**SDLC Models & Architecture with Agile, DevOps, SRE & DevSecOps, SOA & Micro services**

* Let’s Understand about Software Development Model
* Overview of Waterfall Development Model
* Challenges of Waterfall Development Model
* Overview of Agile Development Model
* Challenges of Agile Development Model
* Requirement of New Software Development Model
* Understanding an existing Pain and Waste in Current Software Development Model
* What is DevOps?
  + Transition in Software development model
  + Waterfall -> Agile -> CI/CD -> DevOps -> DevSecOps
* Understand DevOps values and principles
* Culture and organizational considerations
* Communication and collaboration practices
* Improve your effectiveness and productivity
* DevOps Automation practices and technology considerations
* DevOps Adoption considerations in an enterprise environment
* Challenges, risks and critical success factors
* What is DevSecOps?
  + Let’s Understand DevSecOps Practices and Toolsets.
* What is SRE?
  + Let’s Understand SRE Practices and Toolsets.
* List of Tools to become Full Stack Developer/QA/SRE/DevOps/DevSecOps
* Microservices Fundamentals
* Microservices Patterns
  + Choreographing Services
  + Presentation components
  + Business Logic
  + Database access logic
  + Application Integration
  + Modelling Microservices
  + Integrating multiple Microservices
* Keeping it simple
  + Avoiding Breaking Changes
  + Choosing the right protocols
  + Sync & Async
  + Dealing with legacy systems
  + Testing
* What and When to test
* Preparing for deployment
* Monitoring Microservice Performance
* Tools used for Microservices Demo using container

**Platform - Operating Systems - *Centos/Ubuntu & VirtualBox & Vagrant***

**Ubuntu**

* Installing CentOS7 and Ubuntu
* Accessing Servers with SSH
* Working at the Command Line
* Reading Files
* Using the vi Text Editor
* Piping and Redirection
* Archiving Files
* Accessing Command Line Help
* Understanding File Permissions
* Accessing the Root Account
* Using Screen and Script
* Overview of Hypervisor
* Introduction of VirtualBox
* Install VirtualBox and Creating CentOS7 and Ubuntu Vms

**Vagrant**

* Understanding Vagrant
* Basic Vagrant Workflow
* Advance Vagrant Workflow
* Working with Vagrant VMs
* The Vagrantfile
* Installing Nginx
* Provisioning
* Networking
* Sharing and Versioning Web Site Files
* Vagrant Share
* Vagrant Status
* Sharing and Versioning Nginx Config Files
* Configuring Synced Folders

**Platform - *Cloud - AWS***

* Introduction of AWS
* Understanding AWS infrastructure
* Understanding AWS Free Tier
* IAM: Understanding IAM Concepts
* IAM: A Walkthrough IAM
* IAM: Demo & Lab
* Computing:EC2: Understanding EC2 Concepts
* Computing:EC2: A Walkthrough EC2
* Computing:EC2: Demo & Lab
* Storage:EBS: Understanding EBS Concepts
* Storage:EBS: A Walkthrough EBS
* Storage:EBS: Demo & Lab
* Storage:S3: Understanding S3 Concepts
* Storage:S3: A Walkthrough S3
* Storage:S3: Demo & Lab
* Storage:EFS: Understanding EFS Concepts
* Storage:EFS: A Walkthrough EFS
* Storage:EFS: Demo & Lab
* Database:RDS: Understanding RDS MySql Concepts
* Database:RDS: A Walkthrough RDS MySql
* Database:RDS: Demo & Lab
* ELB: Elastic Load Balancer Concepts
* ELB: Elastic Load Balancer Implementation
* ELB: Elastic Load Balancer: Demo & Lab
* Networking:VPC: Understanding VPC Concepts
* Networking:VPC: Understanding VPC components
* Networking:VPC: Demo & Lab

