Practical-6	
Aim	Installation and Configuration of Jenkins
CO-2	Understand the importance of Jenkins to Build, Deploy and Test Software Applications
Theory	Jenkins is an open source automation tool written in Java with plugins built for Continuous Integration purpose. Jenkins is used to build and test your software projects continuously making it easier for developers to integrate changes to the project, and making it easier for users to obtain a fresh build. It also allows you to continuously deliver your software by integrating with a large number of testing and deployment technologies.
procedure	Step 1-: Update ubuntu repository $sudo apt get update Step 2-: Install Java development kit $sudo apt install default-jdk Step 3-: Download the latest jenkins .deb file from jenkins.io website by selecting ubuntu distribution. Once downloaded, double click on file and open with software centre. Click on install button to perform installation. Once Installation is done, you can test the jenkins on http://localhost:8080 on the browser. First time, when you open jenkins portal it will ask to put admin default password which is stored in /var/lib/jenkins/secrets/initialAdminPassword file. So, open the file through terminal and get the password for configuring jenkins for the first time. Now, copy the password and add into the portal and click on install plugins to install selected plugins. Once plugins are installed, click on next and specify the admin details along with the new password for jenkins admin and click on finish to complete the installation. Once installation is done, open Jenkins dashboard using http://localhost:8080 address.

Practical-7	
Aim	Deploying freestyle app in Jenkins
Course Outcome - 2	Understand the importance of Jenkins to Build, Deploy and Test Software Applications
Theory	“Continuous Integration is a software development practice where members of a team integrate their work frequently, usually each person integrates at least daily - leading to multiple integrations per day. Each integration is verified by an automated build (including test) to detect integration errors as quickly as possible.” In simple way, Continuous integration (CI) is the practice of frequently building and testing each change done to your code automatically. Jenkins is a self-contained, open source automation server which can be used to automate all sorts of tasks related to building, testing, and delivering or deploying software. Our first job will execute the shell commands. The freestyle project provides enough options and features to build the complex jobs that you will need in your projects.

Procedure	Step 1-: Click on Create new jobs. Step 2-: Now Specify name to the project as “Example1”, select Option “Free style project “ and click on OK button Step 3-: In this project we are going to learn how to run simple shell script on Jenkins. So, Click on Build option select Execute script from dropdown menu Step 4-: Now Write a Simple Shell command to print the text as Like given below. Now click on apply followed by save button. Step 5-: No Build a project to see the output Click on our first build “1” followed by console output to see the output Click on our first build “1” followed by console output to see the output Example 1.2: Now let us take parameters through files. So, create a new shell script file in local directory. Now first run the shell script locally with no parameter, one parameter and two parameters. Now. Let us run it through Jenkins Shell. To change existing program, click on configure option and then modify the script. <Here, change directory to the path where you have stored your file..You can get the location by pwd command> 1.5: Parameterize Build In this program we are going to see how to provide parameters during runtime to your shell script or java program. Step 1-: Create a free style project example3 by clicking on new item folowed by specifying project name and free style project. Step 2-: Now under general menu, select option this project is parameterize Select String parameter and specify name as “First-Name” Again, click on add parameter and select choice parameter Take second parameter as choice box. Specify name as “City” and add the choices in each line Write a shell script that takes 2 parameters with command line arguments name and city. Now, go back to jenkins, Selct Build option, give the path and write script as shown below Now click on build with parameters and specify the values Click on Build Go to console to see the output
Practical-8	
Aim	Installation and Configuration of ansible

Course Outcome – 5,6	Summarize the importance of Software Configuration Management in DevOps Synthesize the provisioning using Chef/Puppet/Ansible or Saltstack.
Theory	Ansible is an open-source software provisioning, configuration management, and application-deployment tool. It runs on many Unix-like systems, and can configure both Unix-like systems as well as Microsoft Windows. It includes its own declarative language to describe system configuration.

Procedure	Because Ansible requires a Python interpreter (in order to run its modules), we need to install Python as well. For that, issue the command: **$ sudo apt-get install python3 -**y **Configure SSH access to the server** We need to make it possible for our node to access the Ansible server. We do this via Secure Shell (SSH). Copy the server's SSH public key to the node. If your server doesn't have a key yet, generate one with the command: **$ ssh-keygen** Open your terminal either by using the Ctrl+Alt+T keyboard shortcut or by clicking on the terminal icon and install the openssh-server package by typing: **apt update** **apt install openssh-server** Check the status of ssh server using the following command **systemctl status ssh** Ubuntu comes with a firewall configuration tool called UFW. If the firewall is enabled on your system, make sure to open the SSH port: **$ ufw allow ssh** Installing Ansible on server. Use the command “sudo apt install ansible” Confirming the ansible installation by checking its version Checking ansible hosts device by viewing ansible host file /etc/ansible/host Edit file Setup virtual connection