EXPERIMENT NO. 4

Date of Performance	
Date of Submission	

Aim : To understand Continuous Integration, install and configure Jenkins with Maven/Ant/Gradle to setup a build Job.

THEORY

DevOps practices reflect the idea of continuous improvement and automation. Many practices focus on one or more development cycle phases. These practices include:

- **Continuous development**:
  This practice spans the planning and coding phases of the DevOps lifecycle. Version-control mechanisms might be involved.
- **Continuous testing**:
  This practice incorporates automated, prescheduled, continued code tests as application code is being written or updated. Such tests can speed the delivery of code to production.
- **Continuous integration (CI)**:
  This practice brings configuration management (CM) tools together with other test and development tools to track how much of the code being developed is ready for production. It involves rapid feedback between testing and development to quickly identify and resolve code issues.
- **Continuous delivery**:
  This practice automates the delivery of code changes, after testing, to a preproduction or staging environment. A staff member might then decide to promote such code changes into production.
- **Continuous deployment (CD)**:
  Similar to continuous delivery, this practice automates the release of new or changed code into production. A company doing continuous deployment might release code or feature changes several times per day. The use of container technologies, such as Docker and Kubernetes, can enable continuous deployment by helping to maintain consistency of the code across different deployment platforms and environments.
- **Continuous monitoring**:
  This practice involves ongoing monitoring of both the code in operation and the underlying infrastructure that supports it. A feedback loop that reports on bugs or issues then makes its way back to development.
- **Infrastructure as code**:
  This practice can be used during various DevOps phases to automate the provisioning of infrastructure required for a software release. Developers add infrastructure “code” from within their existing development tools. For example, developers might create a storage volume on demand from Docker, Kubernetes, or OpenShift. This practice also allows operations teams to monitor environment configurations, track changes, and simplify the rollback of configurations.

Jenkins is an open source automation server. With Jenkins, organizations can accelerate the software development process by automating it. Jenkins manages and controls software delivery processes throughout the entire lifecycle, including build, document, test, package, stage, deployment, static code analysis and much more.

You can set up Jenkins to watch for any code changes in places like GitHub, Bitbucket or GitLab and automatically do a build with tools like Maven and Gradle. You can utilize container technology such as Docker and Kubernetes, initiate tests and then take actions like rolling back or rolling forward in production.

OUTPUT

JENKINS INSTALLATION (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 log in as a service.

Steps:

1. Setup wizard
2. Select destination folder
3. Service logon credentials
4. Port selection
5. Select Java home directory
6. Custom setup
7. Install Jenkins
8. Finish Jenkins installation

Post-installation Setup Wizard

After downloading, installing and running Jenkins, the post-installation setup wizard begins. This setup wizard takes you through a few quick "one-off" steps to unlock Jenkins, customize it with plugins and create the first administrator user through which you can continue accessing Jenkins.

Unlocking Jenkins:
When you first access a new Jenkins instance, you are asked to unlock it using an automatically-generated password.

- Browse to **http://localhost:8080** (or whichever port you configured for Jenkins when installing it) and wait until the **Unlock Jenkins** page appears.
- The initial Administrator password should be found under the Jenkins installation path (set at Step 2 in Jenkins Installation).

