

SE489 DevOps Engineering

Lab 4

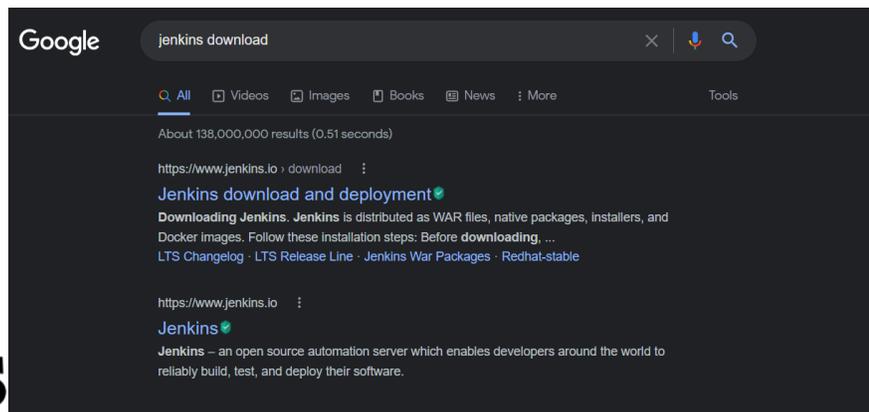


Lab 4: Continuous Integration and Continuous Release

Preambles: Jenkins is a tool to achieve continuous integrations and continuous delivery



Jenkins



Just google for jenkins download, www.jenkins.io is the official website for the jenkins. Click the first link to download jenkins.

The screenshot shows the Jenkins website's 'Jenkins download and deployment' page. The page has a dark header with the Jenkins logo and navigation links. The main content area is white and contains the following sections:

- Jenkins download and deployment**: The main heading.
- The Jenkins project produces two release lines: Stable (LTS) and regular (Weekly).** Depending on your organization's needs, one may be preferred over the other. See the links below for more information and recommendations about the release lines.
- Stable (LTS)**: Long-Term Support (LTS) release baselines are chosen every 12 weeks from the stream of regular releases. Every 4 weeks we release stable releases which include bug and security fix backports. Learn more...
Links: [Changelog](#) | [Upgrade Guide](#) | [Past Releases](#)
- Regular releases (Weekly)**: This release line delivers bug fixes and new features rapidly to plugin developers who need them. It is generally delivered on a regular cadence. Learn more...
Links: [Changelog](#) | [Past Releases](#)
- Downloading Jenkins**: Jenkins is distributed as WAR files, native packages, installers, and Docker images. Follow these installation steps:
 1. Before downloading, please take a moment to review the **Hardware and Software requirements** section of the User Handbook.
 2. Select one of the packages below and follow the download instructions.
 3. Once a Jenkins package has been downloaded, proceed to the **Installing Jenkins** section of the User Handbook.
 4. You may also want to verify the package you downloaded. Learn more about verifying Jenkins downloads.
- Download Jenkins 2.346.3 LTS for:**
 - Generic Java package (.war)
 - Docker
 - Ubuntu/Debian
 - CentOS/Fedora/Red Hat
 - Windows
 - openSUSE
- Download Jenkins 2.365 for:**
 - Generic Java package (.war)
 - Docker
 - Ubuntu/Debian
 - CentOS/Fedora/Red Hat
 - Windows
 - openSUSE

Go for LTS (Long Term Support) version, Out of several options listed select windows, Automatic download of installer file will start. Once done, you can check it's a msi installer.

There are some software requirements also for jenkins, website puts them like this

Software Requirement:



The screenshot shows the Jenkins website's documentation page for Java requirements. The page has a dark header with the Jenkins logo and navigation links for Blog, Documentation, Plugins, Community, Subprojects, About, and English. The main content area is divided into two columns. The left column contains a 'User Handbook' section with a list of links: User Handbook overview, Installing Jenkins, Using Jenkins, Pipeline, Blue Ocean, Managing Jenkins, Securing Jenkins, System Administration, Scaling Jenkins, and Troubleshooting Jenkins. The right column features the title 'Java requirements' and a sub-section 'Running Jenkins'. The text under 'Running Jenkins' states that Java 8 or Java 11 are required for running modern versions of Jenkins and provides links for upgrading from Java 8 to Java 11 and for Docker installation instructions. It also mentions that starting with the Jenkins 2.357 weekly release, Java 11 or Java 17 will be required, with Java 8 supported until the September 2022 LTS release.

Let's check java's version first, open command window and run the following command to confirm the version of the java

```
Command Prompt
Microsoft Windows [Version 10.0.25145.1011]
(c) Microsoft Corporation. All rights reserved.

C:\Users\mzafa>java -version
java version "1.8.0_341"
Java(TM) SE Runtime Environment (build 1.8.0_341-b10)
Java HotSpot(TM) 64-Bit Server VM (build 25.341-b10, mixed mode)

C:\Users\mzafa>
```

If it is 8,11 or 17, it will work fine.

