Software Development

Deployment and CI/CD

Module 20

Welcome

What is **deployment**?

Live on the **Internet** vs. **Production-Ready**

Live on the Internet vs. Production-Ready

1. Deployment encompasses the entire process of getting an application to be "production-ready," ensuring it runs reliably and securely, and maintaining it over time.

2. For example, a production-ready application will include the following:

- Environment configuration
- Automated testing
- Version control
- Security
- Monitoring and logging
- Documentation

What is **DevOps?**

DevOps is **NOT** a:

1. Specific tool
2. Technology
3. Job title
4. Standalone practice

DevOps **IS**:

1. **Philosophy**:
   DevOps is a mindset devoted to collaboration, communication, and integration between developers and operations teams.

2. **Problem-Solving**:
   Whether the solution involves a shift in team culture or implementing new technology, DevOps focuses on solving problems.

3. **Personal:**
   - Before you can harness the power of DevOps for your team, you first need to figure out what it means to you.
   - Companies will use DevOps as marketing, but not every solution is right for you.
     - "Does this solution solve **my/our** problem? Is this the tool **we** need?"

What are the goals of **DevOps?**

The Goals of DevOps are:

1. To foster collaboration and experimentation among teams.

2. To improve the speed and reliability of projects by automating parts of the development and deployment process.

The Three **Ws** of Strategy

How Do We Solve Problems?

There are many problem-solving solutions and critical thinking philosophies available. This strategy focuses on asking the following questions:

1. **Why?** Focus on the reasons and motivations behind a strategy.
2. **What?** These are the goals and objectives the strategy intends to achieve.
3. **Who?** These are the people who benefit from the solutions.

Standards vs. **Rules**

Standards vs. Rules

Standards

Standards are established norms or guidelines agreed upon as best practices in an industry or company. They are designed to promote efficiency, consistency, and quality.

- Standards are more flexible and often change to reflect a team's project or situation.

Rules

Rules are strict, non-negotiable requirements. They generally don't involve collaboration as they often involve legal concerns, security, or safety.

- Examples include password and secret-key policies, access control rules, and workplace compliance.

Standards

Examples

- Automation: Don’t do anything twice
- Planning:
  - Work with Project Managers and plan for changes
  - Agile strategies
- Quality:
  - Version control
  - Config management
  - Testing
  - Auditing
- Communication: Open communication and collaboration
- Improvement: Metrics

What is **CI/CD?**

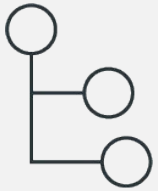
What is CI/CD?

1. **Continuous Integration and Continuous Delivery/Continuous Deployment (CI/CD)** is a set of practices and tools that automate the process of software development, testing, and deployment.

2. CI/CD shortens the software development lifecycle for making the product available to customers.

3. CI/CD bridges the gap between software development and the provisioning and maintenance of the IT infrastructure.

4. By enforcing automation in the building, testing, and deployment of applications, CI/CD shortens the time needed for deployment, increases productivity, and results in fewer bugs in the product.



CI/CD **Pipeline**

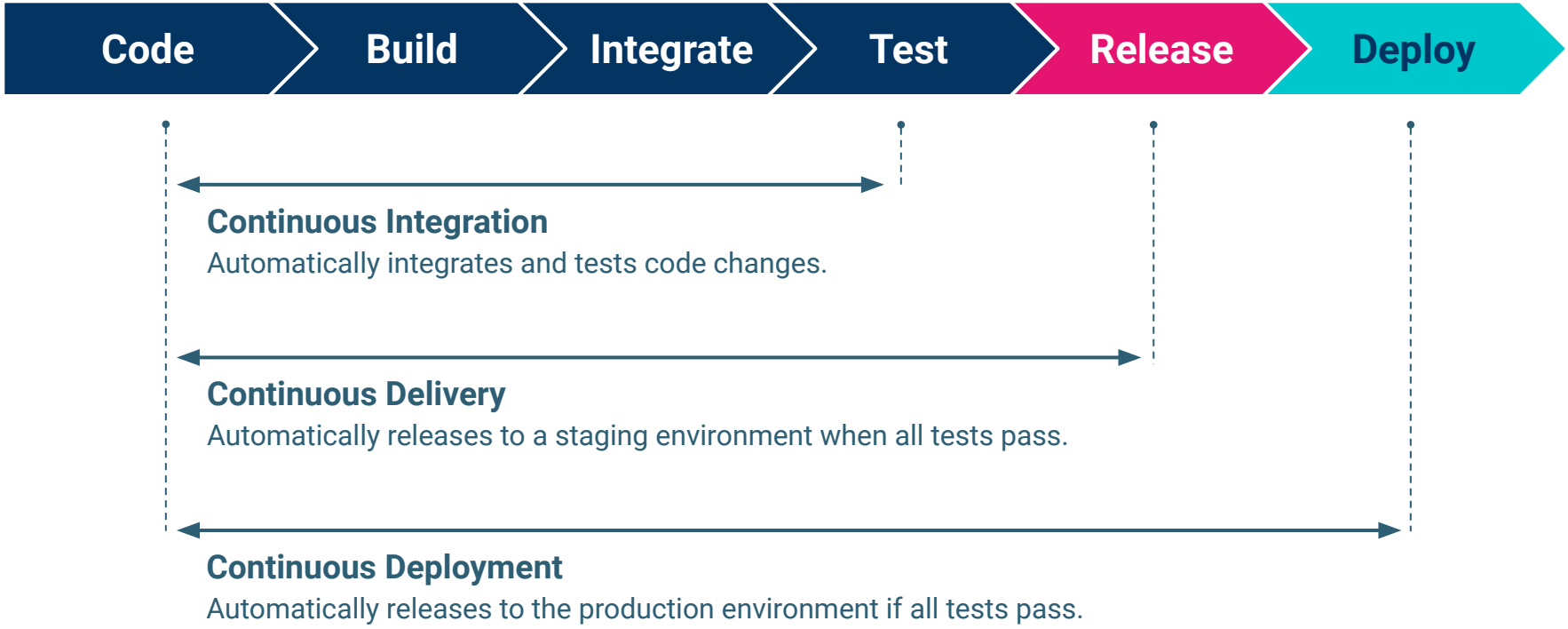
CI/CD Pipeline

1. The CI/CD pipeline consists of continuous integration, delivery, and deployment phases. Each phase has a particular task or process to perform.

2. Each phase consists of sequential **stages**.

3. Companies can define these stages, which make up their workflows.

CI/CD Pipeline: Stages of Development



Instructor **Demonstration**

Mini-Project