**1. Install OpenJDK 11**

1. SSH to your Ubuntu server as a non-root user with sudo access.
2. Install OpenJDK 11.
3. $ sudo apt-get install openjdk-11-jdk -y

**2. Install and Configure PostgreSQL**

1. Add the PostgreSQL repository.
2. $ sudo sh -c 'echo "deb http://apt.postgresql.org/pub/repos/apt/ `lsb\_release -cs`-pgdg main" >> /etc/apt/sources.list.d/pgdg.list'
3. Add the PostgreSQL signing key.
4. $ wget -q https://www.postgresql.org/media/keys/ACCC4CF8.asc -O - | sudo apt-key add -
5. Install PostgreSQL.
6. $ sudo apt install postgresql postgresql-contrib -y
7. Enable the database server to start automatically on reboot.
8. $ sudo systemctl enable postgresql
9. Start the database server.
10. $ sudo systemctl start postgresql
11. Change the default PostgreSQL password.
12. $ sudo passwd postgres
13. Switch to the **postgres** user.
14. $ su - postgres
15. Create a user named **sonar**.
16. $ createuser sonar
17. Log in to PostgreSQL.
18. $ psql
19. Set a password for the **sonar** user. Use a strong password in place of my\_strong\_password.
20. ALTER USER sonar WITH ENCRYPTED password 'my\_strong\_password';
21. Create a **sonarqube** database and set the owner to **sonar**.
22. CREATE DATABASE sonarqube OWNER sonar;
23. Grant all the privileges on the **sonarqube** database to the **sonar** user.
24. GRANT ALL PRIVILEGES ON DATABASE sonarqube to sonar;
25. Exit PostgreSQL.
26. \q
27. Return to your non-root sudo user account.
28. $ exit

**3. Download and Install SonarQube**

1. Install the **zip** utility, which is needed to unzip the SonarQube files.
2. $ sudo apt-get install zip -y
3. Locate the latest download URL from the [SonarQube official download page](https://www.sonarqube.org/downloads/).
4. Download the SonarQube distribution files.
5. $ sudo wget https://binaries.sonarsource.com/Distribution/sonarqube/sonarqube-<VERSION\_NUMBER>.zip
6. Unzip the downloaded file.
7. sudo unzip sonarqube-<VERSION\_NUMBER>.zip
8. Move the unzipped files to /opt/sonarqube directory
9. sudo mv sonarqube-<VERSION\_NUMBER> /opt/sonarqube

**4. Add SonarQube Group and User**

Create a dedicated user and group for SonarQube, which can not run as the **root** user.

1. Create a **sonar** group.
2. $ sudo groupadd sonar
3. Create a **sonar** user and set **/opt/sonarqube** as the home directory.
4. $ sudo useradd -d /opt/sonarqube -g sonar sonar
5. Grant the **sonar** user access to the /opt/sonarqube directory.
6. $ sudo chown sonar:sonar /opt/sonarqube -R

**5. Configure SonarQube**

1. Edit the SonarQube configuration file.
2. $ sudo nano /opt/sonarqube/conf/sonar.properties

Find the following lines:

#sonar.jdbc.username=

#sonar.jdbc.password=

Uncomment the lines, and add the database user and password you created in Step 2.

sonar.jdbc.username=sonar

sonar.jdbc.password=my\_strong\_password

Below those two lines, add the **sonar.jdbc.url**.

sonar.jdbc.url=jdbc:postgresql://localhost:5432/sonarqube

1. Save and exit the file.
2. Edit the sonar script file.
3. $ sudo nano /opt/sonarqube/bin/linux-x86-64/sonar.sh

About 50 lines down, locate this line:

#RUN\_AS\_USER=

Uncomment the line and change it to:

RUN\_AS\_USER=sonar

1. Save and exit the file.

**6. Setup Systemd service**

1. Create a systemd service file to start SonarQube at system boot.
2. $ sudo nano /etc/systemd/system/sonar.service

Paste the following lines to the file.

[Unit]

Description=SonarQube service

After=syslog.target network.target

[Service]

Type=forking

ExecStart=/opt/sonarqube/bin/linux-x86-64/sonar.sh start

ExecStop=/opt/sonarqube/bin/linux-x86-64/sonar.sh stop

User=sonar

Group=sonar

Restart=always

LimitNOFILE=65536

LimitNPROC=4096

[Install]

WantedBy=multi-user.target

1. Save and exit the file.
2. Enable the SonarQube service to run at system startup.
3. $ sudo systemctl enable sonar
4. Start the SonarQube service.
5. $ sudo systemctl start sonar
6. Check the service status.
7. $ sudo systemctl status sonar

**7. Modify Kernel System Limits**

SonarQube uses **Elasticsearch** to store its indices in an MMap FS directory. It requires some changes to the system defaults.

1. Edit the sysctl configuration file.
2. $ sudo nano /etc/sysctl.conf

Add the following lines.

vm.max\_map\_count=262144

fs.file-max=65536

ulimit -n 65536

ulimit -u 4096

1. Save and exit the file.
2. Reboot the system to apply the changes.
3. $ sudo reboot

**8. Access SonarQube Web Interface**

Access SonarQube in a web browser at your server's IP address on port 9000. For example:

http://192.0.2.123:9000

Log in with username admin and password admin. SonarQube will prompt you to change your password.

mkdir c:\temp\spc

cd c:\temp\spc

git clone https://github.com/spring-projects/spring-petclinic.git

cd spring-petclinic

mvn package

* Now run the scanning based on the command from sonar qube

mvn clean verify sonar:sonar -Dsonar.projectKey=test -Dsonar.host.url=http://localhost:9000 -Dsonar.login=sqp\_b9a78cff3c8a840035070fa05f043fd4e324b15f