Hardware Requirements: As mentioned at the jenkins website, followings are requirements

Jenkins  Blog Documentation Plugins Community Subprojects

> User Documentation Home

User Handbook

- User Handbook overview
- **Installing Jenkins**
 - Docker
 - Kubernetes
 - Linux
 - macOS
 - WAR files
 - **Windows**
 - Other Systems
 - Offline Installations
 - Initial Settings
- Using Jenkins
- Pipeline
- Blue Ocean
- Managing Jenkins
- Securing Jenkins
- System Administration
- Scaling Jenkins
- Troubleshooting Jenkins
- Appendix
- Glossary

Windows

The simplest way to install Jenkins on Windows is to use the Jenkins Windows installer. That program will install Jenkins as a service using a 64 bit JVM chosen by the user. Keep in mind that to run Jenkins as a service, the account that runs Jenkins must have permission to login as a service.

Prerequisites

Minimum hardware requirements:

- 256 MB of RAM
- 1 GB of drive space (although 10 GB is a recommended minimum if

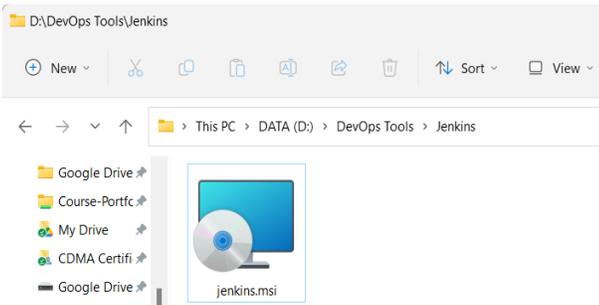
Recommended hardware configuration for a small team:

- 4 GB+ of RAM
- 50 GB+ of drive space

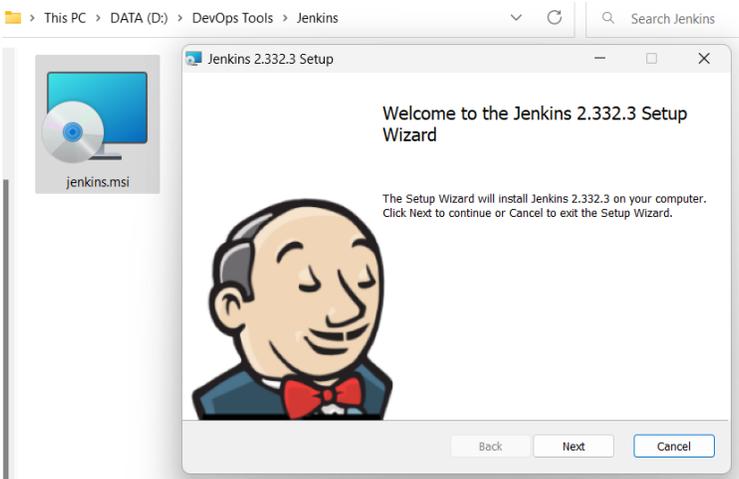
Comprehensive hardware recommendations:

- Hardware: see the [Hardware Recommendations](#) page

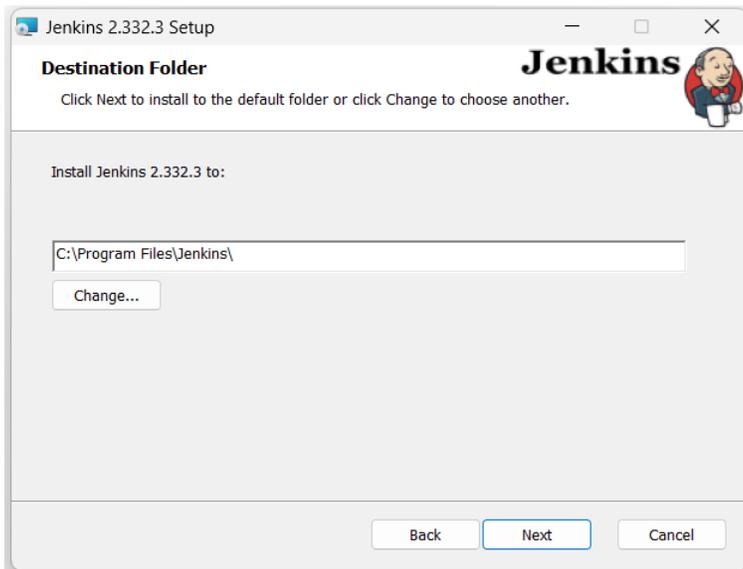
If these requirements are fulfilled, then proceed for the installation of the Jenkins, browse to the download location of the Jenkins setup file, double click on it to starting the installation process



