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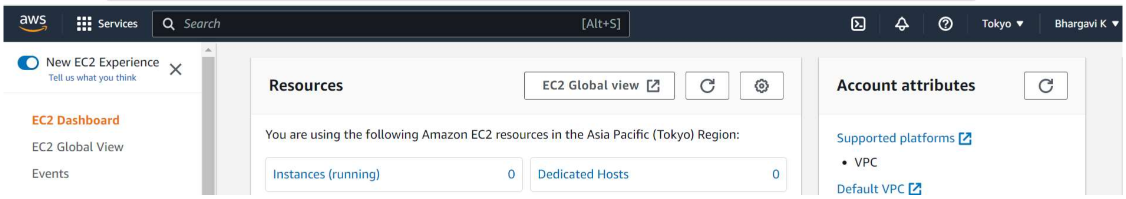
Student ID: 202051048

POD LAB 2

1. Create a free-tier Amazon AWS account.

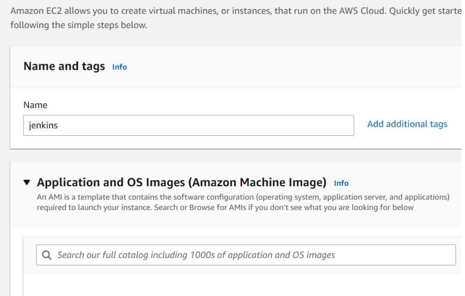


You are using the following Amazon EC2 resources in the Asia Pacific (Tokyo) Region:

2. Go to EC2 services and create an EC2 instance as demonstrated in the video.

i. Click on launch instance to launch an EC2 instance.

ii. Name your instance and select the operating system you want. Here, I've chose ubuntu.



Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get starte following the simple steps below.

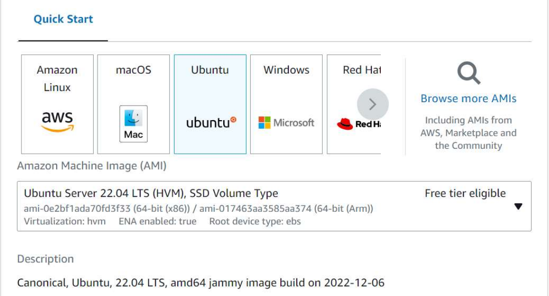
Name and tags Info

Name: jenkins

Application and OS Images (Amazon Machine Image) Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images


Quick Start
Amazon Linux
aws
macOS
Mac
Ubuntu
ubuntu
Windows
Microsoft
Red Hat
Red Hat
Browse more AMIs
Including AMIs from AWS, Marketplace and the Community

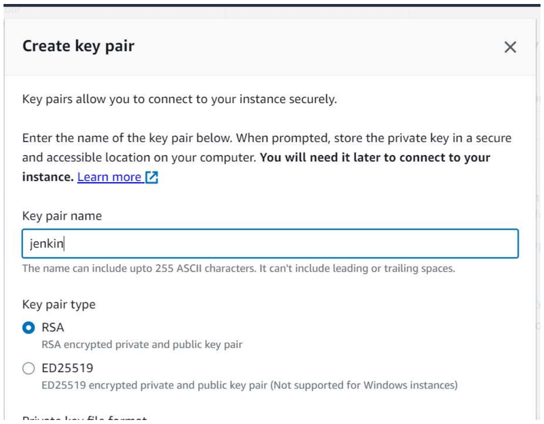
Amazon Machine Image (AMI)

Ubuntu Server 22.04 LTS (HVM), SSD Volume Type — Free tier eligible
ami-0e2bf1ada70fd3f33 (64-bit (x86)) / ami-017463aa3585aa374 (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Canonical, Ubuntu, 22.04 LTS, amd64 jammy image build on 2022-12-06

iii. Create a new key pair to securely connect to your instance. Name it as you wish, rest of the configurations are kept constant. We can launch our instance now.



Create key pair

Key pairs allow you to connect to your instance securely.

Enter the name of the key pair below. When prompted, store the private key in a secure and accessible location on your computer. **You will need it later to connect to your instance.** Learn more

Key pair name

jenkin

The name can include upto 255 ASCII characters. It can't include leading or trailing spaces.

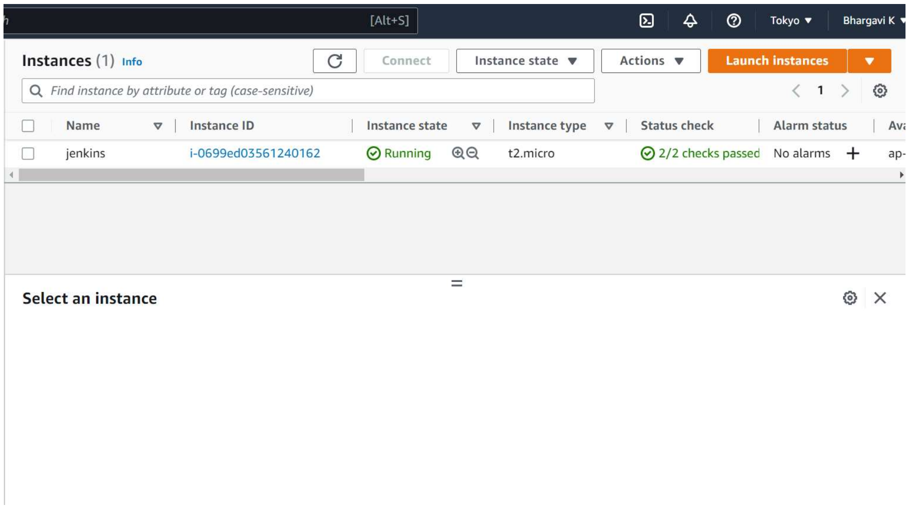
Key pair type

● RSA
RSA encrypted private and public key pair

○ ED25519
ED25519 encrypted private and public key pair (Not supported for Windows instances)

Private key file format

iv. Our instance is running successfully



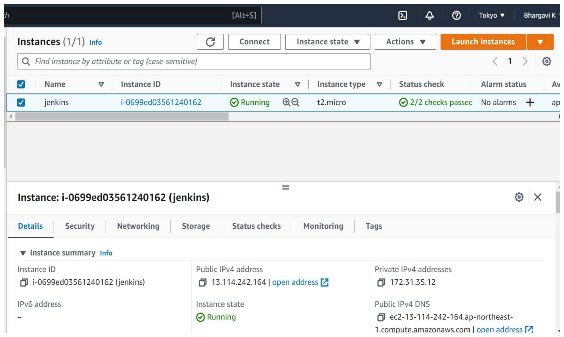
Instances (1) Info

□	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Ava
□	jenkins	i-0699ed03561240162	✓ Running	t2.micro	✓ 2/2 checks passed	No alarms +	ap-

Select an instance

3. Setup MobaXterm to access the EC2 instance from your computer:

Copy the public ip address and add to your pc. Add the private key and click on okay to start your session.



Instances (1/1) Info

☑	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Av
☑	jenkins	i-0699ed03561240162	✓ Running	t2.micro	✓ 2/2 checks passed	No alarms +	ap

Instance: i-0699ed03561240162 (jenkins)

Instance summary Info

Instance ID
i-0699ed03561240162 (jenkins)

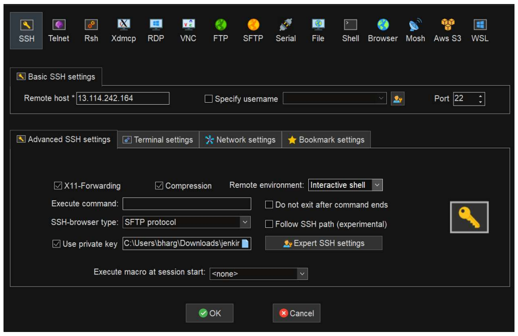
Public IPv4 address
13.114.242.164 | open address

Private IPv4 addresses
172.31.35.12

IPv6 address
–

Instance state
✓ Running

Public IPv4 DNS
ec2-13-114-242-164.ap-northeast-1.compute.amazonaws.com | open address



Remote host * 13.114.242.164 □ Specify username Port 22

☑ X11-Forwarding ☑ Compression Remote environment: Interactive shell

Execute command:

