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DevOps & DevSecOps MultiCloud

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Best I.T Training and Placement Institute

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About LiveTech

LiveTech was founded in 2004 by IT industry professionals to impart quality training and carve a niche in the IT training industry. LiveTech has successfully skilled 100000+ professionals in Software Testing and Development Domain. LiveTech is involved in training on Software Courses for over 21+ years. LiveTech is a leader in creating not only skilled professionals but also enhance their Employability through real time project implementation Training in Software Testing and Development. The programs are designed by Industry experts and backed by certifications recognized globally in I.T Solutions.

DevOps with AWS, Azure & Linux

Skills Covered :

Devops with Aws & Azure

DevOps Introduction:

Why DevOps?
- Business Perspective
- IT Perspective
- Developer Perspective
- Tester Perspective
- Operations Perspective

What is DevOps?
- Definition
- Stakeholders of DevOps
- What is SDLC
- Phases of SDLC
- Role of Dev in SDLC
- Role of Ops in SDLC

What is Agile & Scrum?
- Agile Development Process
- Agile Manifesto
- Agile Scrum Work Flow
- Agile Analysis Estimation Techniques
- Types of Roles and Responsibilities
- Problem That DevOps Solves
- Making a DevOps Transition
- Introduction to DevOps Automation
- Role of Dev in Agile Scrum
- Role of Ops in Agile Scrum

Problem which resolves DevOps Implementation in Project Implementation

DevOps Life Cycle
- Introduction to DevOps Automation Tools
- DevOps Technology Categories
- Collaboration
- Planning
- Issue Tracking
- Monitoring
- Configuration Management
- Source Control
- Dev Environments

- Continuous Integration
- Continuous Testing
- Continuous Deployment

Linux Essentials for DevOps

- Linux Overview
- What is Operating system
- What is Unix, Linux
- Unix vs Linux
- Linux Distributions
- Linux Architecture & Installation
- Linux Boot process
- File system management
- User management
- Group management
- Package management
- Disk & Volune management
- Linux volume manager hands on
- Process management
- Scheduling and batch automation
- Editors
- VMware overview

Virtualization

- What is virtualization
- Brief explation on hyperviser
- The difference between local and virtual servers

Shell/BASH Scripting

- Role of Shells in Linux Environment
- Types of shells
- Shell Commands
- Command line arguments
- Variables
- Types of Operators
- Conditional Statements
- Bash Loops
- Case statement
- Functions
- Interactive Scripts
- Awk & Sed
- Adv. Script Programs
- Implementing shell scripts based on real world scenarios

Python

- Introduction to Python
- Variables, Data types, Input/Output, Comments, Docstrings, Typecasting
- Control structures: if,ifelse, elseif, for, while, break, continue, pass
- Data Structures: Strings, lists, tupples, sets, dictionaries
- Functions, Modules & Packages
- Error Handling
- Iterators & Generators
- Introduction to OOPs

GIT

- Introduction of GIT
- What is a Version Control System (VCS)? Distributed Vs Non-distributed VCS
- What is Git and where did it come from?
- Alternatives to Git
- Installation and Configuration
- Obtaining Git Installing
- Git Working with local repo-Git
- Git commands
- Updating the remote repository from the local (git push) Updating the local repository from the remote (git pull)
- Tagging in Git What are Git Tags? Listing tags Lightweight tags
- Displaying tag details (tag show) Annotated tags
- Checking out tags Pushing tags Pulling tags
- Branching in Git
- What is a branch
- A note about <HEAD> Listing branches Create new branch Checkout branch Pushing branches Pulling branches Merging in Git
- Fetching Changes (git fetch) Rebasing (git rebase)
- Git Workflows Different ways of using Git Centralized
- Feature Branch Gitflow Workflow Forking Workflow
- Advanced Branching
- Advance Merging
- Deleting a Branch Fast forward merge Three-way merge
- Web hook integration
- Handling Merge Conflicts
- Git hub actions
- Implementing git hub actions on various workflows
- Implementing workflows using Git Lab

