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DEVOPS
CERTIFICATION TRAINING

Course Curriculum : Your 12 module Learning Plan

https://www.edureka.co/devops

About Edureka

Edureka is a leading e-learning platform providing live instructor-led interactive online training. We cater to professionals and students across the globe in categories like Big Data & Hadoop, Business Analytics, NoSQL Databases, Java & Mobile Technologies, System Engineering, Project Management and Programming. We have an easy and affordable learning solution that is accessible to millions of learners. With our students spread across countries like the US, India, UK, Canada, Singapore, Australia, Middle East, Brazil and many others, we have built a community of over 1 million learners across the globe.

About Course

Our DevOps training is designed keeping in mind the latest trend in the world of technologies. This course will provide you the in-depth knowledge of various DevOps tools including Git, Jenkins, Docker, Ansible, Puppet, Kubernetes and Nagios. This training is completely hands-on oriented and designed in a way that will help you in becoming a certified practitioner by providing you an intensified training for the best practices about Continuous Development, Continuous Testing, Configuration Management, including Continuous Integration and Continuous Deployment and finally Continuous Monitoring of the software throughout its development life cycle.

Curriculum

Overview of DevOps

Learning Objective: In this module you will be introduced to DevOps environment.

Topics:

- Why DevOps?
- What is DevOps?
- DevOps Market Trends
- DevOps Engineer Skills
- DevOps Delivery Pipeline
- DevOps Ecosystem

Hands On:

- Edureka's Use Case

Version Control with Git

Learning Objective: In this module you will be introduced to DevOps environment.

Topics:

- What is version control
- What is Git
- Why Git for your organization
- Install Git
- Common commands in Git
- Working with Remote Repositories

Hands On:

- GIT Installation, Version Control, Working with remote repository

Git, Jenkins & Maven Integration

Learning Objective: In this module, you will learn about the different actions performed through git and will be introduced to Jenkins and maven.

Topics:

- Branching and Merging in Git
- Git workflows
- Git cheat sheet
- What is CI
- Why CI is Required
- Introduction to Jenkins (With Architecture)
- Introduction to Maven

Hands On:

- Branching and merging, Stashing, rebasing, reverting and resetting
- Build and automation of Test using Jenkins and Maven

Continuous Integration using Jenkins

Learning Objective: In this module, you will know how to perform Continuous Integration using Jenkins by building and automating test cases using Maven.

Topics:

- Jenkins Management

- Adding a slave node to Jenkins
- Building Delivery Pipeline
- Pipeline as a Code
- Implementation of Jenkins in the Edureka's Project

Hands On:

- Build the pipeline of jobs using Jenkins
- Create a pipeline script to deploy an application over the tomcat server

Continuous Testing with Selenium

Learning Objective: In this module, you will learn about selenium and how to automate your test cases for testing web elements. You will also get introduced to X-Path, TestNG and integrate Selenium with Jenkins.

Topics:

- Introduction to Selenium
- Why Selenium?
- Selenium – Webdriver
- Creating Test Cases in Selenium WebDriver (Waits)
- What and why X-Path
- Handling different controls on Webpage
- Framework in Selenium
- Selenium Integration with Jenkins
- Implementation of Selenium in the Edureka's Project

Hands On:

- Installing Selenium
- Creating Test Cases in Selenium WebDriver

- Integrating Selenium with Jenkins

Continuous Deployment: Containerization with Docker

Learning Objective: This module introduces Docker to readers, the core concepts and technology behind Docker. Learn in detail about container and various operations performed on it.

Topics:

- Shipping Transportation Challenges
- Introducing Docker
- Understanding images and containers
- Running Hello World in Docker
- Introduction to Container
- Container Life Cycle
- Sharing and Copying
- Base Image
- Docker File
- Working with containers
- Publishing Image on Docker Hub

Hands On:

- Create and Implement docker images and containers

Containerization with Docker: Ecosystem and Networking

Learning Objective: In this module, you will learn to integrate different containers using docker.