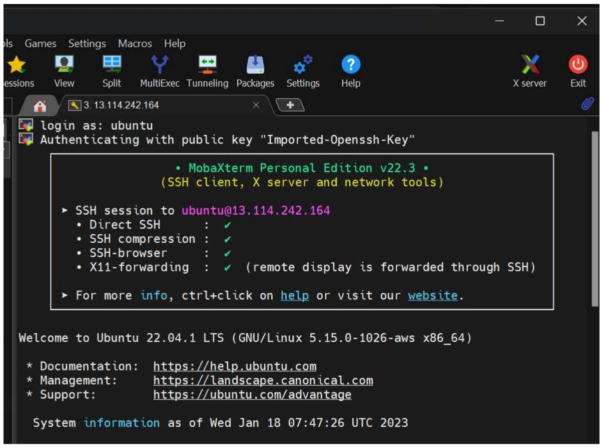
□ Do not exit after command ends

SSH-browser type: SFTP protocol

□ Follow SSH path (experimental)

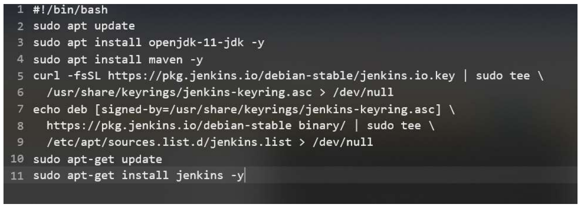
☑ Use private key C:\Users\bharg\Downloads\jenkir

Execute macro at session start: <none>



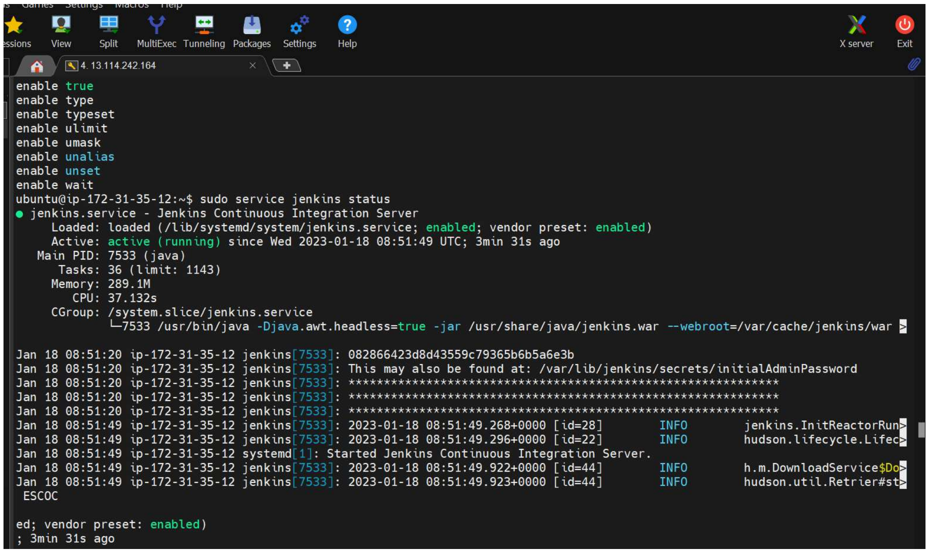
```
login as: ubuntu
Authenticating with public key "Imported-Openssh-Key"

            • MobaXterm Personal Edition v22.3 •
          (SSH client, X server and network tools)

   ➤ SSH session to ubuntu@13.114.242.164
     • Direct SSH      :  ✔
     • SSH compression :  ✔
     • SSH-browser     :  ✔
     • X11-forwarding  :  ✔  (remote display is forwarded through SSH)

   ➤ For more info, ctrl+click on help or visit our website.

Welcome to Ubuntu 22.04.1 LTS (GNU/Linux 5.15.0-1026-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Wed Jan 18 07:47:26 UTC 2023
```

4. Run following commands to install jenkins:



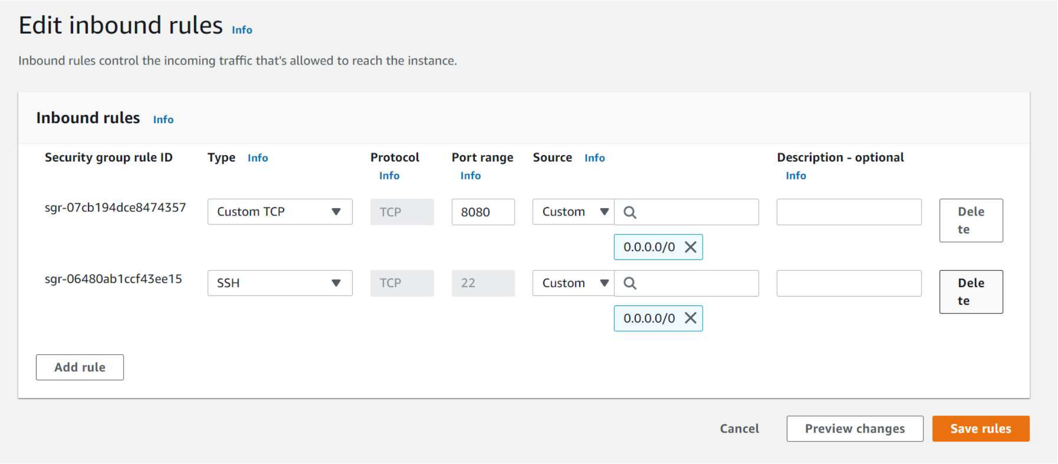
```
#!/bin/bash
sudo apt update
sudo apt install openjdk-11-jdk -y
sudo apt install maven -y
curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo tee \
  /usr/share/keyrings/jenkins-keyring.asc > /dev/null
echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \
  https://pkg.jenkins.io/debian-stable binary/ | sudo tee \
  /etc/apt/sources.list.d/jenkins.list > /dev/null
sudo apt-get update
sudo apt-get install jenkins -y
```

Jenkins has been installed succesfully.



```
enable true
enable type
enable typeset
enable ulimit
enable umask
enable unalias
enable unset
enable wait
ubuntu@ip-172-31-35-12:~$ sudo service jenkins status
● jenkins.service - Jenkins Continuous Integration Server
     Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)
     Active: active (running) since Wed 2023-01-18 08:51:49 UTC; 3min 31s ago
   Main PID: 7533 (java)
      Tasks: 36 (limit: 1143)
     Memory: 289.1M
        CPU: 37.132s
     CGroup: /system.slice/jenkins.service
             └─7533 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war >

Jan 18 08:51:20 ip-172-31-35-12 jenkins[7533]: 082866423d8d43559c79365b6b5a6e3b
Jan 18 08:51:20 ip-172-31-35-12 jenkins[7533]: This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Jan 18 08:51:20 ip-172-31-35-12 jenkins[7533]: *************************************************************
Jan 18 08:51:20 ip-172-31-35-12 jenkins[7533]: *************************************************************
Jan 18 08:51:20 ip-172-31-35-12 jenkins[7533]: *************************************************************
Jan 18 08:51:49 ip-172-31-35-12 jenkins[7533]: 2023-01-18 08:51:49.268+0000 [id=28]        INFO        jenkins.InitReactorRun>
Jan 18 08:51:49 ip-172-31-35-12 jenkins[7533]: 2023-01-18 08:51:49.296+0000 [id=22]        INFO        hudson.lifecycle.Lifec>
Jan 18 08:51:49 ip-172-31-35-12 systemd[1]: Started Jenkins Continuous Integration Server.
Jan 18 08:51:49 ip-172-31-35-12 jenkins[7533]: 2023-01-18 08:51:49.922+0000 [id=44]        INFO        h.m.DownloadService$Do>
Jan 18 08:51:49 ip-172-31-35-12 jenkins[7533]: 2023-01-18 08:51:49.923+0000 [id=44]        INFO        hudson.util.Retrier#st>
 ESCOC

ed; vendor preset: enabled)
; 3min 31s ago
```