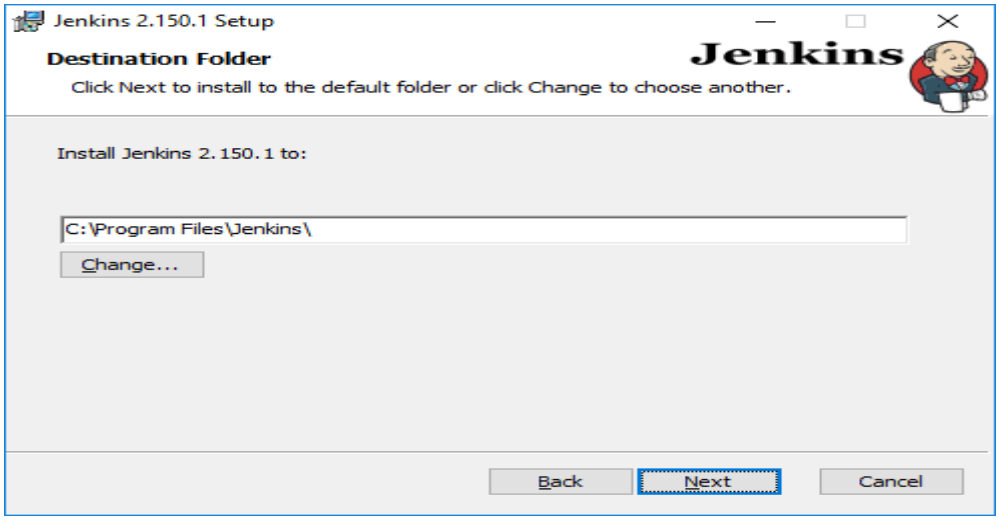
MAVEN INSTALLATION

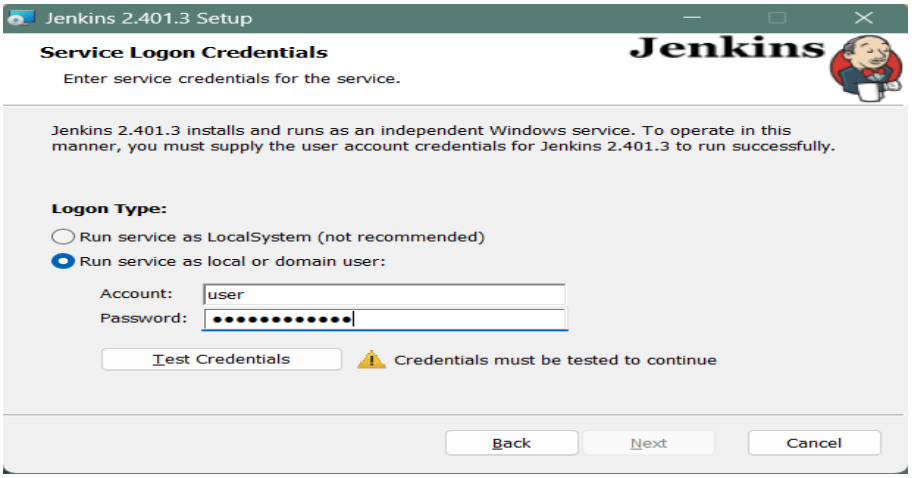
Maven is a powerful project management and comprehension tool that provides a complete build life cycle framework to assist developers.

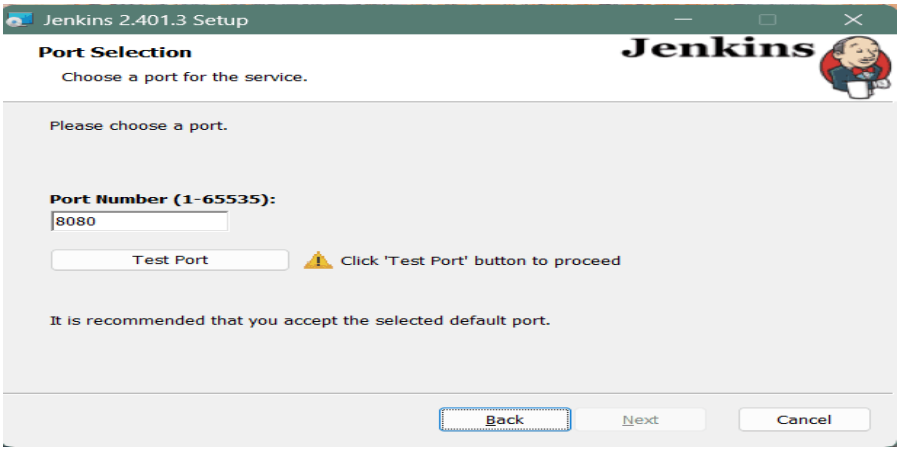
It is based on the concept of a **POM (Project Object Model)** that includes project information and configuration information for Maven such as:

