DevOps Contents:

1. **Introduction to DevOps**
   - What is DevOps?
   - History and evolution of DevOps
   - DevOps vs Traditional IT
   - Benefits of DevOps
   - DevOps Lifecycle (with real-life examples)

2. **Version Control with Git & GitHub**
   - Git fundamentals: Init, Clone, Commit, Push, Pull
   - Branching, Merging, Rebase
   - GitHub basics: repositories, forks, pull requests
   - **Tools:** Git
   - **TASK:**
     - End-to-End Git Workflow with GitHub Integration
     - Hands-on Git: Branching, Merging, Rebase, Revert, and Collaboration

3. **Build Tools**
   - Introduction to Build Automation
   - Maven: Project setup, POM, dependency management
   - Gradle: Basic concepts
   - **Tools:** Maven
   - **TASK**
     - End-to-End Java Project Setup with Maven and GitHub Integration

4. **Continuous Integration with Jenkins**
   - Introduction to CI/CD
   - Jenkins installation & setup
   - Creating and running jobs
   - Pipelines (Declarative vs Scripted)
   - Integrating Git and Maven with Jenkins
   - **Tools:** Jenkins
   - **TASK**
     - Jenkins-Based Netflix Automation

5. **Infrastructure as Code (IaC) with Terraform**
   - What is IaC
   - Terraform basics: Providers, Resources, Variables
   - **Tools:** Terraform
   - **TASK**
     - Create a reusable Terraform configuration using variables for instance count, type, and name.
     - Implement different environments (e.g., dev, test, prod) using `.tfvars` files.
     - Use the Terraform CLI to deploy different environments from the command line.
     - Automated Multi-Tier AWS Infrastructure Provisioning with Terraform

6. **Containerization with Docker**
   - Introduction to Containers
   - Docker vs Virtual Machines
   - Docker installation and setup
   - Dockerfile, Images, Containers, Volumes, Networks
   - Docker Compose for multi-container apps
   - **Tools:** Docker
   - **Task**
     - Docker-Based Netflix App Deployment on AWS ECS

7. **Container Orchestration with Kubernetes**
   - Introduction to Kubernetes architecture
   - Pods, Deployments, Services, ConfigMaps
   - Minikube setup (local cluster)
   - Deploying containerized apps
   - Helm Charts (basic)
   - **Tools:** Kubernetes, Minikube, kubectl
   - **TASK**
     - Full Lifecycle Kubernetes Management: Pods, Deployments, Namespaces & Clusters

8. **Configuration Management (Optional Advanced)**
   - Need for configuration management
   - Introduction to Ansible
   - Writing Playbooks
   - Infrastructure provisioning with Ansible
   - **Tools:** Ansible
   - **TASK**
     - Ansible Playbook-Based Configuration Management

9. **Monitoring and Logging**
   - Importance of monitoring in DevOps
   - Prometheus: Metrics collection
   - Grafana: Data visualization dashboards
   - Alerting and dashboard examples
   - **Tools:** Prometheus, Grafana
   - **TASK**
     - Server Metrics Monitoring Dashboard with Prometheus & Grafana

10. **Final Capstone Project**
    - Plan → Code → Build → Test → Deploy → Monitor
    - Real-life app (e.g., E-commerce or Blog site)
    - Use complete DevOps toolchain
    - Presentation and demo