5. Add inbound rules in the security



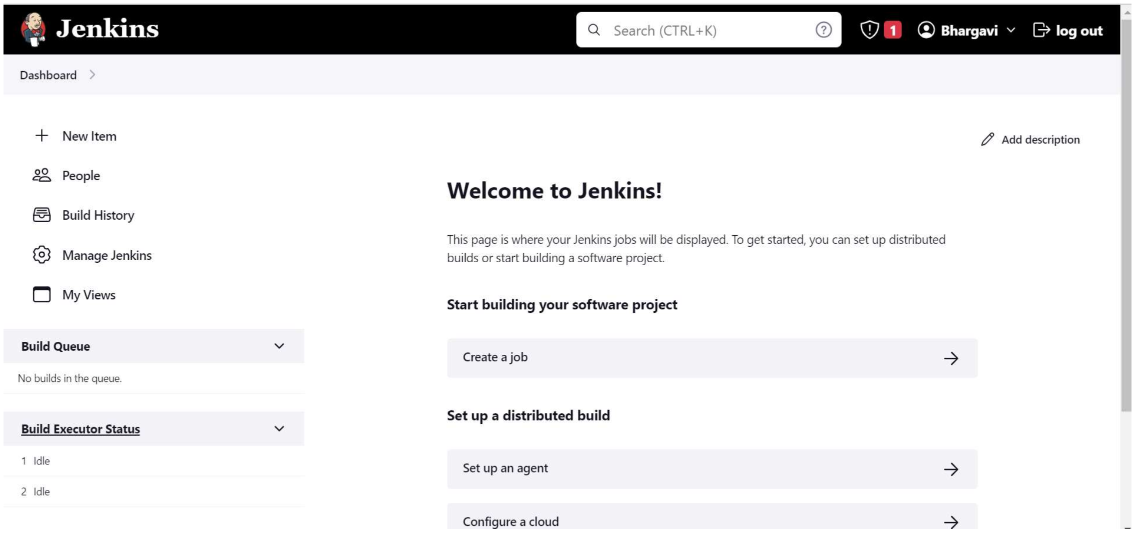
Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules Info

Security group rule ID	Type Info	Protocol Info	Port range Info	Source Info	Description - optional Info
sgr-07cb194dce8474357	Custom TCP	TCP	8080	Custom 0.0.0.0/0	
sgr-06480ab1ccf43ee15	SSH	TCP	22	Custom 0.0.0.0/0	

6. Create your Jenkins account by going to 8080 port:



Welcome to Jenkins!

This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.

Start building your software project

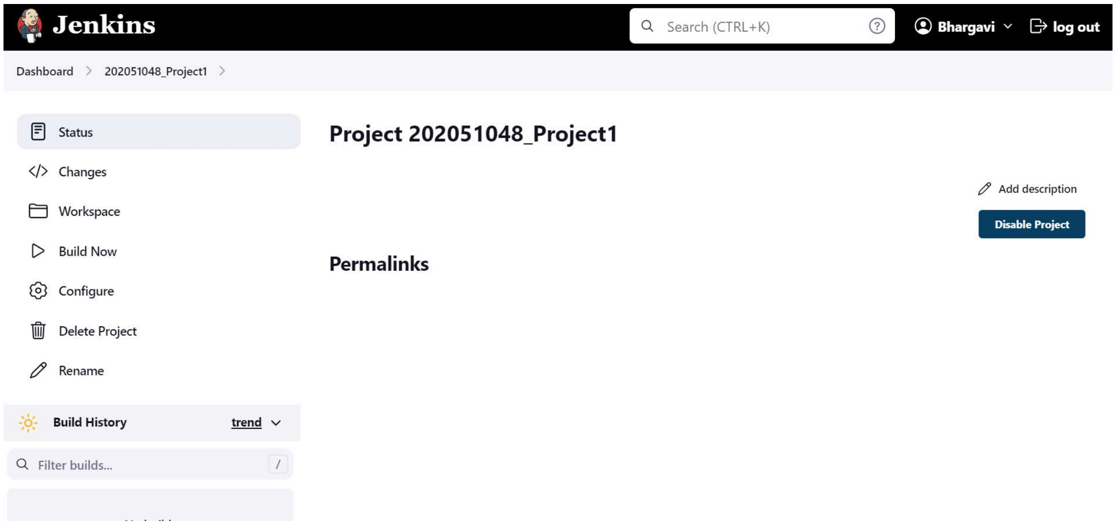
Set up a distributed build

No builds in the queue.

1 Idle

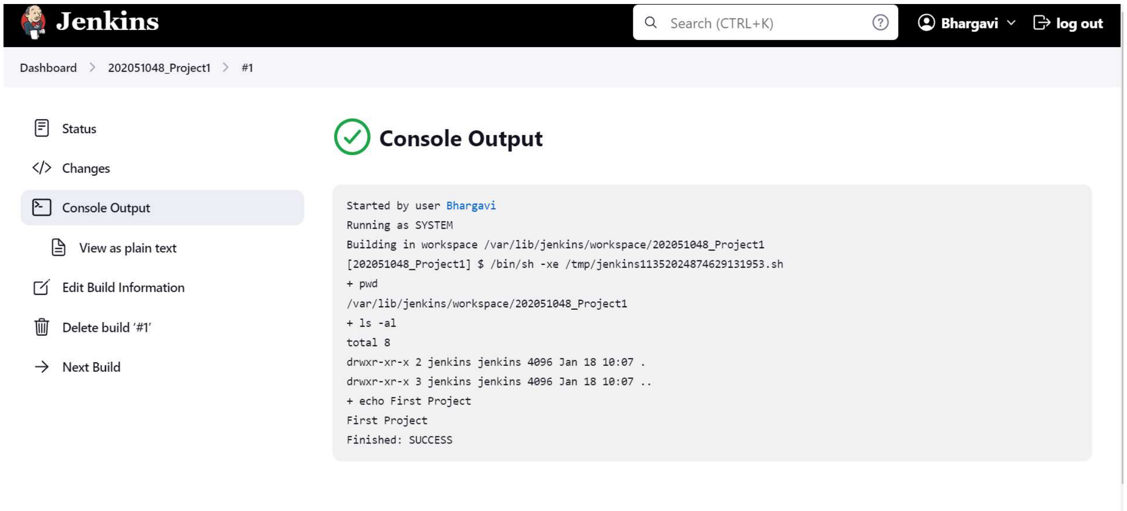
2 Idle

7. Click on new item to create new project add necessary information and shell code to execute it:



Click on build now to get the output:

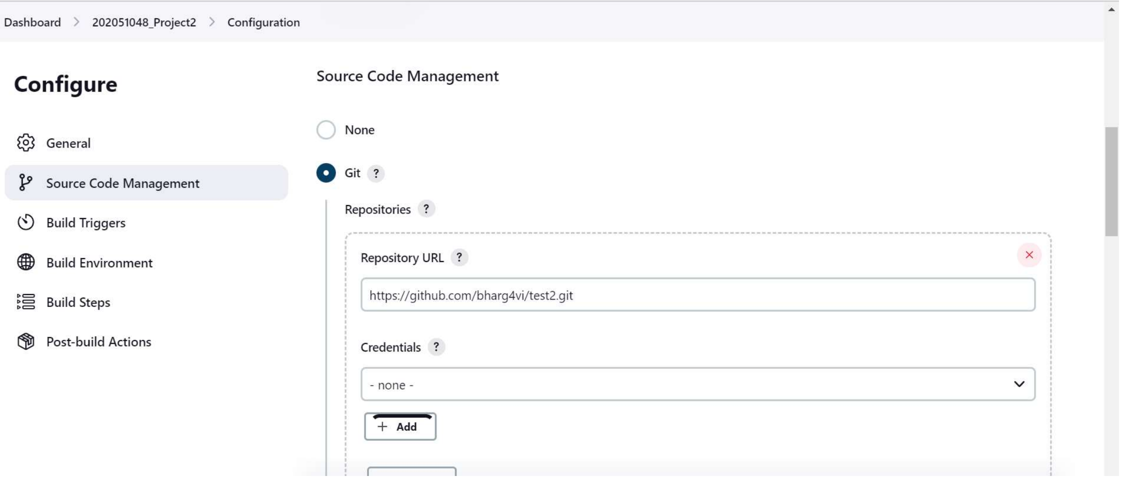
8.



Console Output

```
Started by user Bhargavi
Running as SYSTEM
Building in workspace /var/lib/jenkins/workspace/202051048_Project1
[202051048_Project1] $ /bin/sh -xe /tmp/jenkins11352024874629131953.sh
+ pwd
/var/lib/jenkins/workspace/202051048_Project1
+ ls -al
total 8
drwxr-xr-x 2 jenkins jenkins 4096 Jan 18 10:07 .
drwxr-xr-x 3 jenkins jenkins 4096 Jan 18 10:07 ..
+ echo First Project
First Project
Finished: SUCCESS
```

8. For the second project use we'll import code from a git repo and build it:



Source Code Management

○ None

● Git ?

