

Incorporating CI/CD into the QA Process

To ensure a smooth and efficient testing workflow, QA is integrated into the CI/CD pipeline as follows:

1. Continuous Integration (CI) – Early Defect Detection

- Developers push code to the repository, triggering an automated build process.
- Automated unit, API, and functional tests run immediately to validate changes.
- If any test fails, the pipeline stops, and the issue is flagged for developers.

2. Continuous Delivery (CD) – Ensuring Stability Before Deployment

- After passing CI tests, the code is deployed to a staging environment.
- Regression tests and UI/UX tests run to ensure new changes do not break existing features.
- Once verified, the release moves to production with minimal manual intervention.

Managing Tests for New Features vs. Regression Testing

• New Feature Testing:

- For every new feature, we create test cases covering all possible scenarios (positive, negative, edge cases).
- Automated UI and API tests validate the functionality before merging the code.
- Manual exploratory testing helps uncover unexpected issues.

• Regression Testing:

- A set of automated test scripts ensures that existing functionalities remain intact after updates.
- Regression suites are triggered on every new commit to catch potential side effects.
- High-risk areas receive additional manual testing if necessary.

Performance & Security Testing Strategies

- **Performance Testing:**

- **Load Testing:** Simulates high user traffic to measure system response.
- **Stress Testing:** Pushes the application beyond normal limits to check for crashes.
- **Scalability Testing:** Ensures the system can handle increased workload efficiently.

- **Security Testing:**

- **Authentication & Authorization Checks:** Ensuring users have proper access control.
- **Penetration Testing:** Simulating attacks to evaluate system resilience.

By integrating these processes into CI/CD, we ensure faster feedback, improved quality, and a stable, secure repository management system.