Certified DevOps Engineer

Course Curriculum.

*Course Hours: 45 | Class :15*

WHAT is DEVOPS:

DevOps is a set of practices that combines software development and IT operations. It aims to shorten the systems development life cycle and provide continuous delivery with high software quality. DevOps is complementary with Agile software development; several DevOps aspects came from Agile methodology.

TARGET AUDIENCE:

Individuals involved in IT development, IT operations, or IT service management. Individuals whose role are touched by DevOps and Continuous Delivery, such as the following IT roles:

- DevOps engineers
- Product owners
- Integration specialists
- Operations managers
- Incident and change managers
- System administrators
- Network administrators
- Business managers
- Automation architects
- Enterprise architects

WE COVER:
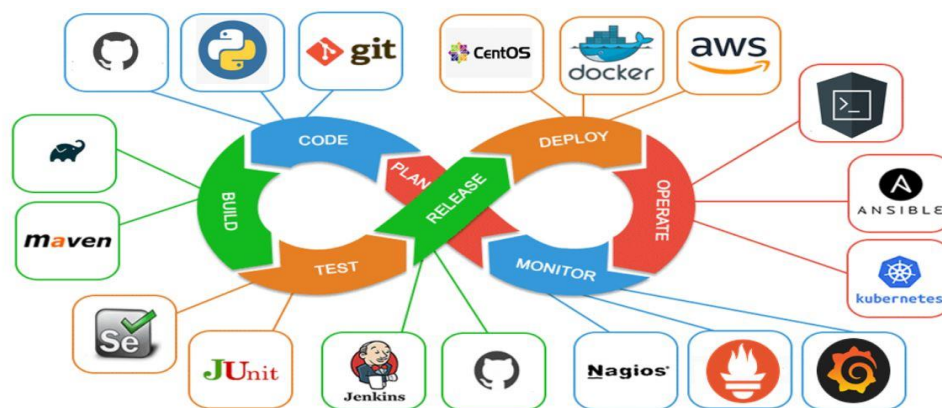
Lesson01: Introduction to DevOps.

1. What is DevOps. Roles and responsibilities.
2. DevOps Culture to overcome legacy overhead.
3. Understand the software development methodology (SDLC).
4. Agile, Waterfall & DevOps development procedure.
5. Understand the IT Service development and deployment process.
6. DevOps History & Lean Process.

Quiz: Question & Answer.

Lesson02: Operating System (Linux).

1. Installation and configuration Linux operating system.
2. Managing user, group & network management.
3. Selinux & Repository Management.
4. Linux memory management and administration.
5. Monitoring and managing Linux process & Service.
6. Linux filesystem management.

LAB: 01- Linux Installation and environment readiness.
LAB: 02- Selinux & Linux Repository Management.
LAB: 03- Linux File System Management.
LAB: 04- Linux Server Root Password Break procedure.

Quiz: Question & Answer.

Lesson03: Automation & System.

1. Overview of Ansible.
2. Building an Ansible Inventory.
3. Running Ad Hoc Commands.
4. Writing and Running a Playbooks.

LAB: 01- Ansible Installation and environment reediness.
LAB: 02- Web Server Installation and configuration by ansible playbook.
LAB: 03- Database Server Installation and configuration by ansible playbook.

Quiz: Question & Answer.

Lesson04: Cloud Concept & AWS.

1. Cloud compute service (EC2).
2. Cloud storage service (S3, EBS).
3. Cloud database service (RDS).
4. Load balancing (ELB) & Autoscaling.
5. User and identity management (IAM).

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LAB: 01- Configure and Launching EC2 Instance.
LAB: 02- S3 Bucket configuration as version Control system.
LAB: 03- EBS Storage create & attaches with EC2 instance.
LAB: 03- RDS database configuration launching and connect with DB client.
LAB: 04- Elastic load Balancing configuration and validation.

Quiz: Question & Answer.