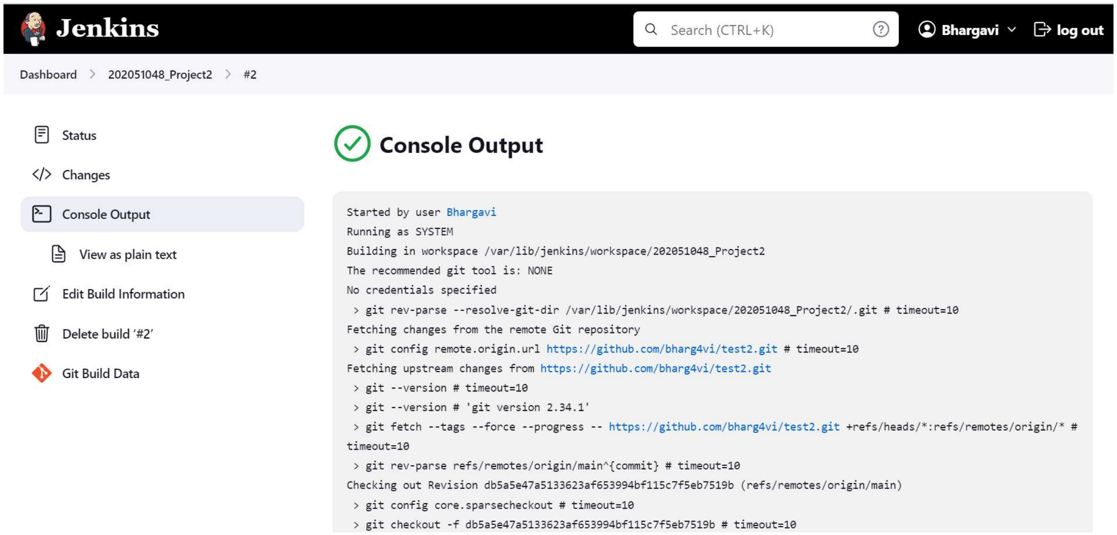
Repositories ?

Repository URL ?

https://github.com/bharg4vi/test2.git

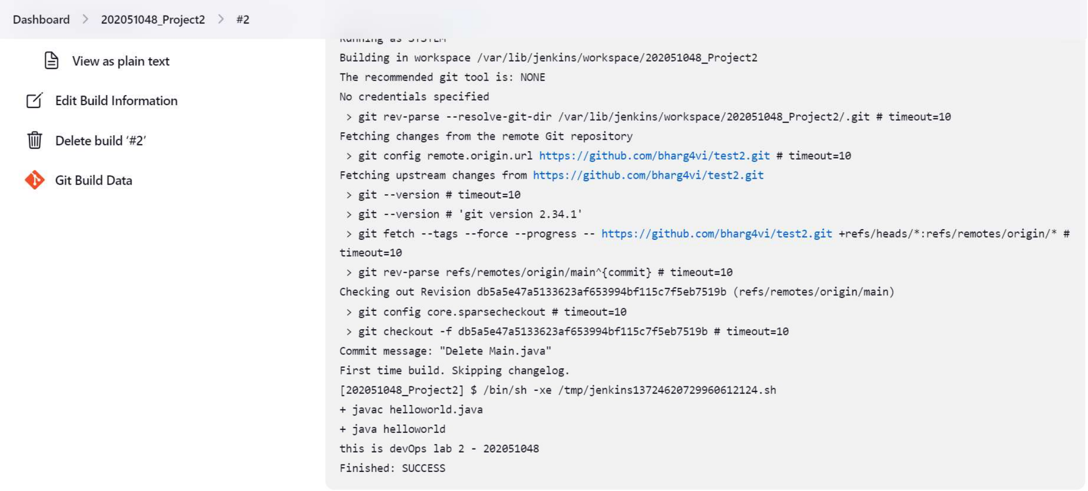
Credentials ?

- none -



Console Output

```
Started by user Bhargavi
Running as SYSTEM
Building in workspace /var/lib/jenkins/workspace/202051048_Project2
The recommended git tool is: NONE
No credentials specified
 > git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/202051048_Project2/.git # timeout=10
Fetching changes from the remote Git repository
 > git config remote.origin.url https://github.com/bharg4vi/test2.git # timeout=10
Fetching upstream changes from https://github.com/bharg4vi/test2.git
 > git --version # timeout=10
 > git --version # 'git version 2.34.1'
 > git fetch --tags --force --progress -- https://github.com/bharg4vi/test2.git +refs/heads/*:refs/remotes/origin/* #
timeout=10
 > git rev-parse refs/remotes/origin/main^{commit} # timeout=10
Checking out Revision db5a5e47a5133623af653994bf115c7f5eb7519b (refs/remotes/origin/main)
 > git config core.sparsecheckout # timeout=10
 > git checkout -f db5a5e47a5133623af653994bf115c7f5eb7519b # timeout=10
```

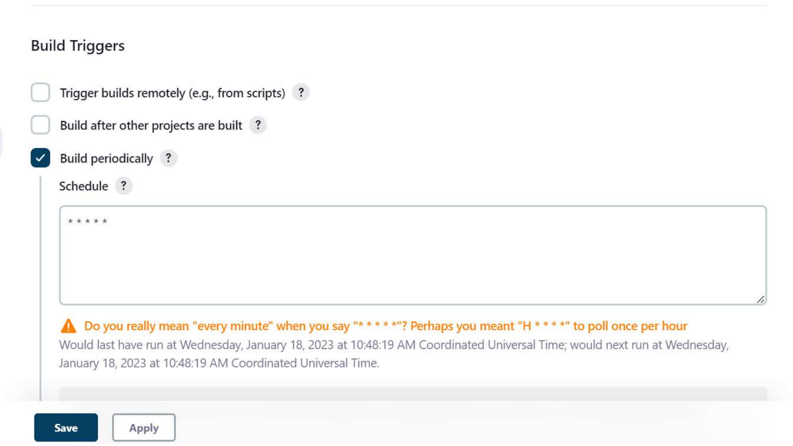


```
Running as SYSTEM
Building in workspace /var/lib/jenkins/workspace/202051048_Project2
The recommended git tool is: NONE
No credentials specified
 > git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/202051048_Project2/.git # timeout=10
Fetching changes from the remote Git repository
 > git config remote.origin.url https://github.com/bharg4vi/test2.git # timeout=10
Fetching upstream changes from https://github.com/bharg4vi/test2.git
 > git --version # timeout=10
 > git --version # 'git version 2.34.1'
 > git fetch --tags --force --progress -- https://github.com/bharg4vi/test2.git +refs/heads/*:refs/remotes/origin/* #
timeout=10
 > git rev-parse refs/remotes/origin/main^{commit} # timeout=10
Checking out Revision db5a5e47a5133623af653994bf115c7f5eb7519b (refs/remotes/origin/main)
 > git config core.sparsecheckout # timeout=10
 > git checkout -f db5a5e47a5133623af653994bf115c7f5eb7519b # timeout=10
```

```
Commit message: "Delete Main.java"
First time build. Skipping changelog.
[202051048_Project2] $ /bin/sh -xe /tmp/jenkins13724620729960612124.sh
+ javac helloworld.java
+ java helloworld
this is devOps lab 2 - 202051048
Finished: SUCCESS
```

9. Now we want to automate this process of building so we'll build project 3 now:

Here we'll add Build Periodically to every minute



Build Triggers

□ Trigger builds remotely (e.g., from scripts) ?

□ Build after other projects are built ?

☑ Build periodically ?