**Platform - Containers - *Docker***

* What is Containerization?
* Why Containerization?
* How Docker is good fit for Containerization?
* How Docker works?
* Docker Architecture
* Docker Installations & Configurations
* Docker Components
* Docker Engine
* Docker Image
* Docker Containers
* Docker Registry
* Docker Basic Workflow
* Managing Docker Containers
* Creating our First Image
* Understading Docker Images
* Creating Images using Dockerfile
* Managing Docker Images
* Using Docker Hub registry
* Docker Networking
* Docker Volumes
* Deepdive into Docker Images
* Deepdive into Dockerfile
* Deepdive into Docker Containers
* Deepdive into Docker Networks
* Deepdive into Docker Volumes
* Deepdive into Docker Volume
* Deepdive into Docker CPU and RAM allocations
* Deepdive into Docker Config
* Docker Compose Overview
* Install & Configure Compose
* Understanding Docker Compose Workflow
* Understanding Docker Compose Services
* Writing Docker Compose Yaml file
* Using Docker Compose Commands
* Docker Compose with Java Stake
* Docker Compose with Rails Stake
* Docker Compose with PHP Stake
* Docker Compose with Nodejs Stake

**Source Code Versioning - *Git using Github***

* Introduction of Git
* Installing Git
* Configuring Git
* Git Concepts and Architecture
* How Git works?
* The Git workflow
  + Working with Files in Git
  + Adding files
  + Editing files
  + Viewing changes with diff
  + Viewing only staged changes
  + Deleting files
  + Moving and renaming files
  + Making Changes to Files
* Undoing Changes
  + - Reset
  + - Revert
* Amending commits
* Ignoring Files
* Branching and Merging using Git
* Working with Conflict Resolution
* Comparing commits, branches and workspace
* Working with Remote Git repo using Github
* Push - Pull - Fetch using Github
* Tagging with Git

**Code Analysis & Securing Code (SAST) - *SonarQube & Coverity Scan & Snyk***

* What is SonarQube?
* Benefits of SonarQube?
* Alternative of SonarQube
* Understanding Various License of SonarQube
* Architecture of SonarQube
* How SonarQube works?
* Components of SonarQube
* SonarQube runtime requirements
* Installing and configuring SonarQube in Linux
* Basic Workflow in SonarQube using Command line
* Working with Issues in SonarQube
* Working with Rules in SonarQube
* Working with Quality Profiles in SonarQube
* Working with Quality Gates in SonarQube
* Deep Dive into SonarQube Dashboard
* Understanding Seven Axis of SonarQube Quality
* Workflow in SonarQube with Maven Project
* Workflow in SonarQube with Gradle Project
* OWASP Top 10 with SonarQube

**Build Management - *Maven and Gradle***

**Maven**

* Introduction to Apache Maven
* Advantage of Apache Maven over other build tools
* Understanding the Maven Lifecycle and Phase
* Understanding the Maven Goals
* Understanding the Maven Plugins
* Understanding the Maven Repository
* Understanding and Maven Release and Version
* Prerequisite and Installing Apache Maven
* Understanding and using Maven Archetypes
* Understanding Pom.xml and Setting.xml
* Playing with multiples Maven Goals
* Introducing Maven Dependencies
* Introducing Maven Properties
* Introducing Maven Modules
* Introducing Maven Profile
* Introducing Maven Plugins
* How can Maven benefit my development process?
* How do I setup Maven?
* How do I make my first Maven project?
* How do I compile my application sources?
* How do I compile my test sources and run my unit tests?
* How do I create a JAR and install it in my local repository?
* How do I use plugins?
* How do I add resources to my JAR?
* How do I filter resource files?
* How do I use external dependencies?
* How do I deploy my jar in my remote repository?
* How do I create documentation?
* How do I build other types of projects?
* How do I build more than one project at once?

**Gradle**

* What is Gradle?
* Why Gradle?
* Installing and Configuring Gradle
* Build Java Project with Gradle
* Build C++ Project with Gradle
* Build Python Project with Gradle
* Dependency Management in Gradle
* Project Structure in Gradle
* Gradle Tasks
* Gradle Profile and Cloud
* Gradle Properties
* Gradle Plugins

**Package Management - *Packer & Artifactory***

**Artifactory**

* Artifactory
  + Artifactory Overview
  + Understanding a role of Artifactory in DevOps
  + System Requirements
  + Installing Artifactory in Linux
  + Using Artifactory
  + Getting Started
  + General Information
  + Artifactory Terminology
  + Artifactory Repository Types
  + Artifactory Authentication
  + Deploying Artifacts using Maven
  + Download Artifacts using Maven
  + Browsing Artifactory
  + Viewing Packages
  + Searching for Artifacts
  + Manipulating Artifacts

