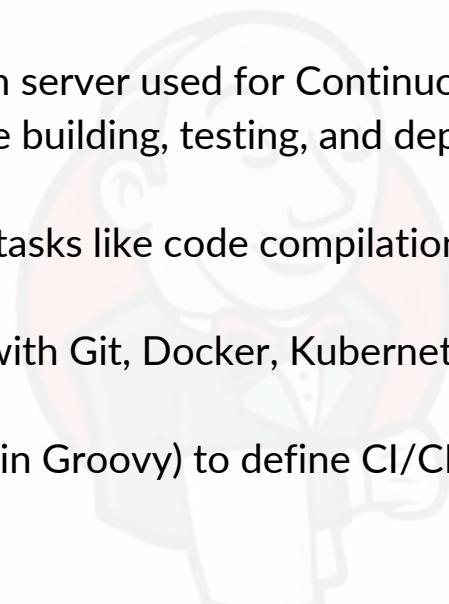




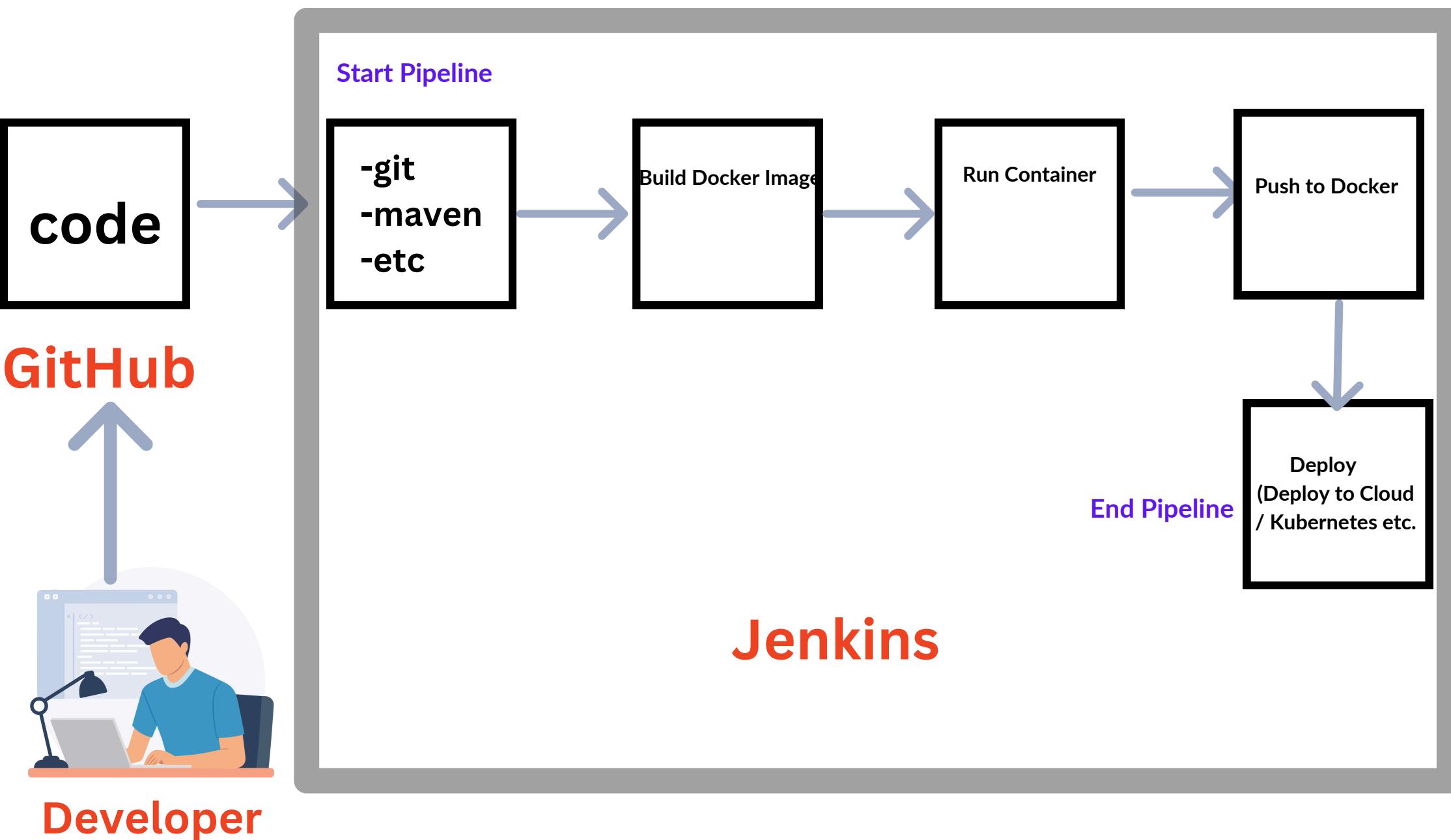
# Jenkins

## Jenkins CI/CD

- > Jenkins is a popular open-source automation server used for Continuous Integration (CI) and Continuous Deployment (CD) in software development. It helps automate the building, testing, and deployment of applications.
- > Automation – Jenkins automates repetitive tasks like code compilation, testing, and deployment
- > Plugins – It has 1,800+ plugins, integrating with Git, Docker, Kubernetes, Maven, and more
- > Pipeline as Code – Uses Jenkinsfile (written in Groovy) to define CI/CD pipelines.



