Project UdaPeople

Section1:

Explain the Fundamentals and Benefits of CI/CD to Achieve, Build, and Deploy Automation for Cloud-Based Software Products

CI/CD is described as method or combined practices to frequently deliver applications to customers by enforcing automation into the building, testing and deployment of applications.

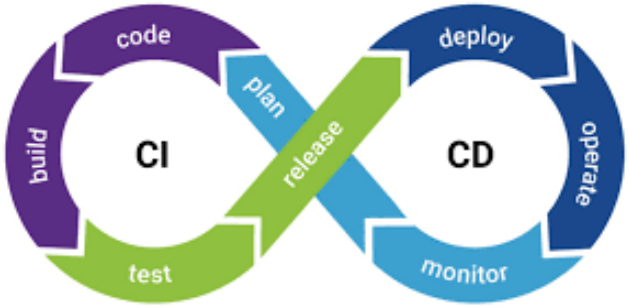

Figure 1: CI/CD steps

The combined practices of a CI/CD are *continuous integration, continuous delivery* and *continuous deployment*.

A CI/CD pipeline is a series of orchestrated steps that have the ability to take source code all the way into production. The steps include **building**, **packaging**, **testing**, **validating**, **verifying infrastructure**, and **deploying** into all necessary environments

How does organization benefits from the CI/CD

Let‘s see the CI/CD will benefit both product developers and the business in general.

- **CI/CD will create more revenue:**

  Continuous integration (CI) will help developers merge their code changes to the main code branch many times per day. Once a developer’s changes to an application are merged, those changes are validated by automatically building the application to ensure the changes have not broken the application. *This will help developers to focus on their work and more features that generate value will be released more quickly*.

- **CI/CD will reduce time to deployment:**
  Through automated testing, the development process will be more efficient, reducing the time of the application delivery process. In addition, with automated deployment and provisioning, *the developer’s changes to application will be live in cloud within few minutes.*
- **Simplified rollback**

  With CI/CD pipelines, developers will have powers to fail fast and recover even faster. Means that if there is a problem with the current pushed state of application, they can undo to return production to a working state. *The ability to easily rollback code saves team’s time, energy, and resources and leads to faster fixes of problem code.*

- **Continuous feedback for improvement:**

  The CI/CD pipeline is a continuous cycle of build, test and deploy. Every time code is tested, developers can quickly take action on the feedback and improve the code. Also gives everyone on project including *stakeholders, a way to see what and where changes are happening, and what is going wrong too*.

- **Improving team collaboration and system integration**
  Everyone on the team will have ability to change code, respond to feedback and quickly respond to any issues that occur. *With continuous feedback, the ci/cd pipeline makes the entire development and deployment process more transparent*.

- **CI/CD ensures the superior code quality**
  Teams collaborate to identify critical bugs, which ensures that bad code does not make it to production. With pipelines automation, developers get to know about code problems in real time. This will save time and money since developers will not spend time and resources on buggy codes. *CI/CD implementation drives business growth by providing high-quality releases that have fewer errors and bugs.*