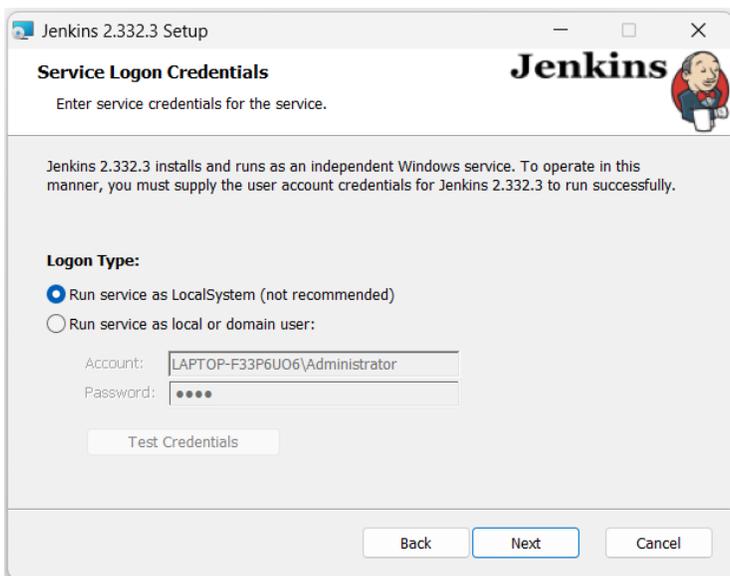
Following screen will appear



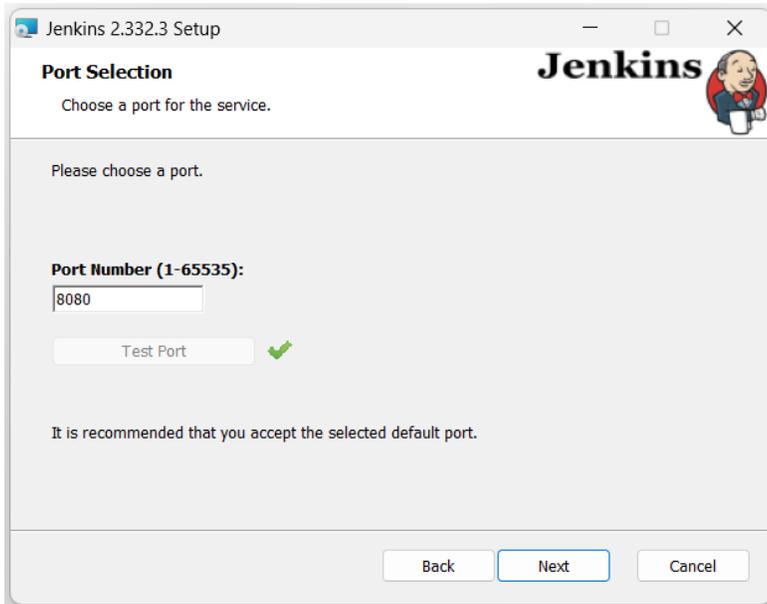
To proceed with the installation process, click on next
Accept the default location, if you don't want to change it



To avoid other overheads, choose first option on the next screen presented.



By default, jenkins runs on port 8080, you may test port as well



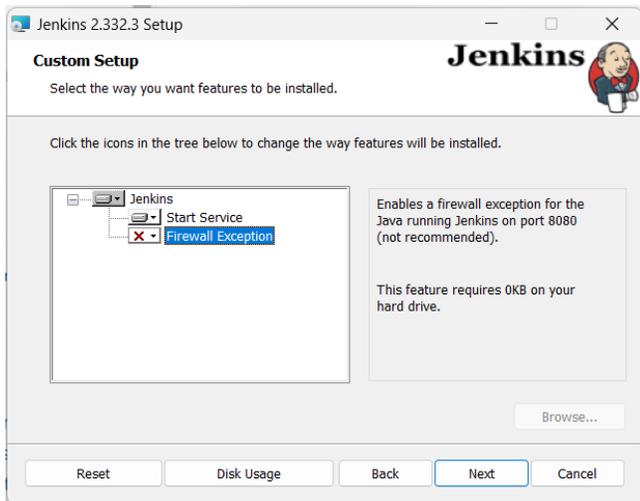
Click next, and let Jenkin select version of java for it, although, jenkins recommends, Java version 11, for sake of compatibility with other tools installed on laptop, I will continue with version 8.



Simply click Ok, if you receive this



Leave the firewall services off, and select next to the next screen



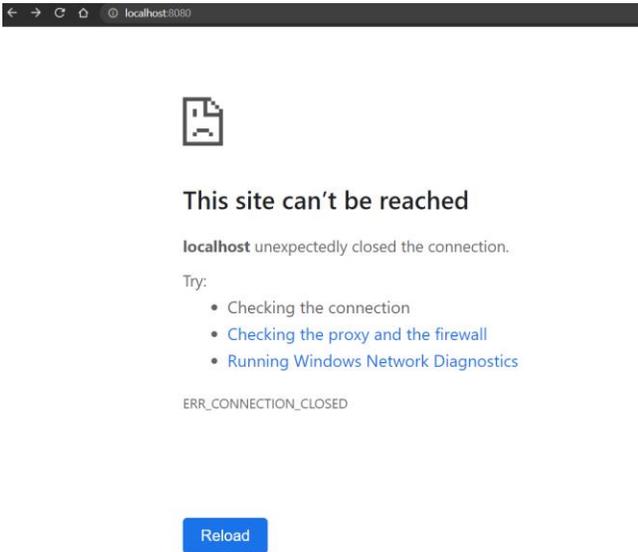
Click on install, to complete the installation process.



