BANKING INFORMATION SYSTEM

1. Overview:

The provided code represents a simple Automated Teller Machine (ATM) system implemented in Python. It allows users to perform various banking operations such as balance inquiry, cash withdrawal, deposit, fund transfer, and view transaction history. The system is designed with classes representing different functionalities such as User, Transaction, TransactionHistory, Withdrawal, Deposit, Transfer, Quit, and ATM.

2. Classes and Functionality:

User: Represents a bank user with attributes such as user_id, PIN, and balance.

Transaction: Represents a transaction with attributes such as transaction_type, amount, and timestamp.

TransactionHistory: Manages the history of transactions. It allows adding transactions and displaying transaction history.

Withdrawal: Manages cash withdrawal functionality.

Deposit: Manages deposit functionality.

Transfer: Manages fund transfer functionality between users.

Quit: Allows users to exit the system.

ATM: The main class managing the ATM operations. It includes methods for adding users, authenticating users, displaying the ATM menu, and executing operations based on user input.

3. Operation Flow:

The program starts by instantiating an ATM object.

Users are created and added to the ATM system with a unique user ID, PIN, and initial balance.

Users are authenticated by providing their user ID and PIN.

Upon successful authentication, users can choose from various options in the ATM menu.

Based on the user's choice, corresponding operations such as balance inquiry, withdrawal, deposit, transfer, viewing transaction history, or quitting the system are executed.

Code explanation:

1.Creating and adding users to the ATM system:

```
atm = ATM()

user1 = User("abilash", "1234", 1000000)

user2 = User("abi", "1234", 500000)

atm.add_user(user1)

atm.add_user(user2)
```

2. Authenticating a user:

```
user_id_input = input("Enter User ID: ")

pin_input = input("Enter PIN: ")

current_user = atm.authenticate_user(user_id_input, pin_input)

if current_user:

    print(f"Authentication successful. Welcome, {current_user.user_id}!")

else:

    print("Authentication failed. Please check your User ID and PIN.")
```

3. Displaying the menu and executing user-selected operations:

```
atm.display_menu()

user_choice = input("Enter your choice: ")

atm.execute_operation(current_user, user_choice)
```

4. Performing a cash withdrawal:

```
amount = float(input("Enter withdrawal amount: "))

if atm.withdrawal.withdraw(current_user, amount):

    print("Withdrawal successful.")

    atm.transaction_history.add_transaction("Withdrawal", amount)

else:

    print("Withdrawal failed. Insufficient funds or invalid amount.")
```

5. Displaying the transaction history:

```
print("\nTransaction History:")

atm.transaction_history.display_history()
```