DevOps Syllabus

1) DevOps Introduction
- Software Development Life Cycles (SDLC)
  - o Waterfall Model
- Agile Methodology
  - o Scrum Model
  - o Sprint/ Iteration
- What is DevOps?
- Why DevOps?
- DevOps Importance
- DevOps Model
- DevOps Life cycle
- Market Trend and Career Scope for DevOps
- DevOps Tools

2) Linux
- Introduction of Linux Operation System
- Installing Pre-requisite Software's (SSH Tools and FTP Tools) in Desktop/Laptop.
- Create an account in AWS.
- Create an EC2 Instance in AWS.
- Linux File/Directory structure.
- Linux Commands.

mkdir	cat	service	userdel	Uname
ls	head	uptime	groupdel	cat /etc/*releases
tree	tail	last	crontab	Watch
cd	more	ps	ssh	Netstat
pwd	less	kill	scp	exit/logout/ctrl+d
rmdir	sort	top	rsync	Yum
touch	tr	sar	ssh-keygen	Read
find	sed	zip	ssh-cpy-id	Restart
umask	grep	unzip	awk	Reboot
chmod	who	tar	cut	Shutdown
chown	w	useradd	free	
chgrp	whoami	passwd	dmidecode	
cp	whereis	chage	mail	
mv	date	groupadd	clear	
rm	df	usermod	cal	
file	du	id	wget	curl
wc	hostname	lid	tee	
ln	ipconfig	su	script	
vim	man	sudo	ping	
nano	help	users	telnet	
echo	info	groups	history	

3)   Shell Scripting
- Introduction
- What is Shell?
- Types of Shells
- What is Shell Scripting?
- First Shell Script program
- File Naming Conventions
- Comments
- Variables
- Command line Arguments
- Escape Characters
- String
- Arithmetic Operations
- User Interaction using read command
- Input and Output Redirection
- Control commands – if
- Control commands – for
- Control commands – while loop
- Control commands – Switch case
- Functions
- Pipe

4) Git
- Account Creation in GitHub/GitLab/BitBucket
- What is git?
- What is the VCS?
- What is SCM?
- What is Branch?
- What is Tag?
- Git Administration.
- Git commands
- Working with git as a developer perspective
- SSH Key generation
- PAT creation
- Cloning Repositories
- Merging Branches
- Pull Requests
- Cloning Remote Repo
- GitHub API – Some Realtime Shell Script Examples covers
- Forking Repo
- Branching strategy
- README file
- Best practices for Releases/Code commits in any VCS

5) Maven
- Introduction
- Features & Benefits of Maven
- Installation (Maven Environment Setup)
- Directory Structure
- Content of pom.xml
- Maven Repositories
- Maven Life Cycles
- Executing some Examples
- Maven Multi Modules
  - o Parent pom
  - o Child pom

6) Tomcat
- Introduction
- Difference between App server and Web server
- Understating of Web Servers, App Servers and Database Servers
- Installation (In Windows - Extraction, In Linux Installation)
- Directory structure
- Start the Tomcat server
- Stop the server
- User creation
- Roles
- Port number change
- Application Deployment
  - o Through Admin Console
  - o Copy artifact into webapps folder
- Tomcat Tuning

7) Apache HTTP Server / Nginx Server
- Introduction
- Installation
- Directory Structure
- Start the HTTP server
- Deploy the web static application.

8) SonarQube
- Introduction
- Pre-Requisites
- Architecture
- Installation
- Change the Port Number
- Execution
- Administration – User creations, Project Creation, Project deletion, Token Generation, Creating Quality Gates, Creating Quality Gates.

9) Jenkins

- **Introduction**
  - o Continuous Integration (CI)
  - o Continuous Delivery (CD)
  - o Continuous Deployment (CD)

- **Installation**
  - o   In Linux Server

- **Create the Maven Project using Freestyle Project type**
  - o Integrate Maven software if not done.
  - o Integrate Nexus with Jenkins
  - o Integrate SonarQube with Jenkins
  - o Deploy the App into Tomcat
  - o Through "Deploy to container" plugin
  - o Through Script – SSH Agent Plugin
  - o Configure Email Functionality
  - o Poll SCM
  - o Build Periodically
  - o Git Web Hooks
  - o Discard Old Build
  - o Disable this project
  - o Delete workspace before build starts
  - o Add timestamps to the Console Output
  - o JACOCO plugin
- **Jenkins Directory structure**
- **Create the Maven Project using Maven Project type**
- **Plugin Management**
  - o Safe Restart
  - o Next Build Number
  - o Email Extension
  - o SonarQube Scanner
  - o Schedule Build
  - o Artifactory Plugin
  - o Cloud Foundry
  - o Blue Ocean
  - o Deploy to container
  - o Deploy WebLogic
  - o WebSphere Deployer
  - o Maven Integration
  - o Pulish Over SSH
  - o Thin Backup
  - o Build Name Setter
  - o Convert to Pipeline

