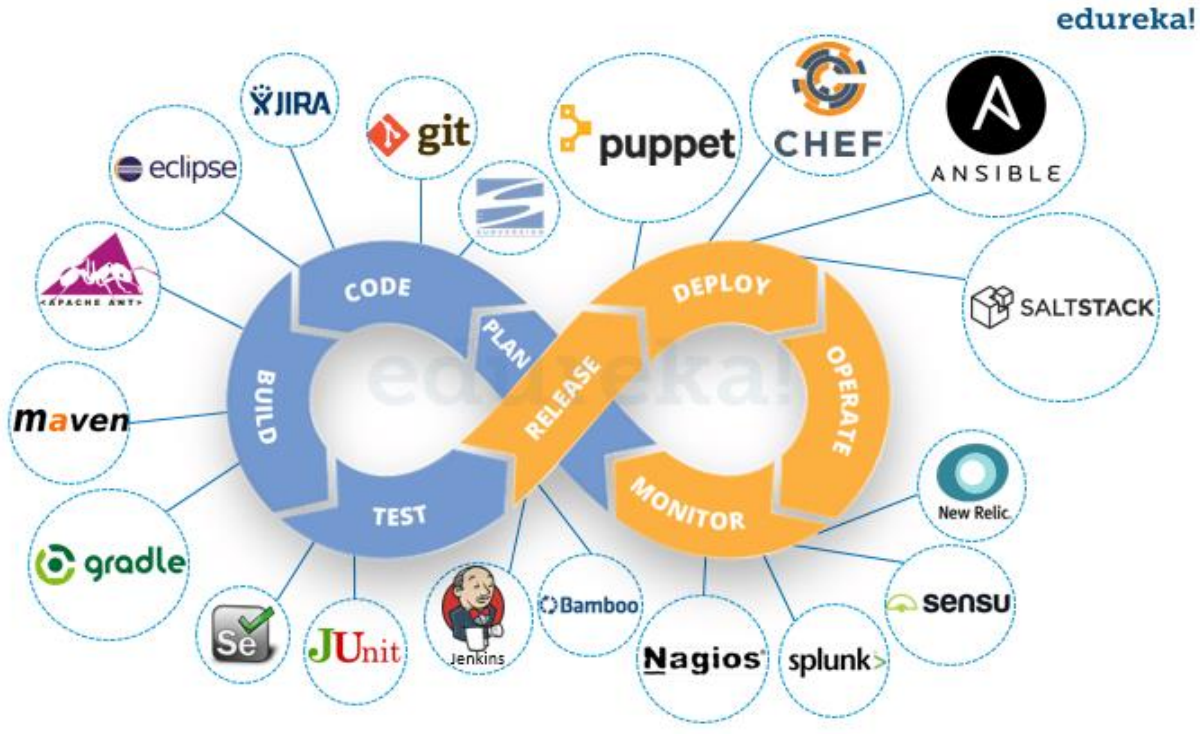
RV College Of Engineering

Submitted by - Ashish Garg
1RV22MC016

DevOps

DevOps is an approach to software development that emphasizes collaboration, integration, and automation between development and operations teams. It aims to streamline the software delivery process and improve the overall efficiency, quality, and speed of delivering software applications. The DevOps lifecycle consists of several phases, each with its own set of activities and objectives. Here are the different phases of DevOps:



1. Plan: In this phase, the development and operations teams collaborate to define the objectives and requirements of the software project. They identify the features to be developed, prioritize tasks, and create a roadmap for the project. This phase also involves setting up metrics and key performance indicators (KPIs) to measure the success of the project.

2. Code: In the code phase, the development team writes the actual code for the software application. They use version control systems (such as Git) to manage the codebase, ensuring that all changes are tracked and can be reverted if needed. Developers often follow best practices like modular programming, code reviews, and automated testing to maintain code quality.

3. Build: The build phase involves compiling the source code into executable binaries or artifacts. This process includes tasks like compiling code, packaging dependencies, and creating the deployment-ready artifacts. Continuous Integration (CI) tools like Jenkins, Travis CI, or CircleCI are commonly used to automate the build process and run automated tests.

4. Test: Testing is a critical phase in the DevOps lifecycle. It involves various types of testing, including unit testing, integration testing, system testing, and acceptance testing. Automation is a key aspect of this phase, where test cases are automated to ensure consistent and reliable results. Continuous Testing practices help catch issues early in the development cycle and improve the software quality.

5. Deploy: In the deployment phase, the software application is deployed to the target environment, such as development, staging, or production. Infrastructure as Code (IaC) tools like Terraform or Ansible are often used to automate the provisioning of infrastructure resources. Continuous Deployment (CD) practices enable frequent and automated deployments, ensuring that software changes are delivered to end-users rapidly.

6. Operate: Once the application is deployed, it enters the operate phase. Operations teams monitor the application's performance, stability, and security in the production environment. They use monitoring tools and log analysis to identify and resolve issues quickly. Continuous Monitoring helps ensure the application is running smoothly and provides insights for further improvements.

7. Monitor: The monitoring phase involves collecting and analyzing data about the application's performance and usage. Metrics such as response time, error

rates, and resource utilization are monitored to gain insights into the application's behavior and identify areas for optimization. Monitoring tools like Prometheus, Grafana, or Datadog are commonly used to visualize and analyze the collected data.

8. Feedback: Feedback is a crucial phase in the DevOps cycle, promoting continuous improvement. Development and operations teams gather feedback from users, stakeholders, and monitoring systems to identify areas for enhancement. This feedback loop helps in refining the software, prioritizing new features, and addressing any issues or bugs that arise.
   These phases are not necessarily linear, and DevOps practices encourage continuous integration and delivery, meaning that each phase can overlap or occur simultaneously. DevOps promotes collaboration and automation throughout the software development lifecycle, leading to faster delivery, increased efficiency, and higher quality software applications.

Tools	**Company**	**Percentage**
Git	Infosys	90%
Jenkins	Wipro	80%
Docker	TCS	75%
Kubernetes	HCL Technologies	70%
Ansible	Tech Mahindra	65%
Terraform	Accenture	85%
Selenium	Cognizant	60%
SonarQube	Mind tree	55%
ELK Stack	Capgemini	50%
JIRA	L&T InfoTech	75%
Confluence	Tata Consultancy	40%
AWS	HCL Info systems	45%
SBT	TCS	30%
Maven	Infosys	65%
JUnit	Wipro	55%

Codeship	Mind tree	20%
Nagios	Tech Mahindra	35%
Splunk	Cognizant	40%
Chef	Accenture	50%