# DevOps Training - Day 1

## Installing Ubuntu on VirtualBox

### Step 1: Download Required Files

1. **Download VirtualBox** from the official website:
   VirtualBox Download
2. **Download Ubuntu ISO** from the official Ubuntu website:
   Ubuntu Download

### Step 2: Install VirtualBox

1. Open the downloaded VirtualBox installer.
2. Follow the on-screen instructions to complete the installation.
3. Once installed, launch VirtualBox.

### Step 3: Create a New Virtual Machine

1. Click **New** in VirtualBox.
2. Enter a name (e.g., "Ubuntu VM").
3. Set the **Type** to **Linux**.
4. Set the **Version** to **Ubuntu (64-bit)**.
5. Click **Next**.

### Step 4: Allocate Memory (RAM)

- Assign at least **2GB (2048 MB)** of RAM (Recommended: **4GB or more**).
- Click **Next**.

### Step 5: Create a Virtual Hard Disk

1. Choose **Create a virtual hard disk now** → Click **Create**.
2. Select **VDI (VirtualBox Disk Image)** → Click **Next**.
3. Select **Dynamically allocated** → Click **Next**.
4. Set at least **25GB storage** (Recommended: **50GB or more**).
5. Click **Create**.

### Step 6: Attach Ubuntu ISO

1. Select the created VM from the list.
2. Click **Settings → Storage**.
3. Under **Controller: IDE**, click **Empty**.
4. Click the **CD icon** on the right → Choose a disk file.
5. Select the downloaded **Ubuntu ISO** file.
6. Click **OK**.

### Step 7: Start the Virtual Machine

1. Select your Ubuntu VM → Click **Start**.
2. The Ubuntu installer will launch. Follow the on-screen instructions to install Ubuntu.