# Jenkins Architecture



# in script we write pipeline like below

ex:

```
pipeline {  
    agent any // Runs the pipeline on any available agent (Jenkins node)  
  
    stages { // Defines different stages of the pipeline  
        stage('git clone') { // Stage 1: Clone the repository  
            steps {  
                // Logic for cloning a Git repository  
            }  
        }  
        stage('mvn build') { // Stage 2: Build the project using Maven  
            steps {  
                // Logic for running Maven build  
            }  
        }  
        stage('build image') { // Stage 3: Build a Docker image  
            steps {  
                // Logic for building a Docker image  
            }  
        }  
    }  
}
```

ansi... | Manage AWS Resour... | Manage AWS Resour... | Launch an instance | Editing jenkins-psa... | Live Session | pipeline in jenkins | +

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:

aws Search [Alt+S]

EC2 > Instances > Launch an instance

vm\_ubuntu\_jenkins\_server Add additional tags

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

Recents Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat SUSE Linux Debian

aws Mac Ubuntu Microsoft Red Hat SUSE Debian

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type

ami-0e55ddab05955c157 (64-bit (x86)) / ami-0429cb8a1cd41ca80 (64-bit (Arm))

Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible

Browse more AMIs Including AMIs from AWS, Marketplace and the Community

▼ Summary

Number of instances | Info

1

Software Image (AMI)

Amazon Linux 2023 AMI 2023.7.2... read more

ami-002f6e91abff6eb96

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

ⓘ Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GiB of bandwidth to the internet.

Cancel Launch instance

Stop sharing Hide Preview code

classplusapp.com is sharing your screen.

Instance type Info | Get advice

Instance type

CloudShell Feedback

Type here to search

ansible-psa-notes/a X Manage AWS Resou... X Manage AWS Resou... X Launch an instance X Editing jenkins-psa-n... X Live Session X pipeline in jenkins... X +

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:

aws Search [Alt+S] Asia Pacific (Mumbai) prithvi

EC2 > Instances > Launch an instance

64-bit (x86) ami-0e35ddab05955cf57 2025-03-05 ubuntu Verified provider

▼ Instance type Info | Get advice

Instance type

t2.micro Family: t2 1 vCPU 1 GiB Memory Current generation: true On-Demand Linux base pricing: 0.0124 USD per Hour Free tier eligible  
On-Demand Windows base pricing: 0.017 USD per Hour On-Demand RHEL base pricing: 0.0268 USD per Hour  
On-Demand Ubuntu Pro base pricing: 0.0142 USD per Hour On-Demand SUSE base pricing: 0.0124 USD per Hour

t2.nano Family: t2 1 vCPU 0.5 GiB Memory Current generation: true On-Demand Ubuntu Pro base pricing: 0.008 USD per Hour On-Demand SUSE base pricing: 0.0062 USD per Hour  
On-Demand Linux base pricing: 0.0062 USD per Hour On-Demand Windows base pricing: 0.0035 USD per Hour

t2.micro Family: t2 1 vCPU 1 GiB Memory Current generation: true On-Demand Linux base pricing: 0.0124 USD per Hour On-Demand Windows base pricing: 0.017 USD per Hour  
On-Demand RHEL base pricing: 0.0268 USD per Hour On-Demand Ubuntu Pro base pricing: 0.0142 USD per Hour  
On-Demand SUSE base pricing: 0.0124 USD per Hour

t2.small Family: t2 1 vCPU 2 GiB Memory Current generation: true On-Demand SUSE base pricing: 0.0548 USD per Hour  
On-Demand Linux base pricing: 0.0248 USD per Hour On-Demand RHEL base pricing: 0.0392 USD per Hour  
On-Demand Ubuntu Pro base pricing: 0.0266 USD per Hour On-Demand Windows base pricing: 0.034 USD per Hour

t2.medium Family: t2 2 vCPU 4 GiB Memory Current generation: true On-Demand Linux base pricing: 0.0496 USD per Hour  
On-Demand Ubuntu Pro base pricing: 0.0531 USD per Hour On-Demand Windows base pricing: 0.0676 USD per Hour  
On-Demand RHEL base pricing: 0.0784 USD per Hour On-Demand SUSE base pricing: 0.1496 USD per Hour

No preference (Default subnet in any availability zone)

Auto assign public IP info

CloudShell Feedback

Type here to search

classplusapp.com is sharing your screen. Stop sharing Hide Preview code

© 2025, Amazon Web Services, Inc. or its affiliates. Privacy Policy Cookie preferences

SCAN AnyScanner 8:11 PM 4/2/2025

29°C

Summary

Number of instances | Info

1

Software Image (AMI)  
Canonical, Ubuntu, 24.04, amd64...read more  
ami-0e35ddab05955cf57

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 8 GiB

① Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Edit Cancel Launch Instance

visible-psa-notsu X Manage AWS Resou... X Manage AWS Resou... X Launch an instance X Editing jenkins-psa-n... X Live Session X pipeline in jenkins X +

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:

aws Search [Alt + S] EC2 Instances Launch an instance

It seems like you may be new to launching instances in EC2. Take a walkthrough to learn about EC2, how to launch instances and about best practices

Do not show me this message again Take a walkthrough X

Launching instance  
Creating security groups 27%

Details

Please wait while we launch your instance.

