GROUP EXERCISE 1

Working in small groups of 3-4 students (No more no less)

Deadline: 11h30, 21/08/2024

LIST OF STUDENTS:

1. STUDENT ID: 20IT220   STUDENT FULL-NAME: **Đoàn Nguyễn Hưng**
2. STUDENT ID: 20IT872   STUDENT FULL-NAME: **Dương Phú Hậu**
3. STUDENT ID: 21IT039   STUDENT FULL-NAME: **Nguyễn Bùi Nam Phúc**
4. STUDENT ID: 21IT007   STUDENT FULL-NAME: **Nguyễn Đại Cường**

PROBLEMS

Based on the lecture slides (Chapter0_SoftwareQualityAssurance.pdf), let's discuss in groups (3-4 students) and give the solutions for the following problems:

1. How can we achieve software quality?
2. What factors affect software quality?
3. Why does the cost of finding and fixing bugs increase with each step of the software development process?
4. What software quality attributes should be considered to ensure during software development?
5. Why does managing changes contribute to software quality?

Note:
*. Submission file must be in pdf format and named with the following syntax: NameOfClass_GroupName_Assignement1.pdf
*. Full names of members must be written in the submission file.

YOUR SOLUTION

1.

Software quality is achieved through rigorous adherence to best practices throughout the software development lifecycle, including comprehensive requirements analysis, design reviews, code quality assurance, automated and manual testing, and continuous integration. Effective defect management and user feedback integration also play crucial roles.

2.

Software quality is influenced by the clarity of requirements, the robustness of design, the quality of code, the extent of testing, the skills of the development team, and the tools and

processes employed. External factors such as time and budget constraints also significantly impact quality.

3.

The cost of fixing bugs escalates in later stages because issues discovered early in requirements or design are easier to address. As development progresses, defects become more deeply embedded, requiring more extensive rework, which is costly and time-consuming, particularly if issues are discovered post-deployment.

4.

Key software quality attributes include:

- Functionality: The software should meet all specified requirements and perform its intended tasks correctly.

- Reliability: It should operate consistently without failure under expected conditions.

- Usability: The software should be easy to use and intuitive.

- Efficiency: It should use system resources optimally.

- Maintainability: The code should be easy to modify and extend.

- Portability: The software should run in different environments or be easily adaptable.

- Security: It should protect against unauthorized access and security threats.

5.

Effective change management ensures that modifications are systematically assessed, documented, and implemented, thereby reducing the risk of introducing defects. It maintains consistency, traceability, and alignment with requirements, all of which are essential for sustaining software quality.