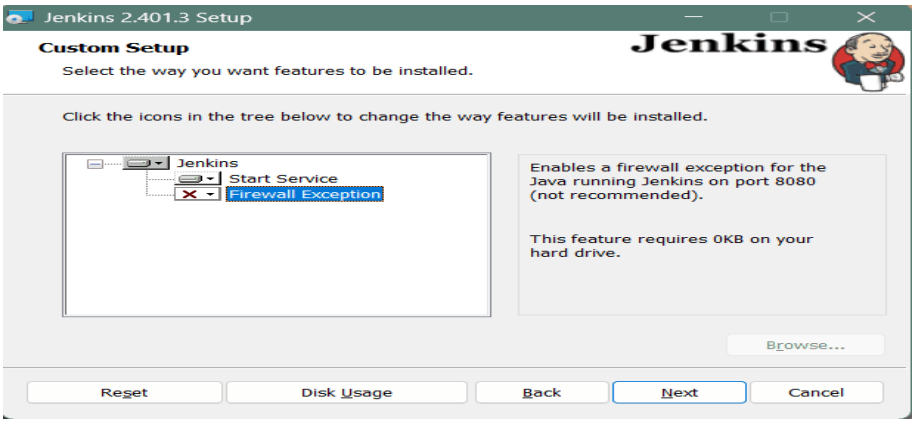
- Construction directory
- Source directory
- Test source directory
- Dependency
- Goals
- Plugins