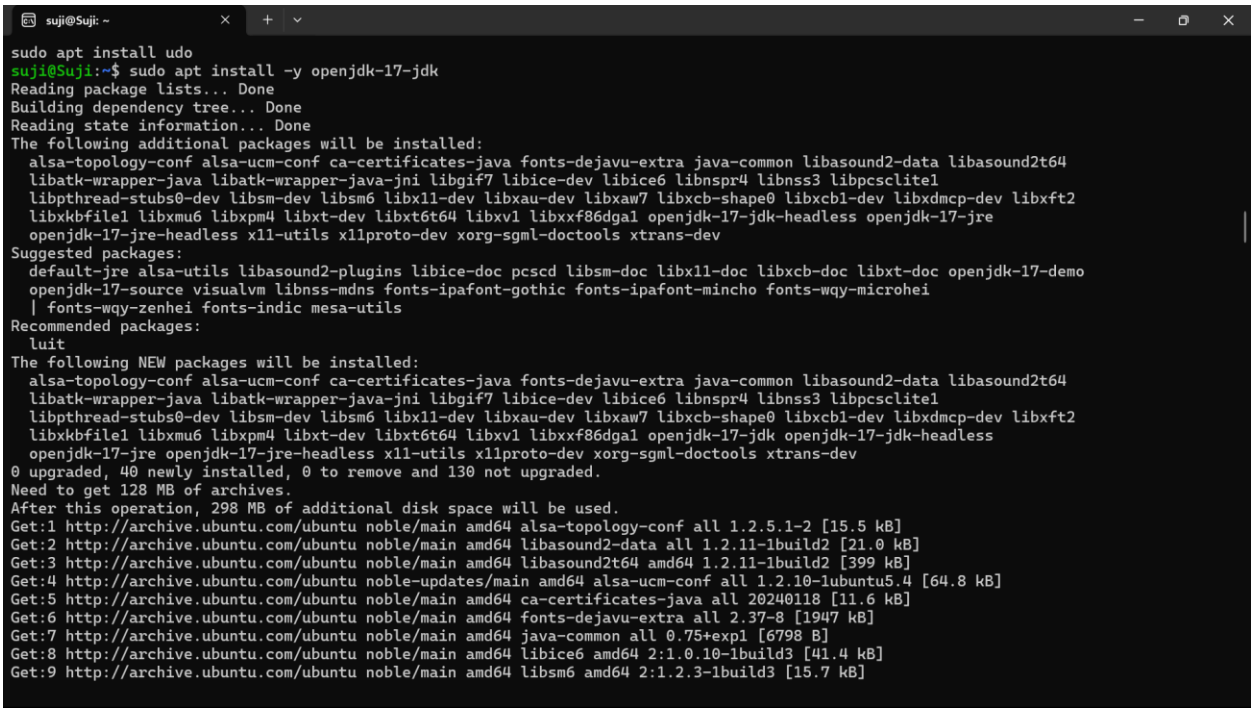
## Setting Up Jenkins on Ubuntu VM

### Step 1: Update Package Lists

sudo apt update -y

### Step 2: Install Java (Required for Jenkins)

sudo apt install -y openjdk-17-jdk

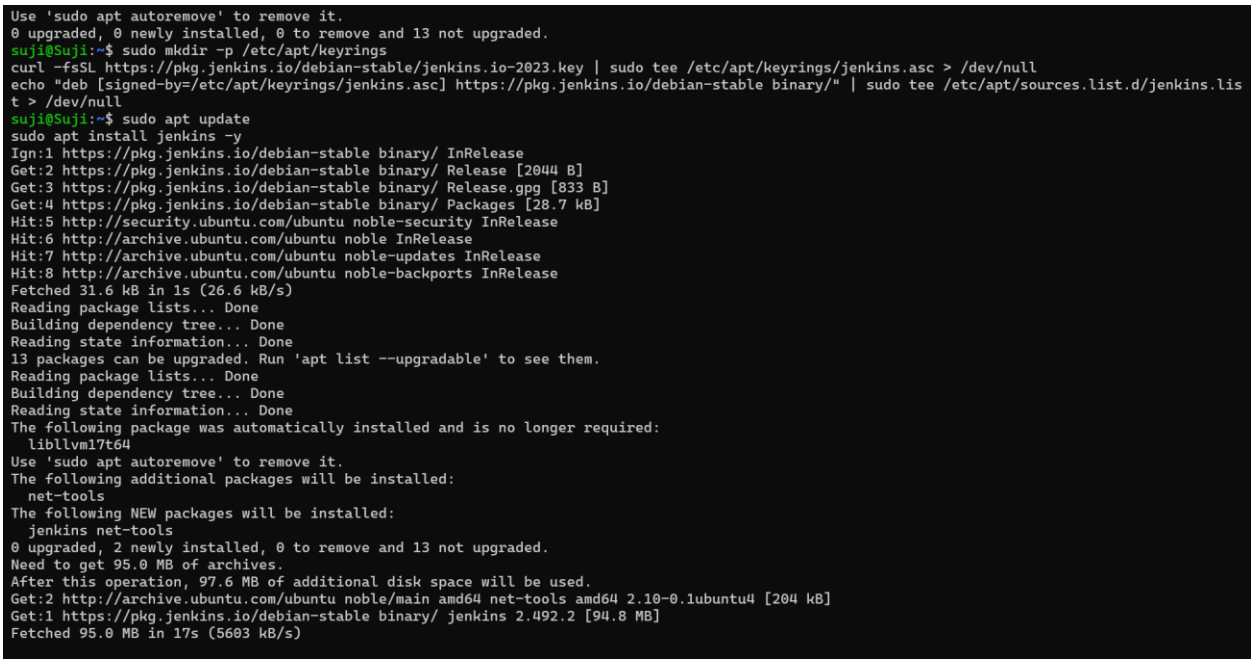



### Step 3: Verify Java Installation

java -version

- Expected output:
- openjdk version "17.0.10" 2024-01-16
- OpenJDK Runtime Environment (build 17.0.10+0)

**Step 4: Add Jenkins Repository**




**4.1 Add Jenkins GPG Key**

wget -q -O- https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key | sudo tee /usr/share/keyrings/jenkins-keyring.asc > /dev/null

**4.2 Add Jenkins Repository**

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

**Step 5: Install Jenkins**

sudo apt update -y

sudo apt install -y jenkins

**Step 6: Start and Enable Jenkins Service**

sudo systemctl start jenkins

sudo systemctl enable jenkins

### Step 7: Check Jenkins Status

```
Unpacking jenkins (2.492.2) ...
Setting up net-tools (2.10-0.1ubuntu4) ...
Setting up jenkins (2.492.2) ...
Created symlink /etc/systemd/system/multi-user.target.wants/jenkins.service → /usr/lib/systemd/system/jenkins.service.
Processing triggers for man-db (2.12.0-4build2) ...
suji@Suji:~$ sudo systemctl enable --now jenkins
Synchronizing state of jenkins.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable jenkins
suji@Suji:~$ sudo systemctl status jenkins
● jenkins.service - Jenkins Continuous Integration Server
     Loaded: loaded (/usr/lib/systemd/system/jenkins.service; enabled; preset: enabled)
     Active: active (running) since Mon 2025-03-17 16:18:13 UTC; 1min 15s ago
   Main PID: 6238 (java)
      Tasks: 53 (limit: 4588)
     Memory: 869.9M ()
     CGroup: /system.slice/jenkins.service
             └─6238 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080

Mar 17 16:18:07 Suji jenkins[6238]: 535dd9073c6041839ed1010bcb510b6f
Mar 17 16:18:07 Suji jenkins[6238]: This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Mar 17 16:18:07 Suji jenkins[6238]: ************************************************************
Mar 17 16:18:07 Suji jenkins[6238]: ************************************************************
Mar 17 16:18:07 Suji jenkins[6238]: ************************************************************
Mar 17 16:18:13 Suji jenkins[6238]: 2025-03-17 16:18:13.001+0000 [id=39]        INFO        jenkins.InitReactorRunner$1#onAttained: Completed in
itialization
Mar 17 16:18:13 Suji jenkins[6238]: 2025-03-17 16:18:13.017+0000 [id=25]        INFO        hudson.lifecycle.Lifecycle#onReady: Jenkins is fully
 up and run>
Mar 17 16:18:13 Suji systemd[1]: Started jenkins.service - Jenkins Continuous Integration Server.
Mar 17 16:18:14 Suji jenkins[6238]: 2025-03-17 16:18:14.173+0000 [id=62]        INFO        h.m.DownloadService$Downloadable#load: Obtained the
updated dat>
Mar 17 16:18:14 Suji jenkins[6238]: 2025-03-17 16:18:14.173+0000 [id=62]        INFO        hudson.util.Retrier#start: Performed the action chec
k updates s>
lines 1-19/19 (END)
```

