DevOps and Cloud Course Content

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Designation: DevOps, Cloud, AI, and Machine Learning Manager and Architect

Introduction:

Welcome to the DevOps and Cloud Course! I am B Reddy Prasad, currently working as a DevOps, Cloud, AI, and Machine Learning Manager and Architect. With extensive experience in these fields, I have designed this course to provide you with comprehensive knowledge and practical skills necessary to excel in the rapidly evolving tech industry. This course covers essential topics in DevOps and Cloud, offering both theoretical insights and hands-on experience.

Overview:

This comprehensive course covers essential DevOps and Cloud concepts, providing in-depth knowledge and practical skills. Students will learn about the software development lifecycle, infrastructure management, containerization, cloud services, and more. Each module combines theoretical knowledge with hands-on labs to ensure practical understanding and application.

DevOps Course Content

1. SDLC and Practical Project Process

- Overview of SDLC models (Waterfall, Agile, etc.)
- Real-world project workflow
- User level application processes

2. Operating System and Networking

- Basic Linux commands and shell scripting
- Networking fundamentals
- Network troubleshooting tools

3. SCM – Source Code Management

- Introduction to Git
- Branching strategies development
- Git commands and Realtime operations

4. Build Tools

- Maven
- Maven Architecture/creating Own Projects and performing Operations from scratch to realtime
- Creating own POM.xml and Settings.xml and sonarqube & Jenkins integrations.

5. CI/CD Tools

- Jenkins
  Best practices for Realtime CI/CD Jobs
  Installations and administrations to manage Realtime operations

6. Code Quality Tools

- SonarQube
  Code review practices
  Static and dynamic analysis
  Installations and administrations to manage Realtime operations

7. Artifactory Tools

- JFrog Artifactory
  Jfrog installtion/creating repos/administrations/ integrationg with Jenkins CI/CD

8. Docker

- Introduction to containerization
- Docker commands and Dockerfile
- Docker container deployment and Realtime operations

9. Kubernetes

- Kubernetes architecture
- Deployments, Services and Operations

10. Infrastructure as Code (IaC)

- Terraform

11. Monitoring

- Prometheus and Grafana

12. Cost Management

- AWS Cost Explorer
- Cost-saving strategies

Cloud Course Content

1. AWS Basics and Account Management

- Cloud computing fundamentals
- AWS account creation and setup
- Understanding AWS global infrastructure (Regions and Availability Zones)

2. Core AWS Services

- EC2: Instances, AMIs, key pairs, security groups
- S3: Buckets, storage classes, lifecycle policies
- IAM: Users, roles, policies, best practices

3. Deploying Web Applications

- Using Httpd Webservers
- Manual setup using EC2, RDS, and S3

4. Load Balancing and Auto Scaling

- Elastic Load Balancing (ELB)
- Auto Scaling Groups

5. Databases

- RDS: Setup, backups, and maintenance
- Redshift: Data warehousing basics

6. Networking and Content Delivery

- VPC: Subnets, route tables, security groups
- Route 53: DNS management
- CloudFront: CDN basics

7. Security and Compliance

- ACM: Managing SSL/TLS certificates
- Secret Manager: Storing and retrieving secrets
- AWS Identity and Access Management

8. Monitoring and Logging

- CloudWatch: Alarms, logs, metrics
- CloudTrail: Tracking user activity and API usage

9. Messaging and Integration

- SNS: Pub/Sub messaging
- SQS: Message queuing

10. Cost Management

- AWS Budgets and Cost Explorer
- Best practices for cost optimization

11. Container Services

- ECS: Amazon Elastic Container Service
- EKS: Amazon Elastic Kubernetes Service

Course Delivery Plan

1. **Introduction and Real-World Applications**
    - Start each module with the benefits and real-world applications.
    - Provide case studies and industry examples.
2. **Hands-On Labs and Implementation**
    - Provide step-by-step lab guides.
    - Include screenshots and detailed instructions.
3. **Student Practice and Q&A Sessions**
    - Allocate time for students to practice.
    - Conduct regular Q&A sessions to address doubts.
4. **Real-Time Scenarios and Mock Interviews**
    - Discuss real-world scenarios and problem-solving.
    - Prepare students for interviews with mock questions.
5. **Assessment and Continuous Learning**
    - Conduct topic-level mock interviews.
    - Assign real-time tasks for continuous learning and practice.