



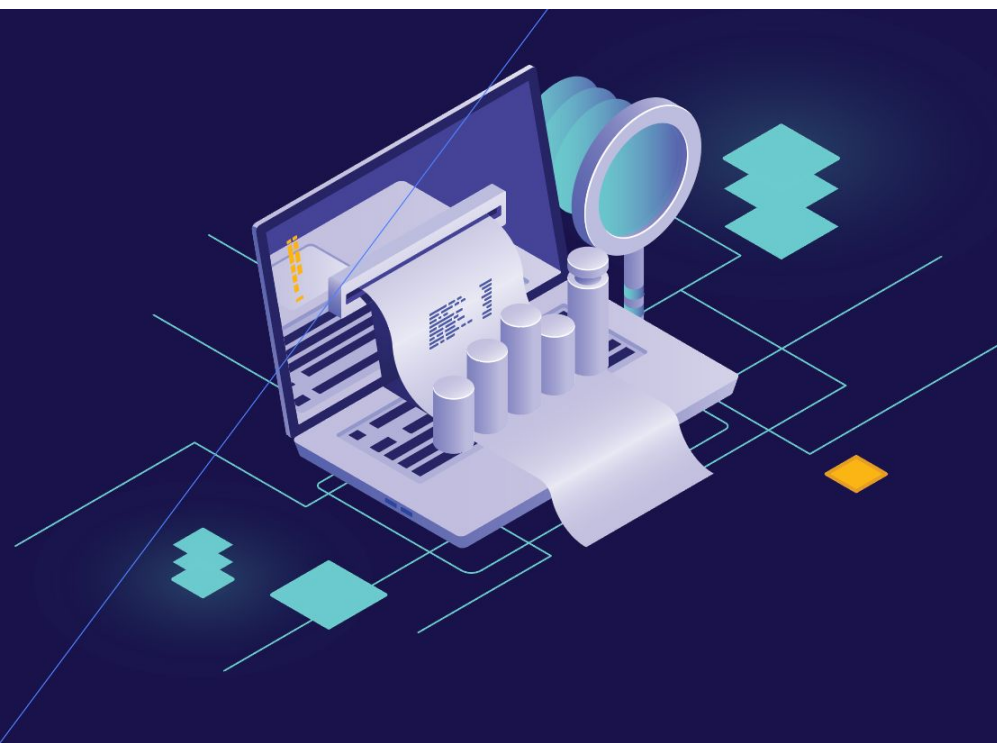
CERTIFICATE PROGRAM

DevOps Certification Training



CloudxLab & Course

At Cloudxlab, we are building one of the best gamified learning environments to make technology learning fun and for life. More than 50,000 users across the world have been benefited by our signature courses on Machine Learning and Big Data. Our vision is to upskill people on high-end technologies like Deep Learning, Machine Learning, Big Data and make them employable.



Sandeep Giri

Founder at CloudxLab

Why CloudxLab



Earn a Verified Certificate from CloudxLab



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Online cloud lab for hands-on for real-world experience



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Work on real-world projects.



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Course Creators



Sandeep Giri

Founder at CloudxLab

Past: Amazon, InMobi, D.E.Shaw

Course Developer

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Abhinav Singh

Co-Founder at CloudxLab

Past: Byjus

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Ashok Singh

DevOps Consultant at Cisco Systems

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Course Developer

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Praveen Pavithran

Co-Founder at Yatis

Past: YourCabs, Cypress Semiconductor

Course Advisor

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Course Curriculum

1: Introduction

- What is DevOps ?
- 10,000 foot view
- Why DevOps ?
- Dev-Test-Deploy
- DevOps Principles
- DevOps Toolchain
- Overview of DevOps Tools
- Co-relation between Agile and DevOps
- Categories of DevOps Tools
- Summary
- Quiz

2: Getting Started with Linux

- Self-paced course on getting started with the command line

3: Getting Started with Python

- Self-paced course to learn foundations in Python

4: Getting Started with Linux

- Account Registration
- Regions and AZ
- Instance types
- Security Group
- Launching EC2 Instance
- Connecting to EC2 instance

Course Curriculum

5: Version Control with Git

- Objective
- What is SCM
- Git branching and merging
- Git Overview
- Creating pull request
- Code Review
- Merging changes
- Lab: Create a repo and push code on GitHub / Bitbucket
- Advanced topic
- Quiz

6: Containers

- Containers Concepts
- Container Vs Virtual Machine
- Installing docker on CentOS, Debian and Windows
- Managing Container with Docker Commands
- Building your own docker images
- Docker Compose
- Docker registry - Docker Hub
- Networking inside single docker container
- Lab - Running Python Web App in docker container
- Lab - Create a docker image from git repo
- Lab - Deploying flask app using docker-compose
- Lab - Complex deployment using docker-compose
- Lab - Creating your own docker registry

Course Curriculum

5: Docker Swarm

- What is Docker Swarm ?
- Creating Swarm
- Deploy Service on Swarm
- Service scaling
- Applying rolling update
- Managing Swarm
- Draining node
- Lab - Create your own swarm cluster
- Lab - Install Docker Machine
- Lab - Deploy Flask app as Highly available service
- Lab - Apply Rolling update for flask app
- Lab - Deploy Voting app in Docker Swarm

