Unit 5

Programmed Solution to a Problem

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*5.1 Discussion*

Candidates Should:

-Identify a substantial problem that provides enough scope for the candidate to access the full range of marks

-Describe, to others, the broad aims of the project specifying possible limitations to the solution of the problem.

-Identify and describe, to others, the possible limitations of a solution to the problem.

-Consider and use feedback from others to refine understanding of the problem and proposed solution.

**Overview**

In this project, I am developing a software solution for Investor Centre, a financial trading firm specializing in foreign exchange in The Glens of Antrim. Currently, the company relies on a paper-based system to manage critical operations, including client data management, investment tracking, and financial transactions. This outdated system has resulted in inefficiencies such as data redundancy, slow processing, and significant security concerns.

The aim of this project is to replace the paper-based system with a fully digital platform that automates key processes, such as appending, deleting, displaying, and updating data records within the database. My new system will enhance data security and improve overall efficiency. By implementing this computerized solution, Investor Centre will benefit from real-time data tracking, record management, and better protection of sensitive financial information with the use of encryption, ultimately improving both employee and client satisfaction.

### **Current System Problems:**

* ****Data Redundancy**:** Investor Centre records client information and financial data manually, leading to frequent duplication of entries and errors.
* ****Insecure Data Storage**:** All data is stored in physical files, leaving it vulnerable to loss, theft, or damage.
* ****Time-Consuming Operations**:** Processing financial transactions and tracking client portfolios is slow due to manual entries, affecting customer satisfaction.
* ****Lack of Real-Time Data****: The current system does not offer real-time updates, making it difficult for the firm and customers to respond quickly to market changes.

### **Goals of the New System:**

* ****Data Handling**:** Replace paper-based records with a database system for client information, financial data, and transaction history.
* ****Improve Security**:** Introduce secure login features with different access levels for administrators, managers, and staff. Implement encrypted data storage to protect sensitive financial information.
* ****Real-Time Financial Data**:** Use the *yfinance* library to get live currency prices and exchange rates, allowing quick financial trades.
* ****User-Friendly Interface****: Create a graphical user interface (GUI) using *tkinter* and styled to simplify operations for staff members, enabling easy data entry and retrieval.
* ****Reduce Redundancy and Errors****: Use automated validation checks to ensure accurate data entry and eliminate duplicates.

### **System Features:**

* ****Account Creation and Login**:** Users can create accounts with details such as name, date of birth, username, and password. A login screen ensures only authorized users can access the system.
* ****Forex Trading Module**:** Users can select currency pairs, view live market data (e.g., open, and close prices), and calculate pip changes to place orders.
* ****Data Storage in SQLite**:** All client data and transaction history are stored securely in an SQLite database.
* ****Financial Charts**:** Integrate with **mplfinance** to display financial charts for visual data analysis.
* ****Trade history**:** Users will be able to log in and check the progress of a trade and view the floating profit/loss and decide whether to close the trade. Closed trades will be stored in a database using *SQLite*.

### **Project Limitations:**

* ****Technical**:** My knowledge is mainly in Python, which limits the system's scalability compared to using languages like Java. Some complex features, like encryption, will not be as up to standard.
* ****Time Constraints**:** Due to the time limit for this project, some tools could not be included. Such as automated email notifications on trade updates and a news page.
* ****Data Integrity**:** While the system handles basic input validation, stronger error-checking mechanisms and security measures should be put in place to protect sensitive data from cyber-attacks.

**Presentation:**

I created this presentation to get feedback from my teacher, classmates, and the investor centre CEO.