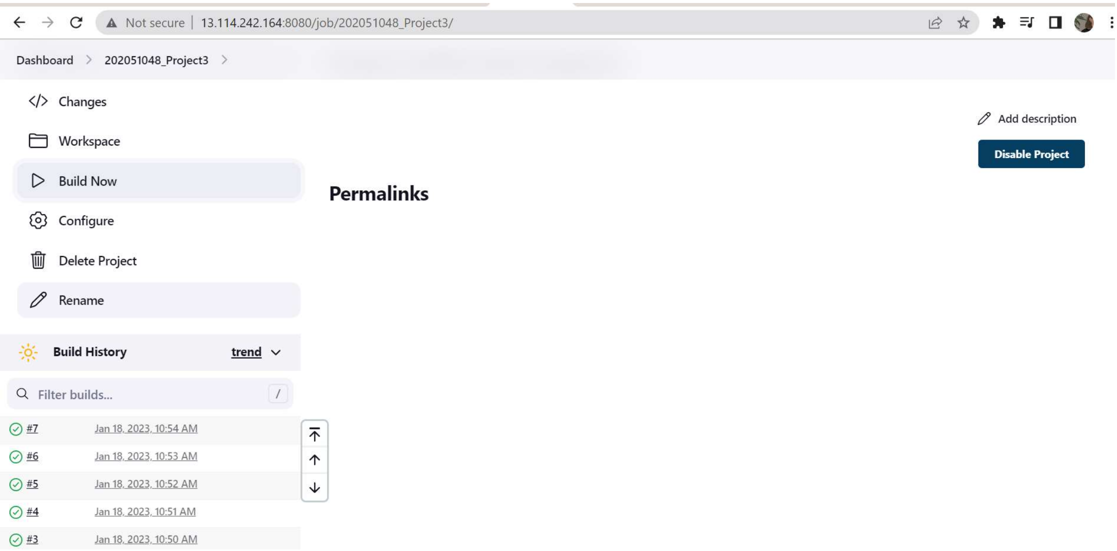
Schedule ?

```
* * * * *
```

⚠ Do you really mean "every minute" when you say "* * * * *"? Perhaps you meant "H * * * *" to poll once per hour

Would last have run at Wednesday, January 18, 2023 at 10:48:19 AM Coordinated Universal Time; would next run at Wednesday, January 18, 2023 at 10:48:19 AM Coordinated Universal Time.

As we can see projects are built succesfully with 1 min difference.

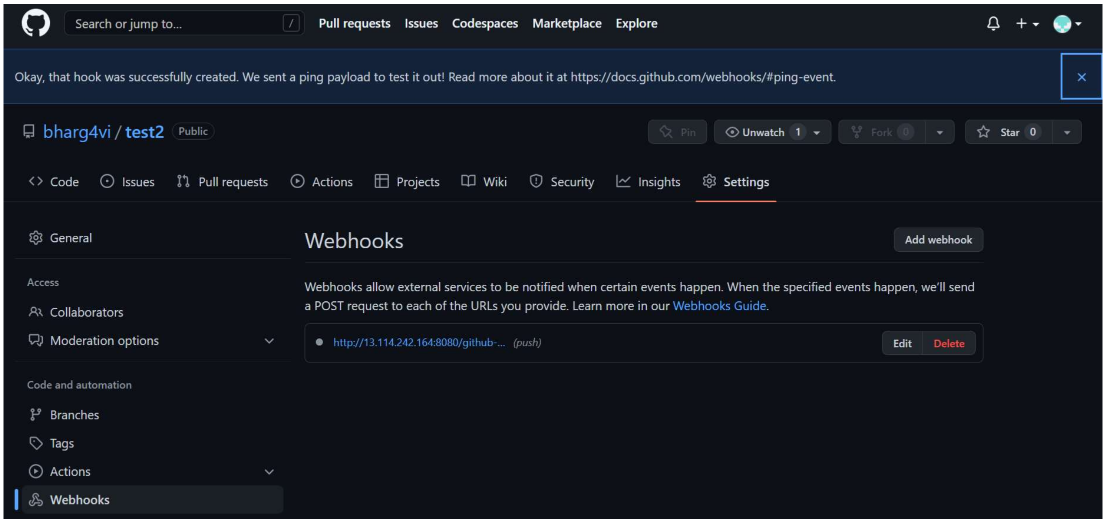


Not secure | 13.114.242.164:8080/job/202051048_Project3/

Dashboard > 202051048_Project3 >

✓ #7	Jan 18, 2023, 10:54 AM
✓ #6	Jan 18, 2023, 10:53 AM
✓ #5	Jan 18, 2023, 10:52 AM
✓ #4	Jan 18, 2023, 10:51 AM
✓ #3	Jan 18, 2023, 10:50 AM

10. Now we'll create project4 with webhooks:

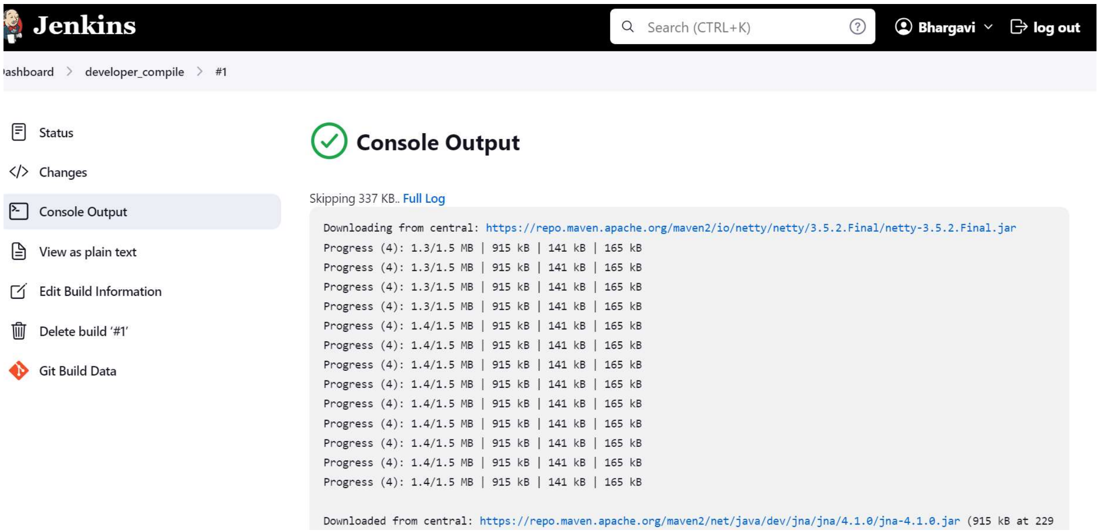


Okay, that hook was successfully created. We sent a ping payload to test it out! Read more about it at https://docs.github.com/webhooks/#ping-event.

Webhooks

Webhooks allow external services to be notified when certain events happen. When the specified events happen, we'll send a POST request to each of the URLs you provide. Learn more in our Webhooks Guide.

● http://13.114.242.164:8080/github-... (push)



