



Semester: V
Academic Year: 2025-26
Class / Branch: TE IT-C3
Subject: ADL Lab
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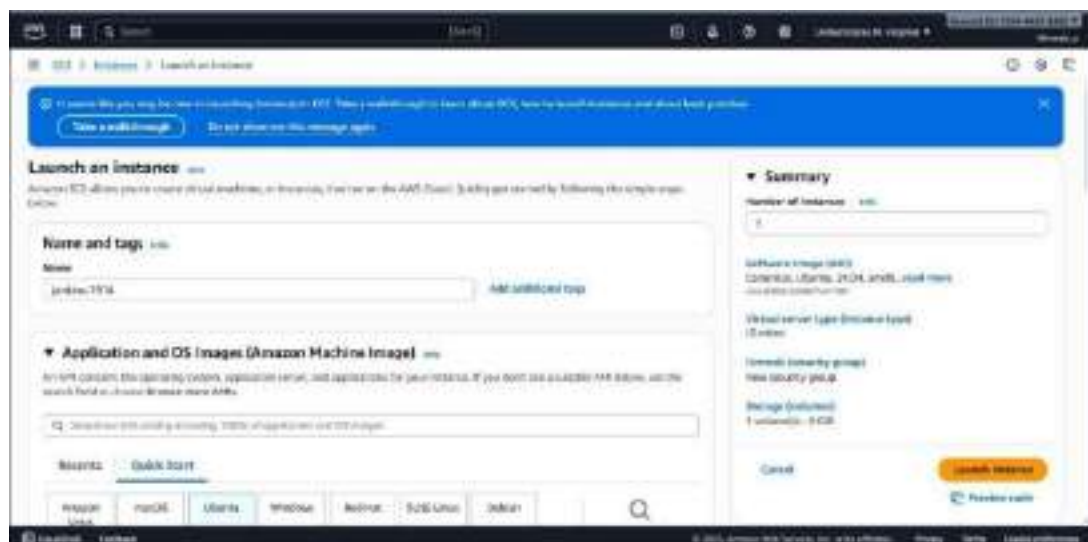
EXPERIMENT NO. 08

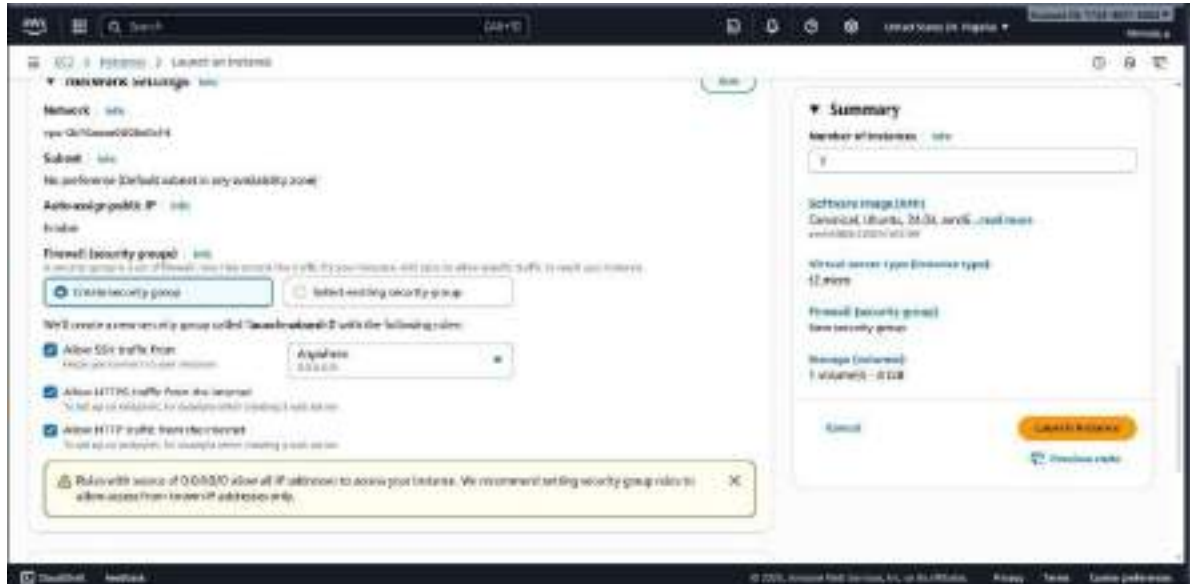
Aim: Create a Jenkins CI/CD Pipeline with SonarQube / GitLab Integration to perform a static analysis of the code to detect bugs, code smells, and security vulnerabilities on a sample Java application.

