DevOps with AWS - Master Program

Pre-Requisites to learn DevOps

-> No specific Pre-Requisites to learn **DevOps with AWS Cloud**

- Your time (4 months and daily 5 hours)
- Your Effort & Dedication is required

Note: We will teach from beginner to advanced level

Who can join this course?

- IT Employees (Developers / Testers / Support Engineers)
- Non-IT People
- Freshers & People who have some career gap also can join

Course Content

Module-1: Software Application Details

Module-2: DevOps world (What, Why, Lifecycle, Roles & Responsibilities)

Module-3: Linux & Shell Scripting

Module-4: DevOps Tools (18 + Tools)

Module-5: AWS (15 + Tools)

Module-6: Real-World Projects

Module-7: Interview Guide (Resume Prep, FAQs, Mock Interview, Tips & Tricks)

Download Syllabus PDF From here : https://ashokitech.com/devops-with-aws-online-training

What is Software Project?

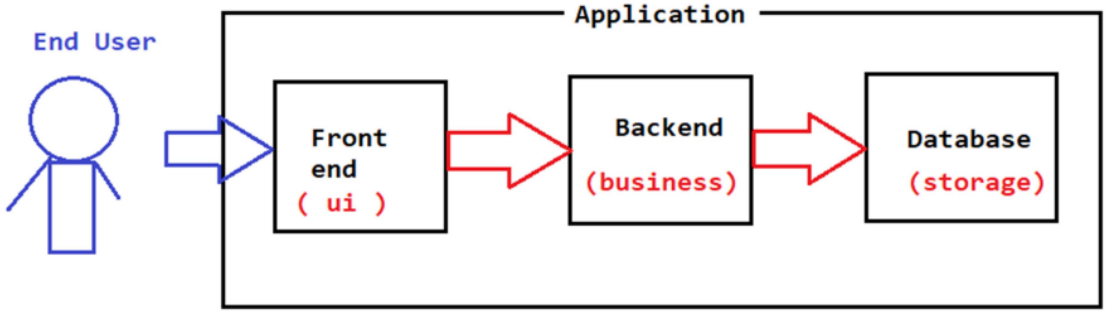
=> Collection of programs is called as Software Project.

Why we need Software Project?

=> To reduce human efforts

Ex: Net Banking, Ticket Booking, Online Training platforms etc....

Software Application Architecture



What is Database?

- ⇨ Database is used to store the data
- ⇨ For every software application will use one or more Databases for storing application data

Ex: Oracle, MySQL, PostgreSQL, SQL Server, MongoDB etc.

What is Backend?

- ⇨ Backend contains business logics of the application

Ex:

1) Verify User login credentials
2) User Registration
3) Sending Emails
4) Sending OTPs
5) Calculations etc..

- **To develop Backend of the application we have below technologies**
    1) Java
    2) Dot Net
    3) Python
    4) PHP
    5) Node JS etc..

What is Frontend?

- Frontend contains User interface (presentation logic)
- End users will communicate with application using Frontend only

- **To develop Frontend of the application we have below technologies**
    1) HTML
    2) CSS
    3) Java Script
    4) Boot Strap
    5) Angular
    6) React JS

What is DevOps?

DevOps = Development + Operations

=> DevOps is a culture

=> DevOps is a process

=> DevOps is set of practises

=> DevOps culture is used to collaborate Development and Operations in Software Project

=> Using DevOps culture, we can simplify software project delivery process to clients

=> DevOps is used throughout software development life cycle process

DevOps Advantages

- Speed
- Rapid Development
- Quick Releases
- Reliability
- Security
- Client Satisfaction
- Teams Collaboration

DevOps Tools Overview

1) Terraform: To provision / creating infrastructure in Cloud

Ex: Machines, Network, Database, Servers, Storage etc...

2) Ansible: To perform Configuration Management.

Ex: install java s/w, copy files from one machine to another machine etc...

