# DevOps Lab/Even Sem 2023-23/Experiment 4

Name:	Class/Roll No. :	Grade:
Dyotak Kachare	D11AD/26	

# **Title of Experiment:**

To understand Continuous Integration, install and configure Jenkins to setup a build Job.

# **Objective of Experiment:**

To understand the importance of Jenkins to Build and deploy Software Applications on server environment

# **Outcome of Experiment:**

To understand the importance of Jenkins to Build and deploy Software Applications on server environment

## **Problem Statement:**

To understand Continuous Integration, install and configure Jenkins to setup a build Job.

# **Description / Theory:**

### DevOps Lab/Even Sem 2023-23/Experiment 4

Jenkins, an open-source automation server, stands at the forefront of modern software development methodologies, championing Continuous Integration (CI) and Continuous Delivery (CD) practices. Launched in 2011, Jenkins has evolved into a versatile and robust tool, becoming an integral part of development pipelines across diverse industries.

### **Core Principles**

#### 1. Automation

Jenkins excels in automating repetitive tasks associated with building, testing, and deploying software. Developers can define pipelines that encompass the entire software delivery process, ensuring efficiency and reducing the risk of human error.

## 2. Extensibility

One of Jenkins' defining features is its vast array of plugins, enabling seamless integration with a wide spectrum of tools and technologies. Whether it's version control systems, testing frameworks, or deployment platforms, Jenkins offers extensibility that caters to the unique needs of different development teams.

#### **Key Features**

#### 1. Pipelines

Jenkins Pipelines, defined as code, allow developers to express the entire build, test, and deployment process in a version-controlled script. This declarative approach ensures consistency across different environments and facilitates collaboration among team members.

### 2. Plugins

With over a thousand plugins available, Jenkins provides unparalleled flexibility. Developers can choose and integrate plugins to extend Jenkins' functionality, creating a tailored environment that aligns with the specific requirements of their projects.

#### 3. Distributed Builds

Jenkins supports the distribution of build and test tasks across multiple machines, enabling parallel execution. This feature accelerates the development process, reducing build times and enhancing overall productivity.

#### 4. Monitoring and Notifications

## DevOps Lab/Even Sem 2023-23/Experiment 4

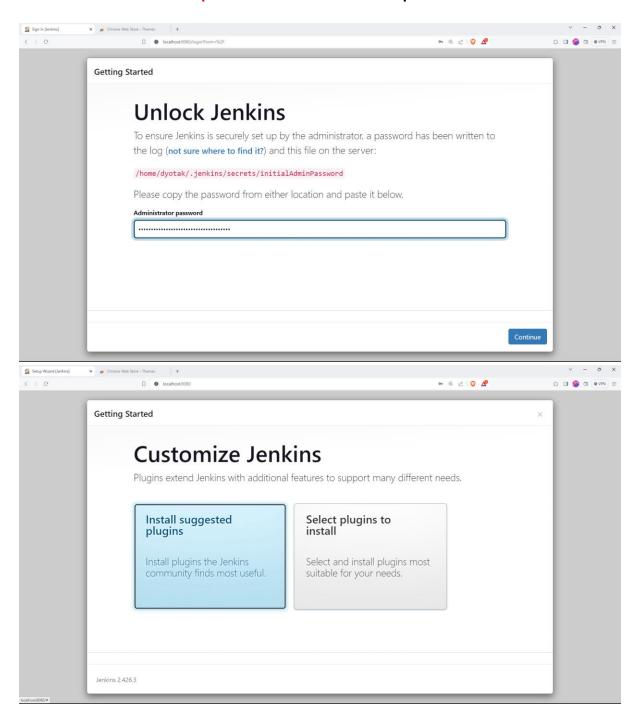
Jenkins offers detailed monitoring capabilities, providing real-time insights into the status of builds and deployments. Additionally, it supports notifications through various channels, ensuring that teams stay informed about the progress and outcomes of their development processes.

