



Semester: V

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Academic Year: 2025-26

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Class / Branch: TE IT-C3

Subject: ADL Lab

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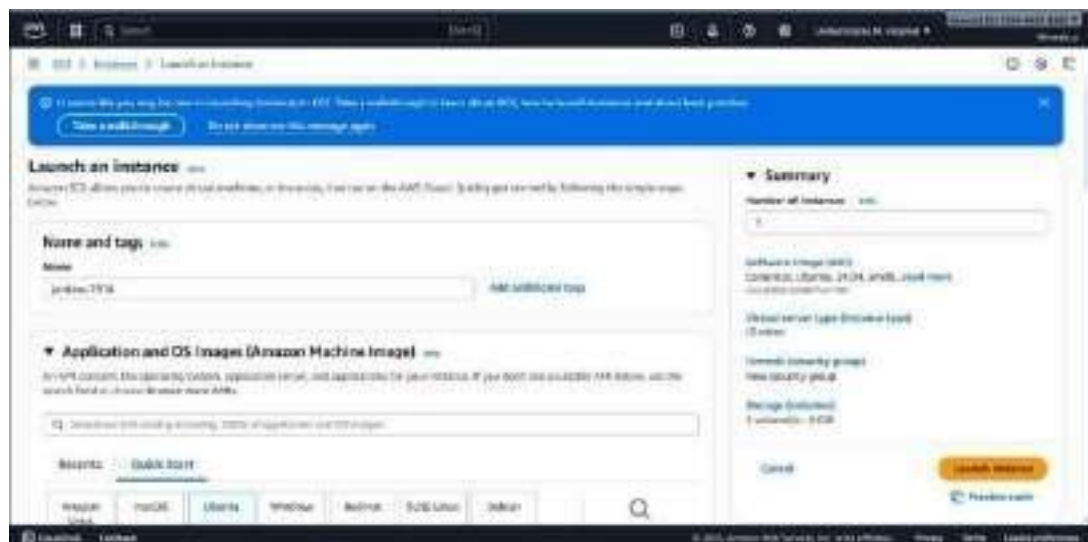
EXPERIMENT NO. 08

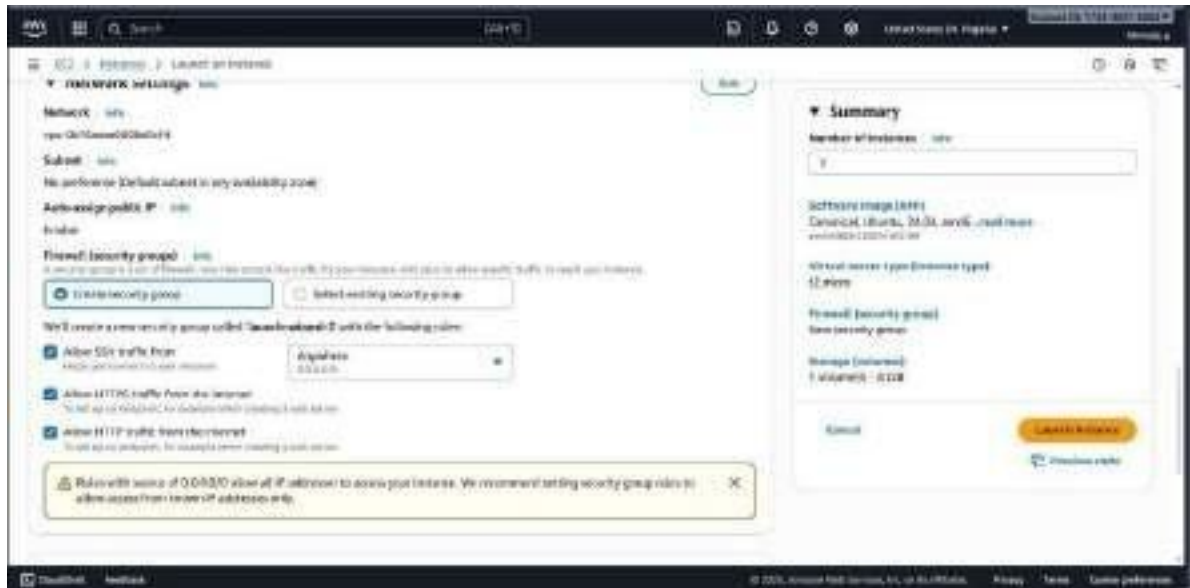
Aim: Create a Jenkins CI/CD Pipeline with SonarQube / GitLab Integration to perform a static analysis of the code to detect bugs, code smells, and security vulnerabilities on a sample Java application.