6: Automate Docker Swarm on AWS

- Install AWSCLI
- Configure AWSCLI
- Create Swarm on AWS
- "Deploy service on Swarm

Course Curriculum

7: Configuration Management with Ansible

- Introduction to Ansible
- Ansible Prerequisites
- Inventory Management
- Executing adhoc commands
- Write Playbooks
- Configuration Management
- Configuring Ansible Roles
- Ansible Vault
- Build Kubernetes Cluster using AWS
- Lab - Launching EC2 instances from bastion
- Lab - Create a playbook to deploy Flask app
- Lab - Working with Ansible Roles

8: Kubernetes

- Introduction to Kubernetes
- Architecture
- Kubernetes cluster installation
- Raft Consensus Algorithm
- Networking in Kubernetes
- Installing Minikube
- Objects in Kubernetes - Pod, Deployment
- Services - Service Discovery, Service Object, Headless Services, Service Types

Course Curriculum

- Role based Access
- Volumes - Persistent Volumes, Persistent Volume Claim, Storage Class
- Config Map and Secrets
- Ingress - Virtual Host, Types, Fanout, Virtual Host, Fanout Ingress configuration, Virtual Host Ingress configuration
- Lab - Installing Minikube on EC2
- Lab - Enable and access Dashboard Addon
- Lab - Deploy flask webapp on Minikube
- Lab - Deploy Nginx app on Minikube
- Lab - Deploy application with host type volumes
- Lab - Create Elastic File system on AWS
- Lab - Deploy nginx using PersistentVolume from AWS EFS
- Lab - Create AWS Storage class backed by EBS storage
- Lab - Deploy Flask app as daemon set
- Lab - Deploy Flask app with different labels
- Lab - Run Kuard pod to view secret
- Lab - Access Flask app without service
- Lab - Access Flask app through service
- Lab - Deploy and access Headless service

Course Curriculum ---

9: Infrastructure as Code with Terraform

- Introduction to Terraform
- Terraform Installation
- Terraform commands
- Terraform Variables
- Creating VM in AWS using Terraform
- Installing nginx on EC2 using Terraform
- Creating and using Terraform Modules
- Terraform Templates
- Lab - Deploying EKS using Terraform
- Lab - Deploy ECS cluster in AWS using public module

10: Continuous Integration using Jenkins

- Introduction to Jenkins
- Continuous Integration & Continuous Integration with Jenkins
- Jenkins Architecture
- Installing Jenkins on EC2
- User management
- Set up Jenkins Master & Slave
- Setup CI-CD pipeline for sample project
- Lab - Setup Role based access
- Lab - Master/Slave Setup
- Lab - Configure SCM in Jenkins

Course Curriculum ---

11. Continuous Monitoring with Prometheus and Grafana

- Introduction to Prometheus
- Prometheus installation
- Introduction to Grafana
- Grafana Installation
- Integration of Prometheus and Grafana
- Adding customised dashboard in Grafana
- Introduction to node exporter
- Integrating node exporter for monitoring
- Monitoring docker and containers
- Lab. - Scrape metric from Grafana
- Lab - View Node exporter metric in Grafana
- Lab - View Docker metric in Grafana
- Lab - Import AWS EC2 dashboard in Grafana

Projects

- 1. Deploying static website on AWS Elastic Beanstalk using Docker and Travis CI**
 - We will first make a simple static website, then dockerize the app. Then we will push it to GitHub and enable Travis to track changes in that repository. Further, we will understand the app deployment on the AWS Elastic Beanstalk using S3 and IAM. We will also host the app on a public domain bought from Google Domains, and configure it with the help of Amazon Route 53.
- 2. Deploying Multi-Container Flask App on AWS**
 - We will deploy the multi-container Flask app (Nginx, uWSGI, Redis and PostgreSQL) on AWS Elastic Beanstalk
- 3. Deploying Flask app on AWS using RDS and ElastiCache**
 - We will deploy the Flask app on AWS Elastic Beanstalk using Docker, RDS(PostgreSQL), ElastiCache(Redis) and Travis CI
- 4. Testing App Locally on MiniKube**
 - In this project, we will understand what is Kubernetes and what is Minikube. As part of the hands-on, we will learn to set up Minikube with VirtualBox in Windows 10 Home system. We will learn various concepts of Kubernetes like pods, deployments, services, and ingress, and have a look at how we could create them in various ways using different commands. We will also deploy the single container static web application - which we have dockerized as part of the Docker, Travis, and AWS project series - and access it using Kubernetes ingress.
- 5. Deploying Static App on Google Kubernetes Engine**
 - In this project, we will learn how to deploy a static website on the Google Cloud Platform (GCP). It is very highly recommended to go through the project Testing App Locally on MiniKube, as the current project is dependent on that.

Course Details and Fees —

Please find more information about the course and fees here:

<https://cloudxlab.com/course/60/devops-certification-training>

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