MAVEN (Build Tool)

- Issues before in manual process of build process Automated build process
- Introduction
- Maven Structure
- Maven Installation
- Maven Life Cycle
- Maven Dependencies
- Maven Repositories
- Maven Plug-ins
- Maven Configuration
- Integration with SCM tools
- Maven Project
- Integrating Maven for Code quality checks,SAST
- Integrating maven with sonar Qube
- Integrating maven with Nexus
- Integrating maven with Jfrog
- Deployment,Re-Deployment,
- Un-Deployment using Maven with Tomcat

GRADLE (Build Tool)

- What is Grade
- Installation
- Life Cycle, Tasks
- Build.gradle file
- Plugins in Gradle
- Gradle properties
- Custom tasks
- Build scans & Debugging
- Deployment

COMPLETE END-TO-END FLOW ON CI

Tools On CI:

- GIT,
- GIT HUB,
- MAVEN,
- GRADLE,
- JUNIT,
- SONARQUBE,
- NEXUS,
- JFROG

CI & CD Servers

Jenkins:

- What is Jenkins?
- Best Practices
- Installation and Configuraiton
  - Pre-requisites
  - Download & Install
  - Configurations
- Jenkins plugins – how to download and use
- Parameterizing the build
- Overview of Continuous Integration (CI)
- What it means Continuous Integration?
- Fundamental of CI
- How CI helps to Agile Development & History of Jenkins
- Where Jenkins Fit in Organization
- Overview of Jenkins community
- Install Jenkins on Ubuntu / Windows Configuring a Node
- Configuring Jenkins server
- Configure Dashboard Configure System Environment Global Properties
- Configure Build Tools Configure Proxy
- Working with Jenkins Build Job
- Create and Configure a job Run a job manually Triggering a Build Scheduled Build job Manual Build job
- Maven and ANT Build Step Execute a Shell
- Post-Build Actions Archiving Build Results Notifications
- Working with Automate Testing
- Advanced Jenkins
- File fingerprint tracking Parameterized Build Job Parameterized Trigger
- Automated Deployment and Continuous Delivery
- Introduction to GROOVY
- CI & CD Pipeline Deployment using pipeline Script
- Jenkins Plugins
- Master
- Slave
- Jenkins administration
- Overview of Notification Email Notification
- Best Practices on Jenkins

Configuration Management Tools

ANSIBLE (CMT)

- IT Automation
  - History of IT Automation
  - Advantages of IT Automation
  - Disadvantages of IT Automation
  - Types of IT Automation
- What is Ansible?
- Ansible Architecture
- Installing Ansible
  - Installing Ansible on Linux OS
  - Installing Ansible using the systems package manager
- Ansible Version and Configuration
- Working with inventory files
  - Basic inventory file
  - Groups in an inventory file
  - Regular expression in the inventory file
- Automating Simple Tasks
- YAML Scripting
- Working with Playbooks
  - Anatomy of a playbook
  - Playbook commands
  - Writing Playbooks
  - Executing the Playbooks
  - Variables in Playbooks
  - Terminology in Playbooks
- Ansible Core Modules
- Ansible Ad-hoc commands
- Installing and configuring a web server
- Working with Handlers
- Ansible Role
- Ansible Galaxy
- Introduction to AAP (Ansible Automation Platform)

Tools On CI:
Note: Realtime Use Case in Ansible integrate with Jenkins, Git and Maven for Deployment

DOCKER (Containerization Tool)