**Packer**

* Packer
* Getting to Know Packer
  + What is Packer?
  + Save What is Packer?
  + Installing Packer
  + Save Installing Packer
  + The Packer workflow and components
  + Save The Packer workflow and components
  + The Packer CLI
  + Save The Packer CLI
* Baking a Website Image for EC2
* Select an AWS AMI base
* Save Select an AWS AMI base
* Automate AWS AMI base build
* Save Automate AWS AMI base build
* Using build variables
* Save Using build variables
* Provision Hello World
* Save Provision Hello World
* Provision a basic site
* Save Provision a basic site
* Customization with a Config Management Tool
  + Simplify provisioning with a config tool
  + Save Simplify provisioning with a config tool
  + Use ansible to install the webserver
  + Save Use ansible to install the webserver
  + Debugging
  + Save Debugging
* Building Hardened Images
  + Use Ansible modules to harden our image
  + Save Use Ansible modules to harden our image
  + Baking a Jenkins image
  + Save Baking a Jenkins image
* Building a Pipeline for Packer Image
  + Validate Packer templates
  + Save Validate Packer templates
  + Create a manifest profile
  + Save Create a manifest profile
  + Testing
  + Save Testing
  + CI pipeline
  + Save CI pipeline

**Configuration & Deployment Management - *Ansible***

* Overflow of Configuration Management
* Introduction of Ansible
* Ansible Architecture
* Let’s get startted with Ansible
* Ansible Authentication & Authorization
* Let’s start with Ansible Adhoc commands
* Let’s write Ansible Inventory
* Let’s write Ansible Playbook
* Working with Popular Modules in Ansible
* Deep Dive into Ansible Playbooks
* Working with Ansible Variables
* Working with Ansible Template
* Working with Ansible Handlers
* Roles in Ansible
* Ansible Galaxy

**Container Orchestration - *Kubernetes & Helm Introduction***

* Understanding the Need of Kubernetes
* Understanding Kubernetes Architecture
* Understanding Kubernetes Concepts
* Kubernetes and Microservices
* Understanding Kubernetes Masters and its Component
  + kube-apiserver
  + etcd
  + kube-scheduler
  + kube-controller-manager
* Understanding Kubernetes Nodes and its Component
  + kubelet
  + kube-proxy
  + Container Runtime
* Understanding Kubernetes Addons
  + DNS
  + Web UI (Dashboard)
  + Container Resource Monitoring
  + Cluster-level Logging
* Understand Kubernetes Terminology
* Kubernetes Pod Overview
* Kubernetes Replication Controller Overview
* Kubernetes Deployment Overview
* Kubernetes Service Overview
* Understanding Kubernetes running environment options
* Working with first Pods
* Working with first Replication Controller
* Working with first Deployment
* Working with first Services
* Introducing Helm
* Basic working with Helm

**Infrastructure Coding - *Terraform***

* Deploying Your First Terraform Configuration
  + Introduction
  + What's the Scenario?
  + Terraform Components
* Updating Your Configuration with More Resources
  + Introduction
  + Terraform State and Update
  + What's the Scenario?
  + Data Type and Security Groups
* Configuring Resources After Creation
  + Introduction
  + What's the Scenario?
  + Terraform Provisioners
  + Terraform Syntax
* Adding a New Provider to Your Configuration
  + Introduction
  + What's the Scenario?
  + Terraform Providers
  + Terraform Functions
  + Intro and Variable
  + Resource Creation
  + Deployment and Terraform Console
  + Updated Deployment and Terraform Commands

**Continuous Integration - *Jenkins***

* Lets understand Continuous Integration
* What is Continuous Integration
* Benefits of Continuous Integration
* What is Continuous Delivery
* What is Continuous Deployment
* Continuous Integration Tools

* What is Jenkins
* History of Jenkins
* Jenkins Architecture
* Jenkins Vs Jenkins Enterprise
* Jenkins Installation and Configurations

* Jenkins Dashboard Tour
* Understand Freestyle Project
* Freestyle General Tab
* Freestyle Source Code Management Tab
* Freestyle Build Triggers Tab
* Freestyle Build Environment
* Freestyle Build
* Freestyle Post-build Actions
* Manage Jenkins
* My Views
* Credentials
* People
* Build History

* Creating a Simple Job
* Simple Java and Maven Based Application
* Simple Java and Gradle Based Application
* Simple DOTNET and MSBuild Based Application

