PRESENTATION

By Kapil

2501350035

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INTRODUCTION

one of the most prevalent real-world instances of computer automation is an Automation Teller Machine (ATM). customers can take money out of their bank accounts at any time without a human teller thanks to it.
A Personal Identification Number (PIN), the desired withdrawal amount, account balance verification , and, if feasible, dispensing the requested amount are all steps in the ATM process. This procedure illustrates how computers process inputs, carry out logical checks, and generate precise outputs.
Understanding the ATM withdrawal process through the application of computational thinking concepts like abstraction, decomposition, and pattern recognition is the goal of this assignment A flowchart, pseudocode, and a functional Python code block will all be used to illustrate the solution.

PROJECT GOALS

Problem Analysis

a) Abstraction

In abstraction, we focus only on the important details and ignore the unneeded ones.

For the ATM process, we only consider:

- User enters PIN
- System verifies the PIN
- User enters the amount
- System checks balance
- if balance is sufficient, money is dispensed

Otherwise, an error message is displayed

We ignore unnecessary physical parts like the card reader, sensor, or cash dispenser hardware.

b) Decomposition

Decomposition means breaking a big problem into smaller parts.

1. Start the process
2. User inserts card and enters PIN
3. System checks if PIN is correct
4. if PIN is correct → ask user to enter withdrawal amount
5. Check if entered amount is ≤ available balance
6. if yes → display amount and dispense cash
7. if no → display “Insufficient Balance”
8. if PIN is incorrect → display “Invalid PIN”
9. End process

c) Pattern Recognition

This ATM system follows similar logic to:

Online payment gateways (PIN or OTP verification)

Mobile wallet transactions

E-commerce checkout systems

All these processes involve verification, decision-making, and transaction completion, which are recurring patterns in computing systems .

PSEUDOCODE

```
START
    SET balance = 5000
    SET correct_pin = 1234

    INPUT user_pin
    IF user_pin == correct_pin THEN
         INPUT amount
         IF amount <= balance THEN
              balance = balance - amount
              PRINT "Transaction Successful"
              PRINT "Remaining Balance: ", balance
          ELSE
              PRINT "Insufficient Balance"
          ENDIF
      ELSE
              PRINT "Invalid PIN"
          ENDIF
  END
```

IMPLEMATION

```
# ATM withdrawal simulation
# Beginner-friendly version

# Step 1: Set up balance and correct PIN
balance = 5000
correct_pin = “1234”

# Step 2: Take input from user
pin = input(“enter your 4-digit PIN:”)

# Step 3: Verify PIN
if pin == correct_pin:
    amount = int(input(“enter withdrawal amount:”))

        # Step 4: Check if sufficient balance
        if amount <= balance:
            balance_= amount
            print(“Transaction Successful!”)
            print(“Remaining Balance:”, balance
        else:
            print(“Insufficient Balance. Please try again.”)
        else:
            print(“Invalid PIN. Access Denied.”)
```

REFLECTION

This assignment helped me see how to solve real-world problem step-by-step using computational thinking. By applying abstraction, I Learned to focus only on the key parts of the ATM process. Decomposition helped me break the problem into smaller steps, making it easier to write pseudocode and python code.

At first, I found it difficult to grasp how to use conditions and logical decisions in programming. However, once I started working with pseudocode and python, I figured out how computers think logically. The flowchart made the whole process visually clear, while pseudocode provided a structured out line. Writing the python code boosted my confidence in basic programming concepts like variables, input/output, and if-else statements.

In the future, this project could be improved by adding the following options:

- Deposit and balance inquiry
- Multiple user accounts
- A daily withdrawal limit

Overall, this activity was a great learning experience that strengthened my understanding of computational problem - solving.

THANK YOU