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THADOMAL SHAHANI TSEC ENGINEERING COLLEGE

Assignment 2

To understand DevOps: Principles, Practices, and DevOps Engineer Role and Responsibilities.

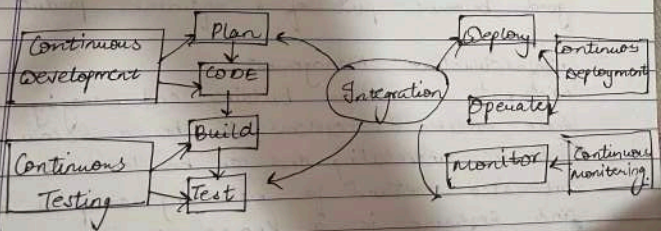
* What is DevOps ?

Sol: DevOps is a collaborative approach where teams work together to build and deliver secure software efficiently. It combines software development (dev) and operation (ops) to accelerate delivery through automation, collaboration, fast feedback and iterative improvement. Built on Agile methodology, DevOps created a culture of accountability, collaboration, and shared responsibility for business outcomes.

Core Principles :-

- Develop and test in production like environment
- Deploy build frequently
- Continously validate operational quality

DevOps Practices



• Continuous Deployment :-
This is the phase that involves planning & coding versioning and managing builds of a software application's functionality.

• Continuous Testing :-
Continuous Testing is, executing automated tests, continuously and repeatedly against the code base and the various deployment environments It is a software testing methodology which focuses on achieving continuous quality and improvement.

• Continuous Integration :
Continuous Integration refers to the build and unit testing stages of the software release process. Every revision that is commited triggers an automated build and test.

• Continuous Delivery V/s Continuous Deployment :
Continuous delivery & deployment originate from continuous integration, a method to develop, build and test new code rapidly with automation so that only code that is known to be good becomes part of a software product.

• Infrastructure Management :
Without automation, building and managing large-scale modern IT systems can be a resource-intensive undertaking and can be lead to increased automated method for maintaing computer system and software is a known, consistent state.

• Configuration Management:
Infrastructure as Code is the pratice of describing all software runtime environment & networking settings and parameters in simple textual format, that can be stored in your version control System (VCS) and versioned on request. These text files are called manifests and are used by DevOps tool to automatically provision and configure built servers, testing, staging & production.

• Manifacture Architecture:
Docker is a tool designed to make it easier to create, deploy and run application by using containers. Containers allow a developer to package up an application with all of the part it needs, such as libraries and other dependencies, and deploy it can one package.

• CLOUD Based DevOps:
DevOps automation is becoming cloud-centric most public & private cloud computing providers support DevOps systematically on their platform, including continous integration & continuous development tools.

* DevOps Engineer Role :-
A DevOps engineer manages a company's IT infrastructure, bridging development and Operations. Key responsibilities includes:-

Technical Responsibilities:-
- Implement development, testing and automation tools.
- Set up infrastructure & tools.
- Code review & validation.
- Bug fixing & troubleshooting.
- Building & maintaining CI/CD pipelines.
- Security implementation & monitoring.

Management Responsibities:-
- Understand customer requirement & KPIs
- Plan team structure & activities.
- Manage stakeholders
- Define development & operational processes.
- Monitor customer experience.
- Mentor team member.