Steps:

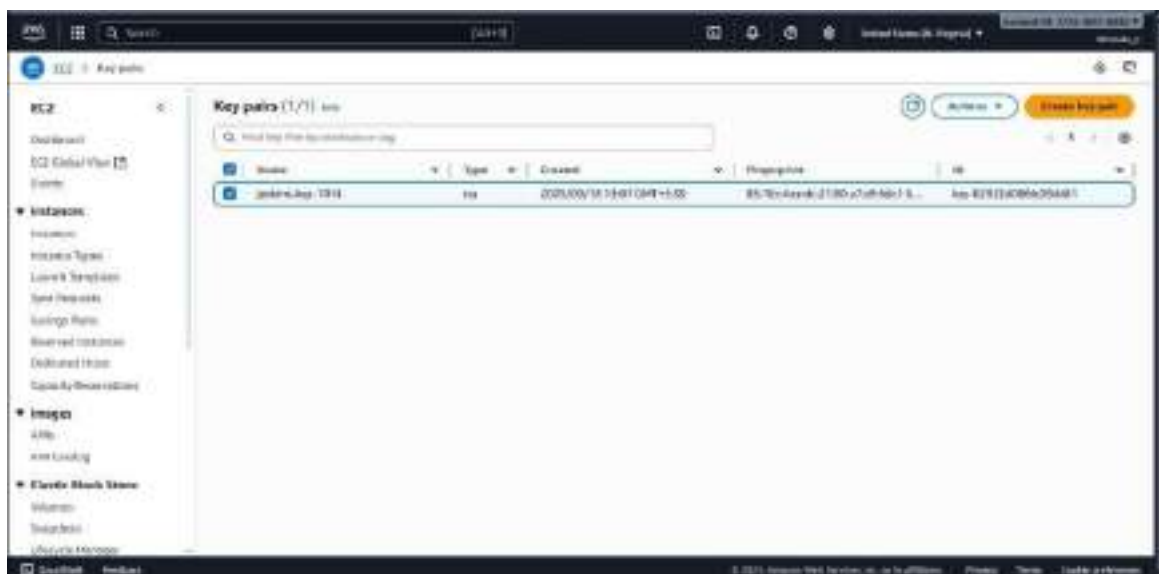
JENKINS Install on AWS instance:

1. Create EC2 Instance -> Ubuntu/t2.micro/enable all network settings

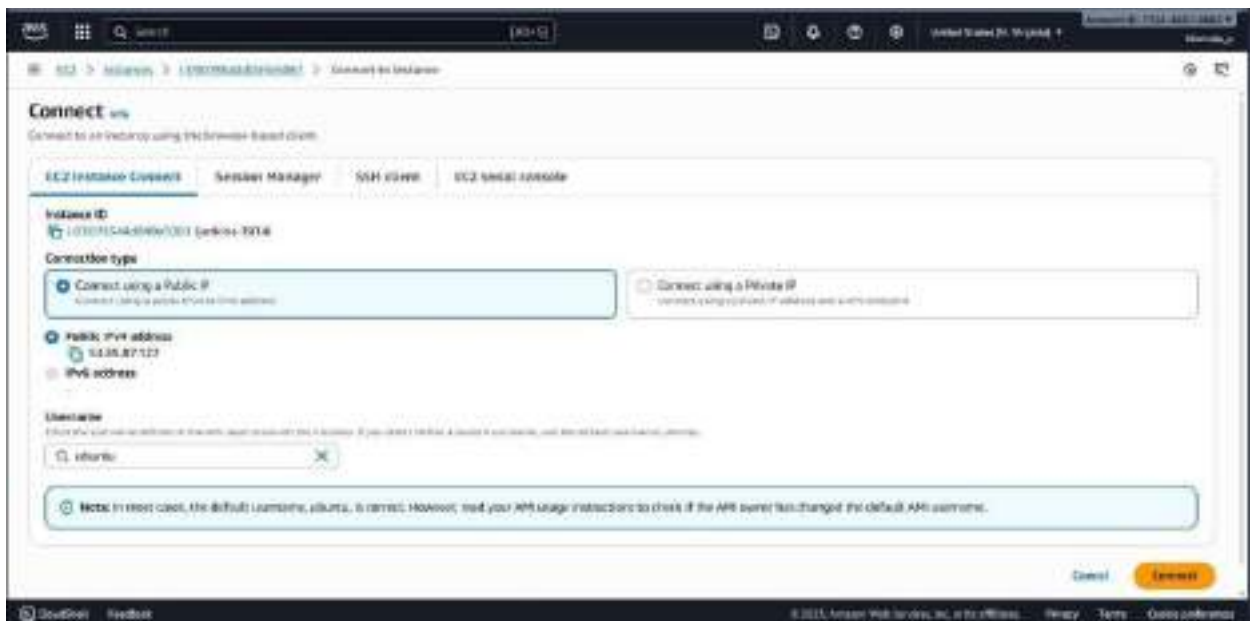




2. Create Key-Value pair



3. Connect to EC2 instance



4. Run Commands on Jenkins terminal:

\$ sudo apt update

```
ubuntu@ip-172-31-17-841:~$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe Translation-en [5652 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 c-n-f Metadata [286 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 Packages [217 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse Translation-en [112 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 c-n-f Metadata [8372 B]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [2887 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [452 kB]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [178.9 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [4373 kB]
Get:15 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [12641 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [8001 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [11231 kB]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en [1305 kB]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 c-n-f Metadata [129.5 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 Packages [59.5 kB]
Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse Translation-en [14.2 kB]
Get:22 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 c-n-f Metadata [592 B]
Get:23 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main amd64 Packages [68.8 kB]
Get:24 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main Translation-en [11.4 kB]
Get:25 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main amd64 c-n-f Metadata [352 B]
Get:26 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/restricted amd64 c-n-f Metadata [1116 B]
Get:27 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe amd64 Packages [139.0 kB]
Get:28 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe Translation-en [116.6 kB]
```

\$ sudo apt install openjdk-11-jdk -y

\$ java --version

[illegible]

5. Run commands:

Index of /

Name	Last modified	Size	Description
debian-rc/	2016-04-07 04:19	-	
debian-stable-rc/	2016-02-04 19:46	-	
debian-stable/	2025-09-17 09:36	-	
debian/	2025-09-17 10:01	-	
openmuse-rc/	2016-04-07 04:21	-	
openmuse-stable-rc/	2016-02-04 19:48	-	
openmuse-stable/	2025-09-17 09:36	-	
openmuse/	2025-09-17 10:01	-	
redhat-rc/	2016-04-07 04:20	-	
redhat-stable-rc/	2016-02-04 19:47	-	
redhat-stable/	2025-09-17 09:36	-	
redhat/	2025-09-17 10:01	-	
suse/	2020-04-16 16:01	-	
windows/	2020-04-16 16:02	-	

- Use debian-stable

Run the following commands: -



```
sudo wget -O /etc/apt/keyrings/jenkins-keyring.asc \
https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
```

