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**Roll No.: C111 Batch: C2-2**

**Subject: DEVOPS**

**EXPERIMENT NO. 3**

**AIM: To implement JENKINS**

**THEORY:**

Jenkins is a tool that is used for automation. It is mainly an open-source server that allows all the developers to build, test and deploy software. It is written in Java and runs on java only. By using Jenkins we can make a continuous integration of projects(jobs) or end-to-endpoint automation.

**What is Jenkins CI/CD Pipeline?**

Jenkins CI/CD stands for Continuous Integration / Continuous Deployment first let us try to understand what is a pipeline. In computing, a pipeline is a set of stages or processes linked together to form a processing system. Each stage in the pipeline takes an input, processes it in accordance with a set of rules, and then sends the outputs to the stage that follows. Frequently, the pipeline’s overall output is its final step’s output. like the procedures outlined below

Test code

Build Application

Push Repository

Deploy to Server

All the steps mentioned above will perform in sequence one after the other if any step/stage get failed it will not move forward to another step/stage until the previous step got a success. To master Jenkins and its integration in CI/CD pipelines, the DevOps Engineering – Planning to Production course provides detailed lessons and real-world projects.

**What is Jenkins Continuous Integration (CI)?**

Jenkins Continuous integration means whenever new code is committed to remote repositories like GitHub, GitLab, etc. Continuous Integration (CI) will continuously build, tested, and merged into a shared repository.

Benefits of Continuous Integration (CI)

We can maintain the reports of the projects

Deployments can be made within the given time

Bugs can be found quickly.

**What is Jenkins Continuous Deployment/Delivery (CD)?**

Continuous Deployment

Continuous Deployment means automating the further stages of the pipeline automatically or manually deploying the application/code to different environments like Dev, Test, and Production. Automating the build is the main component of Continuous Integration and Continuous Deployment.

Continuous Delivery

Each and every build that passed all automated tests and was able to be fully automated and delivered into production only required one click of human intervention is called Continuous Delivery.

**What Is Jenkins Freestyle Project?**

Jenkins freestyle project is an configuration and options based project which will allows you to build,test, and deploy the application with automation by selecting the required configuration based on the requirement following are the some of the available in the freestyle project.

Building and testing code

Packaging applications

Deploying applications to production servers

Running reports

**What is Jenkins Pipeline?**

DevOps professionals mostly work with pipelines because pipelines can automate the processes like building, testing, and deploying the application. Doing manually by UI takes lots of time and effort which will affect productivity. With the help of Continuous Integration / Continuous Deployment (CI/CD) Pipeline scripts we can automate the whole process which will increase productivity and save lots of time for the organization and can deliver quality applications to the end users.