## **Code and Output:**

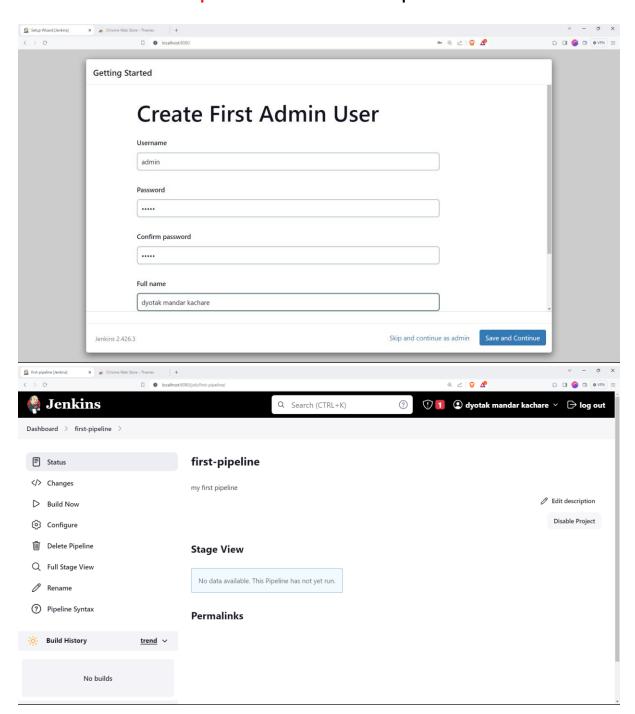
```
-(student ® AIDS210-5)-[~]
$ sudo wget -0 /usr/share/keyrings/jenkins-keyring.asc \
    https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
--2024-02-01 09:40:47-- https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
Resolving pkg.jenkins.io (pkg.jenkins.io)... 151.101.2.133, 151.101.66.133, 151.101.130.133, ...
Connecting to pkg.jenkins.io (pkg.jenkins.io)|151.101.2.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3175 (3.1K) [application/pgp-keys]
Saving to: '/usr/share/keyrings/jenkins-keyring.asc'
======>]
             3.10K --.-KB/s
                               in 0s
2024-02-01 09:40:47 (12.4 MB/s) - '/usr/share/keyrings/jenkins-keyring.asc' saved [3175/3175]
  -(student & AIDS210-5)-[~]
$ 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
  -(student & AIDS210-5)-[~]
$ sudo apt-get update
  sudo apt-get install fontconfig openjdk-17-jre
  sudo apt-get install jenkins
Hit:1 http://packages.microsoft.com/repos/code stable InRelease
```

(dyotak⊕Dyotak)-[~]				
L\$ jenkins Running from: /usr/share/java/jenkins.war				
webroot: /home/dyotak/.jenkins/war 2024-02-10 17:21:26.428+0000 [id=1]	INFO	winstone.Logger#logInternal: Beginning extract		
ion from war file				
2024-02-10 17:21:26.931+0000 [id=1] Empty contextPath	WARNING	o.e.j.s.handler.ContextHandler#setContextPath:		
2024-02-10 17:21:26.975+0000 [id=1]	INFO	org.eclipse.jetty.server.Server#doStart: jetty		
-10.0.18; built: 2023-10-27T01:59:58.245Z; git: 8545fd9bf4cd0d0838f626b405fd4963441546b7; jvm 17.0.9+9-Debian-2				
2024-02-10 17:21:27.184+0000 [id=1]	INFO	o.e.j.w.StandardDescriptorProcessor#visitServl		
et: NO JSP Support for /, did not fir				
2024-02-10 17:21:27.222+0000 [id=1] sion workerName=node0	INFO	o.e.j.s.s.DefaultSessionIdManager#doStart: Ses		
2024-02-10 17:21:27.557+0000 [id=1]	INFO	hudson.WebAppMain#contextInitialized: Jenkins		
home directory: /home/dyotak/.jenkins				
2024-02-10 17:21:27.692+0000 [id=1] d w.a50f40653{Jenkins v2.426.3 / file	INFO	o.e.j.s.handler.ContextHandler#doStart: Starte yotak/.jenkins/war/,AVAILABLE}{/home/dyotak/.je		
nkins/war}	2.7// Home/ a	youak, . Jenkins, war, , Available; (, nome, ayouak, . je		
2024-02-10 17:21:27.702+0000 [id=1]	INFO	o.e.j.server.AbstractConnector#doStart: Starte		
d ServerConnector@6c61a903{HTTP/1.1, 2024-02-10 17:21:27.718+0000 [id=1]	(http/1.1)	<pre>}{0.0.0.0:8080} org.eclipse.jetty.server.Server#doStart: Start</pre>		
ed Server@f99f5e0{STARTING}[10.0.18,s				
2024-02-10 17:21:27.719+0000 [id=27]	INFO	winstone.Logger#logInternal: Winstone Servlet		
2024-02-10 17:21:28.474+0000 [id=49]	INFO	jenkins.InitReactorRunner\$1#onAttained: System		
config adapted 2024-02-10 17:21:28.475+0000 [id=51]	INFO	jenkins.InitReactorRunner\$1#onAttained: Loaded		
all jobs	11110			
2024-02-10 17:21:28.476+0000 [id=51] uration for all jobs updated	INFO	<pre>jenkins.InitReactorRunner\$1#onAttained: Config</pre>		
2024-02-10 17:21:28.493+0000 [id=69]	INFO	hudson.util.Retrier#start: Attempt #1 to do th		
e action check updates server				
2024-02-10 17:21:28.729+0000 [id=37]	INFO	jenkins.install.SetupWizard#init:		
*********				
**********				
************				
Jenkins initial setup is required. An admin user has been created and a password generated.				
Please use the following password to proceed to installation:				
59efd0731a1e4761b9205e41901a03cd				
This may also be found at: /home/dyotak/.jenkins/secrets/initialAdminPassword				
**************************************				
**********				

