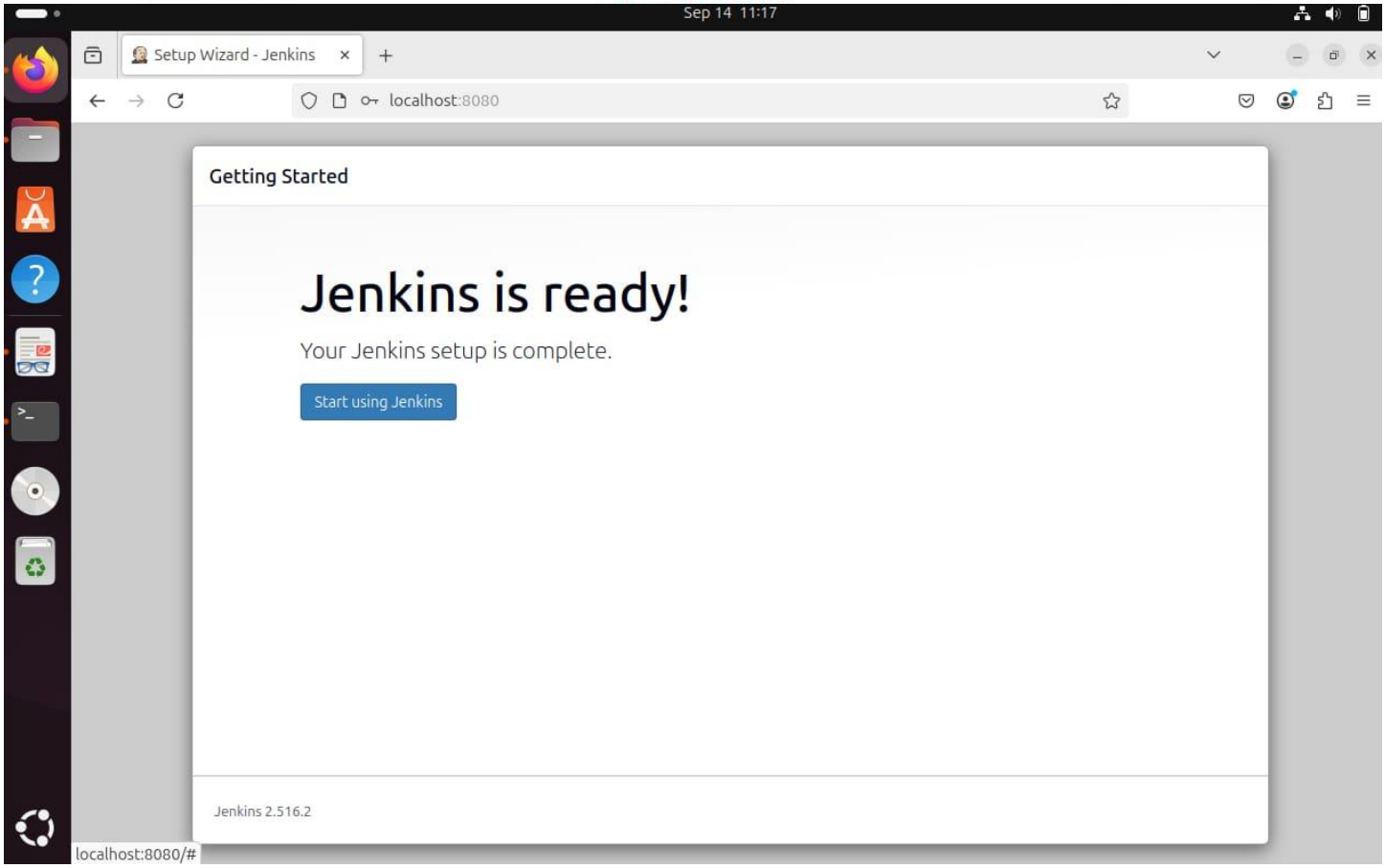
Getting Started

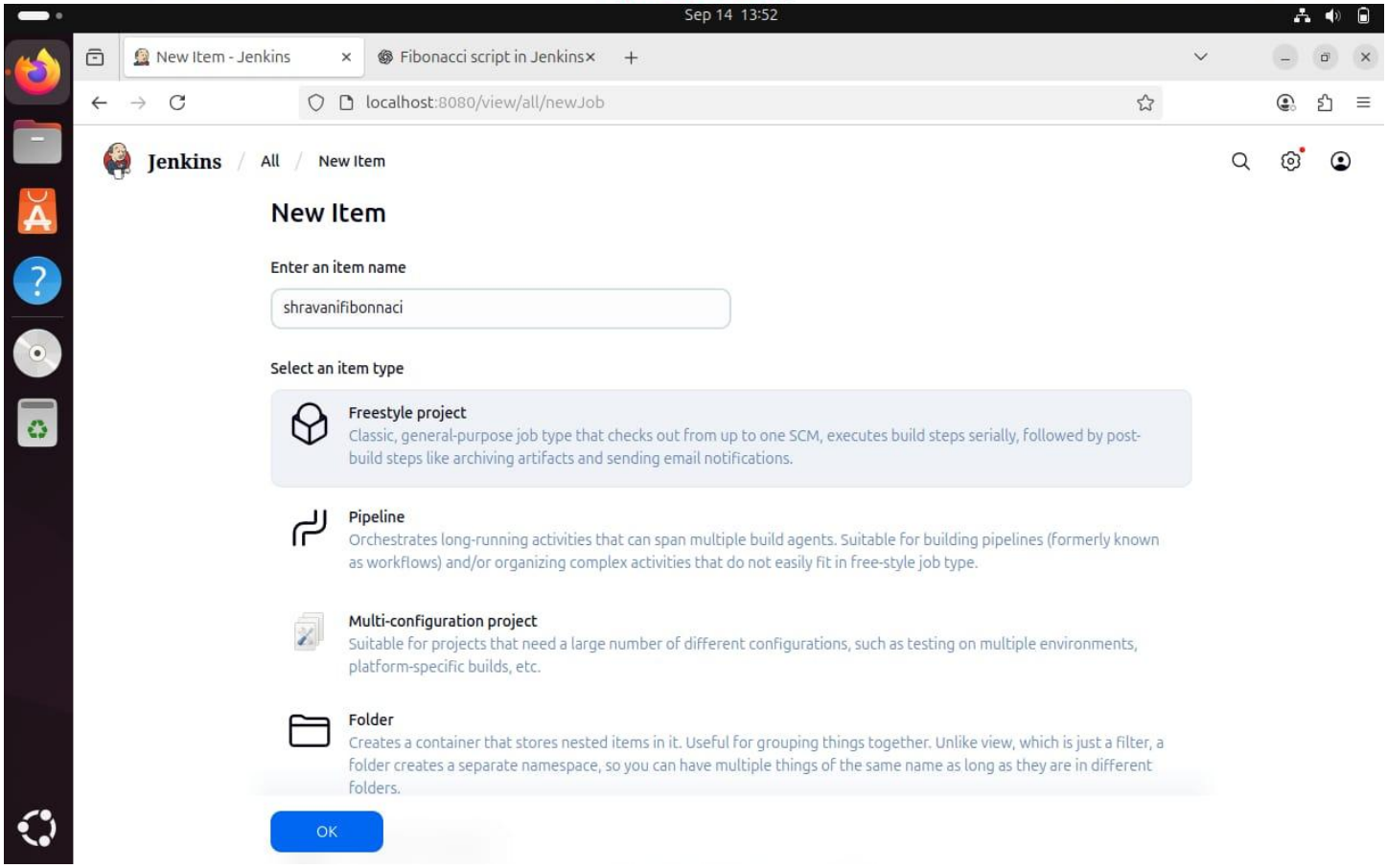


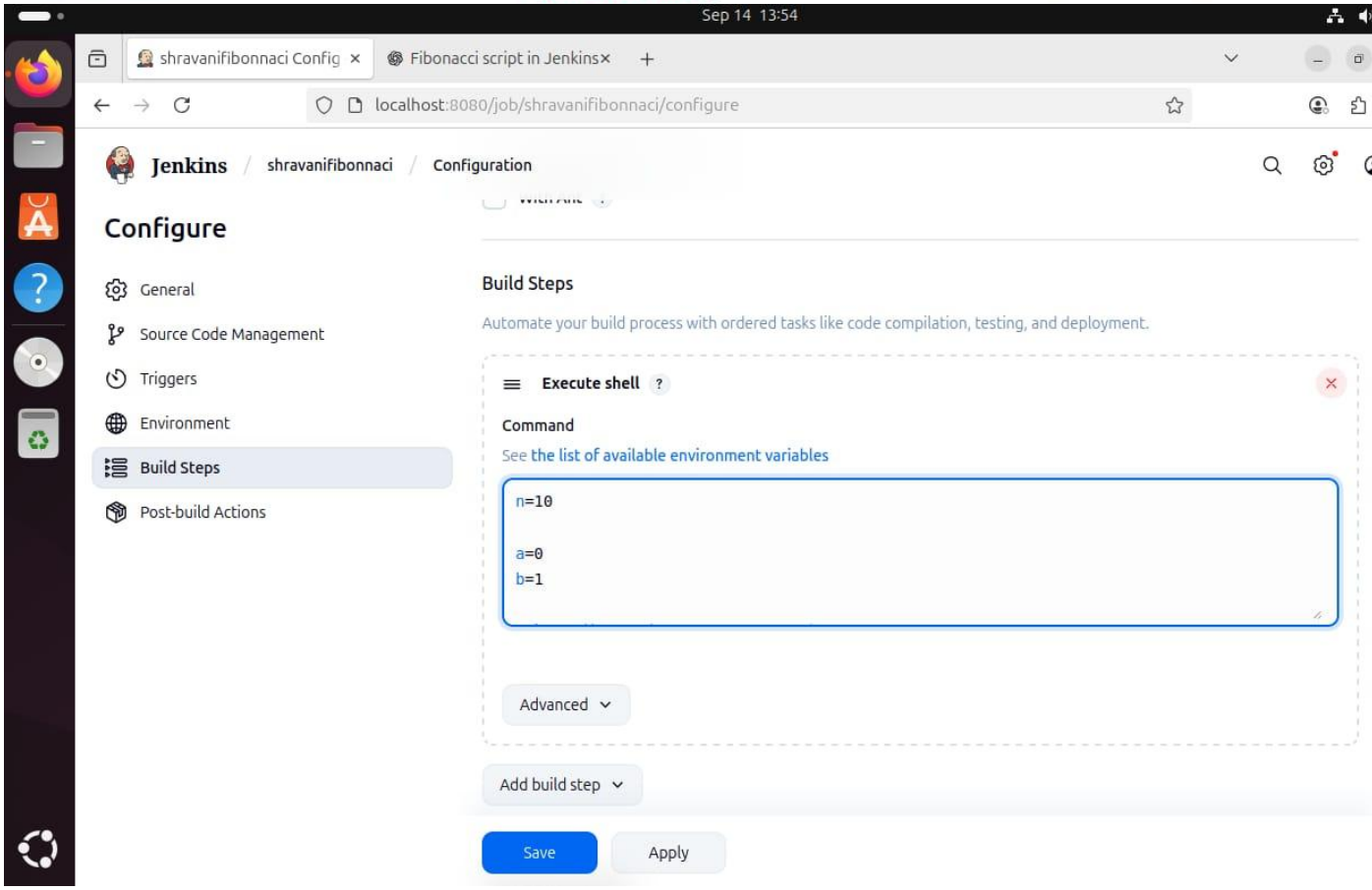

Sep 14 11:16
Setup Wizard - Jenkins
localhost:8080
Getting Started
Instance Configuration
Jenkins URL:
http://localhost:8080/
The Jenkins URL is used to provide the root URL for absolute links to various Jenkins resources. That means this value is required for proper operation of many Jenkins features 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 2.516.2
Not now
Save and Finish
localhost:8080/#