Lesson05: Containerization & Docker.

1. Installation & Configuration.
2. Deploy a service on docker container.
3. Docker networking and port exposing.
4. Image Creation, Management and Registry.
5. Docker storage & Security.

LAB: 01- Standalone Docker Installation and configuration.
LAB: 02- Deploy a web service on docker container.
LAB: 03- Deploy a Database service on docker container.
LAB: 04- Docker administration and configuration management.

Quiz: Question & Answer.

Lesson06: Orchestration and Cluster Management (Kubernetes).

1. Installation, Configuration of Kubernetes.
2. Kubernetes Cluster management.
3. Kubernetes Networking & Security.
4. Kubernetes Storage management.

Quiz: Question & Answer.

Lesson07: Web Server & API.

1. Nginx Installation configuration and management.
2. Nginx reverse proxy and load balancer.
3. Apache Installation configuration and management.
4. Virtual hosting and sub domain management.
5. Tomcat & HAproxy installation and configuration.

LAB: 01- Nginx Installation and configuration and validation.
LAB: 02- Apache webserver installation and configuration and validation.
LAB: 03- Tomcat installation and configuration and validation.
LAB: 04- HAproy installation and configuration and validation.

Quiz: Question & Answer.

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Lesson08: Network, Security & Protocols.

1. Basic Linux system networking, Bridge Networking.
2. Basic Linux System security (BareMetal, VM, container).
3. System firewall management (BareMetal, VM, container).
4. Networking deep drive in BareMetal & Container System.
5. Protocols: DNS, HTTP, HTTPS, SSL, FTP, SSH, TLS, SOAP, REST, GET, POST etc.

LAB: 01- Basic System Security.
LAB: 02- Linux System Firewall Management.
LAB: 03- How to troubleshoot of system network.

Quiz: Question & Answer.

Lesson09: CI & CD Pipeline with Jenkins.

1. Jenkins installation and configuration.
2. Jenkins Job management.
3. Jenkins Build deployment.
4. Jenkins administrations.
5. Jenkins Pipeline and CI-CD advance concept.

LAB: 01- Jenkins Installation and configuration and validation.
LAB: 02- Jenkins Basic Jobs Configuration and execute from remote location.
LAB: 03- Jenkins Chain job Configuration and deployment.
LAB: 04- GitHUB and Docker Plugin management with Jenkins Build
LAB: 05- Jenkins Monitoring and Slave management.
LAB: 06- Docker Container Deployment by Jenkins Job.

Quiz: Question & Answer.

Lesson10: Git, GitHub & JMeter.

1. What is JMeter? Introduction & Uses.
2. JMeter installation and configuration.
3. How to Use JMeter for Performance & Load Testing.
4. What is Git? Introduction & Usage.
5. Git installation and configuration.
6. Git repository management.
7. GitHub administration & brunch creation and management.

LAB: 01- JMeter Installation and configuration.
LAB: 02- JMeter Load Testing for a specific url.
LAB: 03- Git & GitHub installation and configuration.
LAB: 04- Code/build management in GitHUB repositories.

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LAB: 05- *Branch management and Push/Pull Management.*

Quiz: Question & Answer.

Lesson11: Monitoring & Logging.

1. Prometheus/Nagios/Zabbix installation and configuration.
2. Grafana installation and configuration.
3. Import the metric collector with Grafana.
4. Syslog server and Cantal log management.

LAB: 01- *How to setup Prometheus and configuration with node exporter.*
LAB: 02- *How to configuration Grafana and Integrate with Prometheus.*
LAB: 03- *How to setup LogStash Server and integration with Beats.*

Quiz: Question & Answer.

Lesson12: Troubleshooting.

1. What is troubleshooting and troubleshooting procedure.
2. Troubleshooting network issue.
3. Troubleshooting storage issue.
4. Troubleshooting Application issue.

Quiz: Question & Answer.

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