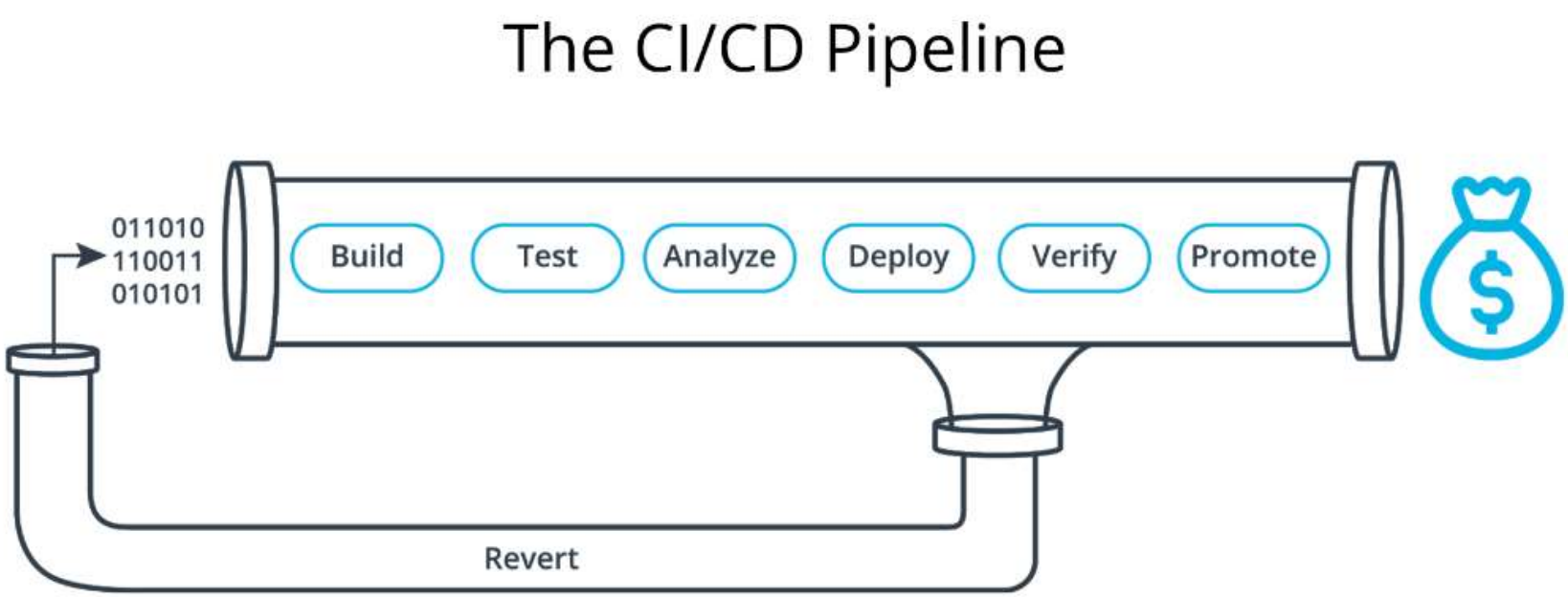
# Fundamentals of CI/CD

- **Continuous integration** means that developers frequently merge their code changes to a shared repository. It's an automated process that allows multiple developers to contribute software com ponents to the same project without integration conflicts. CI involves automated testing whenev er a software change is integrated into the repository. *Some common CI-related phases might inc lude:* compile, unit Test, static Analysis, dependency vulnerability testing, store artifact.

- **Continuous Deployment** means that *a software engineering approach in which the value is deliv ered frequently through automated deployments. Everything related to deploying the artifact fits here. It's the process of "Moving" the artifact from the shelf to the spotlight. Some common CD-r elated phases might include: c*reating infrastructure, provisioning servers, promoting to producti on, smoke Testing (aka Verify), rollbacks.

- **A CI/CD pipeline** is a set of data processing elements connected in series, where the output of o ne element is the input of the next one. In the context of software development, a CI/CD pipelin e is a series of automated steps that allow developers to quickly and safely release new code cha nges to production.

# CI/CD pipeline




**The Phases of CI/CD Pipeline**

# Why is CI/CD Important?

- When large pieces of a code base change at a time it puts an application's quality at higher risk. This is bec ause there is more likely a chance that something will break the larger the change - and troubleshooting is harder the larger the change. Agile organizations frequently integrate their  code and perform automated tests to reduce the cost of introduction, identifying root causes, and fixing bugs.

- Automation is key to CI. There is no way someone could keep up manually at the speed needed for continuous integration to be successful. Developers need to integrate frequently and need feedback as so on as possible.

- With continuous deployment, in which the release to production is fully automated, you relinquish some control. At the same time, you gain additional advantages. You can develop at an even higher velocity than the already-fast continuous delivery, since you don’t need to pause development for releases, and yo ur customers will appreciate the steady stream of improvements.

# Benefits of CI/CD


- With CI/CD, you can have many time to focus analyzing businesses of tasks and can present the estimating cost of each piece of strategies. Therefore, you can transmit that pieces of strategies to any department ot her.