Lab 3\_ part 1

**Testing requirement**

**Exercise 1: Explain types of review.**

**1. Informal Review**

- Description: No formal process or documentation. Colleagues review each other's work casually (e.g., pair programming, desk checks).

- Purpose: Quick feedback, sharing knowledge, and catching obvious errors early.

**2. Walkthrough**

- Description: The author of the work product guides a group through the document or code, explaining content and soliciting feedback.

- Purpose: Understanding, learning, and gathering suggestions; not primarily for defect finding.

**3. Technical Review**

- Description: A team of technically qualified peers examines the product to find defects and ensure standards are followed. May have checklists and records.

- Purpose: Detect defects, improve quality, and ensure conformance to requirements and standards.

**4. Inspection**

- Description: The most formal type. Follows a well-defined process with specific roles (author, moderator, reviewer, scribe) and stages (planning, overview, preparation, meeting, rework, follow-up).

- Purpose: Systematic defect detection and removal, improving product quality, and ensuring process compliance.

**Exercise 2: Liệt kê ra các lỗi ở các requirements sau:**

## ****Hệ thống quản lý sinh viên (Student Management System)****

1. The system shall be easy to use for all teachers => Lỗi mơ hồ, không rõ ràng

**Fix:** The system shall allow teachers to complete grade entry within 3 clicks per class.

1. Students should quickly find their grades. => "quickly" không rõ nghĩa, không có thời gian cụ thể.

**Fix:** The system shall display a student’s grades within 2 seconds after login.

1. The app must always work on any computer. => Không khả thi và mơ hồ "always", "any computer".

**Fix**: The application shall operate on computers running Windows 10+, macOS 11+, or Ubuntu 20.04+.

1. User data will be kept safe. => “Safe” không cụ thể

**Fix**: User data shall be stored using SHA-256 hashing, never saved in plain text.

1. The interface shall be nice and professional. => Mơ hồ, không đo lường được, cảm tính.

**Fix**: The interface shall follow the organization’s official UX/UI guidelines under all conditions.

1. Teachers and admins can approve or reject grades and export reports. => Gộp nhiều ý

**Fix**: Teachers shall be able to approve or reject grades.

1. The grade list shall be updated on time. => Mơ hồ, “On time” không chỉ rõ thời gian

**Fix**: The grade list shall be updated within 5 minutes after grades are submitted.

1. All users shall be satisfied with the system. => Không đo lường, “Satisfied” cảm tính

**Fix**: At least 90% of users shall rate their satisfaction as 4 or higher on a 5-point survey after one month of use.

1. The system will never lose any student data. => Không khả thi, mơ hồ, “Never lose” tuyệt đối hóa

**Fix**: The system shall automatically back up student data every 24 hours and provide restore functionality.

1. The UI should be responsive and beautiful. => Mơ hồ, không đo lường, dùng “should”

**Fix**: The UI shall adapt to all screen sizes from 5 to 27 inches and follow company design standards.

1. The system shall automatically assign student IDs logically. => Mơ hồ, “Logically” không rõ ràng

**Fix**: The system shall assign each student a unique ID following the format [Year][SchoolCode][SequentialNumber].

1. The application shall run well on Windows, macOS, and Linux. => Mơ hồ, “Run well” không có tiêu chí

**Fix**: The application shall start within 10 seconds and not exceed 200MB RAM usage on Windows 10+, macOS 11+, and Ubuntu 20.04+.

1. Students may access their records from anywhere at any time. => Không cụ thể, dùng “may”, không rõ nền tảng

**Fix**: Students shall access their records via the web portal 24/7 with an internet connection.

1. The code must be readable and easy to maintain. => Mơ hồ, không tiêu chí đánh giá

**Fix**: The code shall comply with the coding standard [specify guideline] and achieve at least 80% code coverage by automated tests.

1. Teachers can grade students and notify parents instantly. => Gộp nhiều ý, “instantly” không rõ.

**Fix**: Teachers shall be able to grade students via the system. The system shall notify parents within 1 minute after a grade is submitted.

1. The system should work fast with a large number of students. => Mơ hồ, không đo lường, dùng “should”

**Fix**: The system shall respond to user actions within 2 seconds for up to 1000 concurrent students.

1. It shall detect possible errors in transcripts intelligently. => Mơ hồ, “Intelligently” không rõ

**Fix**: The system shall validate transcripts for missing grades, incorrect formats, or inconsistencies upon submission.

1. The export feature shall support Excel, PDF, CSV, and more. => Mơ hồ, “And more” không chỉ rõ

**Fix**: The export feature shall support Excel (.xlsx), PDF, and CSV formats.

1. The app shall always show the best format for transcripts. => Mơ hồ, “Best format” không rõ tiêu chí

**Fix**: The app shall display transcripts in a tabular format with columns for course, grade, and semester.

1. It should never crash under any condition. => Không thực tế, không kiểm thử, dùng “should”

**Fix**: The application shall handle unexpected errors gracefully and log all exceptions for further analysis.