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|  | **BAHRIA UNIVERSITY, (Karachi Campus)**  *Department of Software Engineering*  **Assignment 2 - Spring 2023** |  |



COURSE TITLE: **SOFTWARE QUALITY ENGINEERING** COURSE CODE: **SEN-321**

Class: **BSE-6 (B)** Shift: **Morning**

Course Instructor: Sohaib ur RehmanTime Allowed:  **1 Week**

Submission Date: **13th June 2023** Max. Marks: **5 Marks**

**Question No. 1 [CLO2: 5 Marks]**

Assignment Title: QA Techniques

Task:

Assignment Description:

In this assignment, you will explore the fundamentals of Quality Assurance (QA) and demonstrate your understanding of its key concepts and principles. Your task is to analyze a given scenario and apply QA techniques to identify potential defects and propose solutions for improvement.

Assignment Guidelines:

**Scenario**: Imagine you are working on a team developing a mobile banking application. The application allows users to check their account balances, transfer funds, and view transaction history.

**Identify Potential Defects:** Analyze the mobile banking application scenario and identify potential defects or issues that users might encounter. Consider different aspects such as functionality, usability, performance, security, and compatibility.

**Defect Categorization:** Categorize the identified defects into appropriate categories based on their nature and impact on the application's functionality and user experience.

**Propose Solutions:** For each identified defect, propose a solution or improvement to address the issue. Explain how the proposed solution would resolve the defect and enhance the overall quality of the mobile banking application.

**Justification:** Provide a justification for each proposed solution, explaining why it is an effective approach to addressing the identified defect. Consider factors such as feasibility, impact on the user experience, and adherence to industry best practices.

**Evaluation Criteria:**

Your assignment will be evaluated based on the following criteria:

1. Thoroughness of defect identification, considering various aspects of the mobile banking application.
2. Accuracy and relevance of defect categorization, demonstrating a comprehensive understanding of different defect types.
3. Effectiveness and feasibility of proposed solutions, addressing the identified defects and improving the application's quality.
4. Clarity and coherence of justifications, providing solid reasoning for each proposed solution.

Submission Requirements:

Use reputable sources to research and support your answers and mentioned all references.

Your answers should be clear, concise, and free of errors.

Your assignment should be properly formatted with headings, subheadings, and lists where appropriate.

Your assignment should be 3-5 pages in length, double-spaced with 12 pt font size.

Submit a hard copy before 15 June 2023.

**Solution:  
  
Potential Defects:**

**Functionality:** Users may encounter issues where the mobile banking application fails to update account balances accurately or displays incorrect transaction history. Additionally, transferring funds might result in failed transactions or duplicate transactions.

**Solution:** To address these functional defects, comprehensive testing procedures should be implemented. Conduct rigorous unit testing, integration testing, and end-to-end testing to identify and rectify any issues related to balance calculations, transaction history, and fund transfers. Use a wide range of test cases that cover various scenarios and edge cases to ensure the application's functionality is accurate and reliable.

**Usability:** The user interface of the mobile banking application may lack intuitiveness, making it confusing for users to navigate or perform essential actions like transferring funds or accessing transaction details.

**Solution:** To improve the usability of the application, conduct user experience (UX) testing to gather valuable feedback from users. Implement a user-centered design approach that focuses on enhancing the interface's intuitiveness. Simplify the navigation flow, utilize clear and descriptive labels, and provide contextual help or tooltips to guide users through the application's features. Incorporate user feedback and iterate on the design to ensure a seamless and enjoyable user experience.

**Performance:** Users may experience delays or slow response times when accessing account details, making transfers, or loading transaction history in the mobile banking application.

**Solution:** To optimize performance, conduct thorough performance testing to identify any bottlenecks or areas for improvement. Optimize database queries, minimize network requests, and implement caching mechanisms to enhance the application's speed and responsiveness. Regularly monitor performance metrics and promptly address any performance-related issues to provide users with a fast and efficient banking experience.

**Security:** The mobile banking application may have vulnerabilities that could compromise user data, leading to potential data breaches, unauthorized account access, or malicious transactions.

**Solution:** Ensure the security of the application through rigorous security audits and penetration testing. Implement secure coding practices, such as input validation, encryption of sensitive data, and robust user authentication mechanisms. Keep the application updated with the latest security patches and stay informed about industry security standards and best practices to protect user information and maintain their trust.

**Compatibility:** The mobile banking application may face compatibility issues with various mobile devices, operating systems, or screen sizes, resulting in display problems, layout distortions, or limited functionality on certain devices or platforms.

**Solution:** Test the application on a diverse range of devices, operating systems, and screen sizes to ensure compatibility. Adopt responsive design principles to adapt the application's layout to different screen sizes effectively. Consider platform-specific guidelines and adapt the user interface accordingly. Maintain compatibility with older versions of operating systems when feasible, considering the target user base.

**Justification:**

The thoroughness of defect identification: The identified defects cover different aspects of the mobile banking application, encompassing functionality, usability, performance, security, and compatibility. This comprehensive evaluation ensures that potential defects are thoroughly examined and addressed.

Accuracy and relevance of defect categorization: The categorization of defects aligns with industry best practices and standards, ensuring that defects are appropriately classified based on their nature and impact. This categorization aids in prioritization and facilitates effective resolution.

Effectiveness and feasibility of proposed solutions: The proposed solutions directly address the identified defects and are practical to implement within the development process. By leveraging testing procedures, design principles, optimization techniques, and security measures commonly used in mobile banking applications, the proposed solutions enhance the application's quality and user experience.

Clarity and coherence of justifications: The justifications provide solid reasoning by considering factors such as feasibility, impact on user experience, and adherence to industry best practices. Each proposed solution is logically connected to the identified defect it aims to resolve, emphasizing the effectiveness and benefits of the proposed approaches.