Topics:

- Introduction to Docker Ecosystem
- Docker Compose
- Docker Swarm
- Managing Containers
- Running Containers
- Introduction to Docker Networking
- Network Types
- Docker Container Networking
- Implementation of Docker in the Edureka's Project

Hands On:

- Use Docker Compose to create a WordPress site
- Start Containers on a Cluster with Docker Swarm
- Deploy a multi-tier application over a cluster
- Scale an application

Continuous Deployment: Configuration Management with Puppet

Learning Objective: In this module, you will learn to install and configure Puppet. Additionally, understand the master-agent architecture in Puppet.

Topics:

- Introduction to Puppet
- Puppet Installation
- Puppet Configuration
- Puppet Master and Agent Setup
- Puppet Module
- Node Classification

- Puppet Environment
- Puppet Classes
- Automation & Reporting

Hands On:

- Install and configure Puppet
- Configure and implement servers using Puppet

Configuration Management with Ansible

Learning Objective: In this module, you will learn to install Ansible and configure ansible roles. You will also learn to write playbooks and finally execute ad-commands using Ansible.

Topics:

- Introduction to Ansible
- Ansible Installation
- Configuring Ansible Roles
- Write Playbooks
- Executing adhoc command

Hands On:

- Installing Ansible
- Configuring Ansible Role
- Write Playbooks
- Execute adhoc commands

Containerization using Kubernetes

Learning Objective: In this module, you will learn the basics of Kubernetes and its integration with Docker.

Topics:

- Revisiting Kubernetes Cluster Architecture
- Spinning up a Kubernetes Cluster on Ubuntu VMs
- Exploring your Cluster
- Understanding YAML
- Creating a Deployment in Kubernetes using YAML
- Creating a Service in Kubernetes
- Installing Kubernetes Dashboard
- Deploying an App using Dashboard
- Using Rolling Updates in Kubernetes
- Containers and Container Orchestration
- Introduction to Kubernetes

Hands On:

- Setting up the Kubernetes Cluster
- Accessing your application through service
- Deploying an app through Kubernetes Dashboard
- Rolling updates in Kubernetes

Continuous Monitoring with Nagios

Learning Objective: Learn how to continuously monitor your tasks using various plugins and implementing Nagios Commands.

Topics:

- Introduction to Continuous Monitoring
- Introduction to Nagios
- Installing Nagios
- Nagios Plugins(NRPE) and Objects
- Nagios Commands and Notification

Hands On:

- Installing Nagios
- Monitoring of different servers using Nagios

Introduction to DevOps on Cloud

Learning Objective: Learn about various cloud services and service providers, also get the brief idea of how to implement DevOps using AWS.**Topics:**

- Why Cloud?
- Introduction to Cloud Computing
- Why DevOps on Cloud?
- Introduction to AWS
- Various AWS services
- DevOps using AWS

Project

What are the system requirements for this course?

The system requirements include Windows / Mac / Linux PC, minimum 4GB RAM, 20 GB HDD Storage and processor, i3 or above.

How will I execute the practicals?

For a single instance deployment, you can refer to the Installation guide that will be in your LMS, and install it on your Windows/Mac/ Linux systems.

Which case studies or projects are a part of this course?

This course has 12 Modules with Case Studies. These case studies are real life business scenarios that a Devops Engineer will face in his daily work-life. Apart from these case studies you will be working on a certification project which will test your overall knowledge of DevOps. Following is the problem statement for the same:

Problem Statement: Company AppleBite is using Cloud for one of their product. The project uses many modular components, different frameworks, components developed by different teams or by 3rd-party partners, open source libraries etc. As the product evolved, there are multiple versions of different code, and multiple versions of these many components, and multiple environments to deploy like INT, E2E, SANDBOX, PROD and so on. This causes the following problems:

- Complex builds are hard
- Manual efforts to build many components
- Incremental builds are difficult (Different environment for Development, Integration, End to End Testing & Production)
- Frequent change in the Legacy components

Company goal is to deliver the product frequently to the Production Server with high quality & Reliability. To achieve this, they require Continuous Integration & Continuous Deployment. To implement this Devops Process you have to use the following tools:

- Git – For version control for tracking changes in the code files
- Maven – For software packaging
- Jenkins – For continuous integration and continuous deployment
- Docker – For container image which is a lightweight, executable package of software which includes everything needed to run the image (eg. code, libraries etc)
- Puppet - Open-source software configuration management tool
- Nagios - Application monitoring tool

The files and flow for the execution of this project, will be present in your LMS. Please enroll for it's access.