- Containerization Vs Virtualization
  - Traditional Virtualization
  - Containerization
- Understanding Docker
  - Difference between Docker and Other VMs
  - Docker file
  - Docker Networking
- Docker Installation
- Docker Hub and expose to official images
- Docker Images registry
- Running the Docker Container
- Handling Docker Containers
- Docker Adv.Commands
- Docker Terminology
- Working with Docker Images
  - Docker Hub
  - Searching Docker images
- Docker file build instructions
  - FROM instruction
  - MAINTAINER instruction
  - COPY instruction
  - ADD instruction
  - RUN instruction
  - ENV instruction
  - ARG instruction
  - Environment variables
  - USER instruction
  - WORKDIR instruction
  - VOLUME instruction
  - CMD instruction
  - ENTRYPOINT instruction
  - SHELL instruction
- A Brief on the Docker image management
- Publish your build images into Docker Hub
- Understanding the Docker Hub
- Working with Containers
  - What is container
  - Docker run command
  - Theory of pulling and Running Containers
  - Container Life cycle
- Data Volume
- Sharing data between Containers
- Docker Swarm Mode
- Swarm Mode Theory
  - Configuring Swarm Mode
  - Services
  - Scaling Services
  - Rolling Updates

Note: Docker Real Time UseCases

KUBERNETES

- What is kubernetes
- Purpose of Kubernetes for micro services
- How kubernetes works
- Master components, how works
- Node Components, how works
- How pods works
- Installations and configuration kubernetes cluster
- Introduction to name space
- Pod lifecycle
- Work with pods
- Replica sets, Liveness probes, Readiness probes
- Config maps & Secret Management
- Storage Management – PV, PVC
- Deployments, Statefullsets
- Services
- Networking and Service discovery
- Security & RBAC
- Logging, Monitoring, Debuging – Grafana, Prometheus, ELK/EFK
- Helm and packaging
- Blue/green deployments with real time examples
  - What is blue and green deployments
  - How it helps in real time
  - Overview of Blue/Green Deployments
  - Implementation Strategies
  - Benefits and challenges
- CI/CD & GitOps using ArgoCD
- Micro services Deployments using cloud-native Deployment techniques

Provisioning using Terraform

Goal:

Learn how to provision and manage infrastructure on a Cloud Platform (AWS) using Terraform Configuration Files.

Objectives:

After completing this module, you should be able to

- Understand Provisioning using Terraform
- Learn the Difference between Terraform vs Ansible
- Understand Terraform Architecture
- Deploy a Terraform Configuration File
- Use Basic Terraform Commands
- Manage Terraform Resources
- Perform Terraform State Commands

Topics

- Introduction to Terraform
- Terraform vs Ansible
- Terraform Architecture
- Terraform Configuration
- Terraform Common Commands
- Managing Terraform Resources
- Terraform State

Hands-On

- Setting Up AWS and Terraform
- Executing a Terraform Configuration
- Managing Terraform Resources
- Referencing Terraform Resources
- Terraform State commands

AWS

Introduction to Cloud Computing

- What is Cloud
- Why Cloud?
- Types of Cloud Deployment Models
- Types of Cloud Services
- Future of Cloud Technologies
- Advantages and Disadvantages of Cloud

Introduction to Amazon Web Services (AWS)

- What is AWS?
- How to Subscribe for AWS account
- What is the AWS Free Usage Tier
- AWS Certification
- Introduction to the AWS management Console
- List of services given by AWS

Elastic Compute Cloud (EC2)

- What is Amazon EC2?
- Features of Amazon EC2
- Managing the EC2 infrastructure
- EC2 Dashboard
- Pricing for Amazon EC2

Regions and Availability Zone Concepts

- Describing Regions
- Availability Zones, and Endpoints
- Managing instances in an Availability Zone

Amazon Machine Images (AMI)

- Managing AMIs
- Working with Windows, Linux AMIs
- Shared and Paid AMI
- Making an AMI Public

EC2 Instances

- Instance Type
- Instance life cycle
- Differences between reboot, stop, and terminate
- Building an EC2 windows and linux instances
- To install instance in public and private subnet
- Security via Key Pairs
- EC2 Class and VPC Security Groups
- Managing Elastic IP's
- Pricing model in EC2 instances
- EC2 with Amazon command line interface

Amazon Elastic Block Store (EBS)

- Features of Amazon EBS
- Amazon EBS volumes
- Managing EBS volumes
- Increasing the volume size
- AmazonEBS snapshots

Load Balancing (ELB)