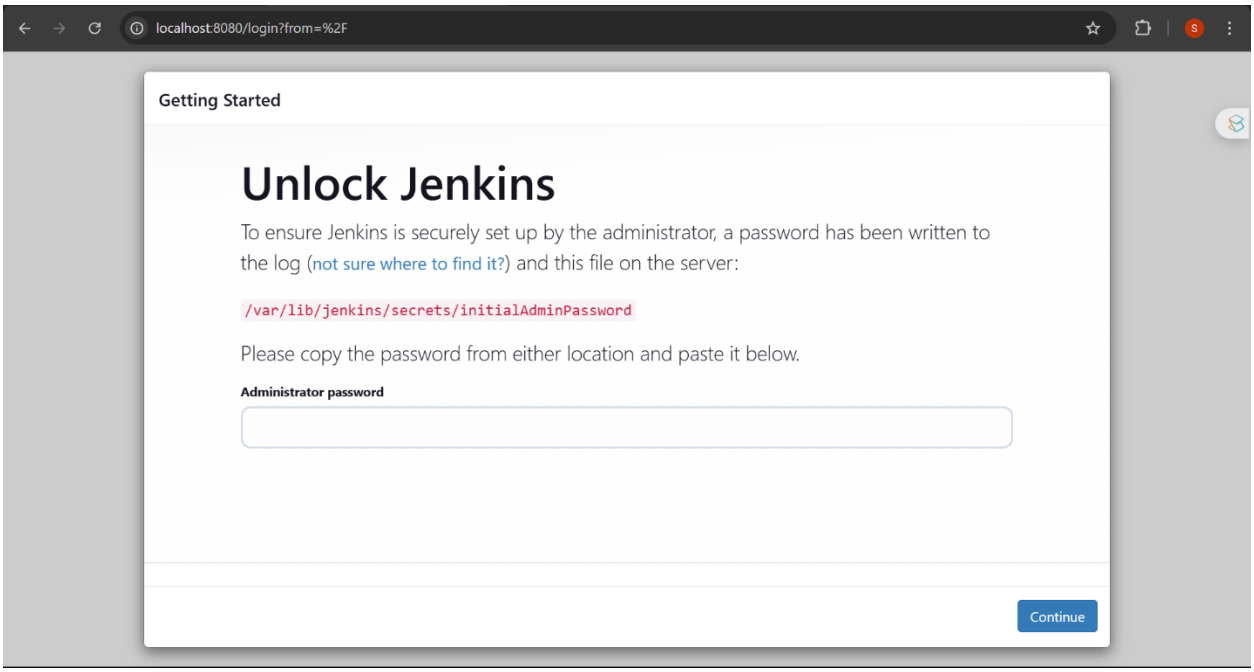
sudo systemctl status jenkins

- You should see **active (running)** if Jenkins is running properly.

### Step 8: Retrieve Jenkins Admin Password

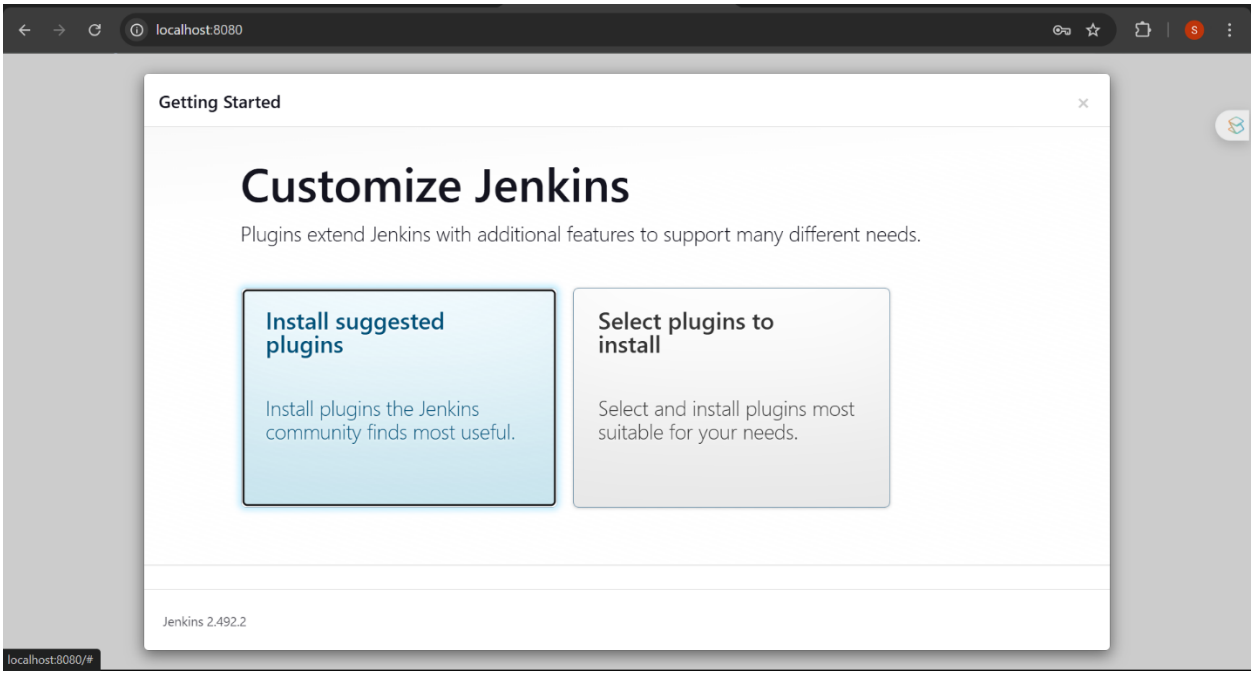
sudo cat /var/lib/jenkins/secrets/initialAdminPassword