Do not close your browser while this is loading.

classplusapp.com is sharing your screen. Stop sharing Hide

CloudShell Feedback

© 2025, Amazon Web Services, Inc. or its affiliates. Private AnyScanner AnyScanner

Type here to search 29°C 8:11 PM

# Install jre

```
ubuntu@ip-172-31-36-132:~$ sudo apt update  
sudo apt install fontconfig openjdk-17-jre  
java -version
```

classplusapp.com is sharing your screen. Stop sharing Hide

3.100.53.31 (ec2-user)

Type here to search

AnyScanner

# Install Jenkins

```
ubuntu@ip-172-31-36-132:~$ sudo wget -O /usr/share/keyrings/jenkins-keyring.asc \
https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
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
```



AnyScanner



# Enable Jenkins

```
ubuntu@ip-172-31-36-132:~$ sudo systemctl enable jenkins
sudo systemctl start jenkins
Synchronizing state of jenkins.service with sysV service sc
emd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable jenkins
ubuntu@ip-172-31-36-132:~$
```

# Copy public ip address

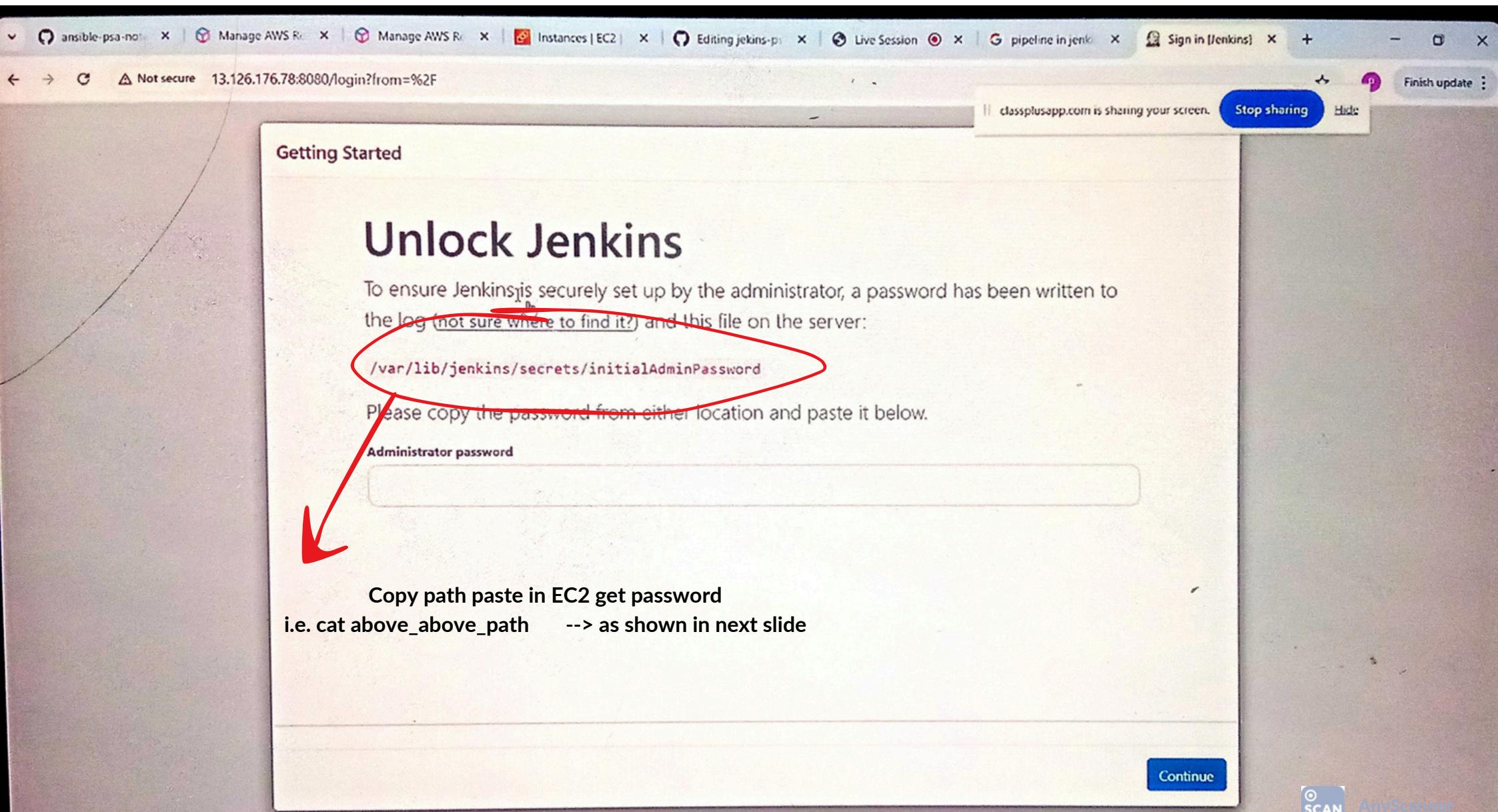
The screenshot shows the AWS Management Console with the EC2 Instances page open. The URL in the browser is `ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#instancesinstanceState=running`. The page displays a list of 5 instances, with one instance selected: `i-01a0ef04b4dcc264c (vm_ubuntu_jenkins_server)`. The instance details pane on the right shows the following information:

Details	Value
Instance ID	i-01a0ef04b4dcc264c
IPv6 address	-
Hostname type	IP name: ip-172-31-36-132.ap-south-1.compute.internal
Answer private resource DNS name	IPv4 (A)
Auto-assigned IP address	13.126.176.78 [Public IP]
Public IPv4 address	13.126.176.78
Private IPv4 addresses	172.31.36.132
Public IPv4 DNS	ec2-13-126-176-78.ap-south-1.compute.amazonaws.com
Instance state	Running
Private IP DNS name (IPv4 only)	ip-172-31-36-132.ap-south-1.compute.internal
Instance type	t2.medium
VPC ID	vpc-01341020acafdf5c0d (default-vpc)

A tooltip on the right side of the instance details pane says "Public IPv4 address copied". The status bar at the bottom of the browser window shows "CloudShell Feedback" and the system tray includes icons for battery, signal, and network.

**Paste ip address in browser ex: public ip:8080**

before you need to add inbound rule in security group i.e. 8080



# copy password paste in Jenkins website as shown next slide

```
ubuntu@ip-172-31-36-132:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
937fac8e803c438097a1629ec3bb068e
ubuntu@ip-172-31-36-132:~$
```

|| classplusapp.com is sharing your screen. Stop sharing Hide

## 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



Continue

## Getting Started

# Customize Jenkins

Plugins extend Jenkins with additional features to support many different needs.