EXECUTION: JENKINS INSTALLATION AND SETUP



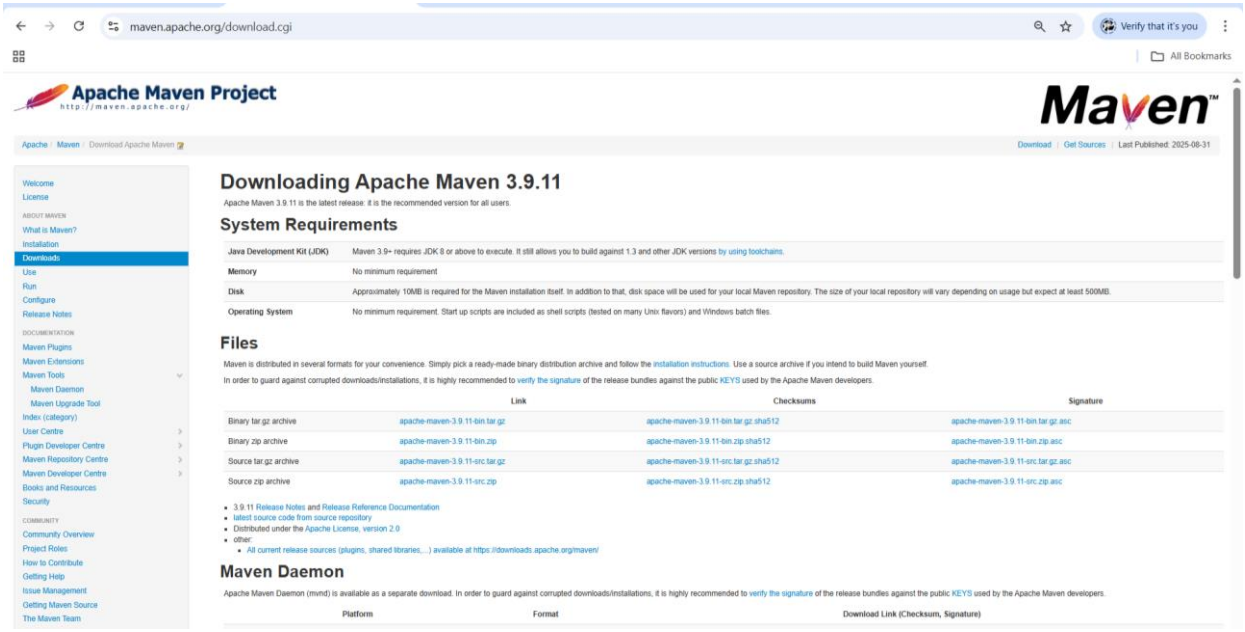

Jenkins 2.401.3 Setup
Service Logon Credentials
Enter service credentials for the service.
Jenkins
Jenkins 2.401.3 installs and runs as an independent Windows service. To operate in this manner, you must supply the user account credentials for Jenkins 2.401.3 to run successfully.
Logon Type:
Run service as LocalSystem (not recommended)
Run service as local or domain user:
Account:
user
Password:
Test Credentials
Credentials must be tested to continue
Back
Next
Cancel

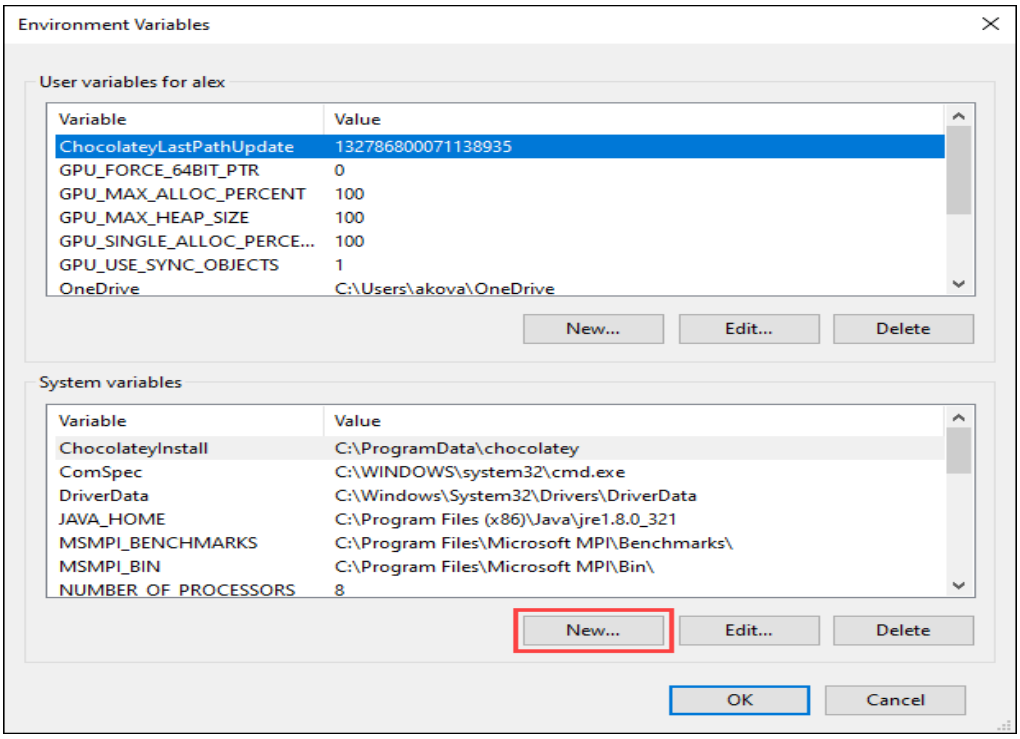

Jenkins 2.401.3 Setup
Port Selection
Choose a port for the service.
Jenkins
Please choose a port.
Port Number (1-65535):
8080
Test Port
Click 'Test Port' button to proceed
It is recommended that you accept the selected default port.
Back
Next
Cancel