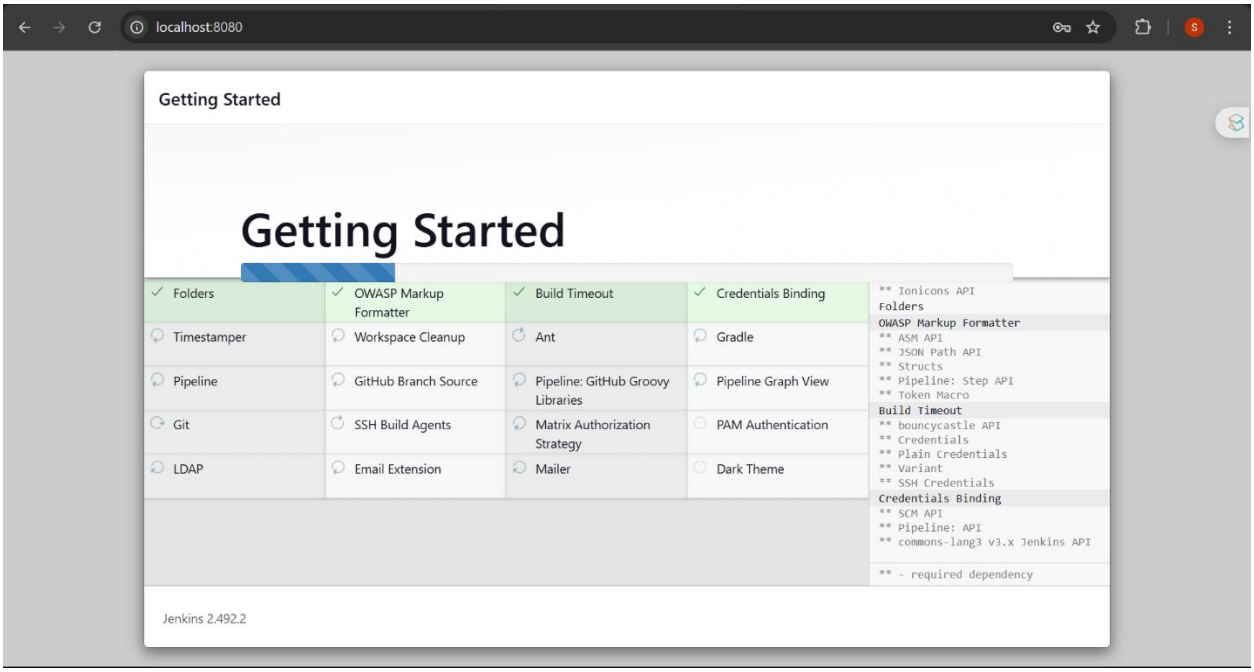
- Copy this password and use it for the initial setup.

