CI/CD - A better way to build and ship products to market

The advantages of CI/CD in achieving build and deployment automation within our company's products

Continuous Integration

- The process of often merging all developers' working copies into a single mainline. It is the "Making" process.
- It is based on the idea that teams of programmers who make frequent releases involving small changes to code produce reliable and easily debugged output.
- Some common phases of CI
  - Compile
  - Unit Test
  - Static Analysis
  - Dependency vulnerability testing
  - Store Artifact

Continuous Deployment

- The code changes to an application are released automatically into the production environment.
- It aims to reduce the lead time for reliably releasing software at any time.
- It's the process of "Moving" the artifact from the shelf to the spotlight.
- Some common phases of CD
    - Creating infrastructure
    - Provisioning servers
    - Copying files
    - Promoting to production
    - Smoke Testing (aka Verify)
    - Rollbacks

Benefits of CI/CD at the Business Level

- **Faster and More Frequent Production Deployments**
  - Businesses that move faster can respond more quickly to customers; responding faster can increase uptake, market share and revenue
- **Catch Compile Errors After Merge**
  - It reduces cost since it frees up developer time that could be spent on product development as there aren't as many code changes to fix down the road if the error is caught quickly
- **Detect Security Vulnerabilities**
  - By avoiding humiliating or expensive security flaws, this would help avoid cost

- **Automated Smoke Tests**
  - Protects revenue by reducing downtime due to a serious bug or crash connected to deployment
- **Automate Infrastructure Creation**
  - Less human mistake will be produced as a result, which will lead to quicker deployments and reduce costs.
- **Automated Rollback Triggered by Job Failure**
  - It can instantly roll back and deploy the most recent successful build instantly to avoid production interruption and protect revenue