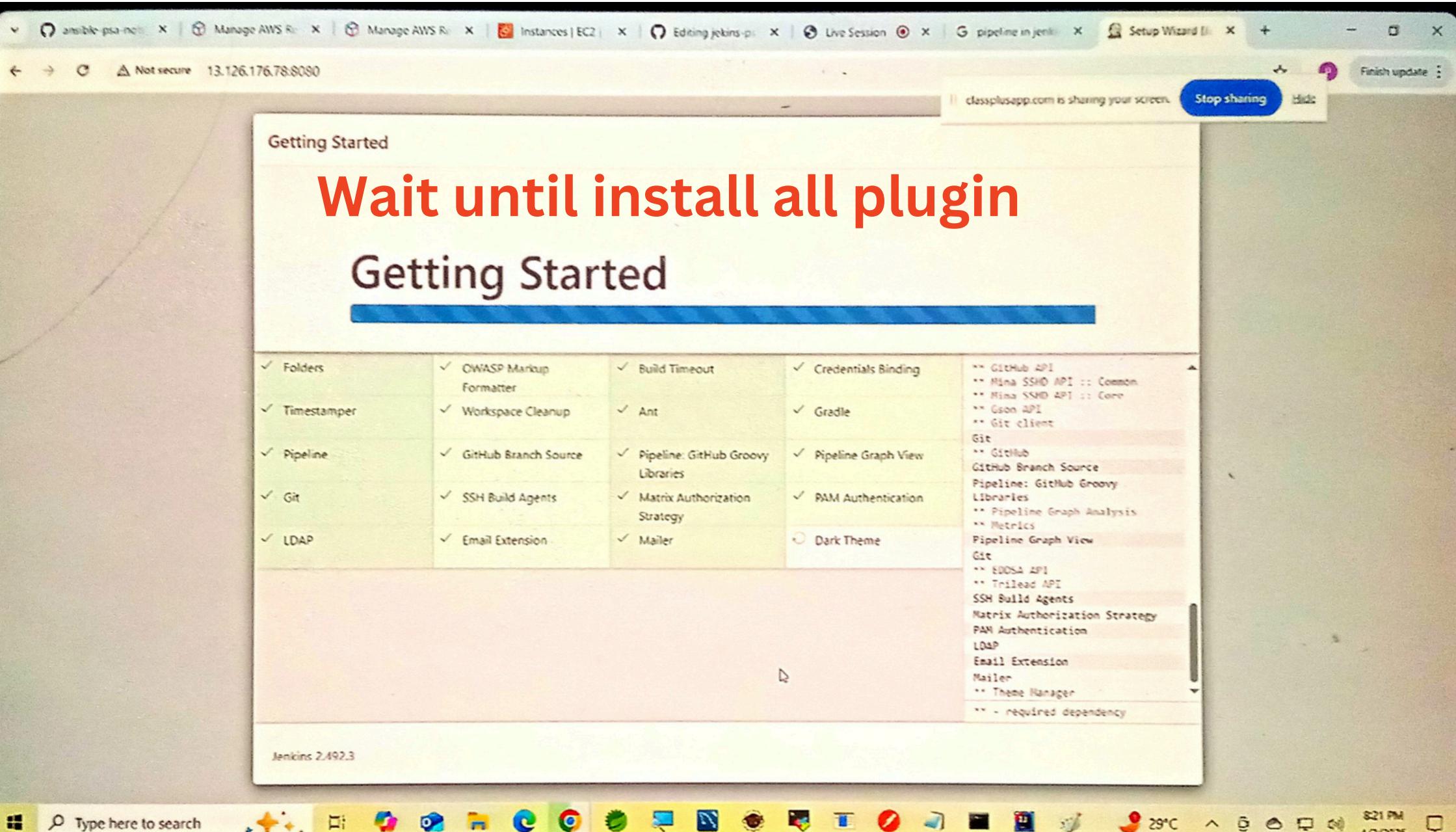
### Install suggested plugins

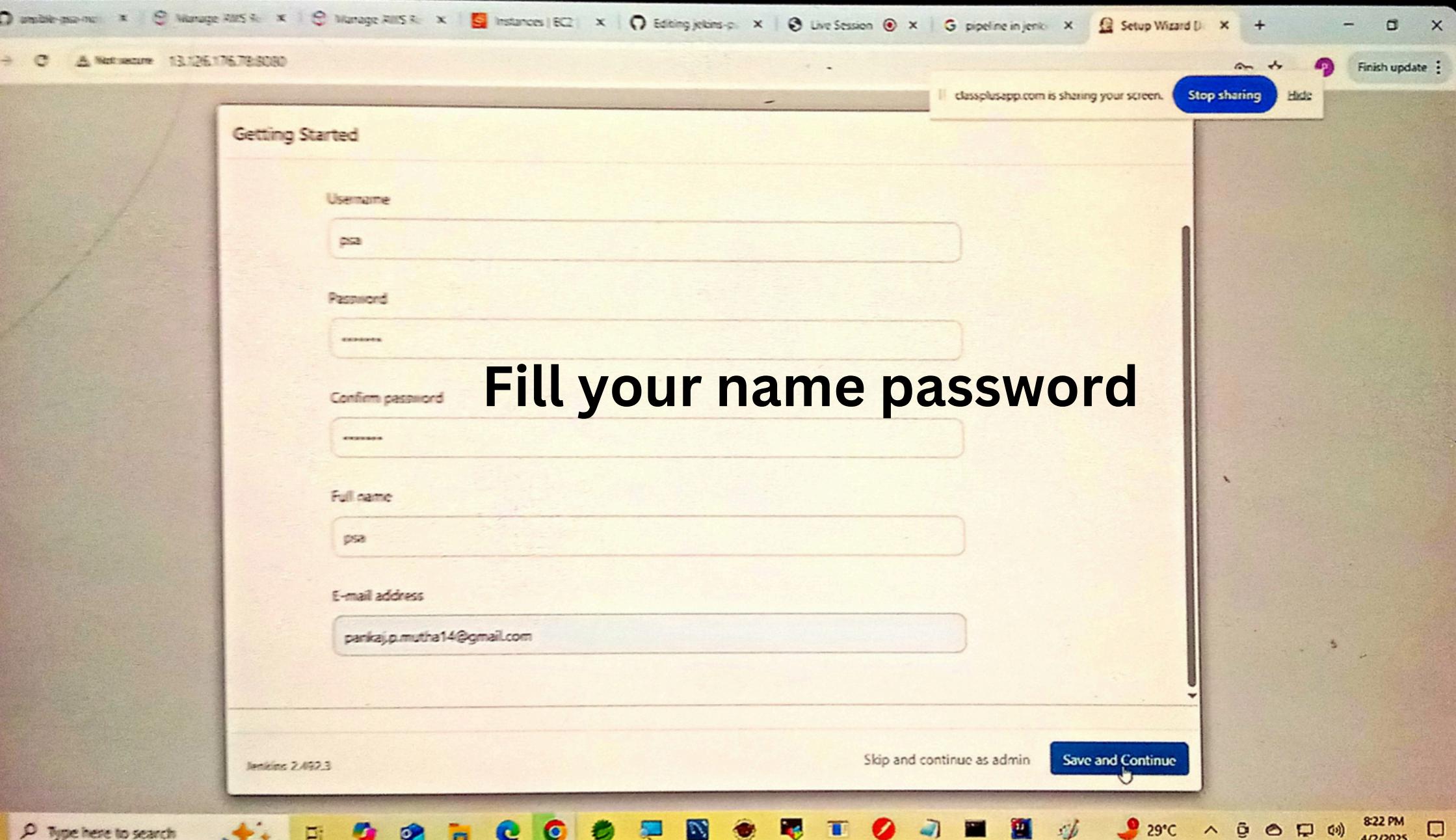
Install pluging the Jenkins community finds most useful.

### Select plugins to install

Select and install plugins most suitable for your needs.

Jenkins 2.492.3





ansible psa-no | Manage AWS Re... | Manage AWS Re... | Instances | EC2 | Editing jenkins-p... | Live Session | pipeline in jen... | Setup Wizard | + - X

Not secure 13.126.176.78:8080

classplusapp.com is sharing your screen. Stop sharing Hide

## Getting Started

# Instance Configuration

Jenkins URL:

The Jenkins URL is used to provide the root URI 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 `http://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.

