DevOps/Cloud Training Plan

Week 1-2: Introduction to DevOps and Cloud Computing

Theoretical Topics:

- What is DevOps?
- Benefits of DevOps
- Overview of Cloud Computing
- Key Cloud Providers (AWS, Azure, GCP)
- Basic DevOps Tools (Git, Docker, Jenkins, etc.)

Practical Labs:

- Setting up Git and GitHub
- Basic Git commands (commit, push, pull, branch)
- Setting up a free tier account on AWS, Azure, or GCP
- Creating and managing a virtual machine in the cloud

Documentation:

- DevOps and Cloud Computing Overview
- Getting Started with Git
- Cloud Account Setup Guide

YouTube Videos:

- [What is DevOps?](https://www.youtube.com/watch?v=M7w9-1TgLU4)
- [Introduction to Cloud Computing](https://www.youtube.com/watch?v=2LaAJq1lB1k)

Week 3-4: Version Control and Continuous Integration (CI)

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Theoretical Topics:

- Importance of Version Control
- Introduction to Continuous Integration
- Overview of CI Tools (Jenkins, CircleCI, GitLab CI)

Practical Labs:

- Advanced Git workflows (rebasing, merging, resolving conflicts)
- Setting up a Jenkins server
- Configuring a Jenkins pipeline for a sample application
- Integrating GitHub with Jenkins for automated builds

Documentation:

- Advanced Git Guide
- Jenkins Installation and Configuration
- Sample CI Pipeline Configuration

YouTube Videos:

- [Git Tutorial for Beginners](https://www.youtube.com/watch?v=8JJ101D3knE)
- [Jenkins Tutorial for Beginners](https://www.youtube.com/watch?v=AFy2V-M8q1E)

Week 5-6: Continuous Delivery (CD) and Infrastructure as Code (IaC)

Theoretical Topics:

- Continuous Delivery vs. Continuous Deployment
- Overview of IaC and its benefits

- Tools for IaC (Terraform, AWS CloudFormation, Ansible)

Practical Labs:

- Setting up a Continuous Delivery pipeline with Jenkins
- Introduction to Terraform
- Writing and applying basic Terraform scripts
- Managing infrastructure on AWS using Terraform

Documentation:

- Continuous Delivery Best Practices
- Terraform Installation and Basics
- Sample Terraform Scripts

YouTube Videos:

- [Continuous Delivery with Jenkins](https://www.youtube.com/watch?v=Ri7-I_g5sq0)
- [Terraform Tutorial for Beginners](https://www.youtube.com/watch?v=7xngnjfIlK4)

Week 7-8: Containerization and Orchestration

Theoretical Topics:

- Introduction to Containers and Docker
- Benefits of Containerization
- Overview of Orchestration Tools (Kubernetes, Docker Swarm)

Practical Labs:

- Docker installation and setup
- Creating and managing Docker containers
- Writing Dockerfiles
- Setting up a Kubernetes cluster
- Deploying applications on Kubernetes

Documentation:

- Docker Basics Guide
- Kubernetes Installation and Configuration
- Sample Kubernetes Deployment Scripts

YouTube Videos:

- [Docker Tutorial for Beginners](https://www.youtube.com/watch?v=fqMOX6JJhGo)
- [Kubernetes Tutorial for Beginners](https://www.youtube.com/watch?v=X48VuDVv0do)

Week 9-10: Monitoring, Logging, and Security

Theoretical Topics:

- Importance of Monitoring and Logging
- Tools for Monitoring and Logging (Prometheus, Grafana, ELK Stack)
- Introduction to DevOps Security Practices

Practical Labs:

- Setting up Prometheus and Grafana for monitoring
- Configuring the ELK Stack for logging

- Basic security practices in DevOps
- Implementing security scans in CI/CD pipelines

Documentation:

- Monitoring and Logging Overview
- ELK Stack Setup Guide
- DevOps Security Best Practices

YouTube Videos:

- [Prometheus and Grafana Tutorial](https://www.youtube.com/watch?v=h4Sl21AKiDg)
- [ELK Stack Tutorial for Beginners](https://www.youtube.com/watch?v=y9Uy0vVvQ1E)

Week 11-12: Advanced Topics and Final Project

Theoretical Topics:

- Advanced Kubernetes features
- Cloud-native application architecture
- Serverless computing and Functions as a Service (FaaS)

Practical Labs:

- Implementing advanced Kubernetes features (e.g., Helm, custom resource definitions)
- Building a cloud-native application
- Creating and deploying a serverless function

Final Project:

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- Design, build, and deploy a complete application using the tools and practices learned
- Document the process and present the project

Documentation:

- Advanced Kubernetes Guide
- Cloud-Native Architecture Principles
- Serverless Function Deployment Guide

YouTube Videos:

- [Advanced Kubernetes Tutorial](https://www.youtube.com/watch?v=PH-2FfFD2PU)
- [Serverless Functions with AWS Lambda](https://www.youtube.com/watch?v=eOBq__h4OJ4)

Additional Resources

Books and Online Courses:

- 'The Phoenix Project' by Gene Kim, Kevin Behr, and George Spafford
- 'Site Reliability Engineering' by Niall Richard Murphy, Betsy Beyer, Chris Jones, and Jennifer Petoff
- Online courses from platforms like Coursera, Udacity, and Pluralsight

Community and Support:

- Join DevOps and Cloud Computing communities on platforms like Reddit, Stack Overflow, and GitHub
- Participate in webinars and workshops

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YouTube Channels:

- [TechWorld with Nana](https://www.youtube.com/c/TechWorldwithNana)
- [The Net Ninja](https://www.youtube.com/c/TheNetNinja)
- [FreeCodeCamp.org](https://www.youtube.com/c/Freecodecamp)