**National College of Ireland**

**Bachelor of Science (Honours) in Computing**

**DevOpsSec**

**Continuous Assessment**

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1. Continuous Integration(CI) is the software development practice where developers merge their changes to the main branch multiple times per day. Each merge then triggers an automated build and runs a test sequence. If the build and test is successful, you can move onto further stages of continuous delivery, but if the build fails, The CI system will block it from progressing onto further stages. The developer would receive a report and would usually fix the issue as soon as possible. Some examples of CI systems are : Circleci, Jenkins and GitLab.

Continuous Delivery(CD) is the software development practice where code changes are prepared to be released to the production stage. Though the code must first pass the automated unit tests, integration tests and system tests before going to production. CD automatically deploys releases to a testing or staging environment, it does not deploy it to the production stage. That still requires human intervention with this development practice.

Continuous deployment furthers continuous delivery as this practice ensures the code changes are continuously released to the production environment. The aim is to release a new version of the application whenever a developer makes any changes to the code and get those changes to end-users. It aims to reduce the time between a developer writing a line of code and the end-user having access to the new or adjusted feature. A diagram of process automation

Description automatically generated

Continuous security is the approach that integrates different security practices into the other software development practices I was talking about. It focuses on introducing security measures as early as possible into the software development lifecycle. It also puts focus on automating the security controls and compliance monitoring. The goal is to identify and fix security issues automatically and improve the overall security of the application.

The key differences between the approaches are that CI focuses on integrating code changes quickly and ensuring they work together. This is usually done multiple times a day in order to obtain rapid feedback on the feasibility of the code. CD allows for the software to be automated at every step except for release. This still requires manual input but with CD the software should be able to be reliably released at any time. Continuous deployment does automate these releases to production as soon as they are ready. And then Continuous security is the practice of emphasizing the importance of security along every step of the way of a CI/CD pipeline. The Image used above is a good way to show the differences between the practices and Continuous security can be overlayer along every step of the way.