DevOps RoadMap

DevOps

- Why was DevOps Required in the First Place?
- What is Waterfall Model?
- What Were the Drawbacks of Waterfall Model?
- What is DevOps?
- What is the Life Cycle or Phases of DevOps?

LifeCycle Or Phases of DevOps

Phase 1:- Plan

- What kind of tasks go into the planning phase in DevOps?
- Jira and Confluence?
- When You use Jira?
- When you should use Confluence?

Phase 2:- Code

- What kind of tasks go into the coding phase for DevOps?
- Git & GitHub
- Download Git and Make GitHub Account
- Make File Changes and Use GitHub as Your Central Repository
- How many Types of Branches can be created & What are the use cases
- Learn Daily Used Commands

1. Git Clone
2. git branch
3. git checkout
4. git status
5. git add
6. git commit
7. git push

Phase 3:- Build [Start of CI]

- What are the tasks Performed in Building Phase?

- What is Maven?

- Architecture of Maven?

- What is the Lifecycle of Maven?

- Learn About Pom.xml file

- Basic Commands of Maven

1. mvn –v
2. mvn clean
3. mvn compile
4. mvn package
5. mvn install
6. mvn test
7. mvn verify
8. mvn deploy
9. mvn dependency:tree

Phase 4:- Test

- What are the tasks Performed in Testing Phase?

- What is Junit/Selenium/SonarQube ?

- When to Use what Tool ?

- How to integrate it?

Phase 5 & 6:- Release & Deploy [We are Almost Ending Towards CI and Starting CD]

- Integrate with any CI/CD Tool – (example: Jenkins)

- Learn About Environments – Dev, SIT, UAT, Pre-Prod, PROD

- Learn Scripting (bash or python)

- Learn to write complete CI Pipeline with Scripting

Step 1: Integrate Version Control (e.g., Git/GitHub)

Step 2: Integrate Build Tool (Maven) to compile the code

Step 3: Integrate Unit Testing Framework (JUnit)

Step 4: Integrate Code Quality Tool (SonarQube)

Step 5: Package the Java application (.jar or .war)

Step 6: Create Docker Image (if using container-based deployment)

Step 7: Push Docker Image to Container Registry (DockerHub, ECR, etc.)

Step 8: Upload .jar/.war to Artifact Repository (Nexus, Artifactory)

Step 9: Archive build artifacts

Step 10: Integrate Notification System (Slack/Email)

– Learn to write complete CD Pipeline with Scripting

Step 1: Pull artifact (.jar/.war) from Artifact Repository

Step 2: Pull Docker Image from Container Registry (if using containers)

Step 3: Deploy to Application Server (e.g., Tomcat, Kubernetes, etc.)

Step 4: Configure Environment Variables and Properties

Step 5: Perform Post-deployment Smoke Tests

Step 6: Integrate Notification System (Slack, Email) for deployment status

Step 7: Implement Rollback Strategy (in case of failure)

– Lets Go Back a Bit on Phase 2– What DevOps Actually Code:

🐳Docker

– What is Docker?

– Why is Docker Required in DevOps?

– Architecture of Docker

1. Docker Daemon
2. Docker Client
3. Docker Images
4. Docker Containers
5. Docker Registries

– What are the Core Components of Docker?

☐ Images, Containers, Dockerfile, Volumes, Networks, etc.

– Docker Commands

1. Version & Help

2. Image Management

3. Container Management

4. Dockerfile Build & Custom Image

– Write Docker File and Learn about each instructions use cases (like: FROM, COPY, RUN etc)

☸ Kubernetes

– What is Kubernetes

– Why is Kubernetes Required in DevOps?

– Architecture of Kubernetes

1. Master Node / Control Plane
2. Worker Node
3. Kube–API Server
4. etcd
5. Controller Manager
6. Scheduler
7. Kubelet
8. Kube–Proxy
9. Container Runtime (Docker, containerd)

– What are the Core Components of Kubernetes And Write YAML Files

1. Pods
2. ReplicaSets
3. Deployments
4. Services
5. ConfigMaps
6. Secrets
7. Volumes
8. Namespaces
9. Ingress

– Kubernetes Commands

1. **Version & Help**
2. **Pod Management**
3. **Deployment Management**
4. **Service & Networking**
5. **Namespace & Resource Management**
6. **Logs & Debugging**

Phase 7 & 8:– Operate & Monitor (Very Important for a SRE Engineer)

– Understand What Happens in the Operate Phase After Deployment

– Why Is the Operate Phase Important in DevOps?

– What is Splunk and Why Use It for Monitoring and Logging?

- Learn How to Send Logs from Applications to Splunk
- Search, Filter, and Visualize Logs in Splunk
- Create Dashboards and Alerts in Splunk
- Monitor Application Errors, Latency, Traffic Trends
- Use Splunk for Root Cause Analysis and Incident Review
- You can also Achieve this with Scripting