LAB MANUAL

Experiment: Introduction to DevOps, DevSecOps, SRE & NoOps

1. Aim

To understand and implement core DevOps principles including CI/CD, DevSecOps practices, SRE concepts, and NoOps (Serverless computing).

2. Objectives

- Understand DevOps lifecycle and its stages.
- Implement a basic Continuous Integration (CI) pipeline.
- Integrate security scanning (DevSecOps).
- Understand reliability concepts in SRE.
- Explore serverless architecture under NoOps.

3. Theory

DevOps is a culture and set of practices that combines Development and Operations to deliver software faster and more reliably. DevSecOps integrates security at every stage of the DevOps lifecycle. SRE (Site Reliability Engineering) focuses on system reliability, availability, monitoring, and incident response. NoOps refers to fully automated cloud-based infrastructure where minimal manual operational effort is required.

4. Tools Required

- Git & GitHub
- VS Code
- Python / Node.js
- GitHub Actions
- Bandit (Security Scanner)
- AWS / Any Cloud Platform (Optional)

5. Practical Implementation

Part A – CI Pipeline: 1. Create simple Python application. 2. Add unit test file. 3. Push code to GitHub. 4. Configure GitHub Actions workflow. Part B – DevSecOps: 1. Install Bandit. 2. Run security scan locally. 3. Integrate Bandit in CI workflow. Part C – SRE Concepts: 1. Add logging in application. 2. Discuss SLA, SLO, Error Budget. Part D – NoOps: 1. Create simple AWS Lambda function. 2. Deploy and test serverless execution.

6. Viva Questions

- What is DevOps?
- Explain CI/CD.
- Difference between DevOps and DevSecOps?
- What is SRE?
- What is Error Budget?
- What is NoOps?

7. Conclusion

In this experiment, we studied and implemented DevOps practices including CI/CD automation, integrated security (DevSecOps), reliability concepts (SRE), and serverless computing (NoOps).