Steps:

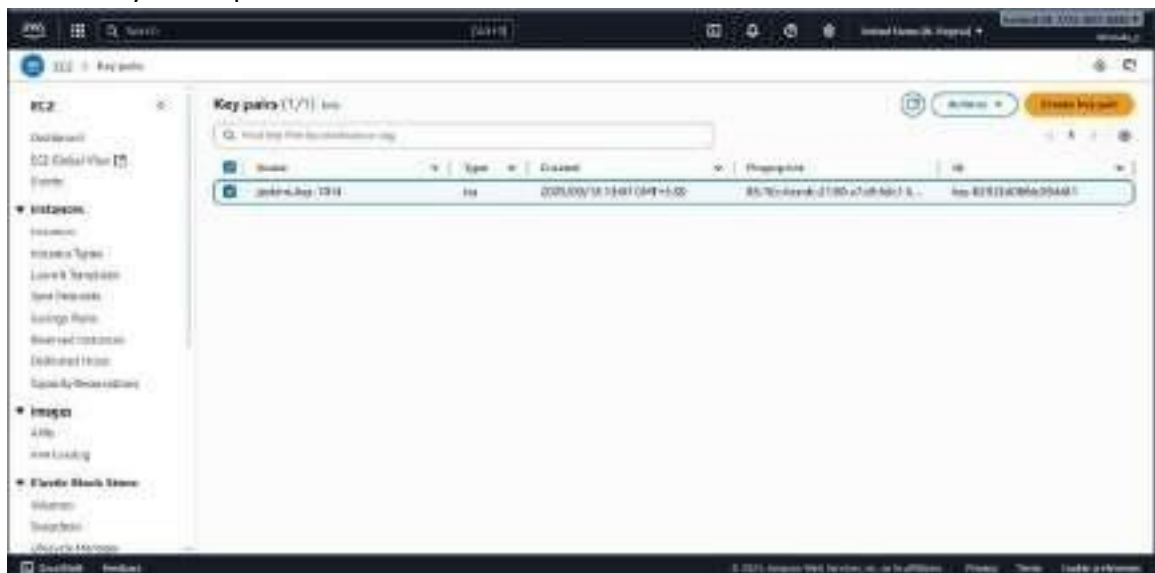
JENKINS Install on AWS instance:

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-172-31-17-861:~$ 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 kB]
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 [492 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 [801 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 [88.8 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 [392 B]
Get:26 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/restricted amd64 c-n-f Metadata [116 B]
Get:27 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe amd64 Packages [130.0 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:

