

INFOSOFT IT SOLUTIONS

Training | Projects | Placements

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INFRASTRUCTURE AS CODE [I a C] TRAINING

1: Introduction to Infrastructure as Code

- **1: Understanding IaC**
 - Definition and Importance of IaC
 - Traditional Infrastructure Management vs. IaC
 - Benefits of IaC
 - Key Concepts: Declarative vs. Imperative, Idempotency, Versioning
- **2: IaC Tools Overview**
 - Popular IaC Tools: Terraform, Ansible, Chef, Puppet, CloudFormation
 - Use Cases and Comparisons
 - Setting Up the Development Environment

2: Getting Started with Terraform

- **3: Terraform Basics**
 - Introduction to Terraform
 - Installation and Setup
 - Writing Basic Terraform Configurations
 - Providers and Resources

- **4: Advanced Terraform**
 - Variables and Outputs
 - State Management
 - Modules and Reusability
 - Provisioners and Data Sources

3: Configuration Management with Ansible

- **5: Ansible Fundamentals**
 - Introduction to Ansible
 - Installation and Setup
 - Playbooks, Roles, and Inventories
 - Ad-hoc Commands
- **6: Advanced Ansible**
 - Variables and Templates
 - Handlers and Tags
 - Ansible Vault for Secrets Management
 - Ansible Galaxy and Custom Modules

4: Other IaC Tools and Ecosystem

7: Chef and Puppet

- Introduction to Chef
- Writing Chef Recipes and Cookbooks
- Introduction to Puppet
- Writing Puppet Manifests and Modules

- **8: AWS CloudFormation and Other Tools**
 - Introduction to AWS CloudFormation
 - Writing CloudFormation Templates
 - Introduction to Azure Resource Manager (ARM) Templates
 - Introduction to Google Cloud Deployment Manager

5: Best Practices and Advanced Topics

- **9: Best Practices in IaC**
 - Code Organization and Structure
 - Testing IaC: Tools and Techniques
 - Continuous Integration/Continuous Deployment (CI/CD) for IaC
 - Security and Compliance
- **10: Advanced IaC**
 - Policy as Code with Sentinel, OPA
 - Multi-Cloud IaC Strategies
 - Disaster Recovery and High Availability
 - Performance Optimization

6: Real-World Projects and Case Studies

- **11: Real-World IaC Implementations**
 - Case Studies of IaC in Industry
 - Migrating from Traditional Infrastructure to IaC
 - Troubleshooting and Debugging IaC

1: Advanced Terraform;-

- **1: Deep Dive into Terraform Modules**
 - Advanced Module Design Patterns
 - Nested Modules and Composition
 - Managing Module Versioning and Dependencies
- **2: Terraform State Management**
 - Remote State Backends (S3, GCS, etc.)
 - State Locking and Consistency
 - State Management Best Practices and Workflows
- **3: Terraform Enterprise Features**
 - Workspaces and Environment Management
 - Sentinel Policy as Code
 - Collaboration and Governance in Terraform Enterprise

2: Advanced Configuration Management with Ansible

- **4: Ansible Performance Tuning**
 - Optimizing Playbooks and Roles
 - Efficient Inventory Management
 - Parallelism and Asynchronous Task Execution
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- **5: Advanced Ansible Techniques**
 - Custom Module Development
 - Complex Role Dependencies and Inclusion Patterns
 - Advanced Error Handling and Debugging
- **6: Integrating Ansible with Other Tools**
 - Using Ansible with Jenkins for CI/CD
 - Integrating Ansible with Cloud Providers (AWS, Azure, GCP)
 - Ansible Tower/AWX for Orchestration and Automation

3: Advanced IaC with AWS CloudFormation and Other Tools

- **7: AWS CloudFormation Advanced Topics**
 - Nested Stacks and Cross-Stack References
 - Custom Resources and Macros

- Drift Detection and Stack Policies
- **8: Advanced ARM Templates and GCP Deployment Manager**
 - Complex Deployments with ARM Templates
 - Custom Scripts and Extensions in ARM Templates
 - GCP Deployment Manager Advanced Templates
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4: Continuous Integration and Continuous Deployment (CI/CD)

- **9: CI/CD Pipelines for IaC**
 - Designing Effective IaC Pipelines
 - Integrating Terraform and Ansible in CI/CD
 - Using Tools like Jenkins, GitLab CI, and GitHub Actions
- **10: Testing and Validation in IaC**
 - Unit and Integration Testing for IaC
 - Tools and Frameworks: Terratest, Inspec , Kitchen, etc.
 - Continuous Testing and Automated Compliance

5: Policy as Code and Security

- **11: Policy as Code**
 - Introduction to Policy as Code Concepts
 - Using OPA (Open Policy Agent) with Terraform
 - Implementing Policies with Hashi Corp Sentinel
- **12: Security Best Practices**
 - Securing IaC Code Repositories
 - Managing Secrets and Sensitive Data
 - Ensuring Compliance and Auditability

6: Multi-Cloud and Hybrid Cloud Strategies

- **13: Multi-Cloud IaC Strategies**
 - Designing Multi-Cloud Architectures
 - Managing Multi-Cloud Deployments with Terraform
 - Cross-Cloud Networking and Security Considerations
- **14: Hybrid Cloud Implementations**
 - Integrating On-Premise and Cloud Resources
 - Hybrid Cloud Networking and Security
 - Using Tools like Anthos, Azure Arc, and AWS Outposts

7: Advanced Topics and Emerging Trends

- **15: Advanced IaC Practices**
 - Blue-Green Deployments and Canary Releases
 - Immutable Infrastructure Patterns
 - Disaster Recovery Planning with IaC
- **16: Emerging Trends in IaC**
 - Serverless and IaC
 - Kubernetes and IaC
 - Future Directions and Innovations in IaC