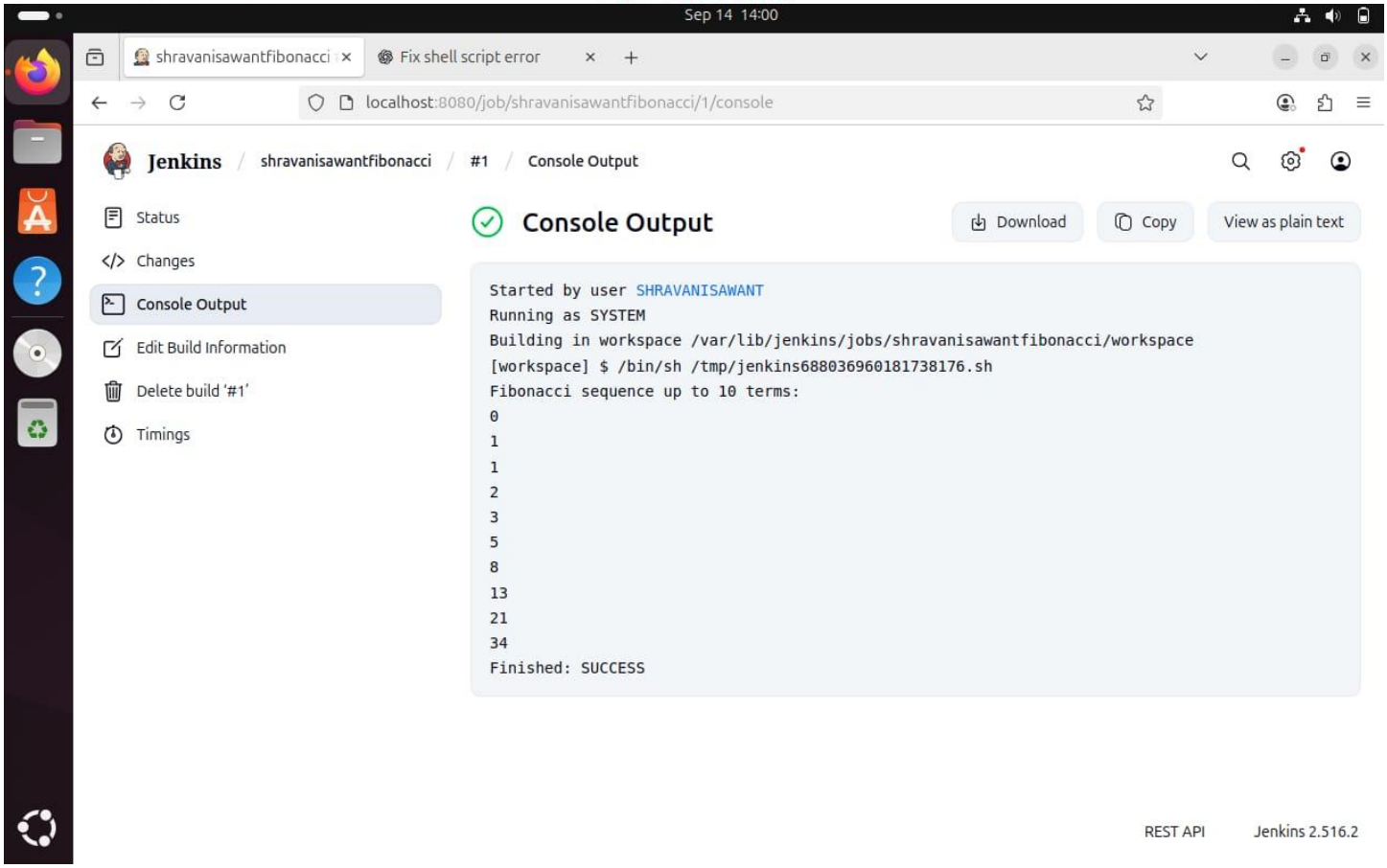

Sep 14 11:16
Setup Wizard - Jenkins
localhost:8080
Getting Started
Create First Admin User
Username
shravanisawant
Password
Confirm password
Full name
SHRAVANISAWANT
Jenkins 2.516.2
Skip and continue as admin
Save and Continue
localhost:8080/#

