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Technology

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Group 15

IT314 Software Engineering
Project Title: Real Estate Listing Website

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Sprint 6: Testing and Documentation

Sprint 6 was all about polishing everything that we had built so far. So, after the completion of all the lister-side functionalities in the previous sprints, our goal for Sprint 6 was straightforward:

Test that everything works exactly as a real user would expect it to; find those hidden issues and document the code in such a way that it will be easy for future developers-and even ourselves-to understand.

This sprint focused predominantly on testing: black-box testing, unit tests, mutation testing, GUI testing, and even non-functional checks like performance and security. Simultaneously, we have also been working on the completion of project documentation so that, later on, it will be easy to maintain and scale the system.

1. System Testing (Black Box Testing)

This was the phase where we behaved completely like an end user. No looking at code, no debugging just interacting with the system from the outside and checking whether it behaves correctly.

What we tested:

- User related functions:
- Login page
- Registration and proof upload
- Property search and filtering
- Saved property and comparison
- Property listing management (Lister)
- Notification

2. Unit Testing

Here we focused on testing the smallest individual pieces – controllers, services, helper functions, etc.

Tools we used:

- Vitest for writing tests
- LLM used : deepseek, chatgpt

What we covered:

- Functionalities regarding User, Lister, Property, Admin.
- Ensuring edge cases are being handled properly.
- Tried to get 100% branch coverage.

Unit testing helped us identify missing validation checks and edge cases we hadn't considered earlier.

3. Mutation Testing

Instead of checking whether our code works, we tested whether our tests are good enough.

We used **Stryker Mutation Testing** with Vitest.

How it worked:

- Stryker makes small changes ("mutants") in the code.
- If our unit tests catch these changes → mutants are killed.
- If our tests don't catch them, mutant survives. Leading to the need of the improvement in the code.

Mutation testing gave us confidence that our test suite isn't just existing for show – it's actually meaningful.

4. GUI Testing

GUI Testing was about checking whether the platform actually *feels good* to use. We explored every page from a user's perspective clicking buttons, navigating forms, and confirming that everything responds the way it should.

What we checked:

Different functionalities of the website pages:

- Home page
 - Login page
 - About page
 - Properties page
 - Contact page
 - User dashboard
 - Compare page
 - Saved properties page
 - My listings page
 - Create new property listing page
 - Property Comparisons page
 - Notification page
 - Account settings page
 - Admin panel
 - User issues page
 - Verify listings page
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5. Documentation

This part includes readable documentation that will help anyone understand how the system works.

What we documented:

Testing Documentation

- Black-box tests list
- Unit test coverage

- Mutation testing score summary
- GUI test checklist