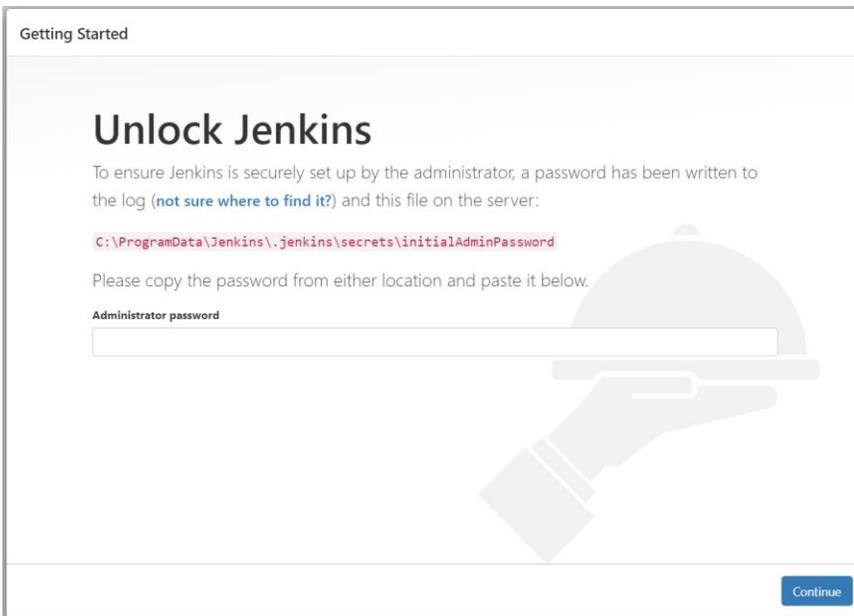
Now Jenkins, has been installed at your computer, let's unlock and configure it a bit.

Running, Unlocking and Using Jenkins

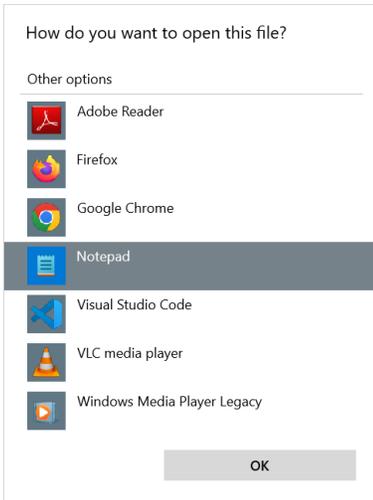
As Jenkins runs at local port 8080, enter url <http://localhost:8080> at your browser



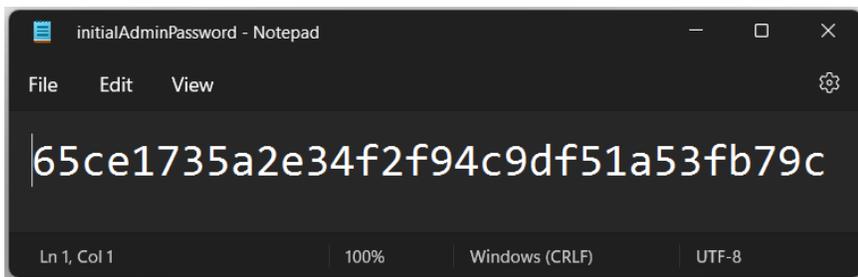
Because for security reasons, we didn't add, firewall exception while installing jenkins, this window will appear, just click on the *Checking the proxy and the firewall* options and you will be taken to below window



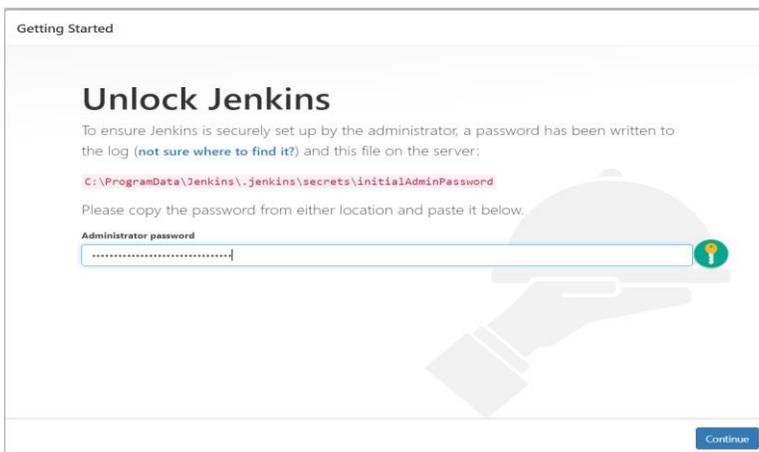
Let's get the sought password from the given location, and paste it. Copy and paste, given location at windows explorer's address bar, select notepad at the subsequent window, to open password file.



