

## Assignment: Software System Case Study

### Case Study: Upgrading and Maintaining the Cape Town Furniture Inventory System

*Cape Town Furniture* has been using a legacy inventory management system for over 15 years. The system was developed using older technology and initially worked only on the company's internal network. Over the years, the business has grown, and the system has undergone several maintenance updates to address software bugs and environmental changes. However, the performance of the system has been declining, and some newer functionalities required by the business are missing.

The company's IT department is now tasked with evaluating whether to continue maintaining the existing system, re-engineer it to improve maintainability, or replace it with a modern solution. In addition, the system's reliability has been questioned, and testing processes need enhancement. Quality management principles also need to be applied to ensure future updates align with the company's objectives.

As part of this evaluation, the following needs have been identified:

1. **Software Evolution:** The system requires several updates to align with business processes and adapt to new regulatory requirements.
2. **Testing Requirements:** A rigorous testing strategy must be applied to ensure system changes do not introduce new defects.
3. **Quality Management:** A new quality plan must be formulated, including establishing quality standards and integrating automated testing where feasible.

*Cape Town Furniture's* management expects you to propose an appropriate solution that considers the trade-offs between continuing maintenance, re-engineering the system, or replacing it. The selected approach must include a testing strategy and quality management practices to ensure a smooth transition and reliable system operations.

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## Questions

1. **Software Evolution (15 points)**
  - a. Identify and describe the different evolution strategies *Cape Town Furniture* can apply to its legacy system.
  - b. Considering the current state of the system, what evolution strategy would you recommend and why?
  - c. What challenges might arise from evolving or replacing the legacy system?
2. **Testing Strategy (15 points)**
  - a. Propose a testing strategy for ensuring that any updates to the system do not break existing functionality.
  - b. Describe how unit testing and system testing would be applied in this context.

3. **Quality Management (20 points)**

- a. Outline the key components of a quality plan that *Cape Town Furniture* could implement for future software updates.
- b. Identify three software quality attributes that should be prioritised for the inventory system and justify your choices.
- c. What role would ISO 9001 standards play in ensuring software quality for *Cape Town Furniture*?

4. **Critical Thinking (10 points)**

- a. Considering both technical and business factors, discuss the trade-offs between maintaining, re-engineering, or replacing the system.
- b. How would you approach stakeholder communication to align expectations regarding the recommended strategy?