- Creating a load balancer
- Internal and external load balancer
- Load balancing protocols
- Security groups for the load balancer
- Health check for the load balancer
- Cross-zone load balancing
- Connection Draining

Auto Scaling

- What is auto scaling?
- Auto scaling components

Advantages of Auto Scaling

- Creation of launch configuration
- Configuration of auto scaling policies
- Advantages of using auto scaling with ELB

Network & Security

- Security Groups
- Elastic IPs
- Placement Groups
- Key Pairs
- Network Interfaces

Networking Services

Amazon Virtual Private Cloud (VPC)

- What is Amazon VPC?
- VPC Essentials
- Default and Nondefault VPC
- VPC Networking and ACL
- Security Groups
- DNS and DHCP Options Sets
- VPC Peering and Endpoints
- Subnet Routing
- VPC Internet Gateway
- Elastic IP addresses and network interfaces
- VPC integration with many other AWS services
- Creating a NAT instance in a VPC
- Configuring a Web application in VPC
- Pricing for Amazon VPC

Amazon Route 53

- Route 53 as your DNS service
- Using Traffic Flow
- Route 53 Health Checks
- Configuring DNS Failover
- Latency Based Routing
- Weighted Routing Policies
- Hosting web portal using Route53
- Bucket Policies

Security & Identity Services

Identity Access Management (IAM)

- IAM Features
- Getting Started With IAM
- Creation of user, groups, roles
- Managing & Writing policies
- Credential Report
- IAM Console and the Sign-in Page

Storage & Content Delivery Services

Amazon S3

- What is object Storage?
- Data as objects
- Lifecycles of S3
- Managing Buckets
- Accessing S3 storage via tools
- Creation of a static website using S3 storage

Database Services

Relational Database Service (RDS)

- RDS Essentials
- Launching RDS instance
- Selecting the Engine
- Configuring the Database Engine
- Managing RDS Database
- Setting up automatic backups
- Authorizing access to the DB

Amazon Cloud Watch

- Amazon Cloud Watch Architecture
- List of services monitored by Cloud Watch
- Collect and track metrics
- Monitoring memory and disk Metrics
- Monitoring logs, Graphs
- Set Alarms

Amazon Security Groups and NACL

- What is Security Group?
- Where the Security Groups are used in AWS?
- What is NACL?
- Difference between NACL and Security Groups
- Implementation of Security Groups and NACL service

Cloud Formation

- Building AWS infrastructure as a code
- Design a template
- Create a Stack
- Create a Template from your Existing Resources
- Introduction to JSON

Application Services

Amazon Simple Email Service (SES)

- Simple email service overview
- Configuring Amazon email service
- Amazon SES and Deliverability
- Amazon SES Email-Sending Process
- Email format and Limits of SES

Amazon Simple Queue Service (SQS)

- Simple Queue service overview
- SQS for background work task
- Creating a Queue
- Confirming the Queue exists
- Add a permission to the Queue

Amazon Simple Notification Service (SNS)

- Simple Notification Service overview
- SNS architecture
- Publishers and subscribers
- Creation of a topic
- Subscribing to topic via Email
- Setting notification for EC2 instance changes

AWS-CI/CD PIPELINE SERVICES

- Code commit
- Code Build
- Code Deploy, Code Artifacts
- Code Pipeline

AWS PROJECT IMPLIMENTATION:
Design, Implementing and Deploying 3-tier Architecture
- Implementing Serverless deployment - Lambda

Azure

What is Microsoft Azure?

