

QA Basics Report — Introduction to Quality Assurance (QA)

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1. Introduction

Quality Assurance (QA) is an essential discipline in software development that ensures software products meet required standards and function as expected. The main goal of QA is to **prevent defects** by improving the processes involved in developing software, rather than just detecting defects after development.

QA is process-oriented and covers the entire Software Development Life Cycle (SDLC). It is a key factor in delivering high-quality, reliable, and user-friendly software applications.

2. Objectives of QA

The main objectives of QA are:

- Ensure that software meets functional and non-functional requirements.
- Detect and prevent defects early in the development process.
- Improve development processes to enhance productivity.
- Deliver high-quality software to satisfy end-users and stakeholders.
- Reduce long-term costs by catching issues early.

3. Importance of QA

QA plays a critical role in:

- **Reducing defects** in software.
- **Improving performance** and user experience.
- Ensuring compliance with industry standards and client expectations.
- **Building trust** in the software product and development team.
- Saving time and cost by identifying issues early.

4. QA in the Software Development Life Cycle (SDLC)

QA integrates into all phases of SDLC:

1. **Requirement Analysis** — Ensure clarity and completeness of requirements.
2. **Design Phase** — Verify design aligns with requirements.
3. **Implementation** — Enforce coding standards and practices.

4. **Testing** — Validate and verify the software through testing.
5. **Deployment & Maintenance** — Monitor and improve quality post-release.

5. Basic QA Concepts Learned

a) Testing Types

- **Functional Testing** — Ensures software works according to requirements.
- **Non-Functional Testing** — Checks performance, usability, security, etc.
- **Regression Testing** — Validates that changes do not break existing functionality.
- **Smoke Testing** — Basic checks before deep testing.
- **Sanity Testing** — Quick checks after minor changes.

b) Test Case

A test case describes conditions, actions, and expected results to test a feature.

Example:

Test Case ID	Description	Input	Expected Result
TC001	Verify login functionality	username/password	Successful login message

c) Bug Life Cycle

- New → Assigned → Open → Fixed → Retested → Closed
- Sometimes → Reopened if the issue persists.

6. Tools in QA

- **Manual Testing Tools:** Jira, TestRail, Zephyr.
- **Automation Testing Tools:** Selenium, Cypress, Postman (for API testing).
- **Bug Tracking Tools:** Jira, Bugzilla.

7. Reflection

I learned that QA is not just about finding bugs, but about **building quality into the process**. Documentation, test cases, and proper testing types are very important. QA plays a vital role in delivering reliable and high-quality software.