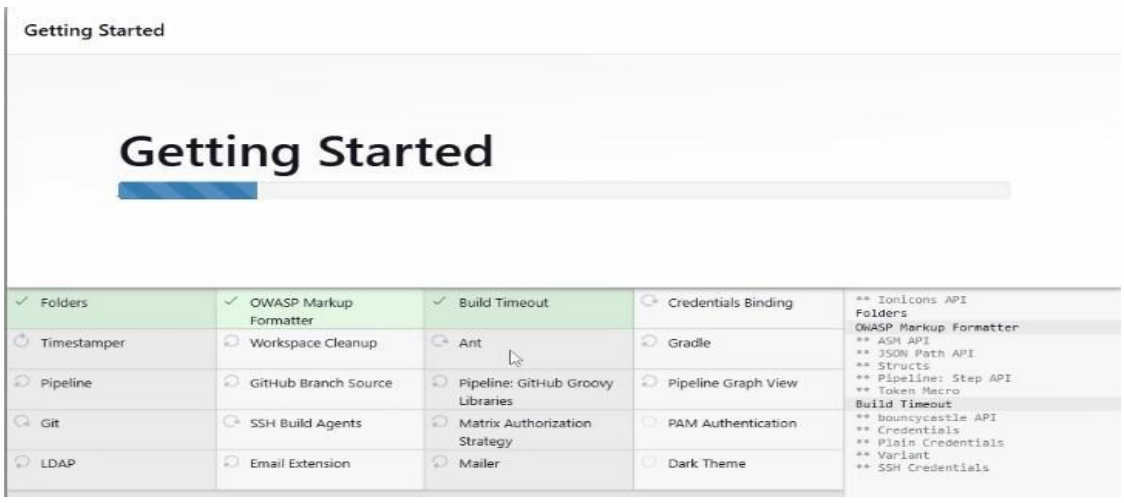

Jenkins 2.401.3 Setup
Custom Setup
Select the way you want features to be installed.
Jenkins
Click the icons in the tree below to change the way features will be installed.
Jenkins
Start Service
Firewall Exception
Enables a firewall exception for the Java running Jenkins on port 8080 (not recommended).
This feature requires 0KB on your hard drive.
Browse...
Reset
Disk Usage
Back
Next
Cancel

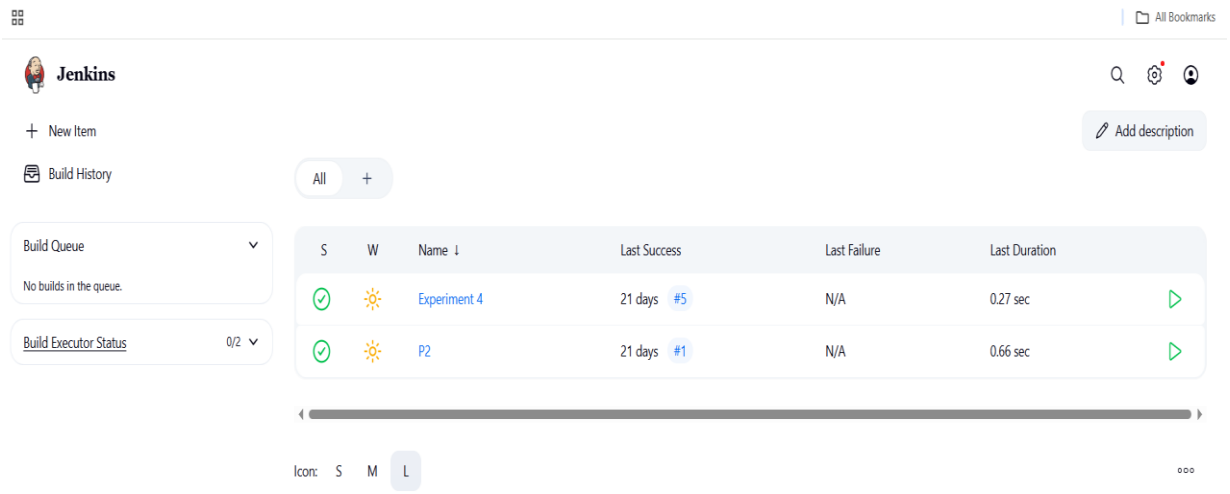

Jenkins 2.401.3 Setup
Completed the Jenkins 2.401.3 Setup Wizard
Click the Finish button to exit the Setup Wizard.
Back
Finish
Cancel

