ABSTRACT

This project is a simulation of an Automated Teller Machine (ATM) built using Python's Tkinter library for GUI development. The application allows users to perform essential banking functions such as balance enquiry, cash withdrawal, deposit, PIN generation, and PIN change. The project demonstrates the use of GUI design, event handling, and secure user input with password masking.

Objectives

- To simulate the working of an ATM machine using Python.
- To provide a user-friendly graphical interface.
- To demonstrate secure operations such as PIN entry and verification.
- To practice modular programming by dividing functionality into multiple screens.

System Requirements Hardware:

- Processor: Intel i3 or above
- RAM: 4GB minimum
- Hard Disk: 100 MB free space

Software:

- Operating System: Windows / Linux / macOS
- Python 3.8 or above
- Tkinter (pre-installed with Python)

Methodology

The project is implemented in Python with the following steps:

1. Main Menu Screen → Displays options (Check Balance, Deposit, Withdraw, Pin Generate, Change Pin, Quit).
2. Balance Enquiry → Verifies user PIN, then displays current balance.
3. Deposit → Accepts an amount in multiples of 100, adds to balance.
4. Withdraw → Allows withdrawal in multiples of 100, checks for sufficient balance.
5. PIN Generate → User enters account number, phone, OTP, then creates a new PIN.
6. PIN Change → Requires old PIN to set a new one.
7. Message Boxes → Provide feedback to the user (success, error, or warning).
8. Code Explanation Global Variables:

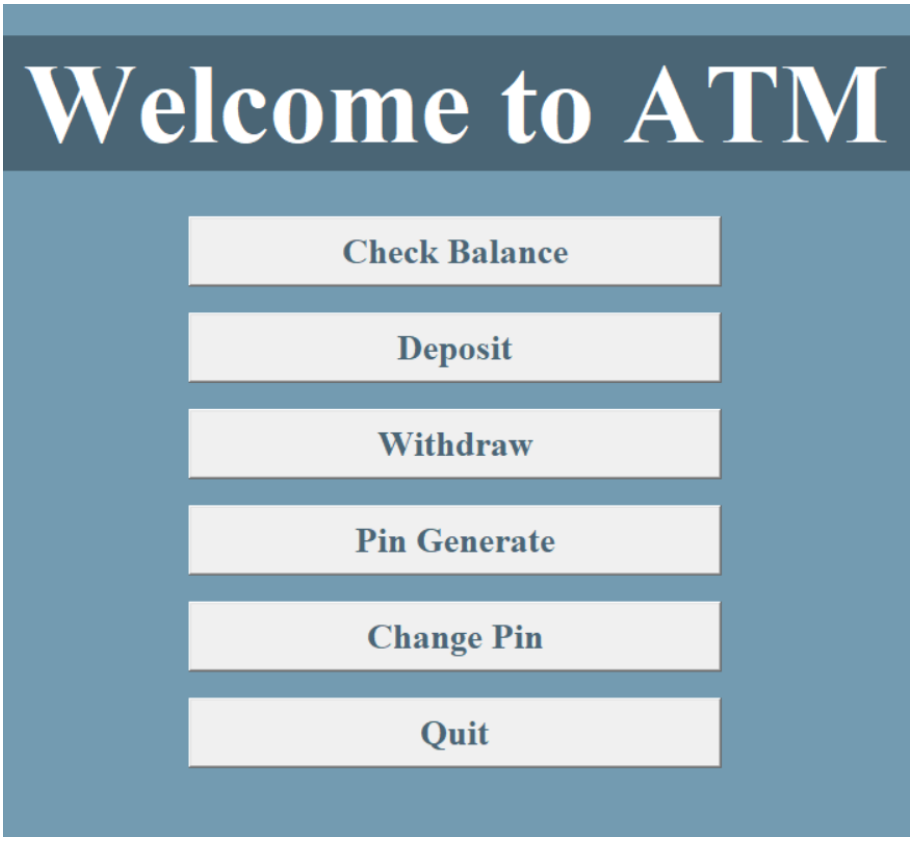
- password → Stores ATM PIN.
- bal → Balance amount.
- bankacc, phone, Otp → Used for PIN generation verification.

