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THADOMAL SHAHANI TSEC ENGINEERING COLLEGE

SEPM Lab Experiment No. 01

Exp 01 :- To understand DevOps : Principles, practices & DevOps Engineer Role and Responsibility

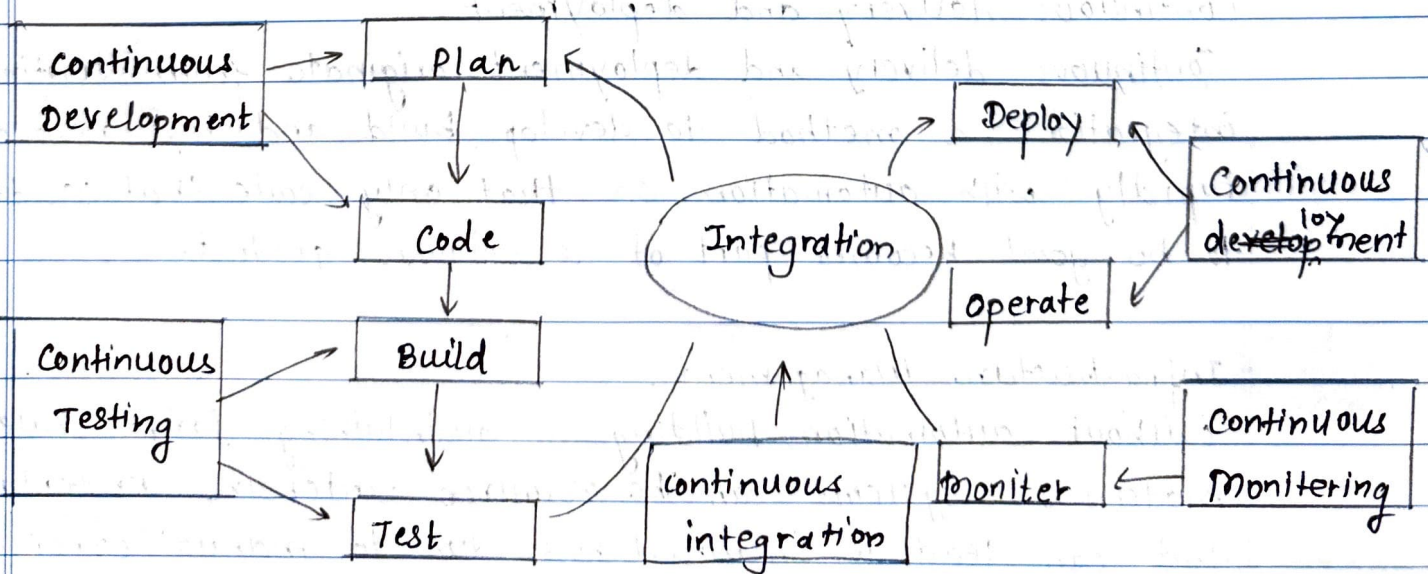
What is DevOps ?

DevOps is a collaborative approach where teams work together to build and deliver secure software efficiently. It combines software development (dev) and operations (Ops) to decide how to accurate delivery through automation, collaboration, fast feedback and iterative improvement. Built on Agile methodology, DevOps creates a culture of accountability, collaboration and shared responsibilities for business outcomes

Core Principles :

i) Develop and test in production-like environment
ii) Deploy builds frequently
iii) Continuously validate operational quality.

DevOps Practices :



Continuous Development
This is the phase that involves planning and coding, versioning and managing build of the software applications functionality
ex: git, github, maven, etc.

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 & improvement
Ex: Bamboo, appium

Continuous Integration:
Continuous Integration refers to the build and unit testing stages of the software releases process. Every revesion that is committed triggers an automated build and test.
ex: Jenkins, Travis ci, circle ci

Continuous delivery and deployment
Continuous delivery and 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.

Infrastoucture Management:
without automation, building & maintaining large scale modern IT systems can be resource-intensive undertaking and can lead to increased risk due to manual error.

Configuration and resourse management is an automated method for maintaining computer systems and software is in a known consistent state.

Configuration Management

Infrastructure as code is the practise of describing all software runtime environment and networking settings and parameters in simple textual format; that can be stored in your version control system (VCS) and versioned on request. ~~There~~ + These text files are called manifest and are used by DevOps tools to automatically provision & configure valid serves, testing & production environment.

Microservice Architecture

Docker is a tool designed to make it easier to create, display and run application by using containers. Containers allows a developer to package up an application with all of the parts it needs, such as libraries and other dependencies and deploy it as one package. By doing so, thanks to the containers the developer can rest assured that the application will run on any other linux machine regardless of any customized settings that machine might have

Eg: Nagios, splunk, etc,

Cloud Based DevOps.

DevOps automation is becoming cloud ~~eeuuta~~. Most public and private ~~dev~~ cloud computing provides support. DevOps systematically on their platform, including continuous integration and continuous development tools.

ex: amazon web services, amazon lambda, google cloud, etc

DevOps Engineer Roles :

A DevOps Engineer manages a company's IT infrastructure, bridging development and operation. key responsibilities include :

Technical Responsibilities :

→ implement development, testing and automation tools.
→ set up infrastructure and tools
→ code review and responsibilies
→ Bug fixing and monute rooting
→ Build and maintain u/co pipelines
→ security implementation and monitering

Management Responsibilities :

→ understand customer requirements and KPIs.
→ Manage stakeholders
→ Define development & operational processes.
→ Moniter customer experience
→ Provide periodic progress reports.
→ Mentor team members.