Final Project Report

Project Title	Testing Instagram Web Version
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Modules Covered	Login, Profile Management, Content Creation and Sharing, User Search

Executive Summary

The Instagram Web Testing project was initiated to ensure the stability, reliability, and correctness of core functionalities provided through the web version of Instagram, a globally popular social media platform. Given its extensive user base and critical features, it was essential to validate that the platform meets quality standards from both technical and user experience perspectives.

A balanced approach was adopted by integrating manual and automated testing practices. Manual testing allowed the testers to uncover UI/UX concerns and explore unexpected behaviors, while automated testing, conducted using Selenium with Python, was focused on regression testing and repetitive tasks such as login validation and content sharing flows.

Throughout the testing lifecycle, systematic test design techniques were applied, including Boundary Value Analysis, Negative Testing, Error Guessing, Usability Testing, and Load/Stress Testing. These methodologies ensured a thorough investigation of how the system behaved under both typical and extreme conditions. The test efforts were documented, and every defect identified was logged, analyzed, and prioritized based on severity

Selenium WebDriver with Python was employed to automate repetitive test cases, particularly for login and user profile interactions. All tests were executed based on clearly defined test cases, each mapped to real-world scenarios. Despite certain limitations such as login automation issues, the majority of features met expectations. The findings, along with documented defects, not only validated the system but also contributed to recommendations that could help improve the platform's quality in the long term.

Summary of Tests Conducted

A structured testing process was followed where each module was broken down into relevant test cases. The focus was to verify if each functional component of the web version performs as expected under valid and invalid scenarios. In total, 19 test cases were executed, distributed across four key modules. The breakdown is shown below:

Module	Total Test Cases	Pass	Fail
Login	4	4	0
Profile Management	4	4	0
Content Creation & Sharing	6	5	1
User Search	5	5	0

With an overall pass rate of 94.7%, the testing team successfully verified that the majority of functionalities behave as intended. Failures were recorded, analyzed, and tracked through a defect log, ensuring no issue went unnoticed.

Defect Trends and Analysis

Defect logging is one of the most critical aspects of a quality assurance process. During this project, three major defects were identified and categorized based on severity and impact. These defects were not only documented but also analyzed for root causes and potential improvements.

The most significant issues were found within the Content Creation and Sharing module, specifically related to the note-sharing functionality. Another critical concern was identified in the Login module, where a lack of session timeout could pose a security risk.

The following table provides a detailed summary of the defects recorded:

Defect ID	Module	Test Case ID	Description	Severity	Status	Remarks
DEF001	Login	TC_Login_01	User remains logged in indefinitely without session timeout.	High	Open	Implement session timeout to enhance application security.
DEF002	Content Creation & Sharing	TC_Content_05	User cannot share a new note if one already exists.	High	Open	Review note-sharing logic and implement note replacement or deletion flow.
DEF003	Content Creation & Sharing	TC_Content_06	Notes longer than 60 characters fail silently without feedback.	Medium	Open	Provide a user-friendly error message for character limit violations.

Overall System Quality

The Instagram web version exhibited a strong quality profile throughout the testing cycle. Quality was evaluated from multiple angles including functionality, stability, performance, usability, and automation coverage.

Key findings are summarized below:

- **Functionality**: All primary features operated correctly across validated test cases and user journeys.
- **Stability**: The system maintained consistent behavior even under different conditions and repeated tests.
- **Usability**: User interface was intuitive; however, minor enhancements are needed for notes-related feedback.
- **Automation Coverage**: Selenium scripts effectively automated key features such as login, profile editing, and note creation.
- **Performance**: No significant delays or crashes were observed; large content uploads handled within acceptable load times.

Automation Challenges and Workarounds

During the automation phase using Selenium WebDriver with Python, the team encountered notable challenges due to the dynamic nature of Instagram's web elements. Instagram often uses dynamic class names that change frequently, making static element selection difficult. This necessitated adaptive strategies to ensure the robustness of the automation scripts.

Key actions taken:

- **Use of Dynamic XPaths:** Custom XPath expressions were created using parent-child hierarchies and partial attribute matching to navigate unpredictable structures.
- **Fallback to Element IDs:** Where available, stable id attributes were used for more reliable and efficient element targeting.
- **Explicit Waits:** The team implemented WebDriverWait to handle dynamic content loading and prevent test failures due to timing issues.
- **Reusable Locator Functions:** Common interaction patterns were abstracted into functions to ensure maintainability and consistency.

These measures helped overcome automation hurdles and ensured the scripts worked consistently across sessions and updates.

Conclusions and Recommendations

In conclusion, the testing of the Instagram web version provided valuable insights into the platform's functional robustness and user experience. Through a well-structured combination of manual and automated testing, the project validated the reliability of key features such as login, profile management, content sharing, and user search. The test cases, designed using established techniques like boundary value analysis and negative testing, achieved a high pass rate of 94.7%. While a few defects were uncovered—particularly in note-sharing and session management, they highlighted areas for improvement rather than critical failures. Challenges in automation, especially related to dynamic XPaths and inconsistent HTML structures, were effectively mitigated through adaptive scripting strategies and best practices. Overall, the project demonstrated that the core Instagram functionalities are stable and user-friendly, and it provided clear recommendations for enhancing the application's quality and security in future iterations.

Recommendations and Way Forward:

- Enhance user feedback for errors, especially in note-sharing and input validation areas.
- Introduce login session timeouts to improve security and comply with modern standards.
- Broaden the testing scope to include Instagram features such as direct messaging, notifications, and stories.
- Continue developing automation scripts to cover complete user journeys including content interaction and deletion.
- Conduct cross-browser compatibility testing across Chrome, Firefox, Safari, and Edge.