Functions:

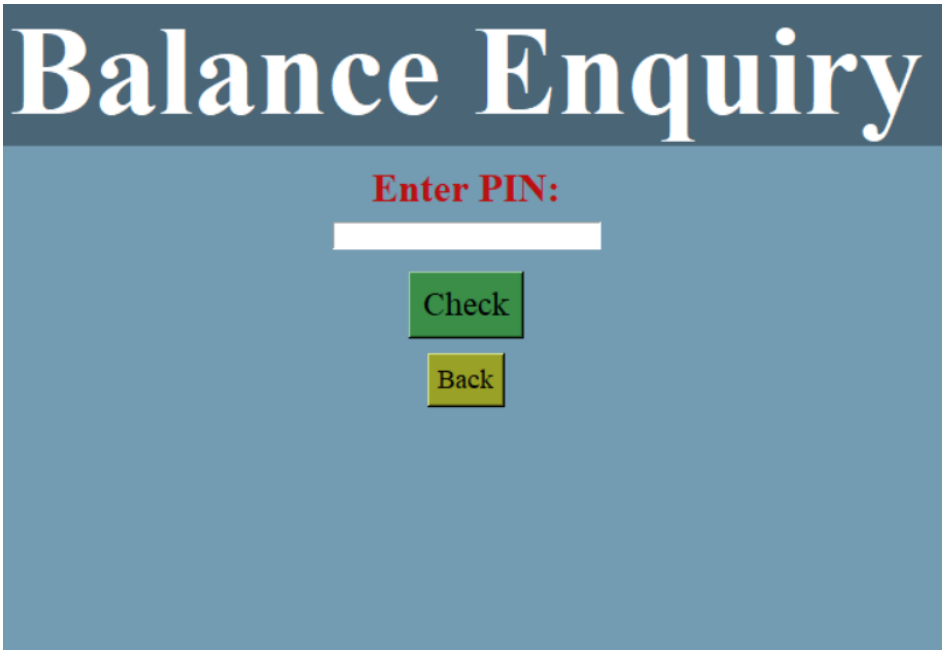
- show_menu() → Displays main menu with buttons.
- check_balance_screen() → Screen for balance enquiry.
- deposit_screen() → Deposit money after PIN verification.
- withdraw_screen() → Withdraw money securely.
- pin_generate_screen() → Generate a new PIN after OTP check.
- change_pin_screen() → Change old PIN to new PIN.
- clear_frame() → Clears widgets when switching between screens

.

