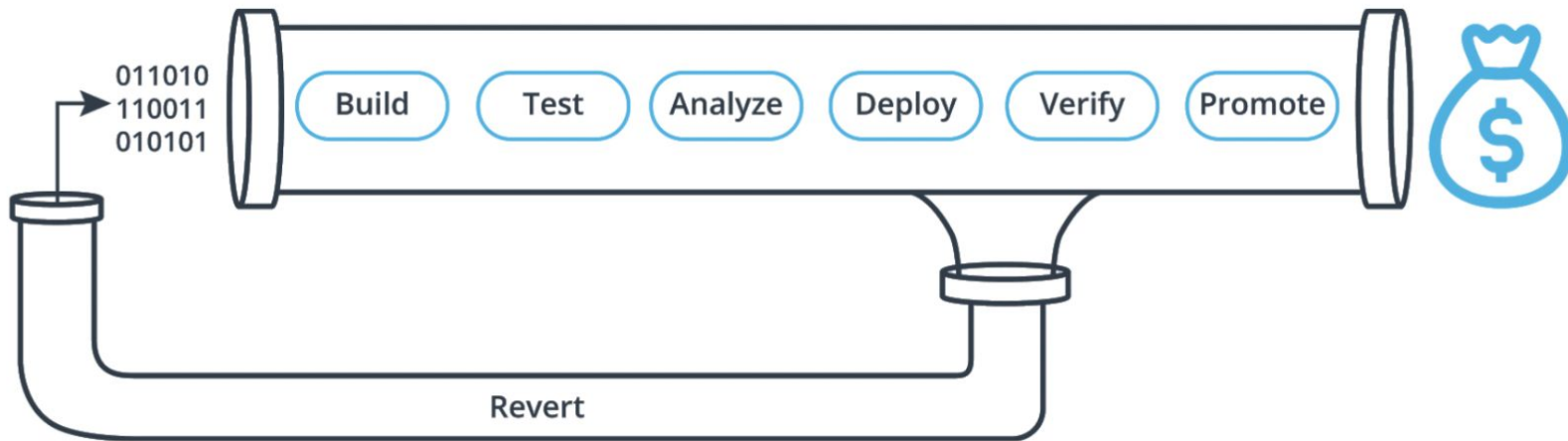# CI/CD

Fundamentals and Benefits

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CI/CD Fundamentals

What is CI/CD?

- **Continuous Integration (CI)**: automates the continuation of code changes from contributors within a software project.
- **Continuous Deployment (CD)**: the process of automatically deploying repository changes to a production environment.
- **Continuous Delivery**: a software development practice that allows teams to produce software in <u>short cycles</u>.

The CI/CD Pipeline

CI/CD Benefits

1. Reduce Cost

- Catch Compile Errors After Merge
  $\rightarrow$ Less developer time on issues from new developer code
- Automate Infrastructure Cleanup
  $\rightarrow$ Less infrastructure costs from unused resources

2. Avoid Cost

- Catch Unit Test Failures
  → Less bugs in production and less time in testing
- Detect Security Vulnerabilities
  → Prevent embarrassing or costly security holes
- Automate Infrastructure Creation
  → Less human error, Faster deployments

3. Increase Revenue

- Faster and More Frequent Production Deployments
  → New value-generating features released more quickly
- Deploy to Production Without Manual Checks
  → Less time to market

4. Protect Revenue

- Automated Smoke Tests
  → Reduced downtime from a deploy-related crash or major bug
- Automated Rollback Triggered by Job Failure
  → Quick undo to return production to working state