Types of Azure Clouds

- Azure as IaaS & Azure as PaaS
- Azure As SaaS

Azure key Concepts

Azure Domains (Components)

- Compute
- Storage
- Azure Networking
- Database

Overview of DevOps

- Why DevOps?
- What is DevOps?
- DevOps Market Trends
- DevOps Engineer Skills
- DevOps Delivery Pipeline
- DevOps Ecosystem

Version Control with Git

- What is version control
- What is Git
- Why Git for your organization
- Install Git
- Common commands in Git
- Working with Remote Repositories

Azure DevOps CI/CD pipelines

- Introduction to CI/CD
- Tasks
- YAML Templates
- Create .NET Core CI pipeline
- Create .NET Core CD pipeline
- Sonar cloud integration

Implement and manage build infrastructure

- Private and hosted agents
- Integrate third party build systems
- Recommend strategy for concurrent pipelines
- Manage Azure pipeline configuration
  (e.g. agent queues, service endpoints, pools, webhooks)

Deploying ARM Template in Azure

- Introduction to CI-CD ARM templates
- Create ARM template
- Create and Run ARM deployment CI pipeline
- Create and Run ARM deployment CD pipeline

Application Secrets in the pipelines

- Introduction to Azure Key vault
- Accessing Secrets from Azure Key Vault
- Linking Secrets from Azure Key Vault

Azure Artifacts

- Introduction to Azure Artifacts
- Create NuGet packages and Versioning
- Package management with DevOps
- Maven packages

Continuous Integration using Jenkins

- Jenkins Management
- Adding a slave node to Jenkins
- Building Delivery Pipeline
- Pipeline as a Code

Implementation of Continuous Testing with Selenium

- Introduction to Selenium
- Why Selenium?
- Selenium – Webdriver
- Creating Test Cases in Selenium WebDriver (Waits)
- What and why X-Path
- Handling different controls on Webpage
- Framework in Selenium
- Selenium Integration with Jenkins
- Integrating Selenium with Jenkins

Introduction To DevSecOps

- What is DevSecOps
- Phases in DevSecOps
- Secure coding practices – OWASP Top 10
- SAST – Checkmarx, Fortify
- Dependency scanning & SCA-Snyk,
  OWASP Dependency-Check
- Secrets Management-Hashicorp Vault, AWS Secrets Management
- Container image security: Clair, Acqa security, Trivy
- IAC – Security: Checkov, Terrascan
- CI/CD Pipeline Security
- DAST – OWASP ZAP, Burp Suite, App scan

Continuous Deployment: Containerization with Docker

Containerization with Docker: Ecosystem and Networking

Configuration Management with Ansible

Faculty : .....
Date : .....
Time : .....
Duration : .....
Fee : .....
Comments : .....