**Copy url save it in notepad for future access**

Jenkins 2.492.3 Not now Save and Finish

8:22 PM 4/2/2025

# Click create job

A screenshot of a web browser showing the Jenkins dashboard at the URL 13.126.176.78:8080. The dashboard features a central 'Welcome to Jenkins!' message and several action buttons. A large red arrow originates from the top-left corner and points directly to the 'Create a job' button, which is highlighted with a red oval. The browser's address bar shows the Jenkins URL, and the top right corner displays a sharing notification from classplusapp.com.

Manage AWS R... Instances | EC2 Editing Jenkins-p... Live Session pipeline in jen... Dashboard [jen... +

Not secure 13.126.176.78:8080

Finish update

Stop sharing Hide log out

Jenkins

Dashboard >

+ New item Build History Manage Jenkins My Views

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

Create a job

Set up a distributed build

Set up an agent

Configure a cloud

Learn more about distributed builds

13.126.176.78:8080/newJob

REO SCAN Jenkins 2.49.3 AnyScanner

Type here to search

29°C 822 PM 4/20/2023

ansible-psa.n... X | Manage AWS R... X | Manage AWS R... X | Instances | EC2 | Editing jenkins p... X | Live Session X | pipeline in jenkins X | New Item [New] X +

Not secure 13.126.176.78:8080/new/job

Jenkins

Dashboard > New Item

New Item

Select pipeline

Enter an item name  
test-pipeline

Select an item type

**Pipeline** (circled)  
 **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.

**Freestyle project**  
 **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 publishing artifacts and sending email notifications.

**Multi-configuration project**  
 Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

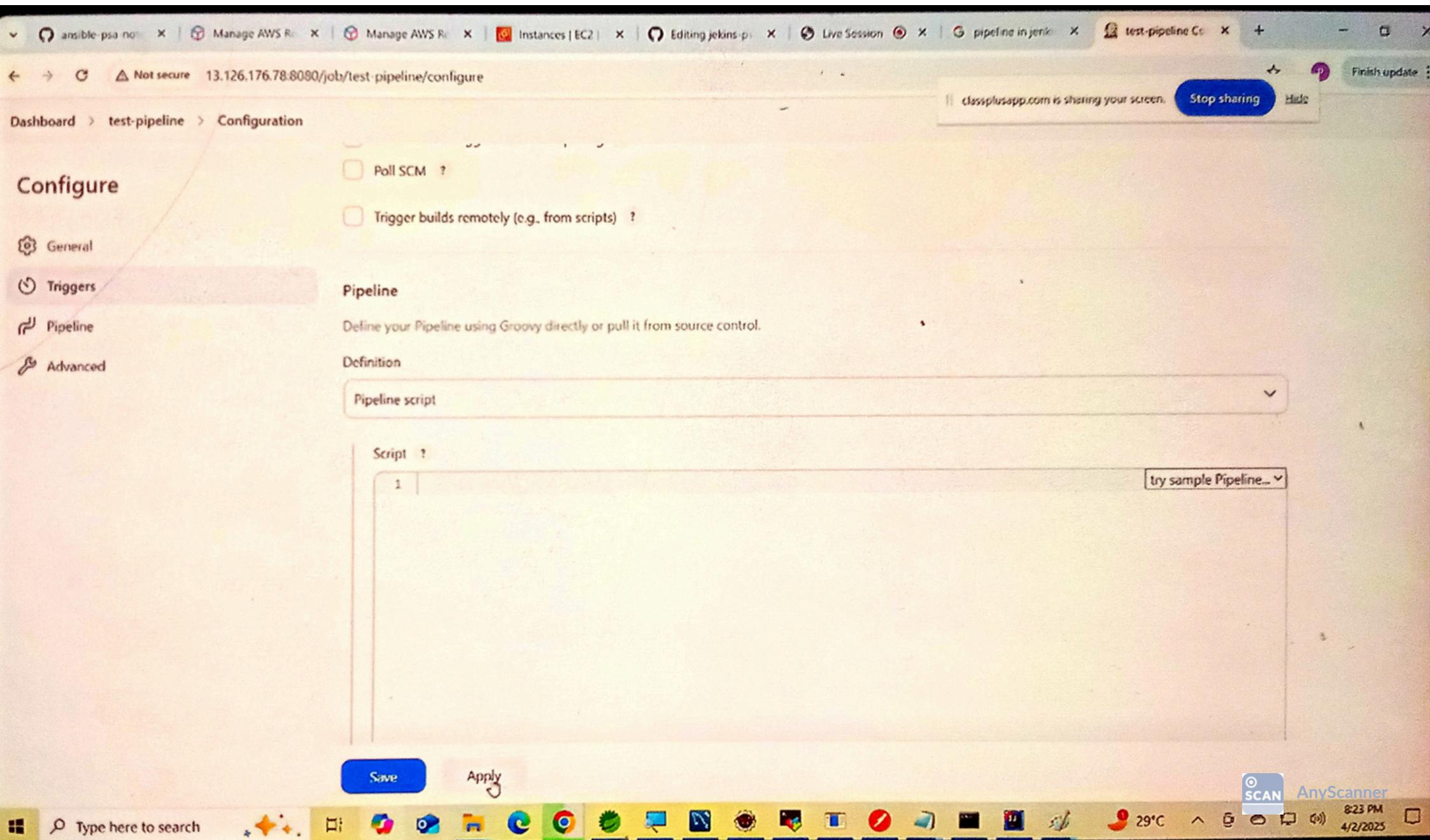
**Folder**  
 Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different

OK

Type here to search

AnyScanner

# Click apply and save



The screenshot shows the Jenkins Pipeline configuration page for a job named "test-pipeline". The "Triggers" tab is selected. Under the "Pipeline" section, there is a "Definition" dropdown set to "Pipeline script". Below it is a "Script" text area containing the Groovy code:

```
1
```

At the bottom of the page, there are "Save" and "Apply" buttons. A status bar at the bottom right shows "AnyScanner" watermark.