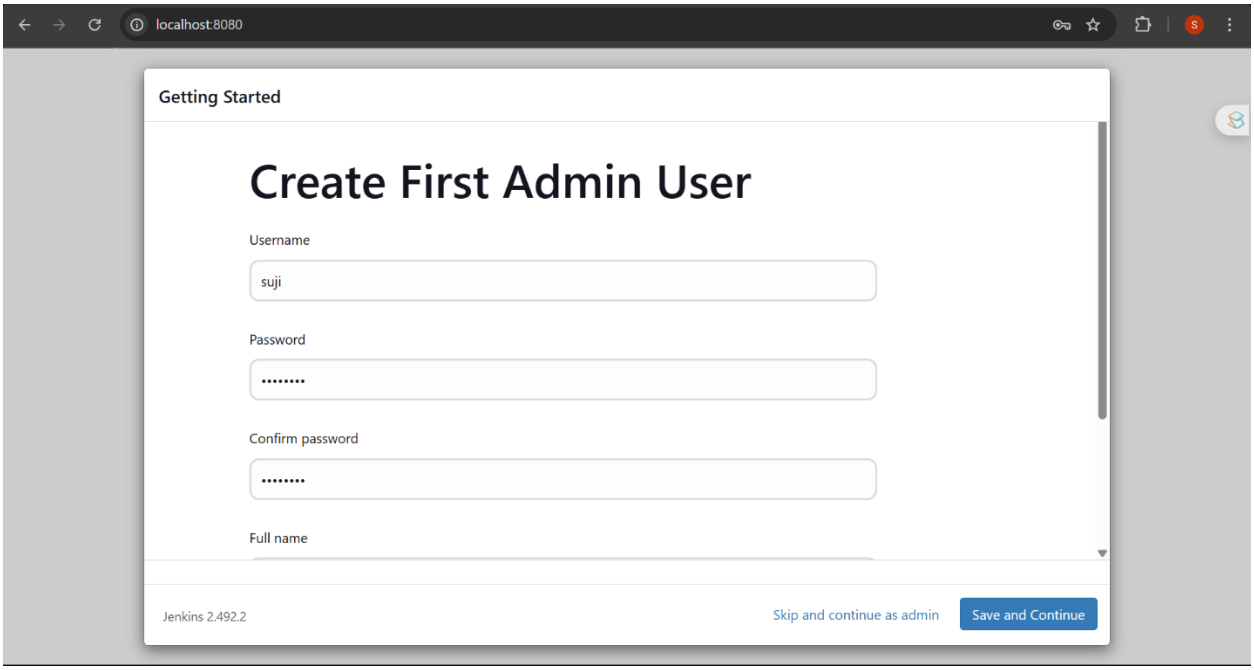


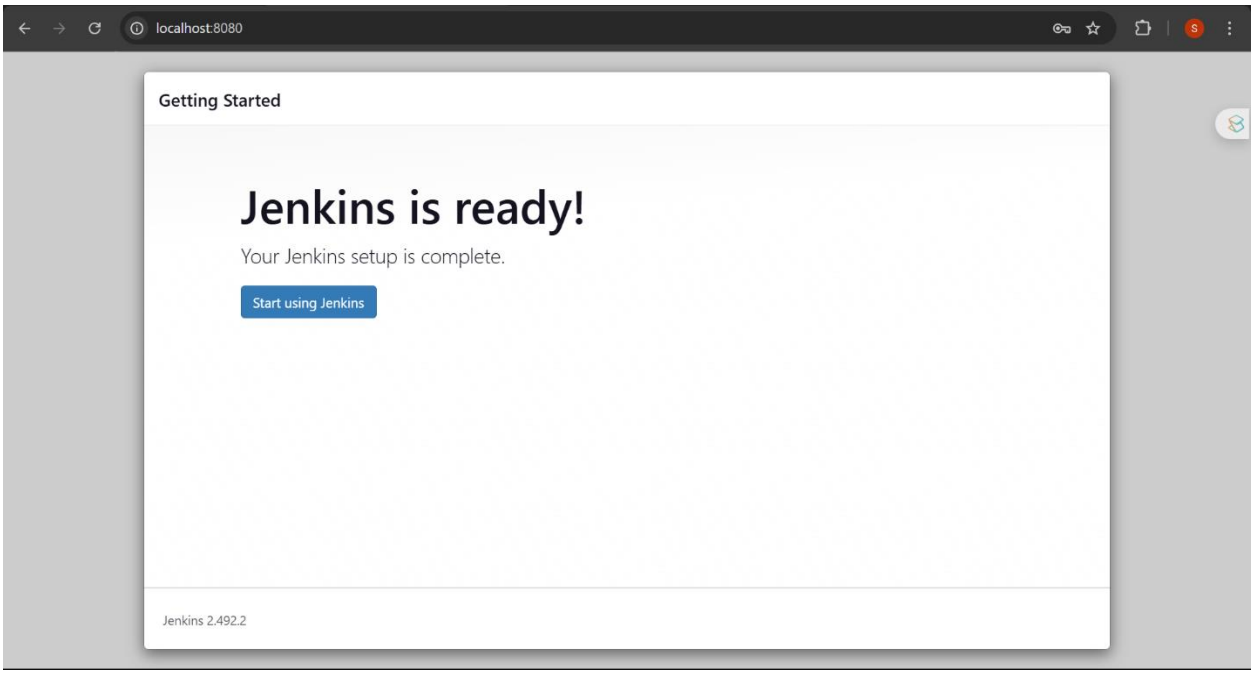

### Step 9: Access Jenkins Web Interface

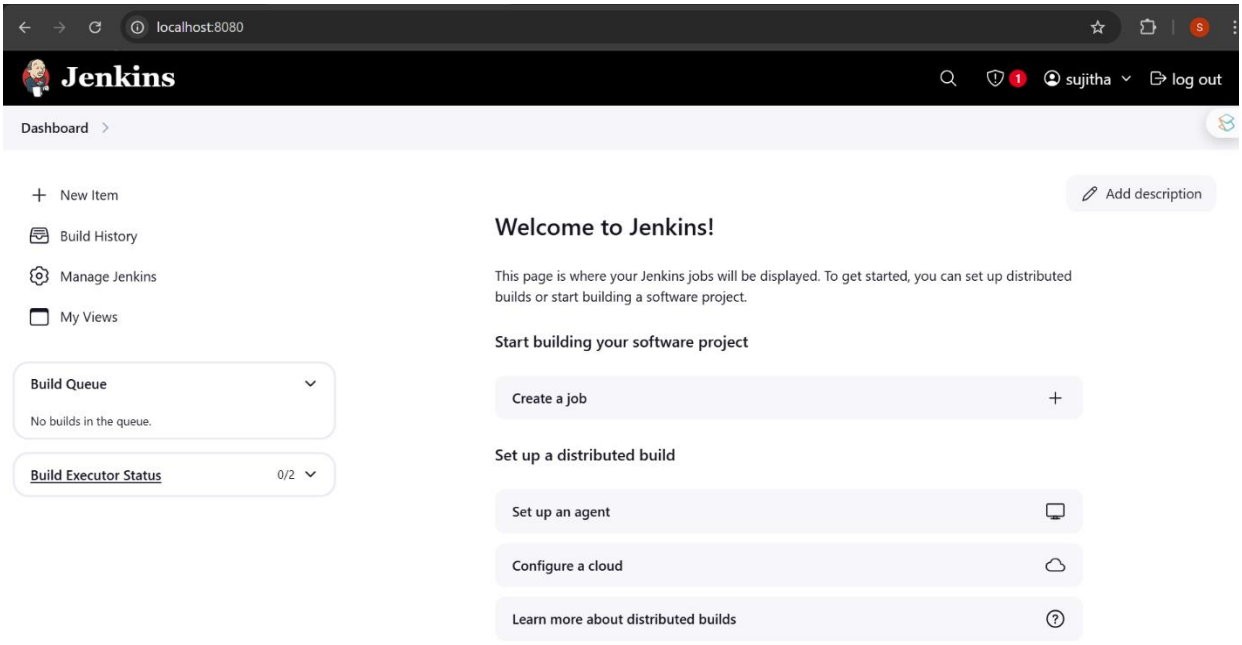
1. Open a browser and go to:
   http://localhost:8080 (or **http://<VM_IP>:8080** if using a remote server).
2. Enter the **admin password** retrieved in the previous step.