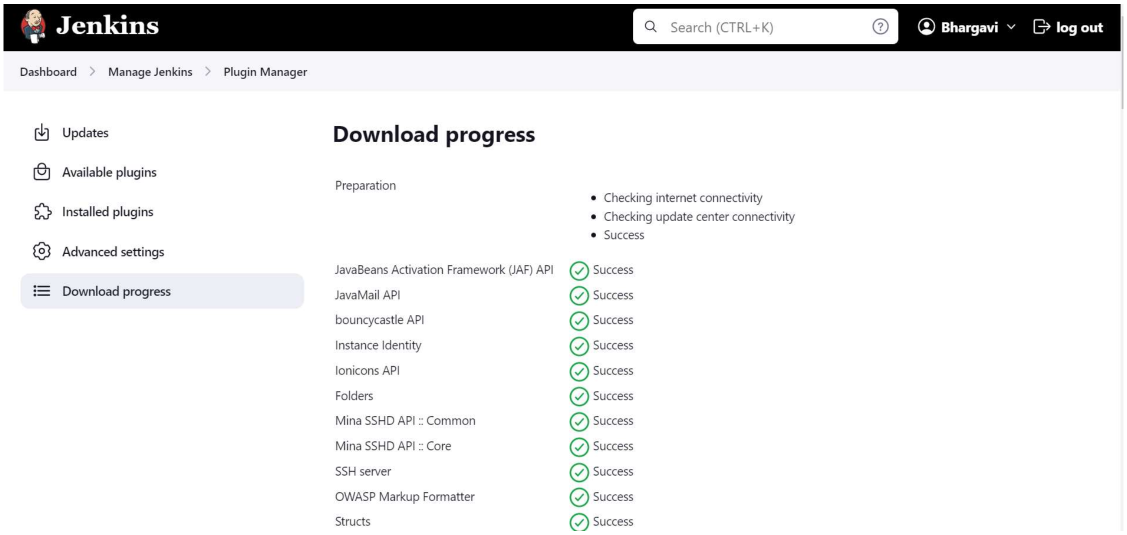
Console Output

Skipping 337 KB.. Full Log

```
Downloading from central: https://repo.maven.apache.org/maven2/io/netty/netty/3.5.2.Final/netty-3.5.2.Final.jar
Progress (4): 1.3/1.5 MB | 915 kB | 141 kB | 165 kB
Progress (4): 1.3/1.5 MB | 915 kB | 141 kB | 165 kB
Progress (4): 1.3/1.5 MB | 915 kB | 141 kB | 165 kB
Progress (4): 1.3/1.5 MB | 915 kB | 141 kB | 165 kB
Progress (4): 1.4/1.5 MB | 915 kB | 141 kB | 165 kB
Progress (4): 1.4/1.5 MB | 915 kB | 141 kB | 165 kB
Progress (4): 1.4/1.5 MB | 915 kB | 141 kB | 165 kB
Progress (4): 1.4/1.5 MB | 915 kB | 141 kB | 165 kB
Progress (4): 1.4/1.5 MB | 915 kB | 141 kB | 165 kB
Progress (4): 1.4/1.5 MB | 915 kB | 141 kB | 165 kB
Progress (4): 1.4/1.5 MB | 915 kB | 141 kB | 165 kB
Progress (4): 1.4/1.5 MB | 915 kB | 141 kB | 165 kB
Progress (4): 1.4/1.5 MB | 915 kB | 141 kB | 165 kB

Downloaded from central: https://repo.maven.apache.org/maven2/net/java/dev/jna/jna/4.1.0/jna-4.1.0.jar (915 kB at 229
```

11. We’ll create a code-review project now:

Download jenkin pluggings for warnings

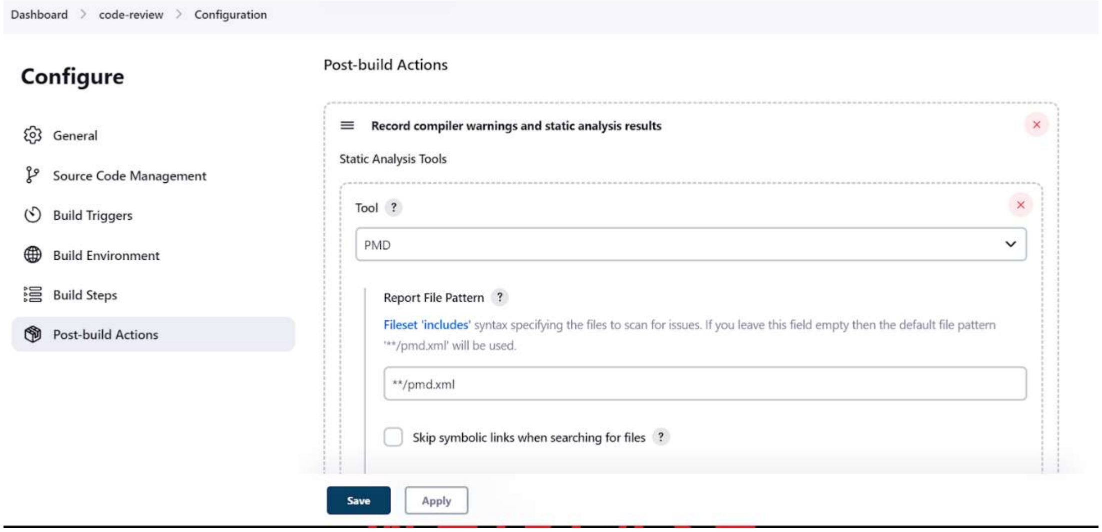


Download progress

Preparation

- Checking internet connectivity
- Checking update center connectivity
- Success

JavaBeans Activation Framework (JAF) API	✓ Success
JavaMail API	✓ Success
bouncycastle API	✓ Success
Instance Identity	✓ Success
Ionicons API	✓ Success
Folders	✓ Success
Mina SSHD API :: Common	✓ Success
Mina SSHD API :: Core	✓ Success
SSH server	✓ Success
OWASP Markup Formatter	✓ Success
Structs	✓ Success



Post-build Actions

Record compiler warnings and static analysis results

Static Analysis Tools

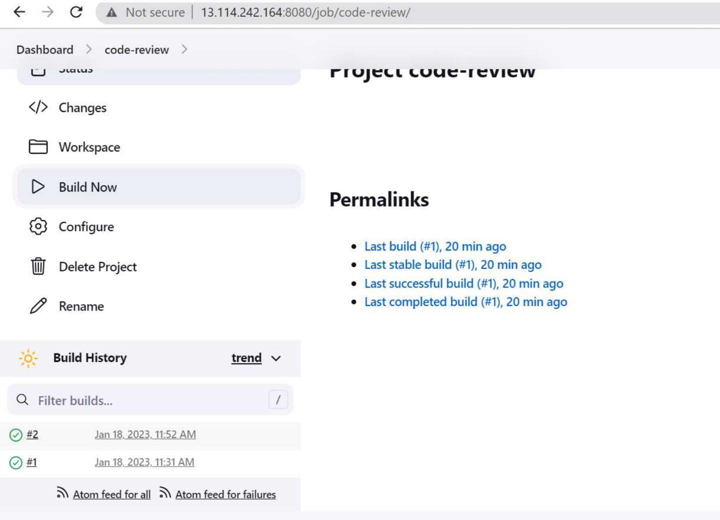
Tool: PMD

Report File Pattern

Fileset 'includes' syntax specifying the files to scan for issues. If you leave this field empty then the default file pattern '**/pmd.xml' will be used.

**/pmd.xml

□ Skip symbolic links when searching for files



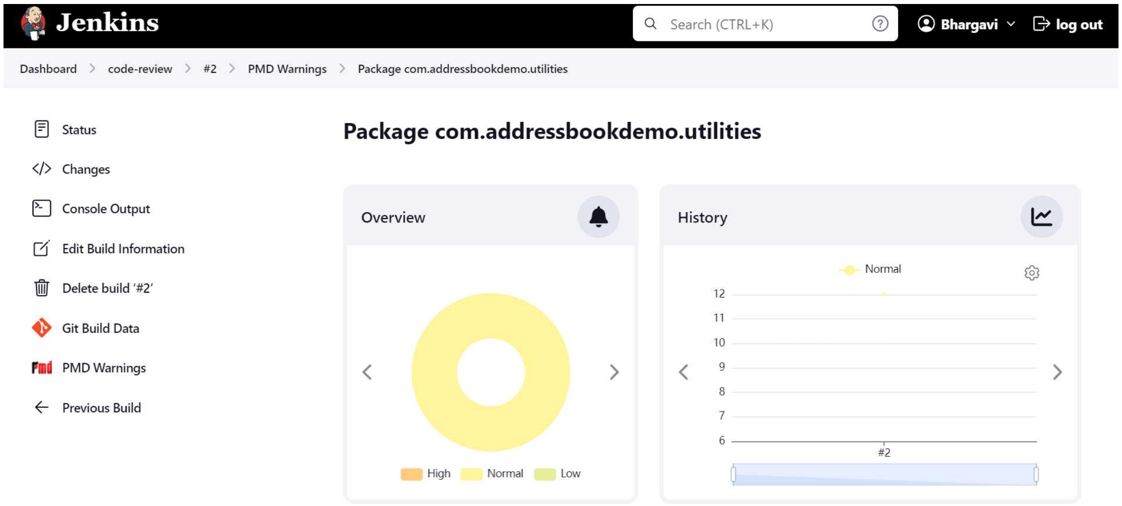
Project code-review

Permalinks

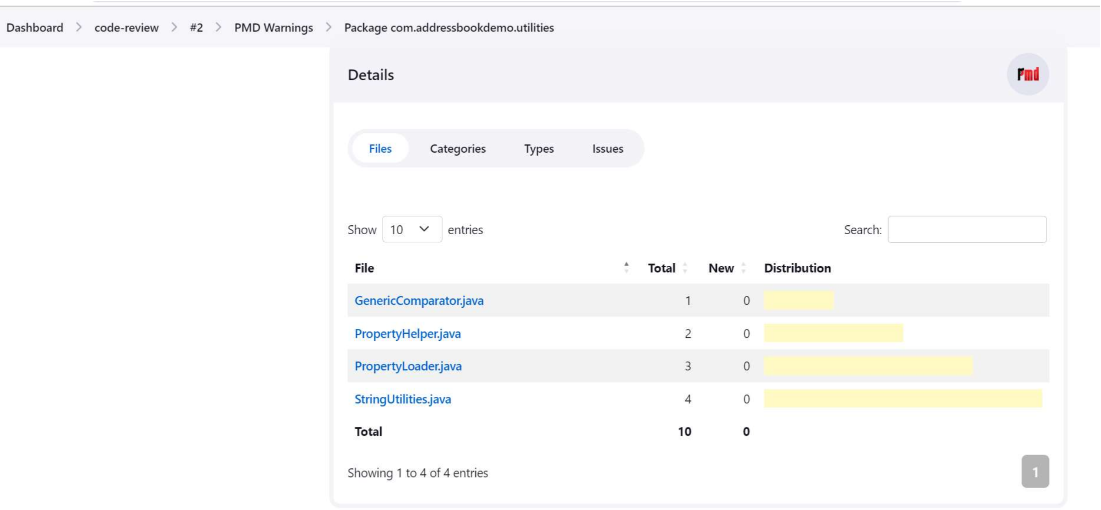
- Last build (#1), 20 min ago
- Last stable build (#1), 20 min ago
- Last successful build (#1), 20 min ago
- Last completed build (#1), 20 min ago