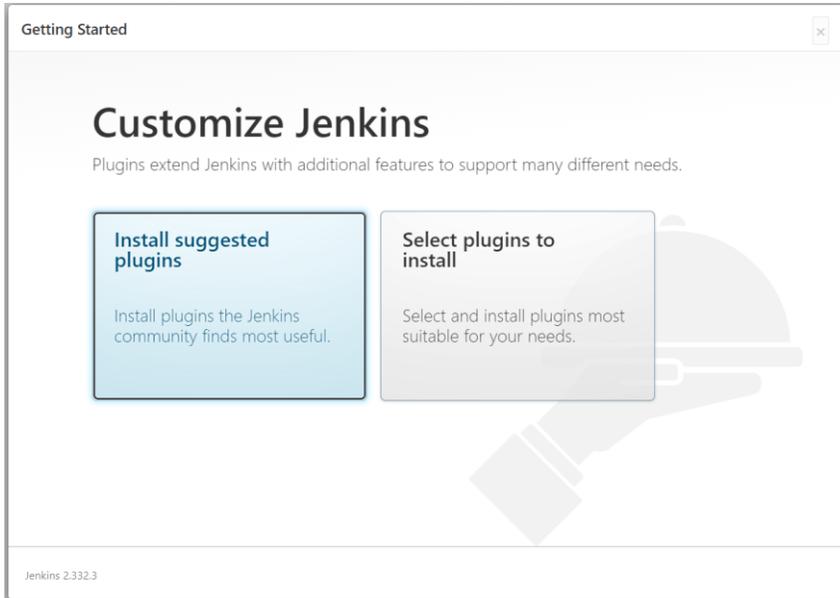
Once in the file, copy the password



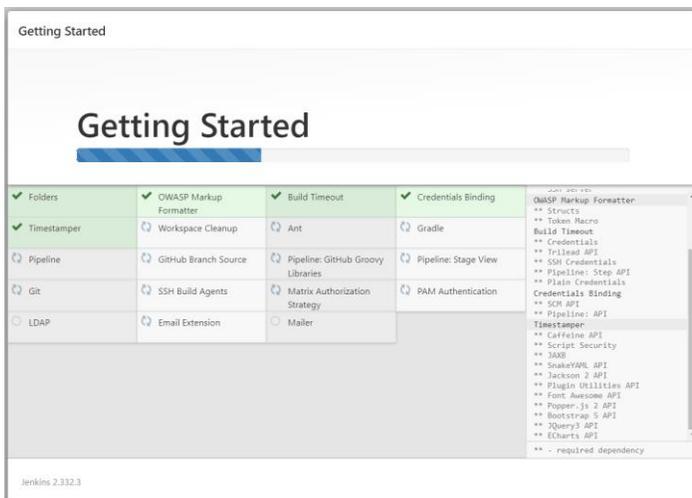
Paste the password and click on continue



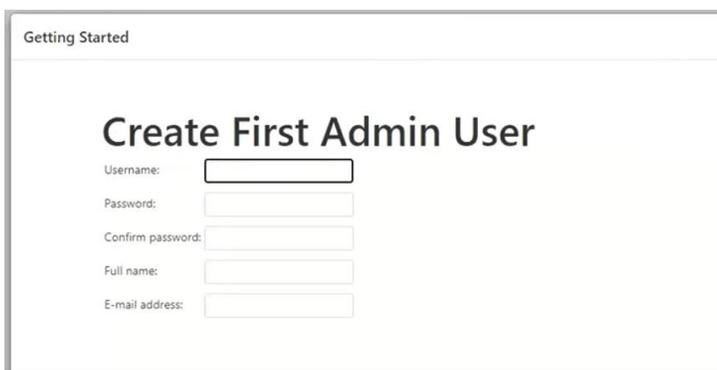
At the subsequent screen it asks for plugins to be installed, select recommended plugins



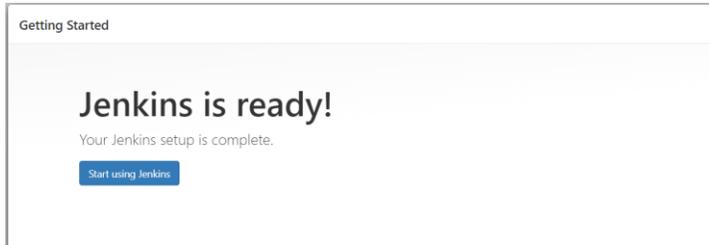
Depending upon network speed, it may take few minutes to install recommended plugins