3. Choose **Install Suggested Plugins** (recommended) or manually select plugins.



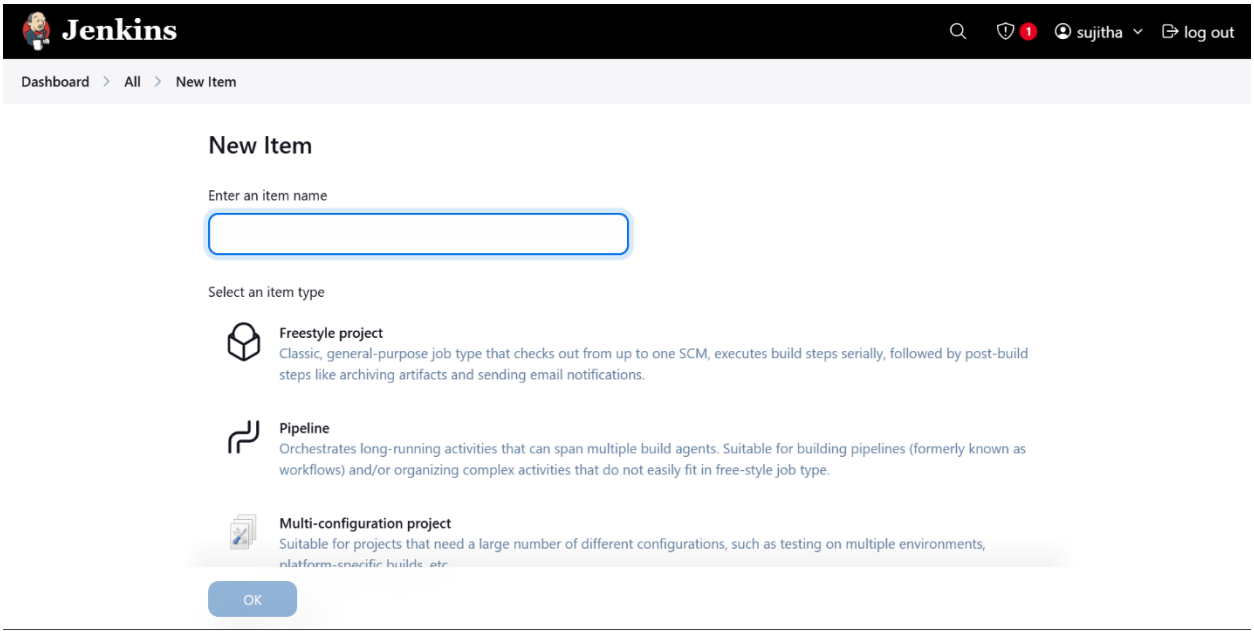




localhost:8080
Getting Started
Create First Admin User
Username
suji
Password
Confirm password
Full name
Jenkins 2.492.2
Skip and continue as admin
Save and Continue


localhost:8080
Getting Started
Jenkins is ready!
Your Jenkins setup is complete.
Start using Jenkins
Jenkins 2.492.2



