**COMP 4964 – DevOps Engineering**

**Lab 7 CI/CD**

## What is CI/CD?

**CI/CD** stands for **Continuous Integration** and **Continuous Deployment/Delivery**. It is a set of practices that automate and streamline the software development process, from code integration to testing and deployment.

A diagram of a software development process

Description automatically generated

### Continuous Integration (CI)

Purpose: Frequently integrate code into a shared repository.

Process: Each code commit triggers automated builds and tests.

Benefit: Catches bugs early and ensures stable code integration.

### Continuous Delivery (CD)

Purpose: Automate the release process after successful integration.

Process: Code is automatically prepared for release to staging or testing environments.

Benefit: Enables frequent and reliable releases with manual approval for production.

### Continuous Deployment (CD)

Purpose: Fully automate the release process.

Process: All changes that pass tests are automatically deployed to production without manual intervention.

Benefit: Speeds up the release process with every change reaching production instantly.

### Key Benefits of CI/CD

1. Faster Feedback Loop: Bugs are caught and fixed early.

2. Automation: Minimizes manual tasks, reducing human errors.

3. Frequent Releases: New features and fixes can be delivered to users more quickly.

## AWS CodePipeline

AWS CodePipeline is a continuous delivery service you can use to model, visualize, and automate the steps required to release your software. You can quickly model and configure the different stages of a software release process.

CodePipeline automates the steps required to release your software changes continuously.

For information about pricing for CodePipeline, see [Pricing](https://aws.amazon.com/codepipeline/pricing/)

## Part 1: Create a simple pipeline with S3 bucket

<https://docs.aws.amazon.com/codepipeline/latest/userguide/tutorials-simple-s3.html>

## Part 2: Create a simple pipeline with Github

<https://aws.amazon.com/getting-started/hands-on/create-continuous-delivery-pipeline/>

## Part 3: Make a pipeline with more stages

<https://docs.aws.amazon.com/codepipeline/latest/userguide/tutorials-four-stage-pipeline.html>