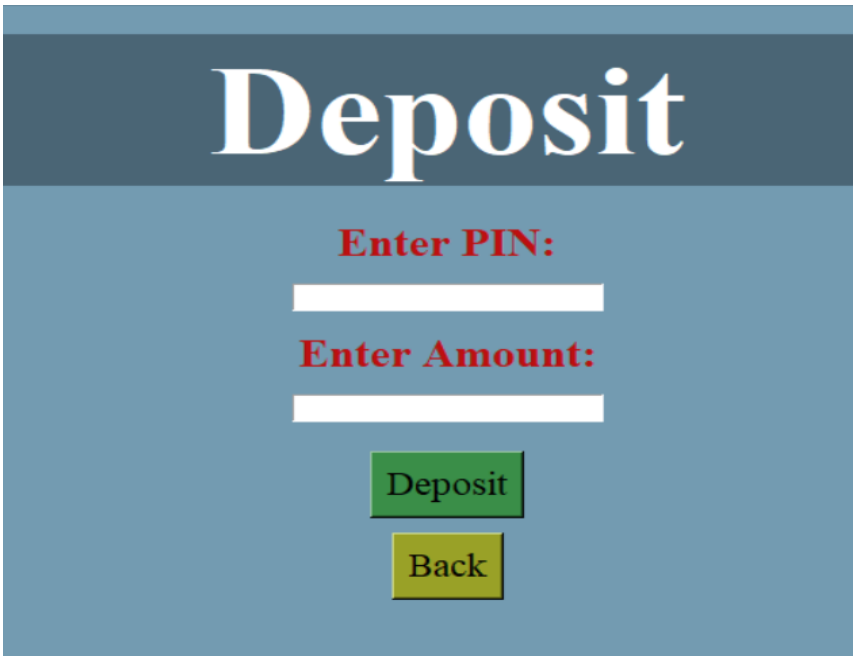
Screenshots



Main Menu



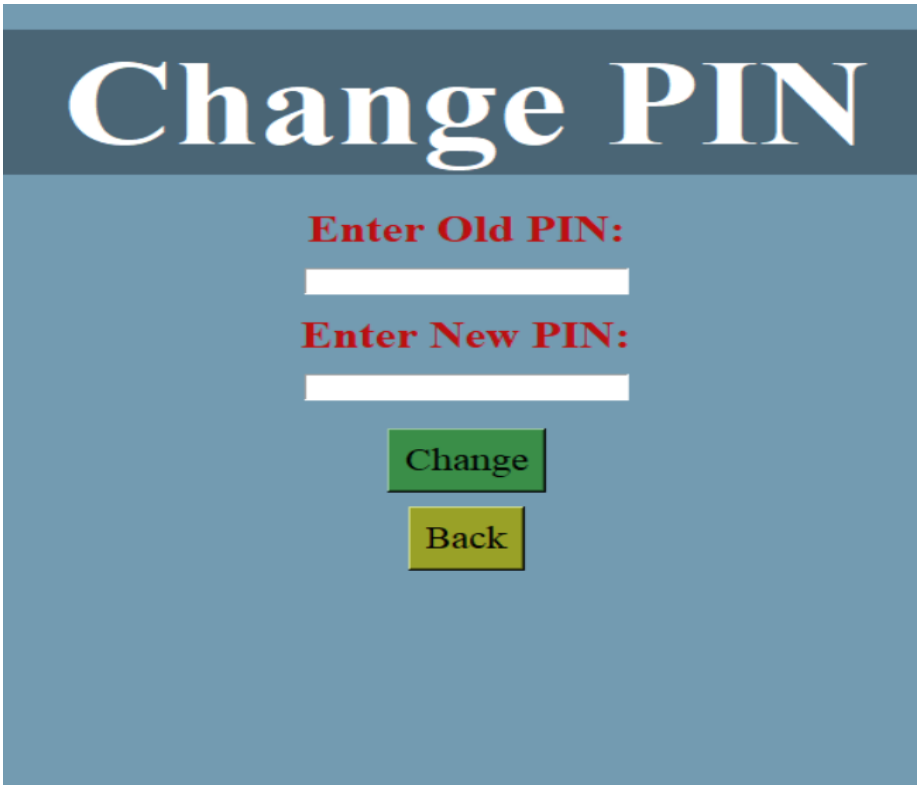
Balance Enquiry Screen



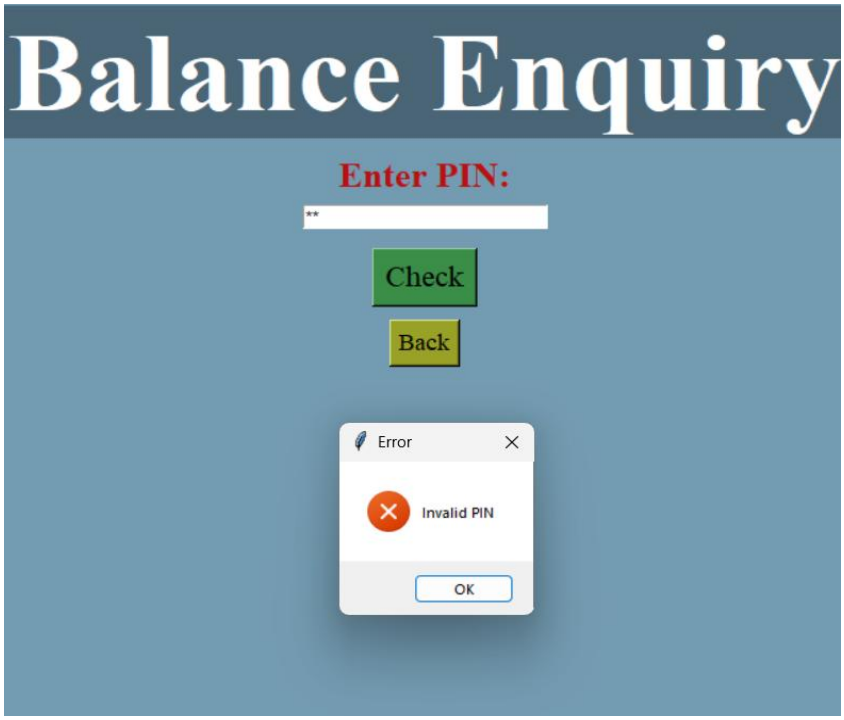
Deposit Screen

Withdraw Screen

PIN Generate Screen



PIN Change Screen



Example of messagebox popup

Results

- Successfully simulates core ATM functionalities.
- Provides user-friendly interface with buttons instead of manual typing.
- Ensures secure access through PIN validation and OTP verification.

Conclusion

The ATM Machine project successfully replicates the working of a real ATM in a simplified environment. The use of Python's Tkinter library made it possible to create an interactive graphical interface. Future improvements may include database integration, transaction history, and card authentication.

Future Scope

- Integration with SQLite/MySQL database to store user accounts.
- Transaction history printing as a receipt.
- Adding biometric/fingerprint authentication.
- Enhanced GUI with modern styling (using ttk or customtkinter).

References

- Python Official Documentation: https://docs.python.org/3/
- Tkinter GUI Programming Guide