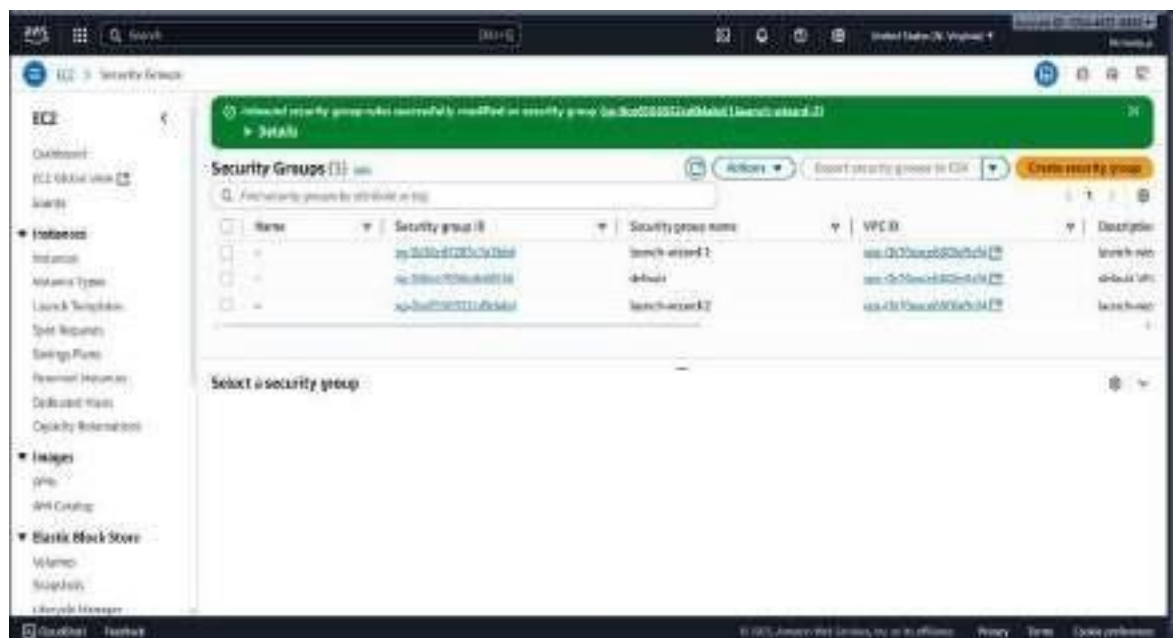
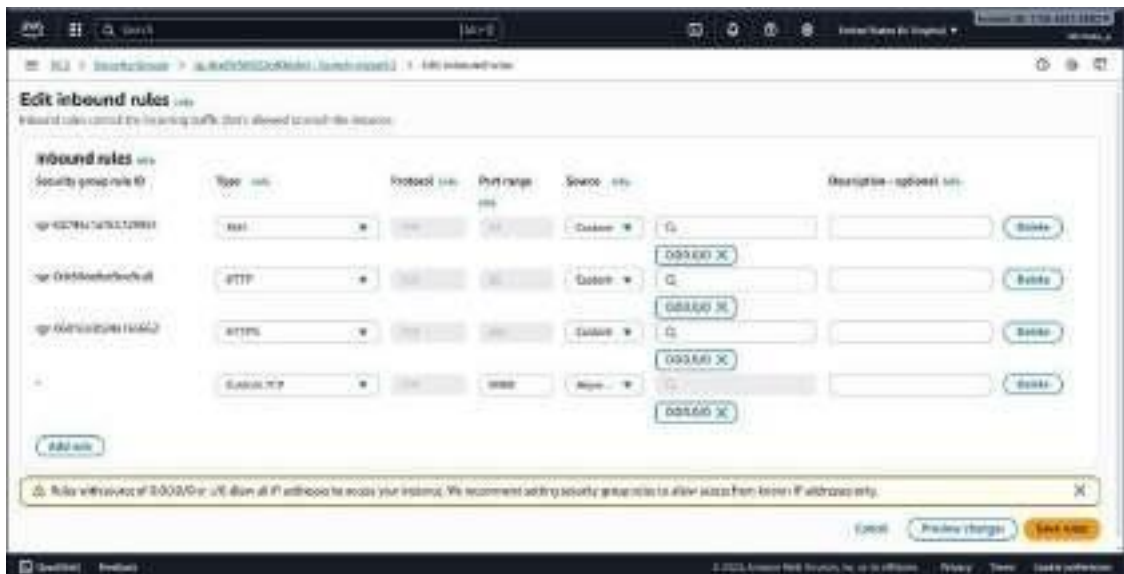
Index of /

| 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 | - | |
| openeuler-rc/ | 2016-04-07 04:21 | - | |
| openeuler-stable-rc/ | 2016-02-04 19:48 | - | |
| openeuler-stable/ | 2025-09-17 09:36 | - | |
| openeuler/ | 2025-09-17 10:01 | - | |
| rocky-rc/ | 2016-04-07 04:20 | - | |
| rocky-stable-rc/ | 2016-02-04 19:47 | - | |
| rocky-stable/ | 2025-09-17 09:36 | - | |
| rocky/ | 2025-09-17 10:01 | - | |
| suse/ | 2020-04-16 18:01 | - | |
| windows/ | 2020-04-16 18:07 | - | |

- Use debian-stable Run the following commands: -



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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 installation wizard. The form has the following fields: Username, Password, Confirm password, Full name, and E-mail address. At the bottom, there is a 'Save and Finish' button.

The screenshot shows the 'Instance Configuration' page in the Jenkins installation wizard. It displays the Jenkins URL as 'http://194.207.96.200:8080/'. Below the URL, there is a section for 'Additional configuration' with a text area for 'Additional configuration'. At the bottom, there is a 'Save and Finish' button.