✓ #2	Jan 18, 2023, 11:52 AM
✓ #1	Jan 18, 2023, 11:31 AM

This is the output:



Package com.addressbookdemo.utilities

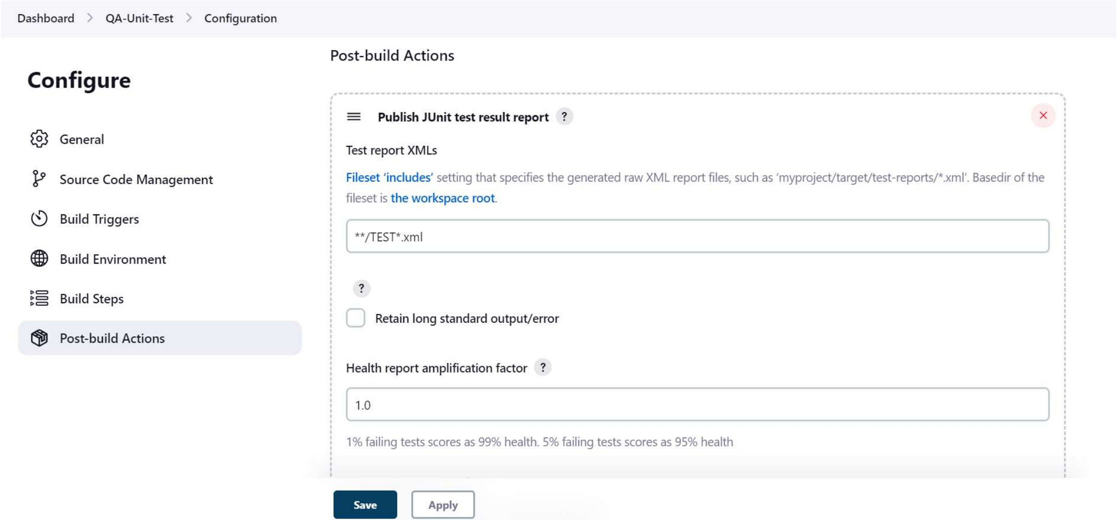


Dashboard > code-review > #2 > PMD Warnings > Package com.addressbookdemo.utilities
Details
Files
Categories
Types
Issues
Show 10 entries
Search:

File	Total	New	Distribution
GenericComparator.java	1	0	
PropertyHelper.java	2	0	
PropertyLoader.java	3	0	
StringUtilities.java	4	0	
Total	**10**	**0**	

Showing 1 to 4 of 4 entries

12. We'll create a project for QA-Unit-Testing



Post-build Actions

Publish JUnit test result report ?

Test report XMLs

Fileset 'includes' setting that specifies the generated raw XML report files, such as 'myproject/target/test-reports/*.xml'. Basedir of the fileset is the workspace root.

**/TEST*.xml

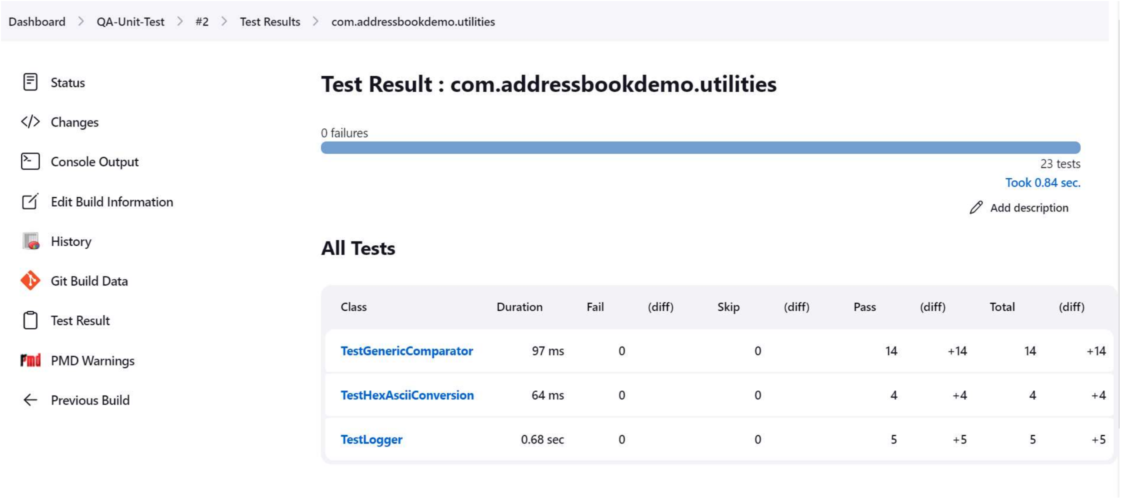
?

□ Retain long standard output/error

Health report amplification factor ?

1.0

1% failing tests scores as 99% health. 5% failing tests scores as 95% health



Test Result : com.addressbookdemo.utilities

0 failures

23 tests

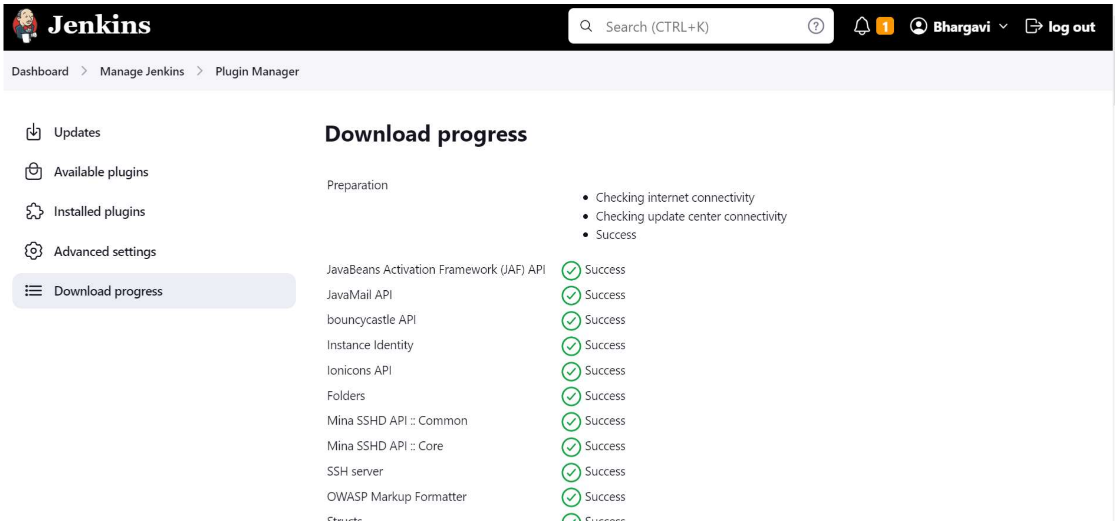
Took 0.84 sec.

