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DevOps Syllabus

- **Intro to GCP**
 - Google Cloud Platform
 - Using GCP

- **Intoduction to DevOps**
 - What is Devops
 - SDLC models
 - Why Devops
 - DevOps framework
 - Devops and Agile
 - Configuration management
 - Continuous Integration and Deployment

- **DevOps Tools**
 - Version control system
 - quality management tools
 - build orchestration tools
 - deployment and configuration tools
 - Monitoring tools

- **Linux essentials**
 - Unix and linux difference
 - Linux File system structure
 - Basic linux/unix commands
 - Changing file permissions and ownership
 - Types of links soft and hard link
 - Find and kill the process with id and name

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- Package installation using RPM and YUM
- **GIT- Version control system**
 - GIT overview
 - GIT architecture
 - GIT Basics
 - GIT on different OS
 - GIT essentials
 - GIT repository
 - GIT clone, fetch, pull
 - GIT branching
- **Quality Management tools**
 - SonarQube Overview
 - SonarQube architecture
 - Quality profiles
 - Quality gates
 - Administration
 - sonar plugins
- **CI/CD Orchestration**
 - Introduction about Jenkins
 - Build Cycle
 - Jenkins Architecture
 - Obtaining and installing Jenkins
 - Installing and configuring Jenkins using WAR and RPM on Java
 - Maven Installation

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- Exploring Jenkins Dashboard
- Jenkins jobs
- Creating Jobs
- Running the Jobs
- Setting up the global environments for Jobs
- Adding and updating Plugins
- Disabling and deleting jobs
- Jenkins Build Deployments
- Understanding Deployment.
- Tomcat installation and configuration
- Securing Jenkins
- Authentication
- Jenkins Plugin
- Authorization
- Confidentiality
- Creating users
- Best Practices for Jenkins
- **VAGRANT**
 - Introduction
 - Why and what is Vagrant
 - Uses of Vagrant in an environment o Alternatives of Vagrant
 - Vagrant versions
 - Installation and Configuration o Installing Virtual box
 - How to install Vagrant on Windows and Linux
 - Configuring Vagrant
 - Provisioning with Vagrant

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- Creating first VM with Vagrant
- Operations on the VM
- Connecting to the VM
- Add required Images to Vagrant
- Creating network and port forwarding using Vagrant

- **Chef for configuration management**
 - Overview of Chef
 - Common Chef Terminology (Server, Workstation, Client, Repository etc.)
 - Servers and Nodes
 - Chef Configuration Concepts
 - Workstation Setup
 - How to configure knife
 - Execute some commands to test connection between knife and workstation
 - Organization Setup
 - Create organization
 - Add yourself and node to organization
 - Test Node Setup
 - Create a server and add to organization
 - Check node details using knife
 - Node Objects and Search
 - How to Add Run list to Node
 - Check node Details
 - Environments

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- How to create Environments
- Add servers to environments
- Roles
- Create roles
- Add Roles to organization
- Attributes
- Understanding of Attributes
- Creating Custom Attributes
- Defining in Cookbooks
- Data bags
- Understanding the data bags
- Creating and managing the data bags
- Creating the data bags using CLI and Chef Console
- Sample data bags for Creating Users. What is Puppet?
- **Puppet for configuration management**
 - What is Puppet?
 - How puppet works
 - Puppet Architecture
 - Master and Agents
 - Puppet terminology and about Manifests
 - Installing Puppet
 - Configuring Puppet Master and Agent
 - Connecting Agents
 - Puppet Master
 - Puppet configuration files
 - Puppet Language Basics

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- The declarative language
 - Resources
 - Using Basic resources like file,exec,package service Resource
 - Collectors
 - Virtual Resources
 - Exported Resources
 - Manifests
 - Modules and Classes
 - Class Parameters
 - Defined Type
 - Templates
 - Static Contents Explosion
 - Using Dynamic Content with Templates
 - Templates Overview
 - Example Code Manifests/Modules
 - NTP Module
 - Users Module
 - SSH
 - Sudo
 - Puppet Forge
 - Understanding the Puppet Forge
 - Module structure
 - Install LAMP with preexisting modules
 - Installing Apache Tomcat with Puppet Modules
- **Docker– Containers.**
 - Introduction

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- What is a Docker
- Dockers vs. Virtualization
- Architecture
- Docker Architecture.
- Understanding the Docker components
- Installation
- Installing Docker on Linux.
- Understanding Installation of Docker on windows.
- Some Docker commands.
- Provisioning
- Docker Hub.
- Downloading Docker images.
- Uploading the images in Docker Registry
- Understanding the containers
- Running commands in container.
- Running multiple containers.
- Custom images
- Creating a custom image.
- Running a container from the custom image.
- Publishing the custom image.
- Docker Networking
- Accessing containers
- Linking containers
- Exposing container ports
- Container Routing
- Docker Compose
- Installing The Docker compose

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- Terminology in Docker compose
- Build word press site using Docker compose
- **Ansible**
 - Introduce to Ansible
 - Describe the terminology and architecture of Ansible.
 - Install Ansible and run ad hoc commands.
 - Write Ansible plays and execute a playbook.
 - Describe variable scope and precedence, manage variables and facts in a play, and manage inclusions.
 - Manage task control, handlers, and tags in Ansible playbooks.
 - Create and manage roles.
 - Configure connection types, delegations, and parallelism.
 - Manage encryption with Ansible Vault.
 - Troubleshoot the Ansible control machine and managed nodes.
 - Implement Ansible Tower
 - Implement Ansible in a DevOps environment using Vagrant.