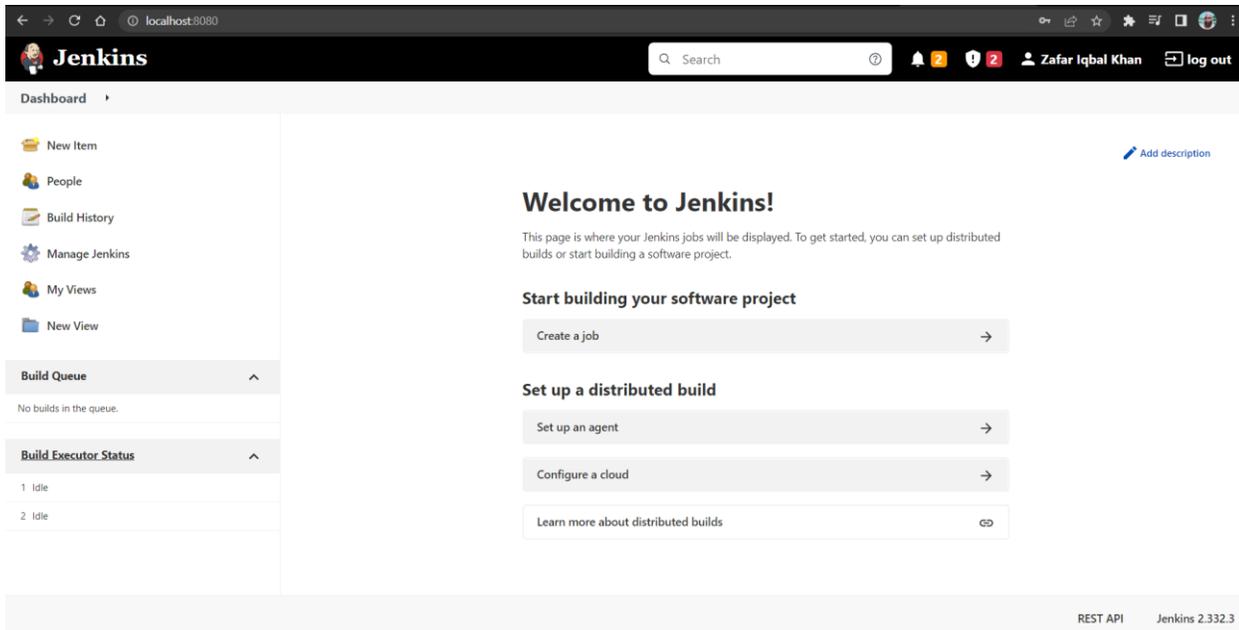
After this Jenkins asks for creation of an Administrative user accounts



