Work on Legacy systems – Dot Net, Oracle, Not much on cloud, AZ-109, AZ-104 need to do.

Need to work on SRE -> Terraform, Docker, Azure, Kubernetes,

Course Name:

SRE Foundation Duration: 30 Half days

Course outline:

Day 1:

- Starting with Azure
    - Overview of Azure
    - Concepts in Azure
- Deploy and Manage Azure compute resources
    - The Virtual Machine Service
    - Deploying a virtual machine
    - Hands-on - Building a Windows virtual machine
    - Connecting to the Virtual Machine
    - State of the Virtual Machine
    - Hands-on - State of the Virtual Machine
    - Hands-on - Build a Linux Virtual Machine
- Azure Web App
    - Azure App Service Plans
    - Hands-on - Azure Web Apps
    - Hands-on - Making simple changes to the Web App
    - Azure Web Apps - Deployment Slots
    - Hands-on - Azure Web Apps - Deployment Slots

Day 2:

- Containers
    - Introduction to Docker
    - Image registry
    - Hands-on - Azure Container Registry
    - Publishing to the Azure Container Registry
    - Hands-on - Azure Container Instances
- Implement and manage storage
    - What are storage accounts?
    - Hands-on - Creating an Azure storage account
    - Azure Blob service
    - Hands-on - Blob service - Uploading a blob
    - Hands-on - Blob service - Accessing the blob
    - Hands-on - Using Access keys
    - Hands-on - Shared Access Signatures - Blob Level
    - Storage Accounts - Access Tiers
    - Hands-on - Storage Accounts - Hot and Cool Access Tier
    - Hands-on - Storage Accounts - Archive Access Tier
    - Azure File shares

Day 3 :

- Configure and manage virtual networking
    - Introduction to Virtual Networks in Azure
    - The network interface

    - The CIDR Notation
    - Hands-on - Working with Azure virtual networks
    - Concept behind subnets
    - Hands-on - Deploying a machine to the virtual network
    - Static IP Address
- Network Security Groups
    - Hands-on - Network Security Groups
    - Hands-on - Network Security Groups - Working with rules
    - Hands-on - Network Security Groups - Priority setting
- What is a Virtual private network?
    - Point-to-Site VPN Connections
    - Site to Site VPN Connection

Day 4:

- Manage Azure identities and governance
    - Azure Subscriptions
    - Creating an Azure subscription
    - What is Azure Active Directory
    - Hands-on - Creating a user in Azure AD
    - Introduction to Role Based Access Control
    - Hands-on - Role-based assignments
    - Hands-on - Custom Roles
    - Hands-on - Azure AD - Creating a group
    - Azure AD Roles

    - Hands-on - Azure AD - Assigning an Azure AD role

- Monitor
    - What is the Azure Monitor Service?
    - Hands-on - Azure Monitor - Alerts
    - What is a Log Analytics Workspace
    - Hands-on - Creating a Log Analytics workspace
    - Hands-on - Connecting virtual machine to the workspace
    - Hands-on - Log Analytics Queries
    - Log Analytics - Alerts

Day 5:

Platform - Containers - Docker

What is Virtualization?

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

Day 6:

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

Day 7:

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

Day 8:

Docker Compose Overview

Install & Configure Compose

Understanding Docker Compose Workflow

Understanding Docker Compose Services

Writing Docker Compose Yaml file

Day 9:

Using Docker Compose Commands

Docker Compose with Dot Net

Docker Compose with Java Stake

Docker Compose with Rails Stake

Docker Compose with PHP Stake

Docker Compose with Nodejs Stake

Day 10:

Configuration & Deployment Management - Ansible

Introduction of Configuration Management

Understand the problems in Servers config management

Finding out the solutions for Servers config management

What is Ansible

Benefits of Ansible

Ansible Vs Chef Vs Puppet

Ansible Architecture

How Ansible Works?

Introduction to YAML

Setup Ansible Developement Environment

Day 11:

Introduction of Ansible Commands lines

Introduction of Ansible Modules

Introduction of Ansible Play

Introduction of Ansible Playbook

Introduction of Ansible Configurations

Introduction of Ansible Inventory

Writing a Play Using Modules

Writing a Playbook

Writing a Inventory

Day 12:

Running a Playbook in Local Server

Running a Playbook in Remote Server

The Setup Module

The Command Module

The Expect Module

The RAW Module

The Script Module

The Shell Module

The File Module

The SELinux Module

The SEBoolean Module

Day 13:

The Copy Module

The Cron Module

The Include Module

The Mount Module

The User Module

The Group Module

The Mail Module

The Git Module

The Apt Module

The Yum Module

The Package Module

The Service Module

Target Section

Variable Section

Task Section

Day 14:

Handler Section

Lookups

Handlers in Ansible

Variables in Ansible

Register in Ansible

Includes vs. Imports in Ansible

Conditions in Ansible

Loops in Ansible

Blocks in Ansible

Files operations in Ansible

Templating(Jinja2) in Ansible

Day 15:

Basic Error Handling in Playbooks

Basic Torubleshooting in Ansibles

Using Hosts and Groups

Behavioral Inventory Parameters

Host Variables

Group Variables

Groups of Group

Groups of Group Variables

Splitting Out Host and Group Specific Data

Understand Role Directory Structure

Using Ansible Roles

Ansible Role Duplication and Execution

Ansible Role Default Variables

Ansible Role Dependencies

Embedding Modules and Plugins In Roles

Ansible Role Search Path

Day 16:

Container Orchestration - Kubernetes

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

Day 17:

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

Day 18:

Kubernetes Pod Overview

Kubernetes ReplicationContrller Overview

Kubernetes Deployment Overview

Kubernetes Servcie Overview

Understanding Kubernetes running environment options

Kubernetes in Local machine

Kubernetes in cloud

Kubernetes in on-prem datacenter

Kubernetes in managed Kubernetes cluster

Day 19:

Setting up Kubernetes cluster using Minikube (Demo)

Setting up Kubernetes cluster using Minikube (Lab)

Working with first Pods (Demo)

Working with first Pods (Lab)

Working with first ReplicationContrller (Demo)

Working with first ReplicationContrller (Lab)

Working with first Deployment (Demo)

Working with first Deployment (Lab)

Working with first Services (Demo)

Working with first Services (Lab)

Day 20:

Infrastructure Coding - Terraform

Introduction

What's the Scenario?

Terraform Components

Demo Time!

Configuring Resources After Creation

Day 21:

Introduction

What's the Scenario?

Terraform Provisioners

Terraform Syntax

Demo Time!

Day 22:

Updating Your Configuration with More Resources

Introduction

Terraform State and Update

What's the Scenario?

Data Type and Security Groups

Demo Time!

Adding a New Provider to Your Configuration

Day 23:

Introduction

What's the Scenario?

Terraform Providers

Terraform Functions

Demo: Intro and Variable

Demo: Resource Creation

Demo: Deployment and Terraform Console

Demo: Updated Deployment and Terraform Commands

Day 24:

Kubernetes Package Managment - Helm

Introducing Helm

Architecutre

Installing Helm

Kubernetes Distro Notes

Install FAQ

Using Helm

Plugins

Role-Based Access Control

TLS/SSL For Helm And Tiller

Securing Helm

Helm Commands

Deep Dive into Charts

Day 25:

Services mesh Control Planes - Istio

What Is a Service Mesh?

Understanding Istio's Features

Demo: Installing Istio on Kubernetes with Docker Desktop

Examining Istio's Architecture and Running Costs

Demo: Running the BookInfo App with Istio

Using a VirtualService to Manage Traffic

Demo: Adding Fault Tolerance with Istio

Module Summary

Understanding VirtualServices, DestinationRules, and Subsets

Demo: A Dark Launch for a New Feature

Using Gateways with VirtualServices to Mange External Traffic

Demo: A Blue/Green Deployment

Day 26:

Infrastructure Monitoring Tool 2- Prometheus

Introduction to Prometheus

Prometheus installation

Grafana with Prometheus Installation

Introduction to Monitoring

Client Libraries

Pushing Metrics

Querying

Service Discovery

Exporters

Introduction to Alerting

Setting up Alerts

Prometheus Storage

Day 27:

Monitoring Dashboard Tool - Grafana

Installation

Installing using Docker

Building from source

Upgrading

Administration

Configuration

Authentication

Permissions

Grafana CLI

Internal metrics

Provisioning

Troubleshooting

Getting Started

Basic Concepts

Screencasts

Features

Panels

Dashboard Features

Data Sources

Explore

Alerting

Plugins

HTTP API

Dealing with legacy systems

Testing

Day 28 :

Software Development Models, Agile, DevOps, SRE & DevSecOps

Lets 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 a existing Pain and Waste in Current Software Development Model

What is DevOps?

Transition in Software developement model

- Waterfall -> Agile -> CI/CD -> DevOps -> DevSecOps

Day 29:

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?

Lets Understand DevSecOps Practices and Toolsets.

What is SRE?

Introduction on SRE Principles and Practices (SLI, SLO, SLAs, Error Budget)

Lets Understand SRE Practices and Toolsets.

List of Tools to become Full Stack Developer/QA/SRE/DevOps/DevSecOps

Day 30:

Microservices Fundamentals Microservices Patterns

Choreographing Services

Presentation components

Business Logic

Database access logic

Application Integration

Modelling Microservices

Integrating multiple Microservices

Avoiding Breaking Changes

Choosing the right protocols

Sync & Async

Dealing with legacy systems

Testing