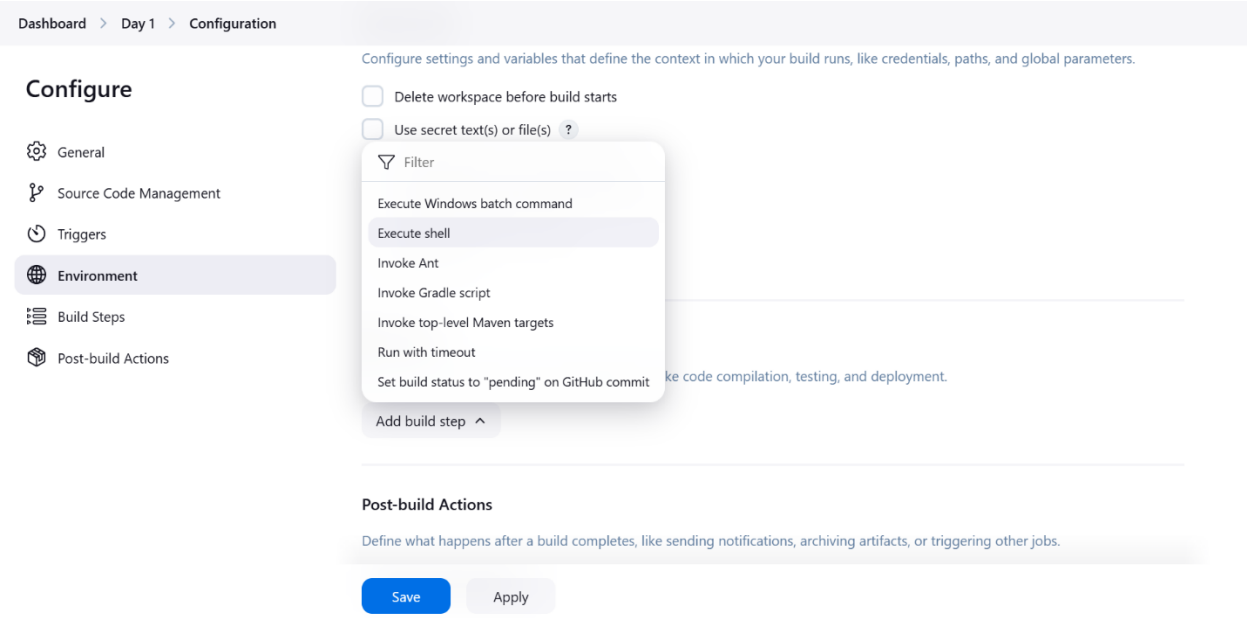

# Creating a Freestyle Job in Jenkins to Install Nginx




## Step 1: Create a New Freestyle Job

1. Open Jenkins and click **New Item**.
2. Enter a name (e.g., "Install-Nginx").
3. Select **Freestyle Project**.
4. Click **OK**.

## Step 2: Configure the Job

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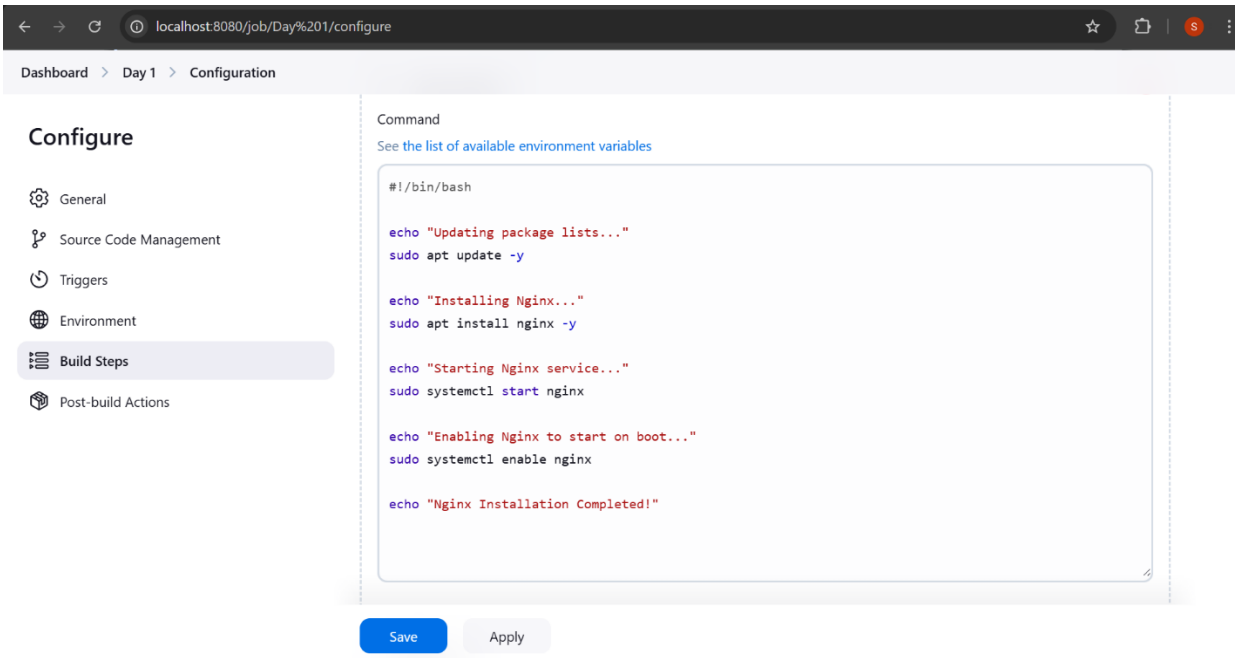
## Add Build Step

