ATM Simulation System (Mini Version)

COAL LAB (EL-2003)

Section: BCS-3B

Instructor: Sir Abdullah Shaikh

Group Members:

1. Huzaifa Ahmed Bari – 24K-0847
2. Shoaib Hayat – 24K-1028
3. Suffian Khan – 23K-0929

Project Proposal

Project Title

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Introduction

Background: This project focuses on basic data management and user interaction in an assembly language environment. It demonstrates how low-level programming can be used to simulate a simple financial system using registers, memory, conditional jumps, and procedures.

Problem Statement: Many beginners struggle to understand how real-world systems like ATMs work internally. There is a need for a simple, console-based simulation that shows how user input, balance tracking, and decision-making (menu-driven programs) are handled at the assembly level.

Objectives:
- To build a functional ATM simulation using Assembly Language and the Irvine32 library.
- To practice core concepts: loops, conditions, procedures, and memory operations.
- To demonstrate basic programming logic in a real-world scenario.

Scope of the Project

Inclusions:
- Menu-based user interface
- Customer and Admin interface
- PIN verification
- PIN reset
- Check balance
- Deposit money
- Withdraw money (with an insufficient funds check)
- Currency Conversion
- Loop until Exit is selected

Exclusions:
- Real database connectivity
- Multiple user accounts
- Advanced security (e.g., encryption)
- GUI interface

Project Description

Overview: The ATM Simulation is a console-based program developed in Assembly Language. After PIN entry, it displays a menu where the user can check the current balance, deposit money, withdraw money, or exit. Each option is handled using procedures and conditional logic, demonstrating basic financial transaction logic.

Technical Requirements:
- Microsoft Visual Studio
- MASM assembler
- Irvine32.inc and Irvine32.lib

Project Phases:
1. Research & Understanding ATM flow
2. Planning the program structure
3. Designing data storage (variables, procedures)
4. Implementation in assembly
5. Testing and debugging
6. Documentation and presentation

Methodology

Approach: We will use an iterative development approach: divide tasks into small sections (PIN check, menu, balance, deposit, withdraw). Write and test each part separately. Combine and refine the final program.

Team Responsibilities:
- Huzaifa: Program Design and Structure
- Shoaib: Implementation and Debugging
- Suffian: Research & Documentation

Expected Outcomes

Deliverables:
- A fully working ATM simulation program in Assembly language
- Source code file (.asm)
- Short documentation/report
- User instructions (how to run and use the program)

Relevance: This project applies key ICT and COAL concepts such as:
- Basic programming logic
- Data organization (balance, input values)
- Conditional control flow
- User interaction
- Low-level register operations

Resources Needed

Software:
- MASM (Microsoft Macro Assembler)
- Irvine32.inc + Irvine32.lib
- Visual Studio
- MS Word for documentation

Other Resources:
- Online tutorials or reference materials for Assembly language
- Instructor guidance when needed