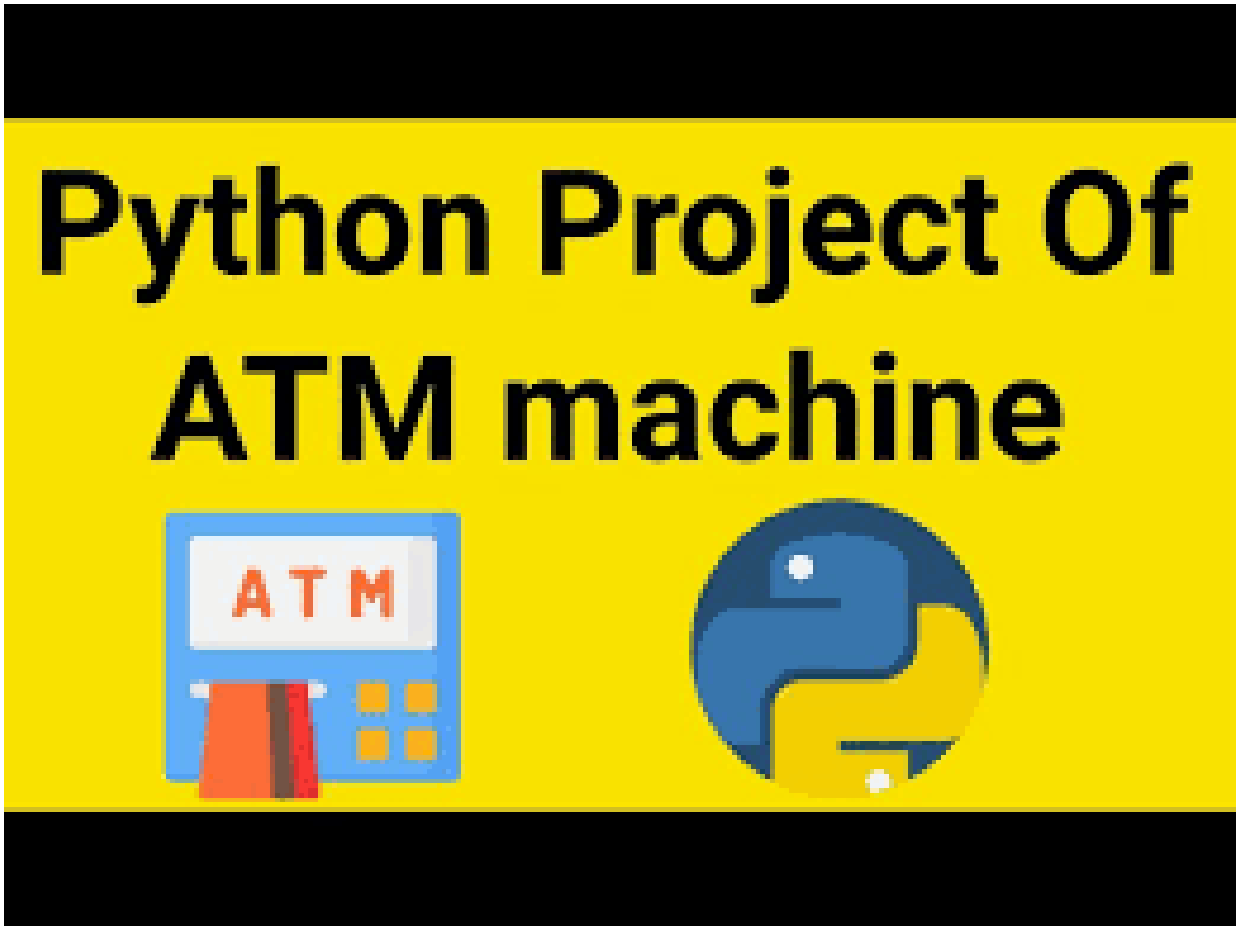

Project Name

Create An ATM Machine Simulation

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ATM Machine Simulation Project Document

1. Project Overview

The ATM Machine Simulation is a Python-based application that emulates the basic functionalities of an Automated Teller Machine (ATM). It allows users to perform typical banking operations such as balance inquiries, cash deposits, cash withdrawals, PIN changes, and viewing transaction history.

2. Objectives

- To simulate an ATM machine using Python.
- To provide a user-friendly interface for performing basic banking transactions.
- To ensure secure operations through PIN verification and change functionality.
- To maintain a record of all transactions for user reference.

3. Functional Requirements

- **Account Balance Inquiry**: Users can check their current account balance.
- **Cash Deposit**: Users can deposit a specified amount into their account.
- **Cash Withdrawal**: Users can withdraw a specified amount from their account, subject to available balance.
- **PIN Change**: Users can change their account PIN after verifying the old PIN.
- **Transaction History**: Users can view a history of all transactions performed.

4. Non-Functional Requirements

- **Usability**: The interface should be simple and intuitive.
- **Security**: The PIN change functionality must be secure, ensuring the old PIN is verified before allowing changes.
- **Performance**: The application should handle transactions efficiently without noticeable delays.

