🛠️ Jenkins Installation & Setup – Full Guide with Notes

📌 What is Jenkins?

Jenkins is an open-source automation server used to **automate the building, testing, and deployment** of software applications. It's widely used for implementing **Continuous Integration and Continuous Delivery (CI/CD)**.

🧱 Prerequisites

Requirement	Details
OS	Ubuntu 20.04/22.04, CentOS 7/8, Amazon Linux, Windows
Java	Java 11+ (Jenkins runs on Java)
System User	Root or user with sudo privileges
Ports	Port `8080` (default for Jenkins)
RAM	Minimum 2 GB recommended

📥 Step 1: Install Java (Ubuntu Example)

```
sudo apt update
sudo apt install openjdk-11-jdk -y
java -version
```

📥 Step 2: Add Jenkins Repository

```
wget -q -O - 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
```

⚙️ Step 3: Install Jenkins

```
sudo apt update
sudo apt install jenkins -y
```

🚀 Step 4: Start and Enable Jenkins

```
sudo systemctl start jenkins
sudo systemctl enable jenkins
```

Check Jenkins status:

```
sudo systemctl status jenkins
```

🌐 Step 5: Access Jenkins Web UI

- Open browser: `http://<your-server-ip>:8080`

🔐 Step 6: Unlock Jenkins

1. Get the initial admin password:

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

2. Paste it into the UI when prompted.

📦 Step 7: Install Suggested Plugins

- Choose: **Install suggested plugins**
- Wait for plugin installation to complete

👤 Step 8: Create Admin User

- Fill out the form with:
  - Username
  - Password
  - Full name
  - Email

✅ Step 9: Jenkins is Ready!

You'll see the Jenkins dashboard 🎉

🧪 BONUS: Create a Freestyle Project

1. Click **New Item**
2. Enter a name → Select **Freestyle Project**

In **Build**, add:

```
echo "Hello Jenkins from CLI"
```

3.
4. Click **Build Now**
5. Check **Console Output**

🔐 Optional: Secure Jenkins with Nginx and SSL

- Use Nginx as a reverse proxy
- Set up Let's Encrypt for HTTPS
- Restrict port `8080` to localhost

🧠 Notes & Best Practices

- 🧩 **Use Pipelines** over Freestyle jobs for advanced CI/CD.
- 🔐 **Always secure Jenkins** with a strong password and user roles.
- 🔁 **Regularly backup Jenkins home** (`/var/lib/jenkins`)
- 📦 **Use Jenkins plugins** to integrate with tools like Git, Docker, Kubernetes.
- 🕵️ **Integrate with GitHub/GitLab** for trigger-based builds.

🧰 Optional: Install Jenkins on Docker

```
docker run -d -p 8080:8080 -p 50000:50000 \
  -v jenkins_home:/var/jenkins_home \
  --name myjenkins jenkins/jenkins:lts
```
