

DevOps RoadMap



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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



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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)





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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)



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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?



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- 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



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