5. Technical Specifications

- **Programming Language**: Python
- **Modules and Libraries**: Standard Python libraries

6. Code Structure

- **ATM Class**:
  - **Attributes**:
    - `balance`: The account balance.
    - `pin`: The account PIN.
    - `transactions`: A list to store transaction history.
  - **Methods**:
    - `check_balance`: Returns the current balance.
    - `deposit`: Adds a specified amount to the balance.
    - `withdraw`: Subtracts a specified amount from the balance if sufficient funds are available.
    - `change_pin`: Changes the account PIN after verifying the old PIN.
    - `transaction_history`: Returns the transaction history.
- **atm_simulation Function**:
  - Provides a menu-driven interface for users to interact with the ATM.

7. Sample Code

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```
class ATM:

    def __init__(self):

        # Initialize the ATM with a default account balance, PIN, and empty transaction history

        self.balance = 1000.00

        self.pin = "1234"

        self.transactions = []


    def check_balance(self):

        # Add the balance inquiry to the transaction history

        self.transactions.append("Checked balance")

        return f"Your current balance is: ${self.balance:.2f}"


    def deposit(self, amount):
```

```
    if amount > 0:
        # Add the deposit amount to the account balance
        self.balance += amount
        self.transactions.append(f"Deposited ${amount:.2f}")
        return f"Successfully deposited ${amount:.2f}"
    else:
        return "Invalid deposit amount. Please enter a positive amount."

def withdraw(self, amount):
    if amount > 0:
        if amount <= self.balance:
            # Subtract the withdrawal amount from the account balance
            self.balance -= amount
            self.transactions.append(f"Withdrew ${amount:.2f}")
            return f"Successfully withdrew ${amount:.2f}"
        else:
            return "Insufficient funds. Please enter a smaller amount."
    else:
        return "Invalid withdrawal amount. Please enter a positive amount."

def change_pin(self, old_pin, new_pin):
    if old_pin == self.pin:
        # Change the PIN to the new one
        self.pin = new_pin
```

```
            self.transactions.append("PIN changed")
            return "PIN successfully changed."
        else:
            return "Incorrect old PIN. Please try again."

    def transaction_history(self):
        # Return the transaction history
        if self.transactions:
            return "\n".join(self.transactions)
        else:
            return "No transactions yet."

def atm_simulation():
    atm = ATM()

    while True:
        print("\nATM Main Menu")
        print("1. Check Balance")
        print("2. Deposit Cash")
        print("3. Withdraw Cash")
        print("4. Change PIN")
        print("5. Transaction History")
        print("6. Exit")
```

```
        choice = input("Enter your choice: ")

        if choice == '1':
            print(atm.check_balance())
        elif choice == '2':
            amount = float(input("Enter amount to deposit: "))
            print(atm.deposit(amount))
        elif choice == '3':
            amount = float(input("Enter amount to withdraw: "))
            print(atm.withdraw(amount))
        elif choice == '4':
            old_pin = input("Enter old PIN: ")
            new_pin = input("Enter new PIN: ")
            print(atm.change_pin(old_pin, new_pin))
        elif choice == '5':
            print(atm.transaction_history())
        elif choice == '6':
            print("Thank you for using the ATM. Goodbye!")
            break
        else:
            print("Invalid choice. Please try again.")

if __name__ == "__main__":
    atm_simulation()
```

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8. Usage Instructions

1. Run the script.
2. Follow the on-screen prompts to perform different ATM operations.
3. Enter valid amounts and PINs where required.
4. Choose the appropriate option from the menu to check the balance, deposit, withdraw, change PIN, or view transaction history.
5. Exit the program by selecting the "Exit" option.

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9. Result

ATM Main Menu

1. Check Balance

2. Deposit Cash

3. Withdraw Cash

4. Change PIN

5. Transaction History

6. Exit

Enter your choice: 1. Check Balance

Invalid choice. Please try again.

ATM Main Menu

1. Check Balance

2. Deposit Cash

3. Withdraw Cash

4. Change PIN

5. Transaction History

6. Exit

Enter your choice: 1

Your current balance is: $1000.00

ATM Main Menu

1. Check Balance

2. Deposit Cash

3. Withdraw Cash

4. Change PIN

5. Transaction History

6. Exit

Enter your choice: 2

Enter amount to deposit: 5000

Successfully deposited $5000.00

ATM Main Menu

1. Check Balance

2. Deposit Cash

3. Withdraw Cash

4. Change PIN

5. Transaction History

6. Exit

Enter your choice: 1

Your current balance is: $6000.00

ATM Main Menu

1. Check Balance

2. Deposit Cash

3. Withdraw Cash

4. Change PIN

5. Transaction History

6. Exit

Enter your choice: 4

Enter old PIN: 1234

Enter new PIN: 1321

PIN successfully changed.

ATM Main Menu

1. Check Balance

2. Deposit Cash

3. Withdraw Cash

4. Change PIN

5. Transaction History

6. Exit

Enter your choice: 5

Checked balance

Deposited $5000.00

Checked balance

PIN changed

ATM Main Menu

1. Check Balance

2. Deposit Cash

3. Withdraw Cash

4. Change PIN

5. Transaction History

6. Exit

Enter your choice: 6

Thank you for using the ATM. Goodbye!

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10. Conclusion

This ATM Machine Simulation provides a basic yet comprehensive model of an ATM's functionality using Python. It ensures user-friendly interaction, secure transactions, and maintains a history of all transactions for reference. The project can be further enhanced with additional features like multiple accounts, transfer functionality, and user authentication for a more realistic simulation.