* Jobs Scheduling in Jenkins
* Manually Building
* Build Trigger based on fixed schedule
* Build Trigger by script
* Build Trigger Based on pushed to git
* Useful Jobs Configuration
* Jenkins Jobs parameterised
* Execute concurrent builds
* Jobs Executors
* Build Other Projects
* Build after other projects are built
* Throttle Builds

* Jenkins Plugins
* Installing a Plugin
* Plugin Configuration
* Updating a Plugin
* Plugin Wiki
* Top 20 Useful Jenkins Plugins
* Using Jenkins Pluginss Best Practices
* Jenkins Node Managment
* Adding a Linux Node
* Adding a Windows Nodes
* Nodes Management using Jenkins
* Jenkins Nodes High Availability

* Jenkins Integration with other tools
* Jira
* Git
* SonarQube
* Maven
* Junit
* Ansible
* Docker
* AWS
* Jacoco
* Coverity
* Selenium
* Gradle

* Reports in Jenkins
* Junit Report
* SonarQube Reports
* Jacoco Reports
* Coverity Reports
* Selenium Reports
* Test Results
* Cucumber Reports

* Jenkins Node Managment
* Adding a Linux Node
* Adding a Windows Nodes
* Nodes Management using Jenkins
* Jenkins Nodes High Availability

* Notification & Feedback in Jenkins
* CI Build Pipeline & Dashboard
* Email Notification
* Advance Email Notification
* Slack Notification

* Jenkins Advance - Administrator
* Security in Jenkins
* Authorization in Jenkins
* Authentication in Jenkins
* Managing folder/subfolder
* Jenkins Upgrade
* Jenkins Backup
* Jenkins Restore
* Jenkins Command Line

**Infrastructure Monitoring Tool - *Datadog***

**Real-time monitoring**

* Datadog provides real-time monitoring of your infrastructure and applications, allowing you to quickly identify and resolve issues before they impact your users.

**Customizable dashboards**

* With Datadog, you can create customizable dashboards that give you a real-time view of your entire infrastructure. These dashboards can be tailored to your specific needs and can include metrics and alerts for all of your systems and applications.

**Integrations**

* Datadog integrates with a wide range of third-party tools and services, allowing you to monitor and manage your entire IT stack from a single platform.

**Collaboration**

* Datadog provides collaboration tools that enable your IT team to work together to resolve issues quickly and efficiently.

**Automatic alerting**

* Datadog can be configured to automatically alert you when certain metrics or events occur. You can set up alerts for things like server downtime, high CPU usage, or application errors.

**Comprehensive metrics**

* Datadog collects and analyzes a wide range of metrics from your infrastructure and applications, including server performance, network traffic, and application logs.

**Machine learning**

* Datadog's machine learning capabilities can help you identify anomalies and patterns in your data, allowing you to proactively address issues before they become critical.

**Log Monitoring Tool - *Splunk***

* What Is Splunk?
* Overview
* Machine Data
* Splunk Architecture
* Careers in Splunk

* Setting up the Splunk Environment
* Overview
* Splunk Licensing
* Getting Splunk
* Installing Splunk
* Adding Data to Splunk

* Basic Searching Techniques
* Adding More Data
* Search in Splunk
* Demo: Splunk Search
* Splunk Search Commands
* Splunk Processing Langauge
* Splunk Reports
* Reporting in Splunk
* Splunk Alerts
* Alerts in Splunk

* Enterprise Splunk Architecture
* Overview
* Forwarders
* Enterprise Splunk Architecture
* Installing Forwarders
* Installing Forwarders
* Troubleshooting Forwarder Installation
* Splunking for DevOps and Security
* Splunk in DevOps
* DevOps Demo
* Splunk in Security
* Enterprise Use Cases

* Application Development in Splunkbase
* What Is Splunkbase?
* Navigating the Splunkbase
* Creating Apps for Splunk
* Benefits of Building in Splunkbase

* Splunking on Hadoop with Hunk
* What Is Hadoop?
* Running HDFS Commands
* What Is Hunk?
* Installing Hunk
* Moving Data from HDFS to Hunk

* Composing Advanced Searches
* Splunk Searching
* Introduction to Advanced Searching
* Eval and Fillnull Commands
* Other Splunk Command Usage
* Filter Those Results!
* The Search Job Inspector

* Creating Search Macros
* What Are Search Macros?
* Using Search Macros within Splunk
* Macro Command Options and Arguments
* Other Advanced Searching within Splunk