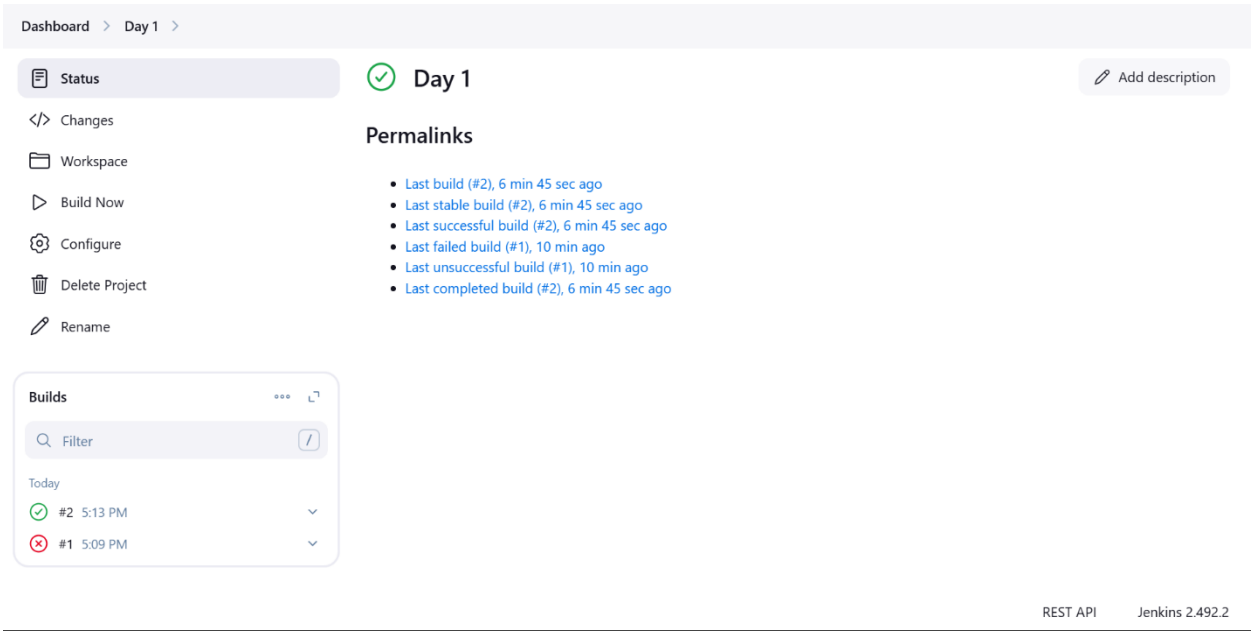
1. Scroll down to **Build** → Click **Add build step** → Select **Execute shell**.
2. Paste the following script in the command box:

```
#!/bin/bash

echo "Updating package lists..."

sudo apt update -y

echo "Installing Nginx..."

sudo apt install -y nginx

echo "Starting Nginx service..."

sudo systemctl start nginx

echo "Enabling Nginx to start on boot..."

sudo systemctl enable nginx

echo "Nginx Installation Completed!"
```




## Step 3: Save and Run the Job

1. Click **Save**.
2. Click **Build Now**.
3. Check the **Console Output** to verify the installation.



## Step 4: Verify the Installation

```
suji@Suji:~$ sudo systemctl start nginx
sudo systemctl enable nginx
Synchronizing state of nginx.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable nginx
suji@Suji:~$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
     Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
     Active: active (running) since Mon 2025-03-17 17:16:54 UTC; 41s ago
       Docs: man:nginx(8)
   Main PID: 7708 (nginx)
      Tasks: 9 (limit: 4588)
     Memory: 6.2M ()
     CGroup: /system.slice/nginx.service
             ├─7708 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
             ├─7710 "nginx: worker process"
             ├─7711 "nginx: worker process"
             ├─7712 "nginx: worker process"
             ├─7713 "nginx: worker process"
             ├─7714 "nginx: worker process"
             ├─7715 "nginx: worker process"
             ├─7716 "nginx: worker process"
             └─7717 "nginx: worker process"

Mar 17 17:16:54 Suji systemd[1]: Starting nginx.service - A high performance web server and a reverse proxy server...
Mar 17 17:16:54 Suji systemd[1]: Started nginx.service - A high performance web server and a reverse proxy server.
```

### Check Nginx Status

systemctl status nginx

- If running, you should see **active (running)**.

### Open Nginx in Browser

1. Open a browser and go to:
2. http://<VM_IP>
3. You should see the **default Nginx welcome page**.