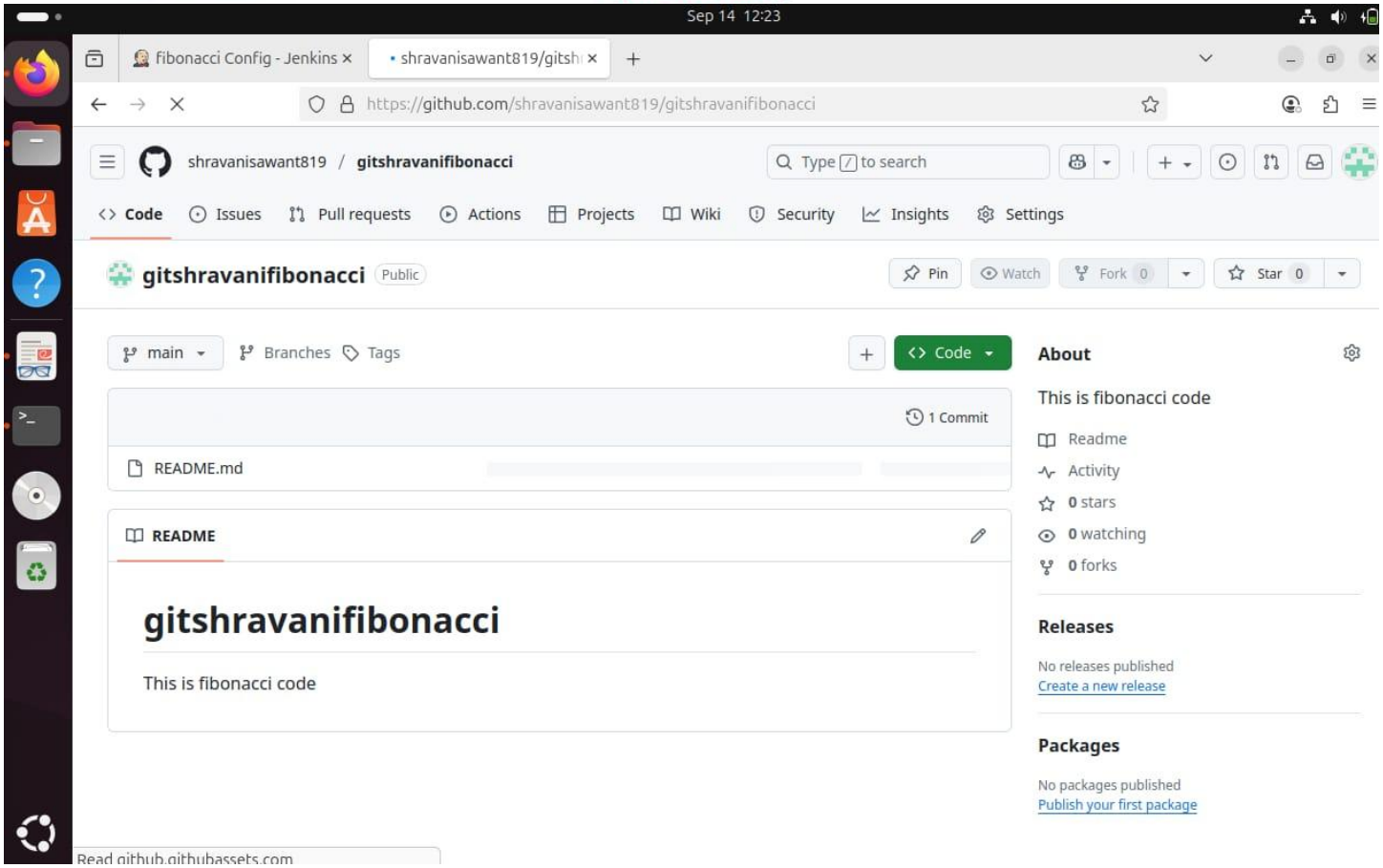

Sep 14 11:18
Dashboard - Jenkins
localhost:8080
Jenkins
New Item
Build History
Build Queue
No builds in the queue.
Build Executor Status 0/2
Welcome to Jenkins!
This page is where your Jenkins jobs will be displayed. To get started, you car
builds or start building a software project.
Start building your software project
Create a job
Set up a distributed build
Set up an agent
Configure a cloud
Learn more about distributed builds
SHRAVANISAWANT
Theme Light
My Views
Account
Appearance
Preferences
Security
Experiments
Credentials
Sign out
REST API
Jenkins 2.516.2
localhost:8080/user/shravanisawant


Sep 14 11:17
Setup Wizard - Jenkins
localhost:8080
Getting Started
Jenkins is ready!
Your Jenkins setup is complete.
Start using Jenkins
Jenkins 2.516.2
localhost:8080/#


Sep 14 13:52
New Item - Jenkins
Fibonacci script in Jenkins
localhost:8080/view/all/newJob
Jenkins / All / New Item
New Item
Enter an item name
shravanifibonnaci
Select an item type
Freestyle project
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.
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 separate namespace, so you can have multiple things of the same name as long as they are in different folders.
OK


Sep 14 13:54
shravanifibonnaci Config
Fibonacci script in Jenkins
localhost:8080/job/shravanifibonnaci/configure
Jenkins / shravanifibonnaci / Configuration
Configure
General
Source Code Management
Triggers
Environment
Build Steps
Post-build Actions
Build Steps
Automate your build process with ordered tasks like code compilation, testing, and deployment.
Execute shell
Command
See the list of available environment variables
n=10
a=0
b=1
Advanced
Add build step
Save
Apply


Sep 14 14:00
shravanisawantfibonacci
Fix shell script error
localhost:8080/job/shravanisawantfibonacci/1/console
Jenkins / shravanisawantfibonacci / #1 / Console Output
Status
Changes
Console Output
Edit Build Information
Delete build '#1'
Timings
Console Output
Download
Copy
View as plain text
Started by user SHRAVANISAWANT
Running as SYSTEM
Building in workspace /var/lib/jenkins/jobs/shravanisawantfibonacci/workspace
[workspace] $ /bin/sh /tmp/jenkins688036960181738176.sh
Fibonacci sequence up to 10 terms:
0
1
1
2
3
5
8
13
21
34
Finished: SUCCESS
REST API
Jenkins 2.516.2



Conclusion:

Creating and building a CI/CD pipeline in Jenkins to test and deploy an application on a Tomcat server streamlines the software delivery process by automating repetitive tasks. This approach ensures consistent and reliable builds, reduces manual errors, and accelerates deployment cycles. Automated testing within the pipeline helps catch issues early, improving overall code quality. Integrating Jenkins with Tomcat allows for seamless deployment, making updates faster and more efficient. Ultimately, this setup enhances collaboration among development teams and supports continuous delivery of high-quality applications.