- Click 'Save and Finish'
- Start using Jenkins

10. Go to Jenkins Dashboard -> manage Jenkins -> Available Plugins -> Install Plugin



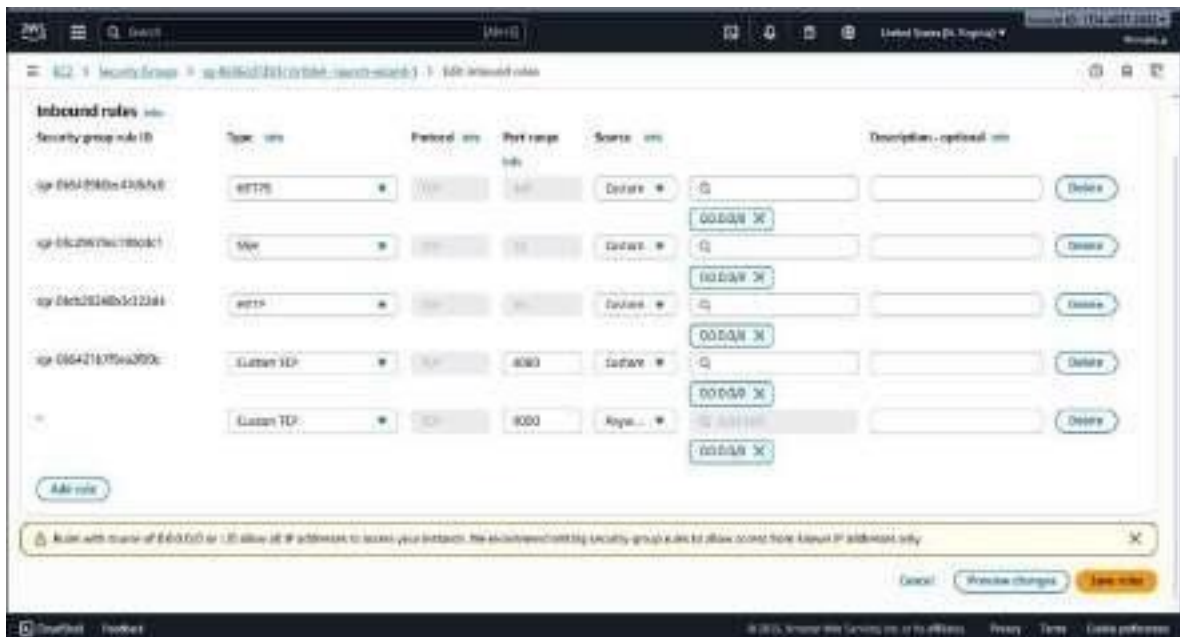
11. Go to jenkins dashboard -> manage jenkins -> system configuration -> tools -> Sonarqube scanner -> save



12. Edit inbound rules -> add port 9000



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

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



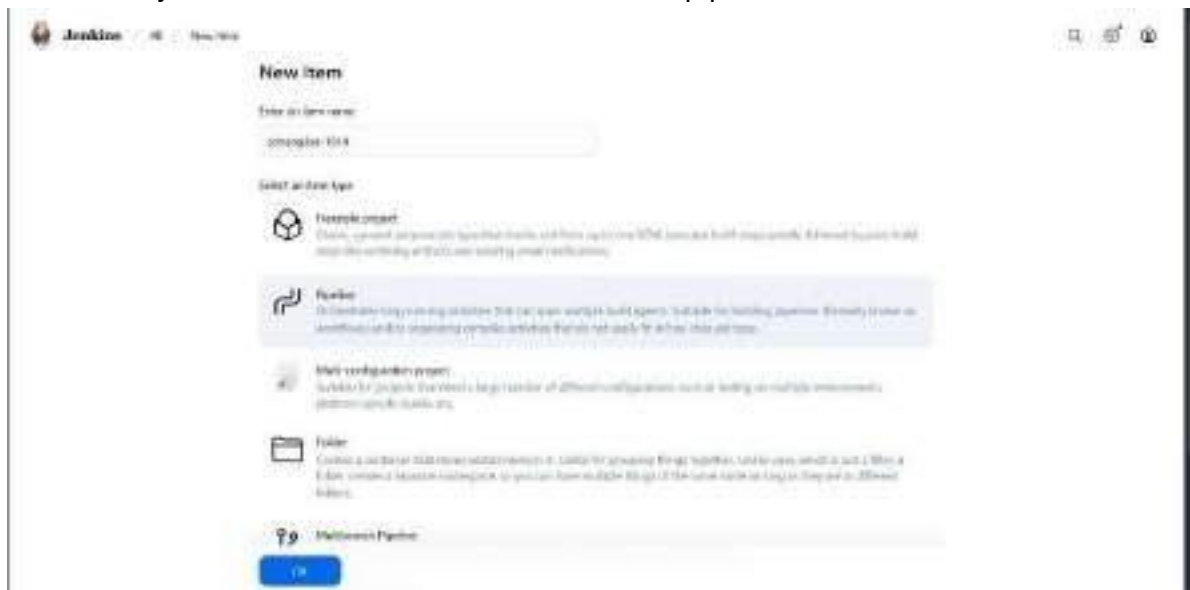
14. Change system configuration in Jenkins Add server url -> 'http://localhost://9000'



15. To create pipeline



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



- Add script





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In this experiment, I understood how SAST helps to find security issues in the source code before running the program. By connecting Jenkins with SonarQube, we can automatically check the code in the pipeline and fix problems early. This makes the code safer, better in quality, and reduces risks during development.