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

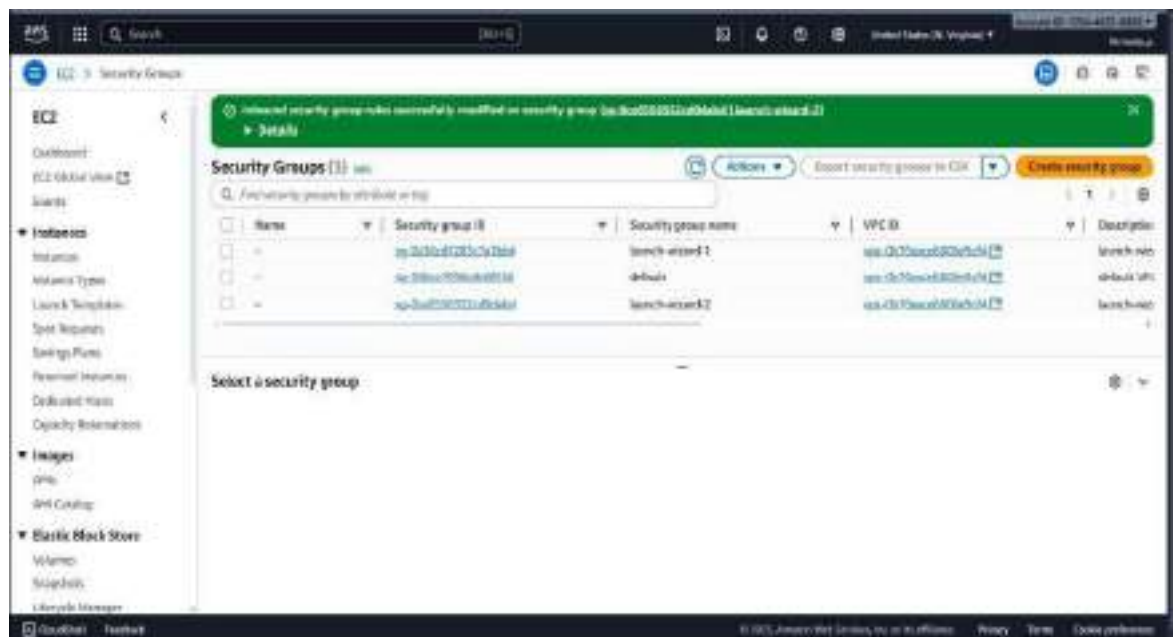
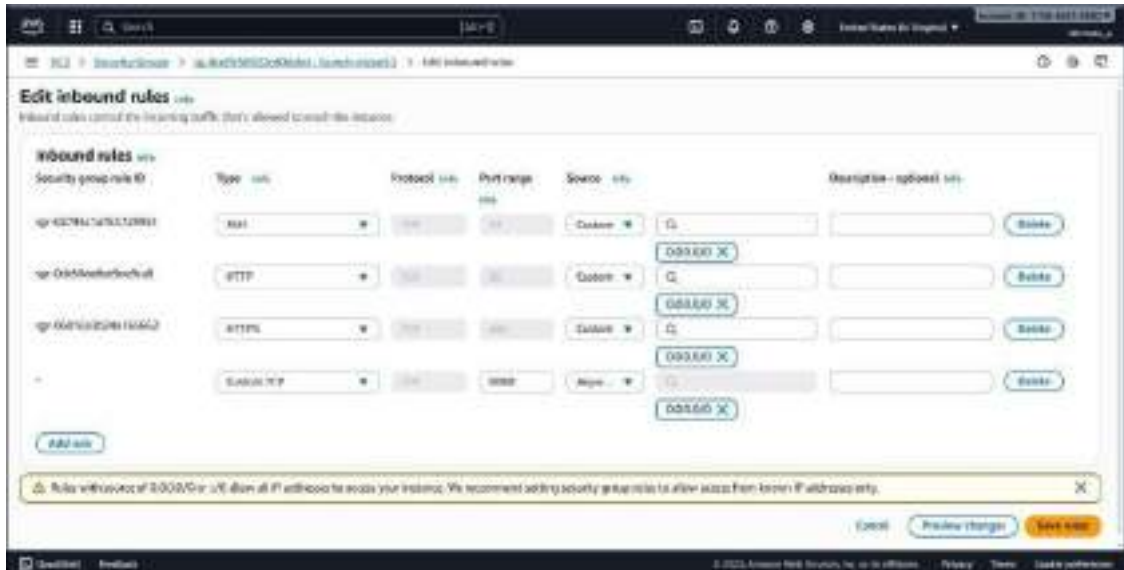
```
sudo apt-get update
sudo apt-get install fontconfig openjdk-17-jre
sudo apt-get install jenkins
```