After completion of this step, Jenkins is ready for the use

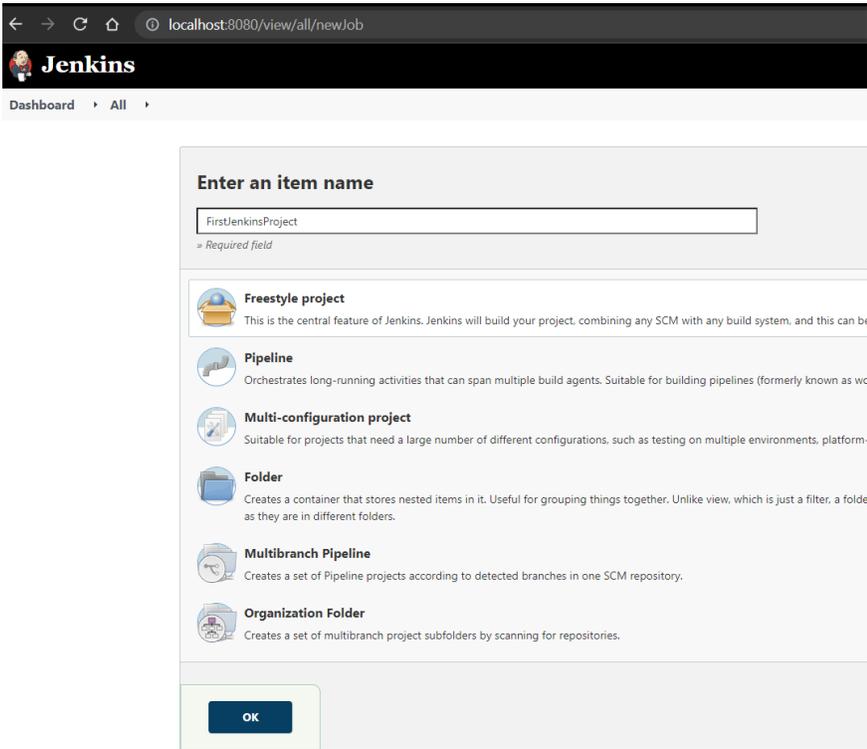


Click on Start using Jenkins, and following *Dashboard* will be presented to you

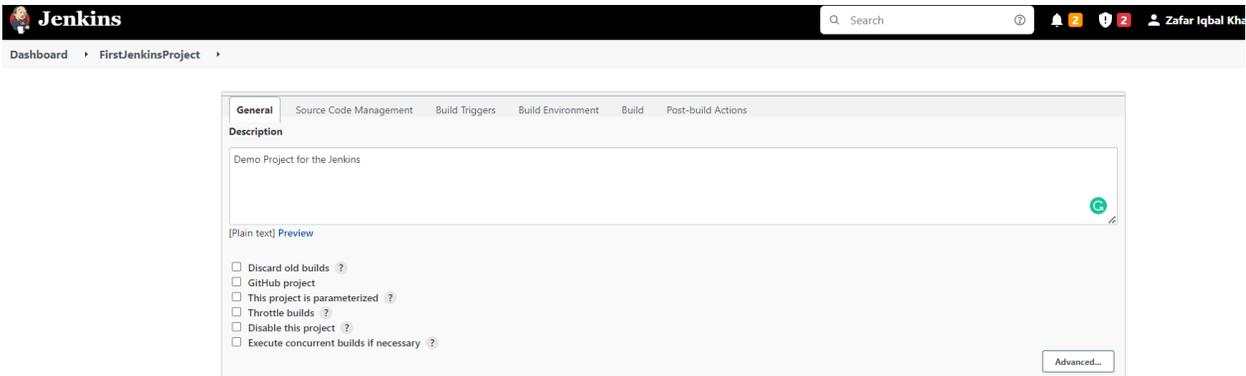


Creating first job

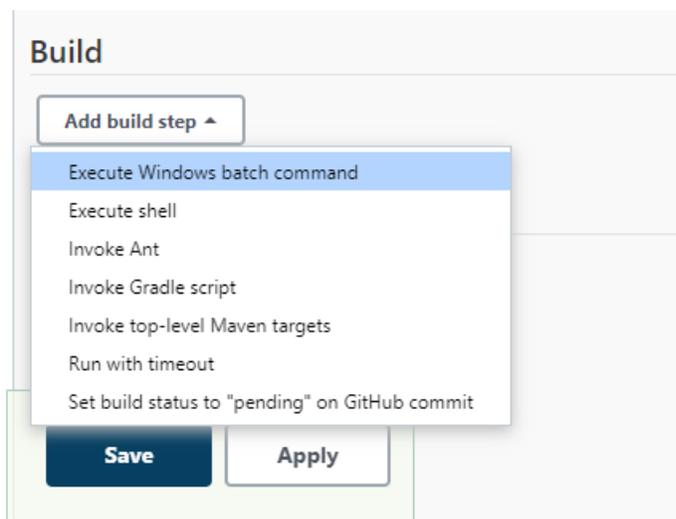
To create a job, click **New Item**, first option on the left side pane, and provide a suitable name for the first project, select Freestyle project, and click on Ok



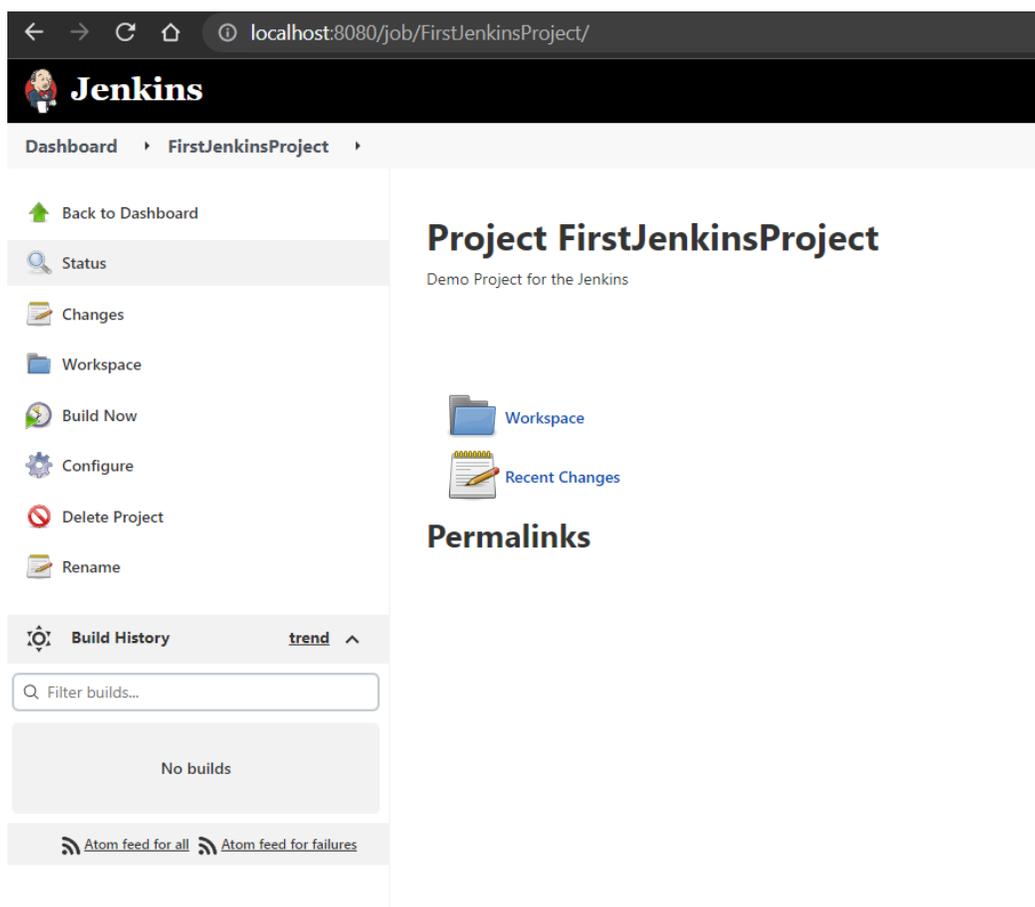
Provide some description for this project.