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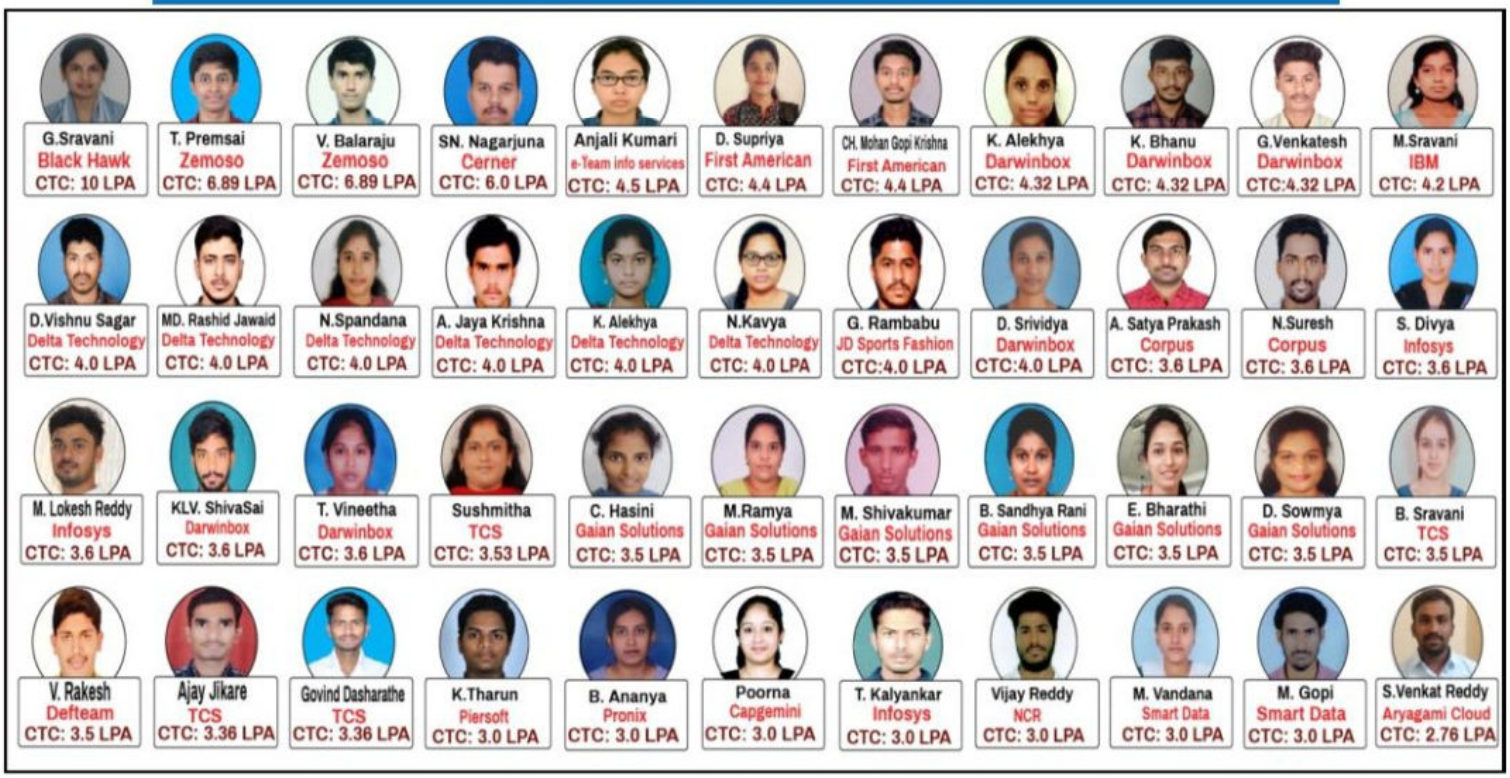
Placed Students



Courses We Offer

Testing Programs

- **Testing Tools** — Functional Test Engineer
- **Manual Testing** — Manual Test Engineer
- **Selenium Testing** — Automation Test Engineer
- **TOSCA** — TOSCA Test Engineer
- **API&ETL Testing** — API Test Engineer
- **Performance Testing** — LoadRunner & JMeter

Developing Programs

- **Full Stack Java** — Full Stack Java
- **Core Java** — Core Java
- **Adv Java & Frameworks** — Adv Java & Frameworks
- **Full Stack Python** — Full Stack Python
- **Python Programming** — Python Programming
- **DJANGO & Frameworks** — DJANGO & Frameworks

Advanced Programs

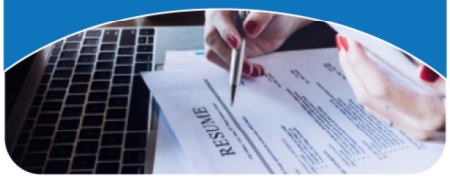
- **DevOps** — DevOps Engineer
- **Data science with AI** — Data science with AI
- **Data Analytics** — Data Analytics
- **Selenium with C#** — Selenium with C#
- **Playwright Automation** — Playwright Automation
- **Python with Selenium** — Python with Selenium

Training Methodology

Class room Training

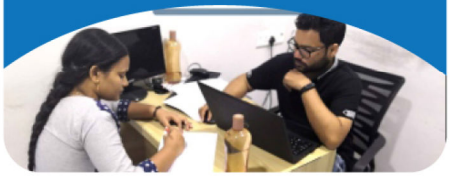
Project Training

Resume Preparation

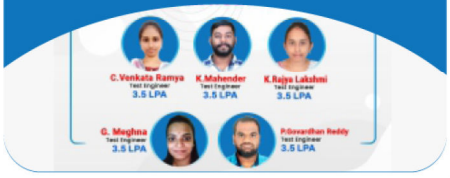


Certification

Interview Preparation



Placement Assistance



Our Infrastructure