6. Then run following commands :-
sudo systemctl start jenkins
sudo systemctl enable jenkins
sudo systemctl status jenkins

```
root@kali:~# systemctl start jenkins
root@kali:~# systemctl enable jenkins
Synchronizing state of jenkins.service with SysV service script with /lib/systemd/sdexecd - install.
root@kali:~# systemctl status jenkins
jenkins.service - Jenkins continuous integration server
   Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)
   Active: active (running) since Thu 2023-09-11 08:09:07 CDT; 49s ago
     Main PID: 2126 (java)
    Tasks: 58 (limit: 1125)
      Memory: 117.0M
        CPU: 16.846s
     CGroup: /system.slice/jenkins.service
            └─5728 /usr/bin/java -Djava.net.preferIPv4stack=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080

Sep 11 08:09:06 ip-172-31-17-84 jenkins[2126]: 441502dce9d9c1a3e0d8d191a
Sep 11 08:09:06 ip-172-31-17-84 jenkins[2126]: This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Sep 11 08:09:06 ip-172-31-17-84 jenkins[2126]: *****
Sep 11 08:09:06 ip-172-31-17-84 jenkins[2126]: *****
Sep 11 08:09:06 ip-172-31-17-84 jenkins[2126]: *****
Sep 11 08:09:07 ip-172-31-17-84 jenkins[2126]: 2023-09-11 08:09:07.4618009 [18-21] INFO jenkins.InitAndPostInitExtension: Completed initial
Sep 11 08:09:07 ip-172-31-17-84 jenkins[2126]: 2023-09-11 08:09:07.5178002 [18-21] INFO jenkins.InitAndPostInitExtension: Jenkins is fully up a
Sep 11 08:09:07 ip-172-31-17-84 jenkins[2126]: 2023-09-11 08:09:07.5248009 [18-21] INFO jenkins.InitAndPostInitExtension: Obtained the update
Sep 11 08:09:07 ip-172-31-17-84 jenkins[2126]: 2023-09-11 08:09:07.5548009 [18-21] INFO jenkins.InitAndPostInitExtension: performed the active check upda
```

7. Edit inbound rules -> add rule -> port 8080



8. Go to instance and browse using IPV4 address



9. For password -> Copy path on webpage you browsed and run command **sudo cat <path>**

```
ubuntu@ip-172-31-17-84:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
d61531dec9924c76a3e8ed90cd519744
ubuntu@ip-172-31-17-84:~$
```

- Copy the password and paste
- Choose Install suggested plugins





- Fill the details

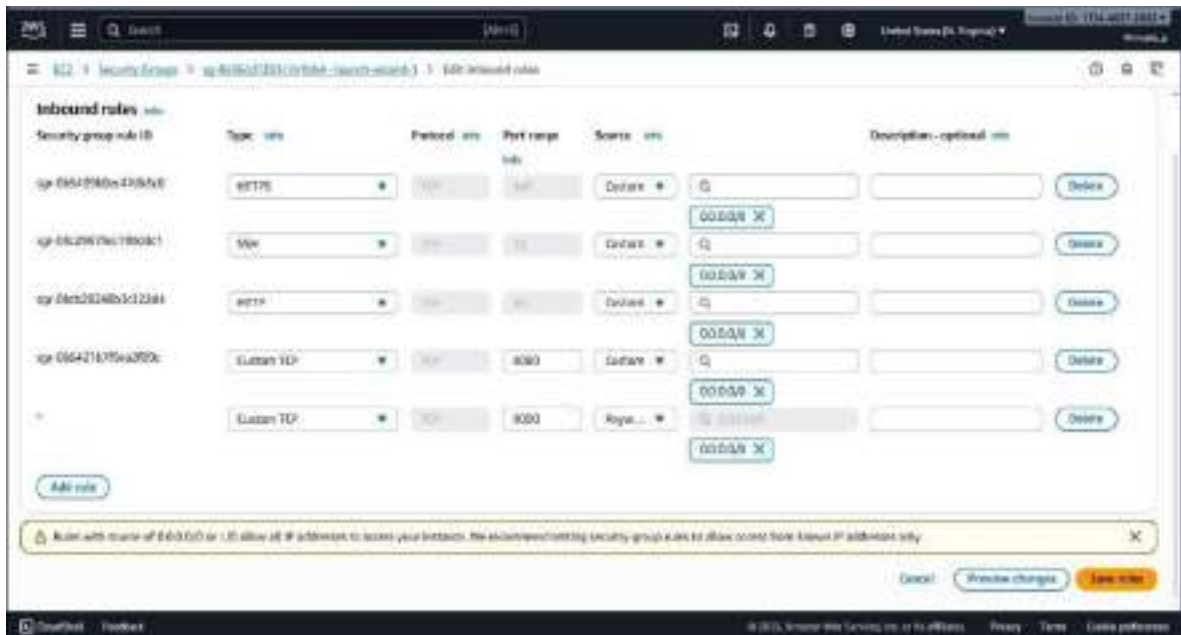
The screenshot shows the 'Create First Admin User' form in the Jenkins 'Getting Started' wizard. The form has the following fields: Username, Password, Confirm password, Full name, and E-mail address. At the bottom, there is a 'Skip and Continue to Admin' link and a 'Save and Continue' button.