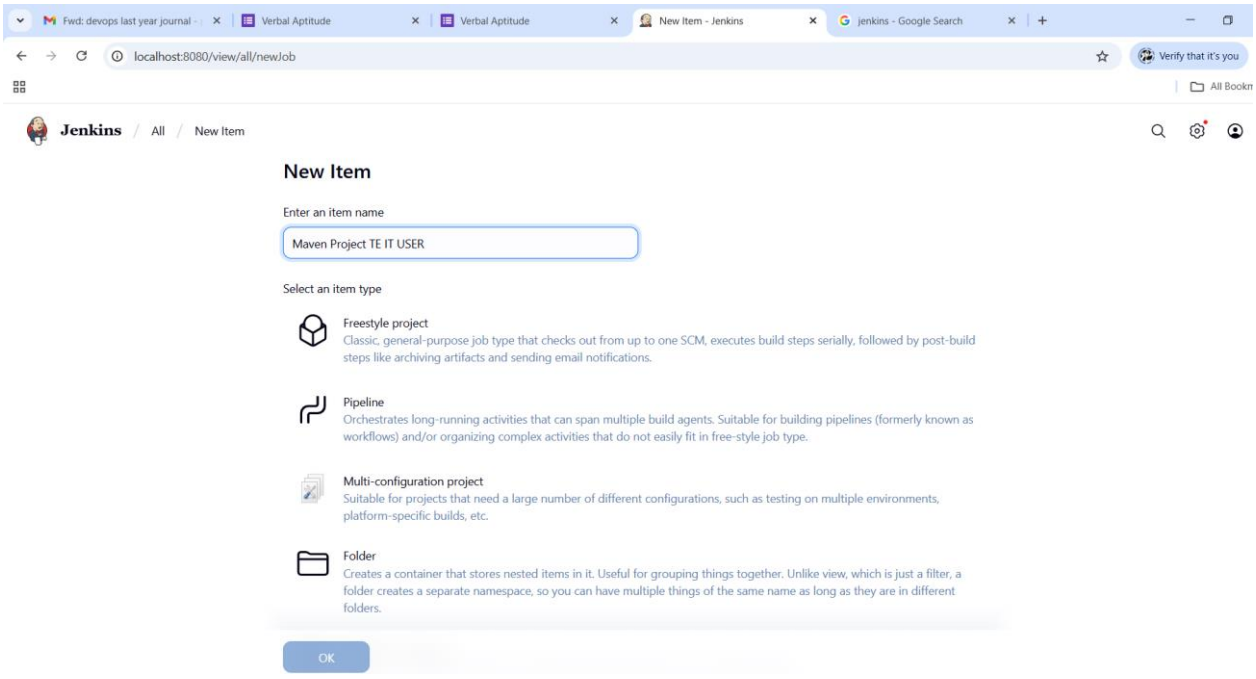
EXECUTION- MAVEN INSTALLATION AND SEETINT SET VARIABLES AND PATH

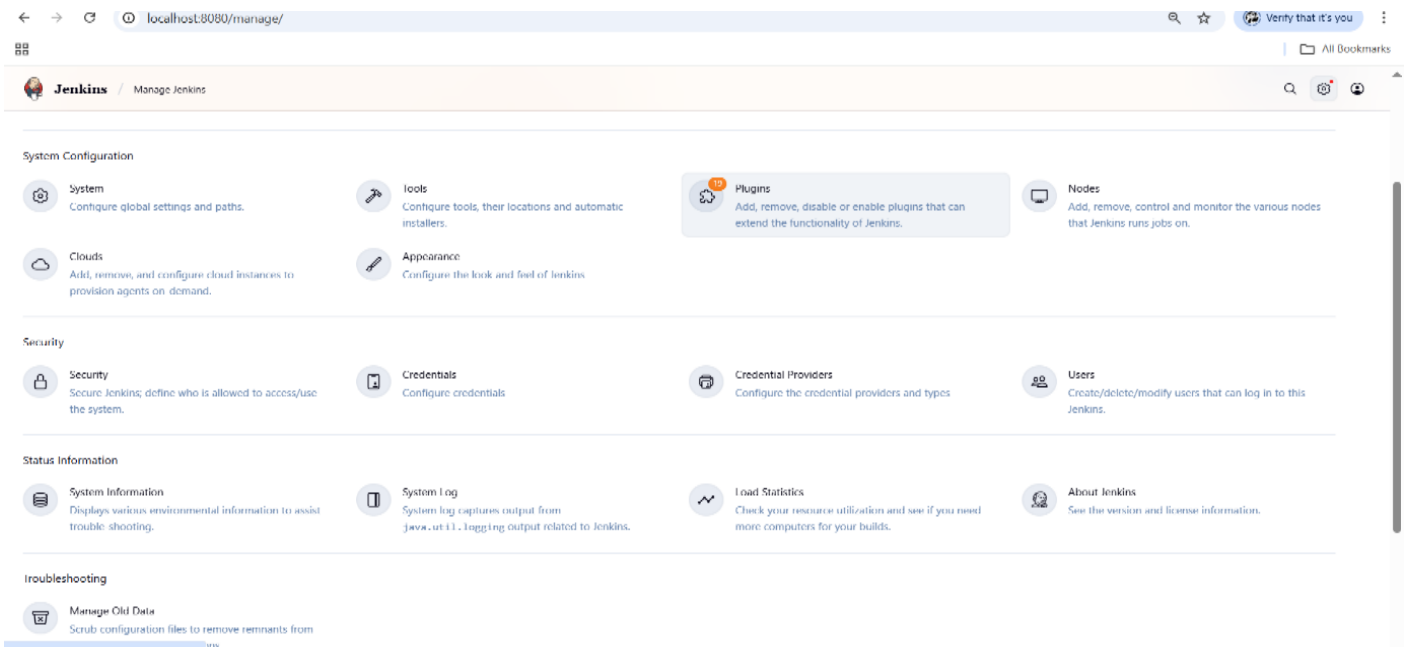


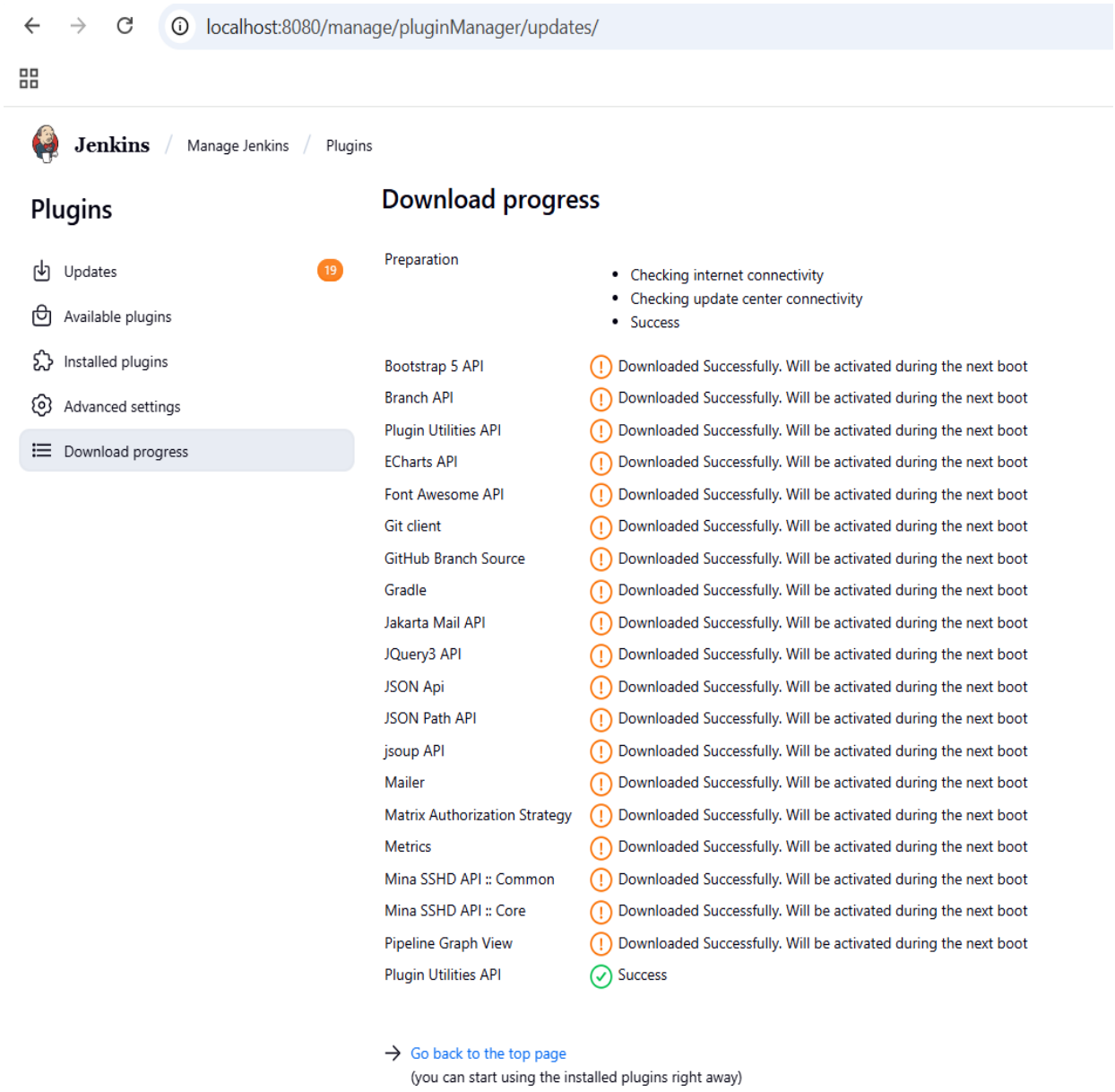





All Bookmarks
Jenkins
New Item
Build History
Add description
All
Build Queue
No builds in the queue.
Build Executor Status 0/2
S W Name ↓ Last Success Last Failure Last Duration
Experiment 4 21 days #5 N/A 0.27 sec
P2 21 days #1 N/A 0.66 sec
Icon: S M L


Fwd: devops last year journal -
Verbal Aptitude
Verbal Aptitude
New Item - Jenkins
jenkins - Google Search
localhost:8080/view/all/newJob
Verify that it's you
Jenkins / All / New Item
New Item
Enter an item name
Maven Project TE IT USER
Select an item type
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 archiving artifacts and sending email notifications.
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.
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 folders.
OK


localhost:8080/manage/
Verify that it's you
All Bookmarks
Jenkins / Manage Jenkins
System Configuration
System
Configure global settings and paths.
Tools
Configure tools, their locations and automatic installers.
Plugins
Add, remove, disable or enable plugins that can extend the functionality of Jenkins.
Nodes
Add, remove, control and monitor the various nodes that Jenkins runs jobs on.
Clouds
Add, remove, and configure cloud instances to provision agents on demand.
Appearance
Configure the look and feel of Jenkins
Security
Security
Secure Jenkins; define who is allowed to access/use the system.
Credentials
Configure credentials
Credential Providers
Configure the credential providers and types
Users
Create/delete/modify users that can log in to this Jenkins.
Status Information
System Information
Displays various environmental information to assist trouble shooting.
System Log
System log captures output from java.util.logging output related to Jenkins.
Load Statistics
Check your resource utilization and see if you need more computers for your builds.
About Jenkins
See the version and license information.
Troubleshooting
Manage Old Data
Scrub configuration files to remove remnants from



CONCLUSION :- Successfully Installed and setup Jenkins 2.303.1and integrated it with MAVEN 3.8.2 and created a Job.