3) Git Hub / Bitbucket: Source Code Repository Servers

4) Maven / Gradle / NPM: Code Build Tools (convert code to executable format)

5) SonarQube: Code Review Software (To identify developer mistakes)

6) Nexus / JFrog: Artifactory Repository Servers (To maintain shared libraries)

7) Tomcat / IIS: It is a web server to run web applications.

8) Jenkins: It is used for CI & CD (To automate build & deployment)

9) Docker: Used for Containerization (Containers creation)

10) Kubernetes: Used for Orchestration (To manage container)

11) Grafana & Prometheus: For Monitoring Purpose

12) EFK (Elastic Search + File Beat + Kibana): For application logs monitoring

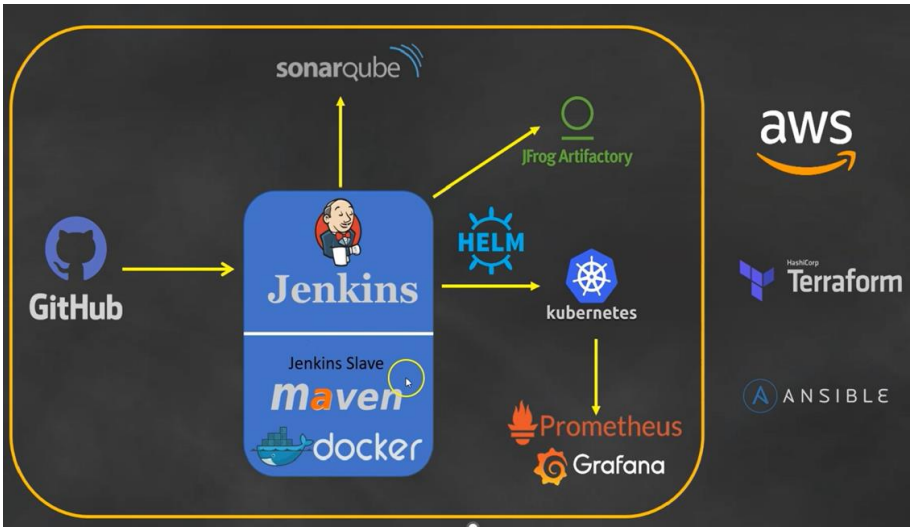
13) JIRA : Project management

Development Team (Programmers) Roles

- Understand Requirements
- Analyse Requirements
- Planning (Designing)
- Implementation (Coding)
- Unit Testing
- Code Integration
- Integration Testing
- Bug Fixing

DevOps Engineer Roles & Responsibilities

- Setup Infrastructure
- Configuration Management
- Managing Source Code Repositories
- Managing Artifact Repositories
- Managing RBAC (Role Based Access)
- Create CI CD Pipelines
- Perform Build and Deployments
- Monitoring Resources
- Monitor Infrastructure & health checks
- Monitor application & health checks



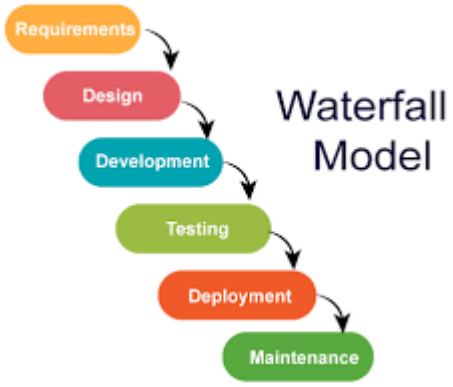
Software Development Life Cycle (SDLC)

=> SDLC Represents end to end application development process

=> We will have several phases in SDLC like below

1) **Requirements Gathering ->** (Functional Team / SME) -> FDD / SRS
2) **Analysis ->** Understand requirements & ask questions
3) **Planning ->** Prepare plan & prototype
4) **Development ->** Coding
5) **Testing ->** Verification and validation
6) **Deployment ->** Running application in the server
7) **Delivery ->** Handover to client (DevOps)
8) **Maintenance ->** Based on SLA

Waterfall Methodology



-> Earlier people used to follow Waterfall Methodology to develop projects

-> Waterfall is a linear methodology to develop and deliver projects

-> Everything will happen step by step

-> If one step completed then only we will go to next step

-> We will move only in forward direction (No backward direction)