And **Execute Windows batch command**, in the build section and save

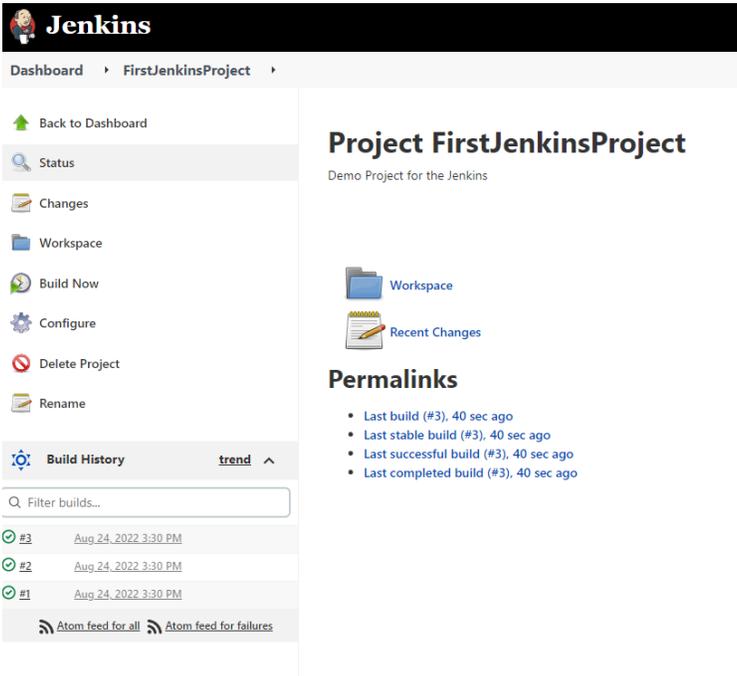


Once saved, Dashboard will look like this

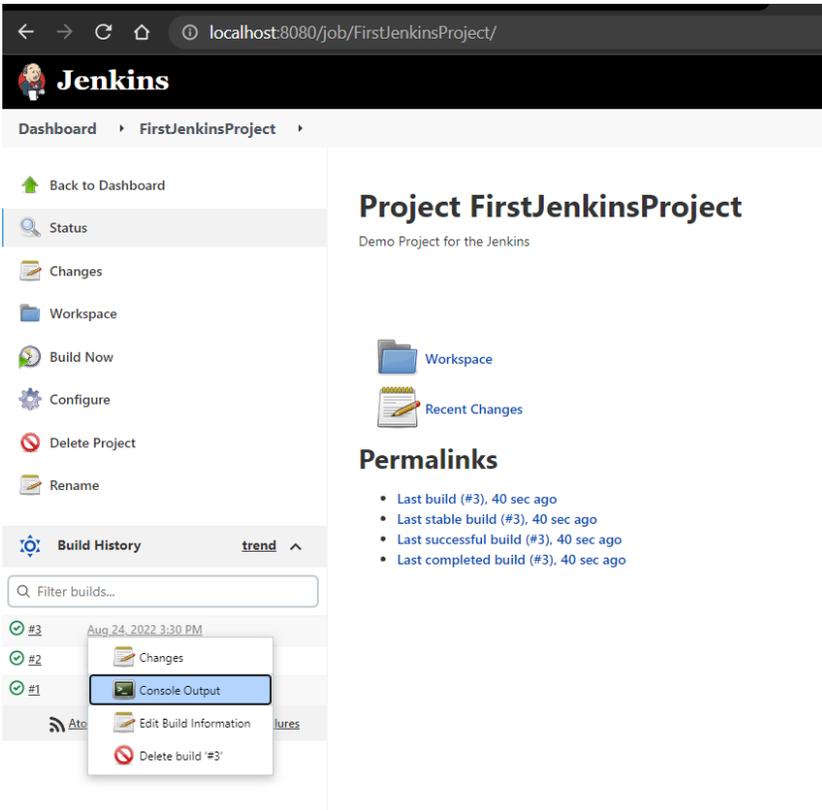


Now, click on **Build Now**, to check the output

All the builds are listed



Click on any build to check for console output



As evident from the below screen, we have successfully ran our first Jenkins build job.



- Back to Project
- Status
- Changes
- Console Output**
- View as plain text
- Edit Build Information
- Delete build '#3'
- Previous Build

Console Output

Started by user [Zafar Iqbal Khan](#)
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\.jenkins\workspace\FirstJenkinsProject
[FirstJenkinsProject] \$ cmd /c call C:\WINDOWS\TEMP\jenkins3629957449517665290.bat

```
C:\ProgramData\Jenkins\.jenkins\workspace\FirstJenkinsProject>java -version
java version "1.8.0_341"
Java(TM) SE Runtime Environment (build 1.8.0_341-b10)
Java HotSpot(TM) 64-Bit Server VM (build 25.341-b10, mixed mode)
```

```
C:\ProgramData\Jenkins\.jenkins\workspace\FirstJenkinsProject>date/t
Wed 08/24/2022
```

```
C:\ProgramData\Jenkins\.jenkins\workspace\FirstJenkinsProject>echo "Jenkins makes life easier"
"Jenkins makes life easier"
```

```
C:\ProgramData\Jenkins\.jenkins\workspace\FirstJenkinsProject>exit 0
Finished: SUCCESS
```