SOFTWARE QUALITY ENGINEERING
Assignment 1

Deadline: 07ᵗʰ April, 2025   **Total Marks= 50**

Instructions:

1. Late submission will cause 10% deduction per day. No submission after **09ᵗʰ April 2025.**
2. This is an individual assignment.
3. *ASSIGNMENT SHOULD BE HANDWRITTEN.* (No pages from register please.)
4. Attach this page with your submission. (5 marks)
5. Upload it on the portal on 7ᵗʰ April at 11:00am (5 marks)
6. Submit hard form during class on same day.
7. Plagiarism is seriously your own choice.

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SOFTWARE QUALITY ENGINEERING
Assignment 1

Question 1: - (30 Marks)

Case Study:

SwiftBank, a leading financial institution, recently launched its highly anticipated digital banking app to enhance customer convenience and attract tech-savvy users. The app promised seamless transactions, real-time account updates, and an intuitive user experience. Due to competition from fintech startups, the bank rushed the development process, launching the app just a few days before a major promotional campaign.

However, soon after going live, the app encountered multiple issues, causing frustration among users and financial risks for the bank.

Problems Observed After Launch:

App Performance Issues: Customers experienced frequent slowdowns and crashes, particularly during peak usage hours. Some users were unable to log in, while others faced delays in transaction processing, making routine banking activities frustrating.

Transaction Failures: Many users reported failed money transfers, with some transactions being deducted twice from their accounts. Others found that their scheduled bill payments were not processed, leading to late fees and inconvenience.

Misconfigured Promotional Offers: The app launched with promotional cashback offers, but incorrect discount rules led to inconsistent rewards. Some users received higher-than-expected cashback, while others didn't receive any at all. The bank's support team struggled to resolve customer complaints efficiently.

Security Vulnerabilities: Cybersecurity experts discovered weaknesses in the authentication process, allowing unauthorized users to access accounts. Ethical hackers demonstrated how they could bypass login security, putting sensitive financial information at risk.

Your Task

SwiftBank is experiencing **serious software quality issues**, but the development team is unsure about the root causes.

As a software quality analyst, your task is to:

1. Identify any three **key software quality challenges** in this case.
2. Suggest at least one improvement for each issue to enhance the overall quality of the system.

Question 2: - (10 Marks)

1. Suggest a scenario where fault will always remain dormant and will never be activated as a failure.

Q No 1:
Task 1:

Three Key Software Quality Challenges:

⇒ **Performance and Reliability Issues:**
- App frequently slowsdown, crashes, and become unresponsive during peak hours.

⇒ **Functional Failures and Data Integrity Issues:**
- Transactions are failing, duplicated and also financial issues.

⇒ **Security Vulnerabilities:**
- Weak authentication, exposing sensitive data.

Task 2:

Improvements:

⇒ **Performance and Reliability:**
Implement testing, optimize the code and its infrastructure.

⇒ **Functional Failures and Data Integrity:**
Introduce automated unit testing and integration testing for transaction modules.

⇒ **Security Vulnerabilities:**
Adopt secure coding practices, use multifactor authentication for avoidance of unauthorized users.

QNO2)

Fault Remain Dormant:

Scenario:

A login form accepts a middle name, but not features uses it. The middle name is stored incorrectly in the database.

Exp: Since the system never uses the middle name, The fault remains dormant and does not cause any failure. A dormant fault is one that exists in the system but doesn't affect behaviour unless triggered by future changes.