Dashboard > test-pipeline > Configuration

## Configure

General

Triggers

Pipeline

Definition

Pipeline script

Script

try sample Pipeline... ▾

Save Apply

Go to Dashboard you will see your created job click it and see next slide what happens

The screenshot shows the Jenkins Dashboard at the URL [13.126.176.78:8080](http://13.126.176.78:8080). A red oval highlights the 'test-pipeline' item in the central list. The list includes columns: Icon, S, W, Name, Last Success, Last Failure, and Last Duration. The 'test-pipeline' row shows an orange sun icon, 'S', 'W', 'test-pipeline', 'N/A', 'N/A', and 'N/A'. A red arrow points from the top text instruction to this highlighted row.

Icon	S	W	Name	Last Success	Last Failure	Last Duration
...	S	W	test-pipeline	N/A	N/A	N/A

Dashboard >

+ New Item      Add description

Build History      Manage Jenkins      My Views

All      +

Build Queue

No builds in the queue.

Build Executor Status 0/2

RIO SCAN Jenkins 2.492.3 AnyScanner

Type here to search

# Click Configure

A screenshot of a web browser showing the Jenkins interface for a pipeline named "test-pipeline". The browser's address bar shows the URL `13.126.176.78:8080/job/test-pipeline/`. A red arrow points from the top-left towards the "Configure" link in the left sidebar. The sidebar also includes links for Status, Changes, Build Now, Delete Pipeline, Stages, Rename, and Pipeline Syntax. The main content area displays the pipeline name "test-pipeline", a Permalinks section, and a Builds section indicating "No builds". The bottom of the screen shows the Windows taskbar with various pinned icons.

Not secure 13.126.176.78:8080/job/test-pipeline/ Finish update

Jenkins

Dashboard > test-pipeline >

test-pipeline

Permalinks

Add description

Status

</> Changes

▷ Build Now

Configure

Delete Pipeline

Stages

Rename

Pipeline Syntax

Builds

No builds

REST API Jenkins 2.492.3

Type here to search

29°C

SCAN AnyScanner 4/2/2025

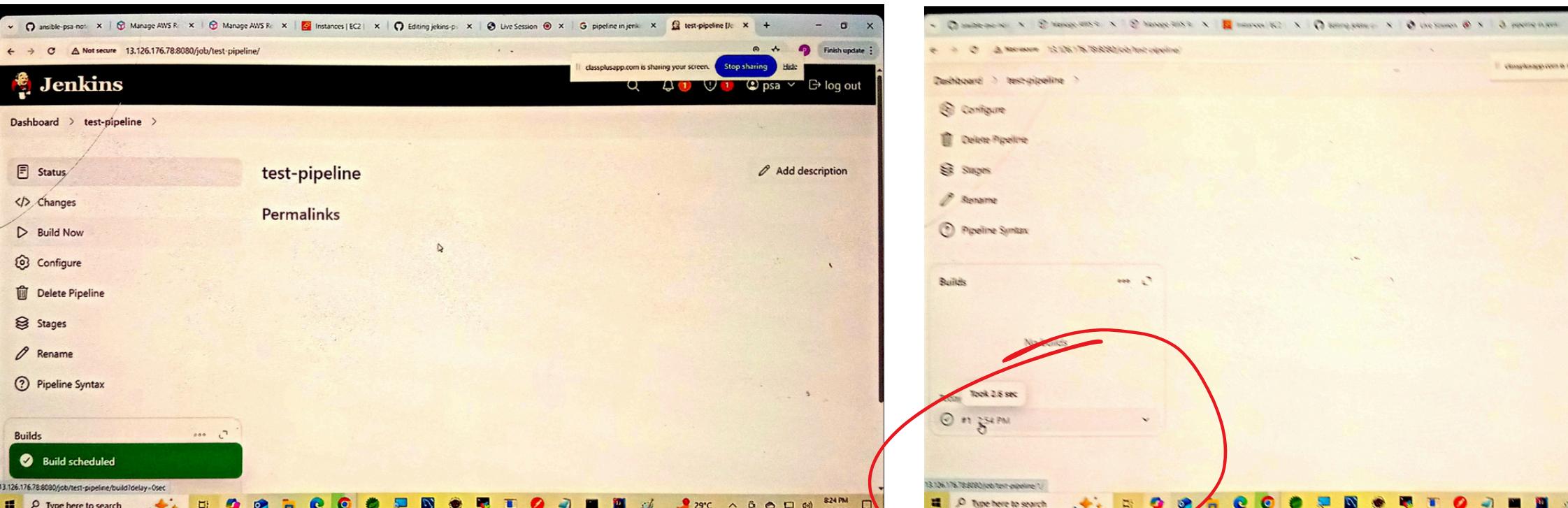
# Now you can write here your pipeline script and click apply and save

