

6. TESTING

A) How testing ensures quality and requirement conformance

Testing is done to make sure the system works as planned and meets all the requirements. Each feature we write down in the requirements is linked with one or more test cases, so if the tests pass, we know the feature is working properly. If they fail, it shows there is a gap or a mistake.

By doing unit tests and integration tests early, problems are caught close to their source, which saves time and avoids rework later. Regression testing helps us check that new updates do not break features that were already working fine. Having clear acceptance tests and criteria also makes it easy to know when a feature is really “done” and ready, so there is no confusion.

On top of that, testing is not just about functionality. We also test non-functional areas like performance, security, usability, and compatibility. These ensure the system is fast, safe, easy to use, and works properly across different devices and browsers.

B) Testing methods to be used later in the project

Functional testing

- Unit Testing: Checking small parts of the code like methods and functions to make sure they behave correctly.
- Integration Testing: Making sure different modules (like login, profile, posting features) work well together.
- System/End-to-End Testing: Running through real scenarios a student or teacher would follow to confirm the whole system works smoothly.
- Regression Testing: Re-running older test cases to be sure that new updates didn't break anything.
- User Acceptance Testing (UAT): Final checks by actual users to confirm the system meets their needs.

Non-functional testing

- Performance Testing: Checking how fast pages load and how the system handles multiple users.
- Security Testing: Making sure login, data handling, and file uploads are secure.

- Usability Testing: Seeing if users can easily finish tasks without confusion.
- Compatibility Testing: Ensuring the system works well across major browsers and devices.
- Accessibility Testing: Making sure the system is usable by everyone, including those with disabilities (e.g., keyboard navigation, proper contrast, alt text).