Flavin Daxey | 4NI20IS401| B Section

devOps

ASSIGNMENT 1

1. What is CI/CD ?

CI and CD stand for continuous integration and continuous delivery/continuous deployment. CI is a modern software development practice in which incremental code changesare made frequently and reliably. Automated build-and-test steps triggered by CI ensure that code changes being merged into the repository are reliable. The code is then delivered quicklyand seamlessly as a part of the CD process. In the software world, the CI/CD pipeline refers tothe automation that enables incremental code changes from developers' desktops to be delivered quickly and reliably to production.

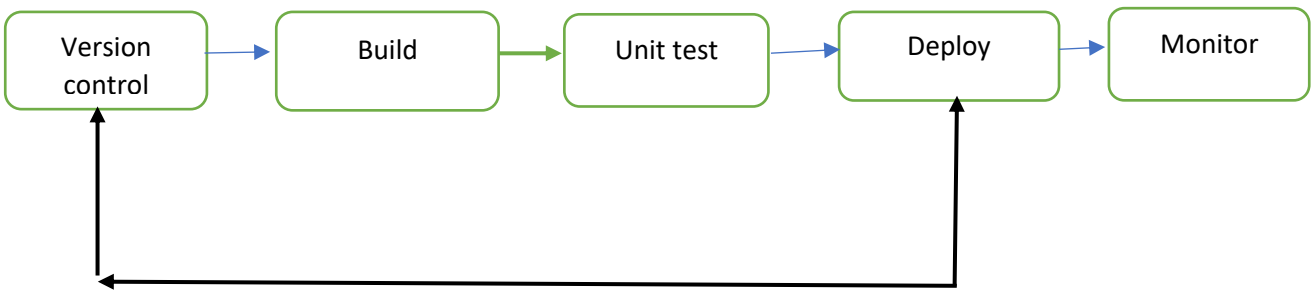
CI/CD allows organizations to deliver software quickly and efficiently. CI/CD facilitates an effective process for getting products into market faster than ever before, continuously delivering code into production, and ensuring an ongoing flow of new features and bug fixes via the most efficient delivery method.

Continuous integration (CI) is practice that involves developers making small changes and checks to their code. CI helps streamline code changes, thereby increasing time for developersto make changes and contribute to improved software.

Continuous delivery (CD) is the automated delivery of completed code to environments like testing and development. CD provides an automated and consistent way for code to be delivered to these environments.

Continuous deployment is the next step of continuous delivery. Every change that passes the automated tests is automatically placed in production, resulting in many production deployments.

Block diagram of CI/CD



2. CI/CD PIPELINE

A continuous integration and continuous deployment (CI/CD) pipeline is a series of steps thatmust be performed in order to deliver a new version of software. CI/CD pipelines are a practicefocused on improving software delivery throughout the software development life cycle via automation.

By automating CI/CD throughout development, testing, production, and monitoring phases ofthe software development lifecycle, organizations are able to develop higher quality code, faster. Although it's possible to manually execute each of the steps of a CI/CD pipeline, the true value of CI/CD pipelines is realized through automation.

The CI/CD pipeline combines continuous integration, delivery and deployment into four majorphases: **source, build, test and deploy**.

The 7 essential stages of a CI/CD pipeline

1. The trigger
2. Code checkout
3. Compile the code
4. Run unit tests
5. Package the code
6. Run acceptance tests
7. Delivery or Deployment

3. FEATURE FLAGES (how it is used ?)

Feature flags are a system of code that allows conditional features to be accessed only when certain conditions are met. In other words, if a flag is on, new code is executed if the flag is off, the code is skipped. Also referred to as or release toggles, feature flags are a best practice in DevOps, often occurring within distributed version control systems.

we should use feature flags, also known as feature toggles as a part of your regular developmentprocess. Any time you have a new feature release you should wrap it in a feature flag to test it,control who has access to it, and gradually roll it out to new users.