The screenshot shows the Jenkins Pipeline configuration page. On the left, there's a sidebar with tabs: General, Triggers, Pipeline (which is selected and highlighted in pink), and Advanced. The main area has a title 'Definition' and a 'Pipeline script' section. A red box highlights the code editor where the following pipeline script is written:

```
1~ pipeline {
2     agent any
3
4~     stages {
5~         stage('Hello') {
6~             steps {
7~                 echo 'Hello World'
8~             }
9~         }
10~    }
11~ }
```

On the right side of the code editor, there's a 'try sample Pipeline...' button. At the bottom of the page, there are 'Save' and 'Apply' buttons, and a green 'Saved' message box. The browser address bar shows the URL: 13.126.176.78:8080/job/test-pipeline/configure.

# Click Build Now



You will see green tick if you pipeline successfully build

# Go to console output see your pipeline status

The screenshot shows a web browser window with multiple tabs open. The active tab is titled "test-pipeline #1" and displays the Jenkins Pipeline console output. The sidebar on the left lists various build actions, with "Console Output" highlighted by a red oval and a red arrow pointing from the main title to it.

Dashboard > test-pipeline > #1

Changes

Console Output

Edit Build Information

Delete build '#1'

Timings

Pipeline Overview

Pipeline Console

Restart from Stage

Replay

Pipeline Steps

Workspaces

Started by user psa  
[Pipeline] Start of Pipeline  
[Pipeline] node  
Running on Jenkins in /var/lib/jenkins/workspace/test-pipeline  
[Pipeline] {  
[Pipeline] stage  
[Pipeline] { (Hello)  
[Pipeline] echo  
Hello World  
[Pipeline] }  
[Pipeline] // stage  
[Pipeline] }  
[Pipeline] // node  
[Pipeline] End of Pipeline  
Finished: SUCCESS

classplusapp.com is sharing your screen. Stop sharing Hide

Finish update

REST API Jenkins 2.492.3

SCAN AnyScanner

Type here to search

29°C 8:24 PM 4/2/2025

# Click Build periodically in here you can set time so that your Jenkins run every minute etc

The screenshot shows the Jenkins configuration interface for a project named "test-pipeline". The "General" tab is selected. In the "Triggers" section, the "Build periodically" checkbox is checked and highlighted with a red circle. Below it, the "Schedule" field contains the value "\*\*\*\*\*". A warning message at the bottom states: "⚠ Do you really mean 'every minute' when you say \*\*\*\*\*? Perhaps you meant 'H \* \* \* \*' to poll once per hour". The browser address bar shows the URL "13.126.176.78:8080/job/test-pipeline/configure".

This project is parameterized ?

Throttle builds ?

General

Triggers

Set up automated actions that start your build based on specific events, like code changes or scheduled times.

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, April 2, 2025 at 2:55:29 PM Coordinated Universal Time; would next run at Wednesday, April 2, 2025 at 2:55:29 PM Coordinated Universal Time.

Save Apply

Time to search

SCAN AnyScanner

# See it is running every minute

A screenshot of a web browser displaying a Jenkins pipeline job page. The URL in the address bar is `13.126.176.78:8080/job/test-pipeline/`. The page title is "Dashboard > test-pipeline >". On the left, there is a sidebar with the following options: Build Now, Configure, Delete Pipeline, Stages, Rename, and Pipeline Syntax. A red circle highlights the "Builds" section, which contains a "Filter" input field and a table of recent builds. The table shows three entries: #3 at 2:57 PM, #2 at 2:56 PM, and #1 at 2:54 PM. To the right of the sidebar, a list of recent builds is shown:

- Last build (#2), 7.6 sec ago
- Last stable build (#2), 7.6 sec ago
- Last successful build (#2), 7.6 sec ago
- Last completed build (#2), 7.6 sec ago

A red arrow points from the text "See it is running every minute" at the top to the "Builds" section in the sidebar.

Builds

Filter
Today
#3 2:57 PM
#2 2:56 PM
#1 2:54 PM

Recent Builds

- Last build (#2), 7.6 sec ago
- Last stable build (#2), 7.6 sec ago
- Last successful build (#2), 7.6 sec ago
- Last completed build (#2), 7.6 sec ago

classplusapp.com is sharing your screen. Stop sharing Hide

Finish update

Type here to search

AnyScanner

# if you want run Jenkins only when GitHub code is changed

The screenshot shows the Jenkins job configuration page for a job named "test-pipeline". The left sidebar lists "General", "Triggers", "Pipeline", and "Advanced" sections. The main content area has two main sections highlighted by a red rounded rectangle: "GitHub hook trigger for GITScm polling" and "Pipeline".

**GitHub hook trigger for GITScm polling**

- Poll SCM ?
- Schedule ?
- No schedules so will only run due to SCM changes if triggered by a post-commit hook
- Ignore post-commit hooks ?
- Trigger builds remotely (e.g., from scripts) ?

**Pipeline**

Define your Pipeline using Groovy directly or pull it from source control.

Buttons at the bottom: Save (blue), Apply.



AnyScanner