St. Francis Institute of Technology, Mumbai-400 103

**Department Of Information Technology**

A.Y. 2021-2022

Class: BE-ITA/B, Semester: VIII

Subject: **DevOps Lab**

**Experiment – 4:** **To build pipeline of jobs in Jenkins, create a pipeline script to test and deploy an application.**

1. **Aim:** To build pipeline of jobs in Jenkins, create a pipeline script to test and deploy an application
2. **Objectives:** Aim of this experiment is that, the students will be able

* To build pipeline of jobs in Jenkins, create a pipeline script to test and deploy an application

1. **Outcomes:** After study of this experiment, the students will be able

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

1. **Prerequisite:** Knowledge of software engineering concept of integration and deployment
2. **Requirements:** Jenkins,JDK, python,Personal Computer, Windows operating system, browser, Internet Connection, Microsoft Word.
3. **Pre-Experiment Exercise:**

**Brief Theory:** Refer shared material

1. **Laboratory Exercise**
   * + 1. **Procedure:**

**a. Answer the following:**

* What is Jenkins’s pipeline?

Jenkins Pipeline (or simply "Pipeline") is a suite of plugins which supports implementing and integrating continuous delivery pipelines into Jenkins.

A continuous delivery pipeline is an automated expression of your process for getting software from version control right through to your users and customers.

Jenkins Pipeline provides an extensible set of tools for modeling simple-to-complex delivery pipelines "as code". The definition of a Jenkins Pipeline is typically written into a text file (called a Jenkinsfile) which in turn is checked into a project’s source control repository.

* What are the different ways to write a Jenkins pipeline?

The Jenkins pipeline is written based on two syntaxes, namely:

1. Declarative pipeline syntax
2. Scripted pipeline syntax

Declarative pipeline is a relatively new feature that supports the pipeline as code concept. It makes the pipeline code easier to read and write. This code is written in a Jenkinsfile which can be checked into a source control management system such as Git.

Whereas the scripted pipeline is a traditional way of writing the code. In this pipeline, the Jenkinsfile is written on the Jenkins UI instance. Though both these pipelines are based on the groovy DSL, the scripted pipeline uses stricter groovy based syntaxes because it was the first pipeline to be built on the groovy foundation. Since this Groovy script was not typically desirable to all the users, the declarative pipeline was introduced to offer a simpler and more optioned Groovy syntax.

The declarative pipeline is defined within a block labelled ‘pipeline’ whereas the scripted pipeline is defined within a ‘node’.

**b**. **Execute following (Refer the shared material) and attach screenshots:**

1. Create and build pipeline project with pipeline script

• Project with Hello World pipeline script

• Project with your own pipeline script

2. Create and build pipeline project with Git

• Fork repository on GitHub

• Create pipeline project with pipeline script from SCM

• Add webhooks to the forked repository

• Build pipeline project

• Add file to forked repository and build

• Make changes to Jenkins’s file on forked repository and build

## Screenshots

## Project with Hello World pipeline script

Graphical user interface, text, application, email, website

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Graphical user interface, text, application, email

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Graphical user interface, website

Description automatically generated

Graphical user interface, text, website

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## Project with your own pipeline script

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Graphical user interface, application

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### On Aborting

Graphical user interface, application

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Graphical user interface, application

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Graphical user interface, text

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Graphical user interface, text, email, website

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Graphical user interface, text, application

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Graphical user interface

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## Create and build pipeline project with Git

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### For Payload URL we need NGROK

Text

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### Command to run ngrok.exe http 8080

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1. **Post-Experiments Exercise**
2. **Extended Theory:**