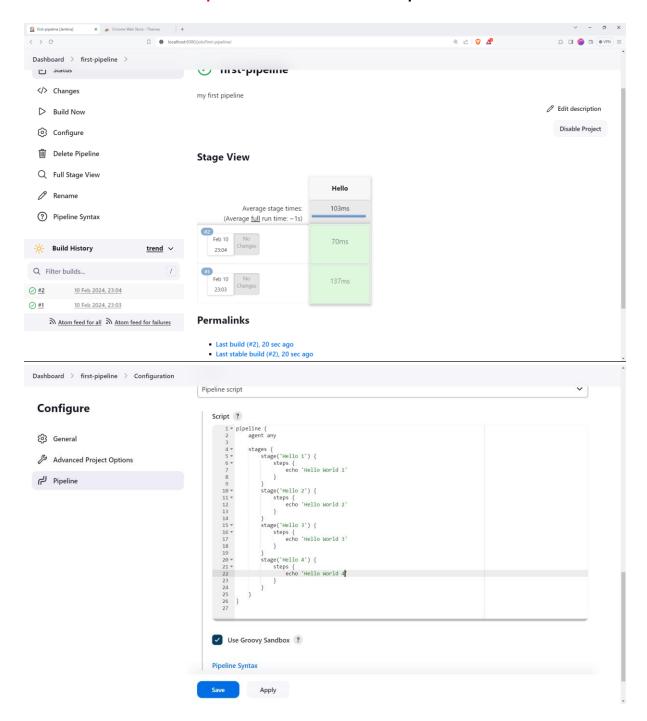






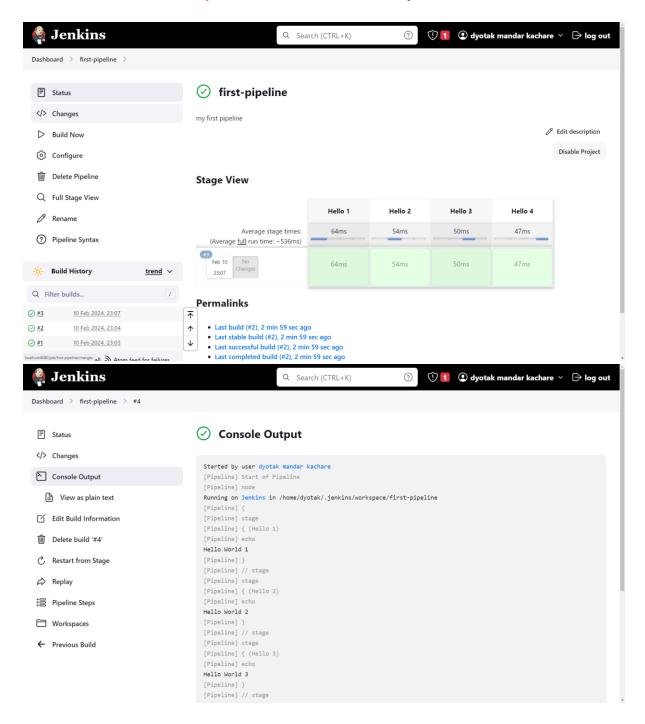








DevOps Lab/Even Sem 2023-23/Experiment 4



#### **Results and Discussion:**

Jenkins is very important tool when it comes to devops. Jenkins can perform a lot of task around 1500 different types of tasks out of which we will eventually learn and use 15-20 of them. Jenkins can pe run on windows/mac/linux but eventually you have to run it on a server.