- **External Plugins Installation**
  - o Urban Code Deploy

- **Port Number Change**

- **Build with parameters**

- **Create View**

- **Jenkins Security**
  - o Create Users (Default Admin)
  - o Provide the specific access Jenkins
  - o Provide the access to specific access to specific projects

- **Upstream and Downstream Jobs**

- **Create the Pipeline Project Jobs (Scripted way and Declarative way)**

- **Create the Multibranch Pipeline Project Jobs**

- **CICD Implementation for Node JS Project**

- **Create Master/Slave**

- **Jenkins Backup**

- **Jenkins Migration**

- **Jenkins Shared Libraries**

- **Jenkins CLI**

  - **Slack Notifications**

- **Some more examples on Declarative Pipeline Script**
  - **Optional Topics**
    - o Jenkins Home Directory Change in RHEL 7.5 Version
    - o Integrate the Urban Code Deploy server with Jenkins
    - o Deploy the App into IBM Cloud

**** 5 Ways of Deploying application into Production Environment ****

10) Resume Preparation and Agile Topics

- Resume Preparation
- DevOps Engineer Roles and Responsibilities
- DevOps Engineer Daily Activities
- Process flow of Scrum Methodologies and Agile Methodology
- Scrum Meeting
- Sprint Planning
- Retrospective Meeting
- Release Management

11) AWS

- Introduction to Cloud & Cloud Computing
- Cloud Service Models
- Types of clouds
- AWS Introduction & It's Global Architecture
- Elastic Compute Cloud (EC2)
  - Introduction to Amazon EC2
  - Launch Our First EC2 Instance - Part 1
  - Launch Our First EC2 Instance - Part 2
  - How to use Putty (Windows Users Only)
  - Security Groups
  - Elastic Volumes, Instance stores,
  - EC2 Instance Meta-data
  - Summary of EC2 Section
  - Amazon Machine Instance (AMI)
  - Private IP, Public IP, Elastic IP
- Elastic Block Store (EBS)
  - What is EBS and its uses
  - EBS Snapshots
  - Create and attach additional EBS volumes.
  - EBS Snapshot Manager.
- EFS
- Simple Storage Service (S3)
  - S3 Essentials
  - Creating a S3 Bucket Using the Console
  - S3 Storage Options and Types
  - S3 Version Control
  - Cross Region Replication
  - S3 Lifecycle Management & Glacier
  - S3 - Security
  - Snowball
  - S3 Summary

- Virtual Private Cloud (VPC)
  - VPC Overview
  - Custom VPC's
  - Building our own custom VPC
  - Build A Custom VPC - Part 2
  - Public Subnets, Private Subnets
  - Network Address Translation (NAT)
  - Access Control Lists (ACLs)
  - VPC Summary
  - VPC Peering
- Elastic Load Balancer (ELB)
  - NLB
  - ELB
- Route 53(DNS)
- ACM
- Auto Scaling Groups
- Identity Access Management (IAM)
  - Introduction of IAM
  - Users
  - Groups
  - Roles
  - Policies
  - Permissions
- AWS CLI
- Elastic Container Registry (ECR)
- Elastic Kubernetes Service (EKS)

12) Docker

- Docker Introduction
- Containerization Vs Virtualization
- Docker Vs Virtual Machine
- Docker Installation & It's Architecture
- Docker Adhoc Commands
- Docker file
- Docker Image
- Docker Container
- Docker Networks
- Docker Volumes
- Docker file & It's Key Words
- Docker Images creation
- Docker Registries (DockerHub, ECR, Nexus)

10) Kubernetes

- Kubernetes Introduction
- Architecture
- Kubernetes Cluster (Self-Managed) Setup Using Kubeadm.
- Kubernetes Namespace
- Kubernetes Objects
- POD
- Replication Controller
- Replica Set
- Daemon Set
- Deployment
  - Rolling Update
  - Recreate
- Stateful Set
- Service
- Persistent Volumes
- Persistent Volume Claim
- Config Maps & Secrets
- HPA & Metrics Server

- **Monitoring Tools (New Relic/Grafana, Prometheus)**

- **DevOps Master Program Highlights**
  - Each Topic Soft Copy Material
  - Each Topic Interview Questions
  - Real Time Use Case Scenarios
  - Case Studies
  - Job Oriented Training

Regards
D^3 Technologies (Docent Disciple Dream)
+91 8610241714 / +91 8668069759
DDDreamtechnologies@gmail.com