All Tests

Class	Duration	Fail	(diff)	Skip	(diff)	Pass	(diff)	Total	(diff)
TestGenericComparator	97 ms	0		0		14	+14	14	+14
TestHexAsciiConversion	64 ms	0		0		4	+4	4	+4
TestLogger	0.68 sec	0		0		5	+5	5	+5

13. We'll next create a project as Metrick-pakage

Install Jacoco plugins



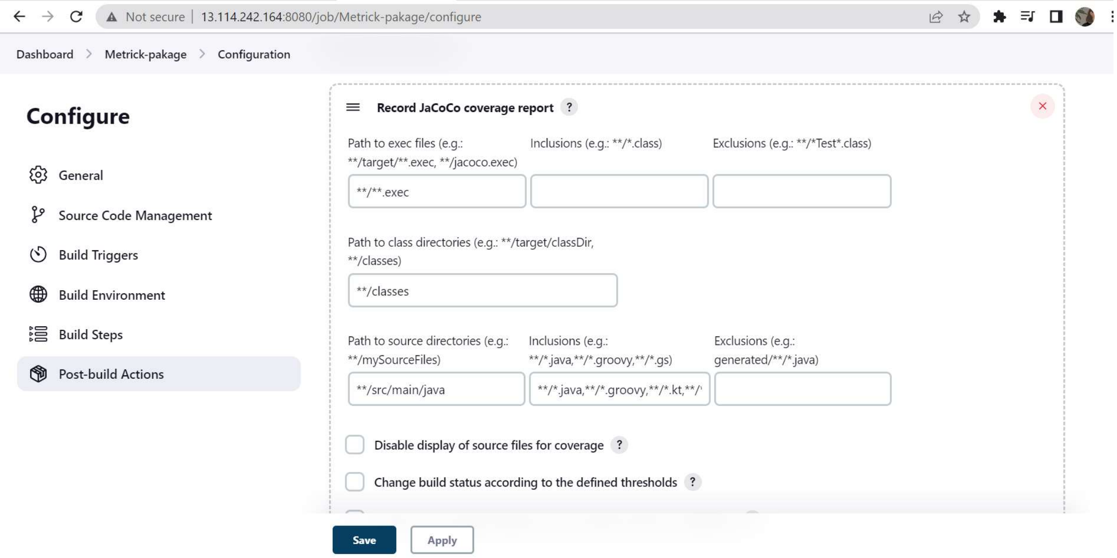
Download progress

Preparation

- Checking internet connectivity
- Checking update center connectivity
- Success

JavaBeans Activation Framework (JAF) API	✓ Success
JavaMail API	✓ Success
bouncycastle API	✓ Success
Instance Identity	✓ Success
Ionicons API	✓ Success
Folders	✓ Success
Mina SSHD API :: Common	✓ Success
Mina SSHD API :: Core	✓ Success
SSH server	✓ Success
OWASP Markup Formatter	✓ Success

Add Jacoco plugins:



Record JaCoCo coverage report ?

Path to exec files (e.g.: **/target/**.exec, **/jacoco.exec): **/**.exec

Inclusions (e.g.: **/*.class):

Exclusions (e.g.: **/*Test*.class):

Path to class directories (e.g.: **/target/classDir, **/classes): **/classes

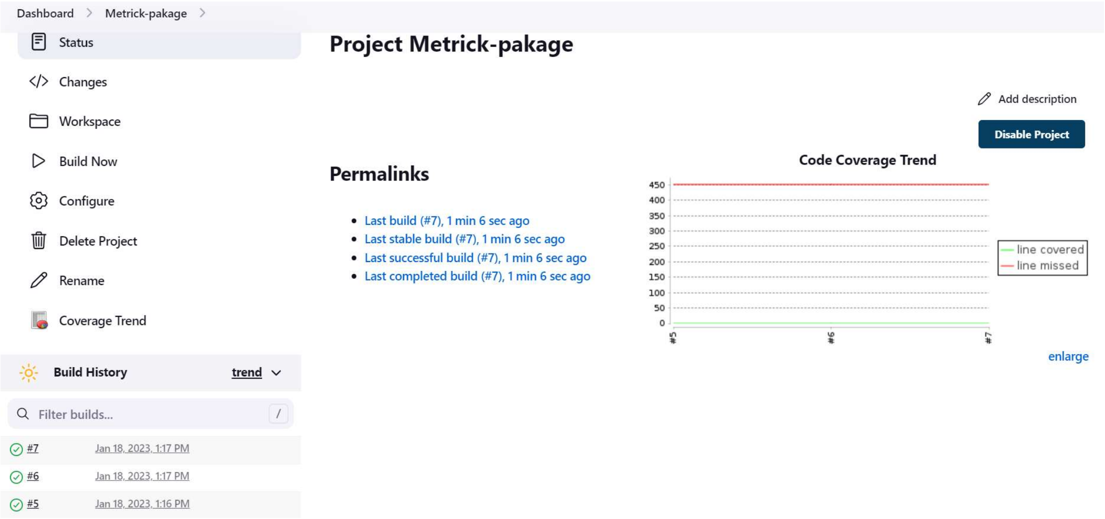
Path to source directories (e.g.: **/mySourceFiles): **/src/main/java

Inclusions (e.g.: **/*.java,**/*.groovy,**/*.gs): **/*.java,**/*.groovy,**/*.kt,**/*

Exclusions (e.g.: generated/**/*.java):

□ Disable display of source files for coverage ?

□ Change build status according to the defined thresholds ?



Dashboard > Metrick-pakage >

- Status
- Changes
- Workspace
- Build Now
- Configure
- Delete Project
- Rename
- Coverage Trend

Build History trend

Filter builds...

- #7 Jan 18, 2023, 1:17 PM
- #6 Jan 18, 2023, 1:17 PM
- #5 Jan 18, 2023, 1:16 PM

Project Metrick-pakage

Add description

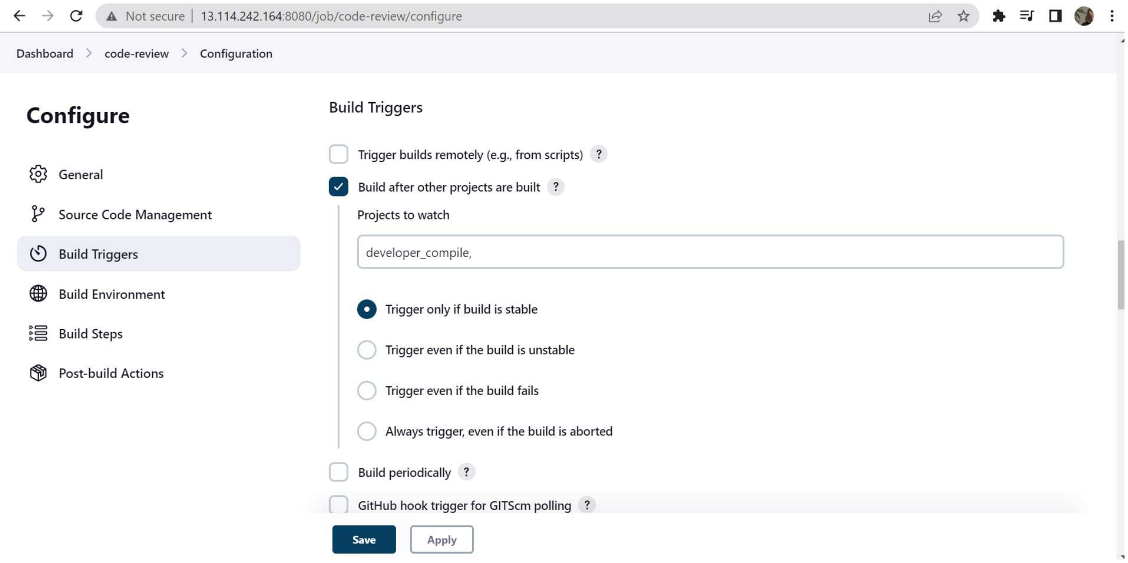
Disable Project

Permalinks

- Last build (#7), 1 min 6 sec ago
- Last stable build (#7), 1 min 6 sec ago
- Last successful build (#7), 1 min 6 sec ago
- Last completed build (#7), 1 min 6 sec ago

Code Coverage Trend

14. Now for the last part we’ll build triggers in code review:



Not secure | 13.114.242.164:8080/job/code-review/configure

Dashboard > code-review > Configuration

Configure

- General
- Source Code Management
- Build Triggers
- Build Environment
- Build Steps
- Post-build Actions

Build Triggers

□ Trigger builds remotely (e.g., from scripts) ?

☑ Build after other projects are built ?

Projects to watch

developer_compile,

● Trigger only if build is stable

○ Trigger even if the build is unstable

○ Trigger even if the build fails

○ Always trigger, even if the build is aborted

□ Build periodically ?

□ GitHub hook trigger for GITScm polling ?

Save Apply