

Software Testing and Quality Assurance

Second Semester 2024/2025

Homework Assignment # 1

The Software Quality Challenge

**Part.1:**

**Q.1:** A software project involves developers, testers, and designers. If one developer does not follow coding guidelines; how does it affect the team?

Failure of a developer to follow coding guidelines can affect the final design and lead to problems such as low code quality, difficulty in maintenance, and frequent errors, which increases the workload of the rest of the team (developers, testers, and designers). This can complicate future testing and development processes, and the final software may not meet the requirements.

**Q.2:** A key developer leaves in the middle of a project. How does SQA help

minimize disruptions?

A quality assurance environment helps minimize disruptions when a lead developer leaves a project midway through its life because it includes several key features, one of which is: “***the need to continue project execution despite team member changes.***” This means that team changes are a natural part of any project, but with good planning, documenting work, clearly assigning tasks, and using knowledge handover procedures to ensure that new members can easily continue working without significant impact on the project, the negative impact can be minimized and the project can be ensured to continue until the goals are achieved.

**Part.2:** Study the following cases that are related to SQA characteristics.

To answer this question, you need to provide the related SQA characteristics for each case and the required action.

**Case.1:** A company hires a software vendor to develop a cloud-based

accounting system. The contract outlines security, performance, and compliance requirements. Midway, the client requests additional reporting features that weren’t in the initial agreement.

**Challenges in SQA:**

1. Contractual conditions.

2. Subjection to the client-supplier relationship.

3. The need to continue maintaining our software for a long period.

**Action required:**

1. Analyze the impact of the new requirements on the schedule and cost.

2. Update the project documentation and re-prioritize according to the changes.

3. Perform comprehensive testing after introducing the new features to ensure that there are no performance or security issues.

**Case.2:** A hospital integrates its electronic health records (EHR) system with third-party diagnostic software. Due to strict healthcare regulations (e.g., HIPAA, GDPR), patient data security and system uptime are critical. The system will require long-term support and compliance checks.

**Challenges/** **Concerns in SQA:**

1. Interfaces with other software systems **→** Because the system must integrate with other diagnostic software.

2. Collaboration and coordination with other software teams → To ensure interoperability and ongoing maintenance.

3. The need to continue out SW maintenance for extended period → Because the system requires security updates and ongoing support to maintain regulatory compliance.

**Required action:**

1. Implement strict security protocols to ensure data protection and regulatory compliance.

2. Conduct integration testing to ensure system compatibility with external software.

3. Develop a long-term maintenance plan to monitor security updates and ongoing support.

4. Enhance coordination between software teams to improve compatibility and integration between systems.

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