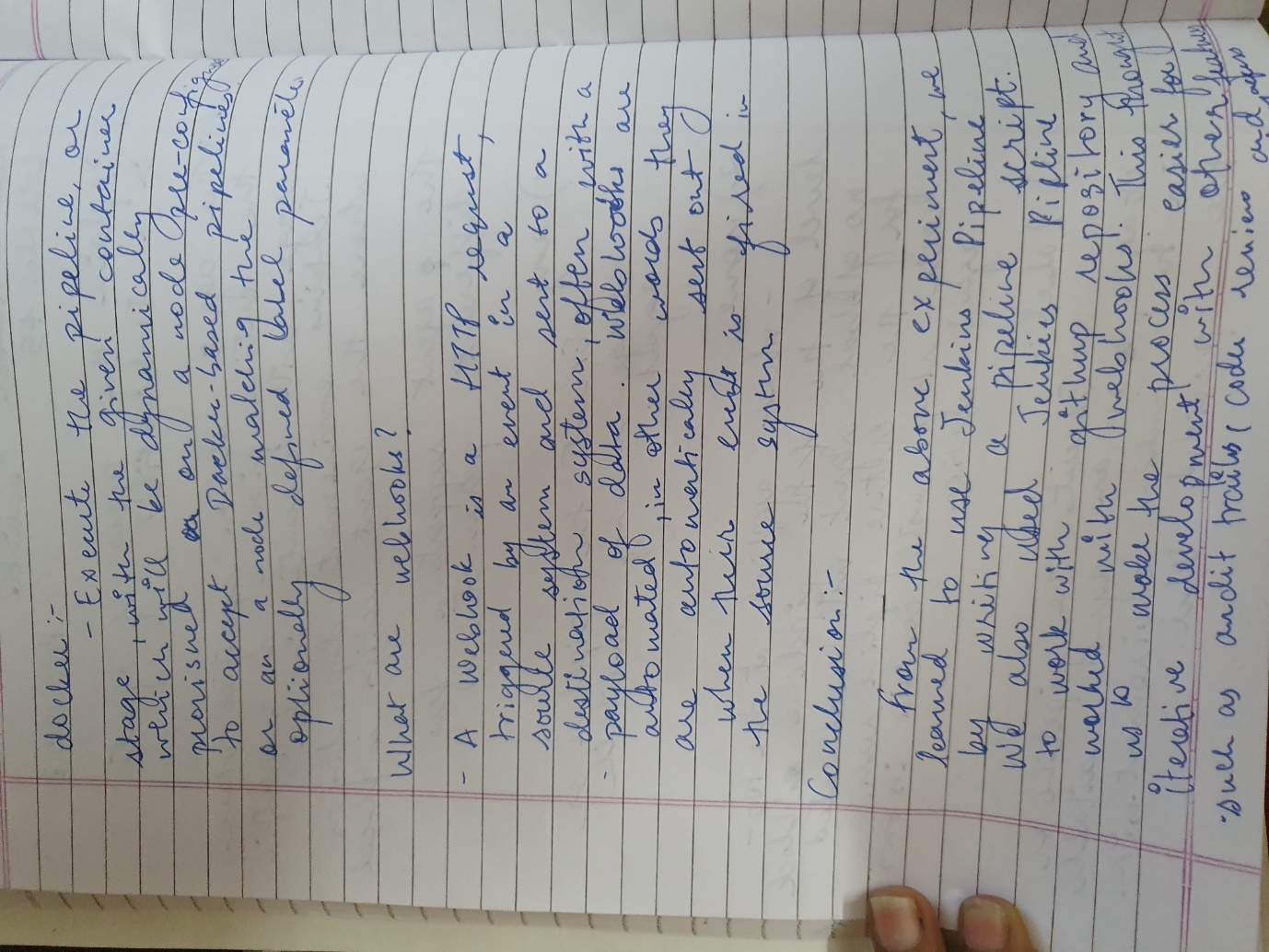
Nil

1. **Questions:**

* Explain the types of agents in a Jenkinsfile?
* What are webhooks?

A picture containing text, whiteboard

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1. **Conclusion:**

* Write what was performed in the experiment.
* Write the significance of the topic studied in the experiment.
* **Text, letter

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1. **References:**

<https://jenkins.io/doc/>

<https://www.jenkins.io/doc/book/pipeline/syntax/>

<https://www.edureka.co/blog/jenkins-pipeline-tutorial-continuous-delivery>

<https://www.slideshare.net/abediaz/introduction-to-jenkins>

<https://www.slideshare.net/jph98/jenkins-ci-presentation>