

# Computer organization and assembly language lab project

1. Introduction

The project involves creating a simulation of an ATM system using assembly language. The purpose is to simulate the basic functionalities of an ATM, such as balance inquiry, cash withdrawal, and deposit, while exploring low-level programming through MASM and the Irvine32.inc library. This project will help understand how computer systems interact with hardware at the assembly language level and will strengthen practical knowledge of computer organization concepts.

1. objectives
2. Simulate basic ATM functionalities (Balance Inquiry, Cash Withdrawal, Deposit).
3. Implement user input and display interaction using assembly language.
4. Understand the role of system-level programming in simulating real-world applications.
5. Apply MASM and the Irvine32.inc library for hardware interaction and control flow management.
6. Project Description
7. Tools/Software:
8. MASM (Microsoft Macro Assembler)
9. Irvine32.inc library for basic input/output operations.
10. Implementation Plan:
11. User Authentication: Implement a simple PIN-based authentication system.
12. Menu Display: Create a user interface that displays options such as balance inquiry, withdrawal, deposit, and exit.
13. Balance Inquiry: Retrieve and display the current balance.
14. Cash Withdrawal: Simulate withdrawal, ensuring the balance is updated and limits are enforced.
15. Deposit: Allow the user to deposit money and update the balance.
16. Exit: Provide an option to exit the system.
17. Challenges and Risks
18. Memory Management: Handling variables like balance and transaction data in assembly, as it requires careful memory management.
19. User Input Validation: Ensuring all user inputs are valid and appropriately handled.
20. Limited Debugging Tools: Debugging assembly programs can be difficult due to the low-level nature of the language.
21. Conclusion

This project will provide practical experience in assembly language programming and a deeper understanding of how high-level concepts like ATM systems are implemented at the machine level. By completing this project, we will gain valuable skills in system-level programming and hardware-software interaction.