The screenshot shows the 'Instance Configuration' form in the Jenkins 'Getting Started' wizard. The 'Jenkins URL' field is pre-filled with 'http://194.207.96.200:8080/'. Below the field, there is a paragraph of text explaining the purpose of the configuration. At the bottom, there is a 'Skip and Finish' button.

- Click 'Save and Finish'
- Start using Jenkins



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13. Go to browser -> <http://localhost:9000>

- type username and password as 'admin'
- Set new password

Update your password

This account should not use the default password.

Enter a new password

Old password

New password

Confirm Password

Save



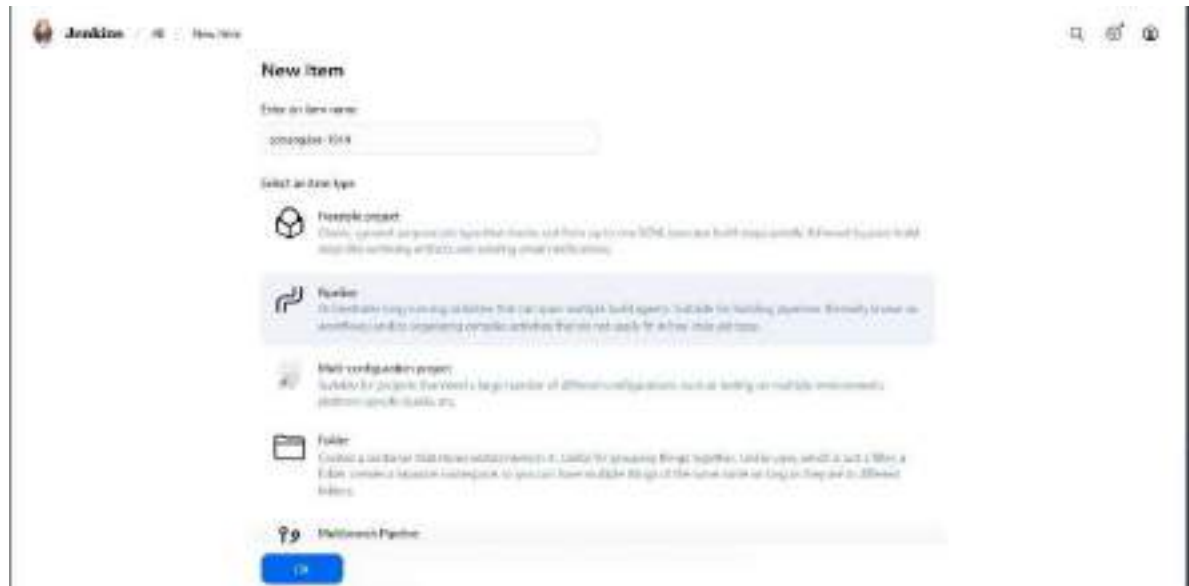
14. Change system configuration in
jenkins Add server url ->
'http://localhost://9000'



15. To create pipeline



- Go to Jenkins Dashboard -> new item -> select pipeline



- Add script



Go to Console Output:



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automatically check the code in the pipeline and fix problems early. This makes the code safer, better in quality, and reduces risks during development.