-> Requirements are fixed

-> Budget is fixed

-> Client involvement is very less

-> Client will see the project at the end

Note: Waterfall Methodology is not suitable for big projects

Agile Methodology

-> Agile is an iterative approach to develop and deliver the projects

-> Development and testing will happen parallelly

-> Client involvement will be very high

-> We will deliver project in multiple releases (Sprints)

-> For every release we will take client feedback

-> Requirements are not fixed

-> Budget is not fixed

-> Project Development, Testing & Delivery is very frequent is Agile

What is Infrastructure?

- ⇨ The resource which are required to run our business is called as Infrastructure

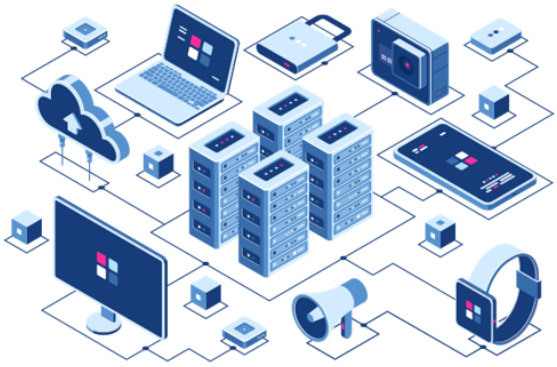
- ⇨ To run a school, we need below infrastructure

-> Board
-> Tables
-> Chairs
-> Markers
-> Duster etc..

⇨ To run hotel, we need below infrastructure

1) Building 2) Power 3) Air Conditioner 4) Tables 5) Chairs 6) Plates 7) Spoons

⇨ To run a software company, we need below infrastructure



-> Machines
-> Web Servers
-> Application Servers
-> Database Servers
-> Load Balancer
-> Network
-> Power
-> Storage
-> Security
-> Monitoring

-> Some companies will purchase and setup infrastructure that is called on On-Premises Infrastructure.

-> If we setup on-prem infrastructure then we have to purchase, setup & manage everything required for project.

1) We have to purchase computers
2) We have to purchase Web servers
3) We have to purchase Database Servers
4) We have to purchase Network
5) We have to purchase Storage
6) We have to purchase Power & Power Backup
7) We need to setup Server room
8) We need to setup Air Conditioner (AC)

9) We need to hire Network Admin to setup network
10) We need to hire Server admin to setup servers
11) We need to hire DB admin to setup Database
12) We need to take a room for rent
13) We need a security guard to monitor our server room
14) We need to keep high security for our server room

-> Below are the challenges if we maintain our own infrastructure

- Security
- Privacy
- Scalability
- Availability
- Network Issues
- Disaster Recovery

-> To overcome above issues, today companies are using Cloud Infrastructure

What is Cloud Computing?

-> Cloud computing is the on-demand delivery of IT resources over the Internet with pay-as-you-go pricing.

-> Instead of buying, owning, and maintaining physical data centers and servers, you can access technology services, such as computing power, storage, and databases, on an as-needed basis from a cloud provider.

Note: IT Resource means, computing, network, power, security, storage, servers etc...

Advantages with Cloud Computing?

- Low Cost
- Pay As You Go
- Scalability
- Availability
- Reliability
- Security
- Unlimited Storage
- Backup

Cloud Providers

=> The company which is providing cloud services is called as Cloud Provider.

1) Amazon - AWS cloud
2) Microsoft - Azure cloud
3) Google - GCP cloud
4) Salesforce cloud
5) Alibaba
6) Oracle Cloud
7) IBM cloud etc.....

Cloud Service Models

1) IAAS : Infrastructure as a service

=> Cloud Provider will give only Infrastructure. We need to manage runtime + application

2) PAAS : Platform as a service

=> Cloud Provider will give infrastructure + runtime. We need to deploy our application in their runtime

3) SAAS : Software as a service

=> Cloud Provider will give infrastructure + runtime + application. We need to use their application to run our business.