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# **CASE STUDY OF ATM**

## **INTRODUCTION**

The Automated teller machine (ATM) is an automatic banking machine (ABM) that allows the customer to complete basic transactions without any help from bank representatives. The basic one allows the customer to only draw cash and receive a report of the account balance.

## **BRIEF DESCRIPTION**

Basically, it is an electronic device that is used by the Bank for transection purpose. The user insert there plastic card which is encoded with the user information on a magnatic strip. The strip contains an identification code that is transmitted to the bank’s central computer by modem. The user insert the plastic card to access the account to access the services provided by the Bank.

There were problems like when the banks were closed at night or you have to write a check before you withdraw your money. Suppose you are facing some problem and you need money urgent and the banks are closed what to do know. To overcome this situation ATM were introduced, they were invented by the Shepherd-Barron in 1960. Now even if banks are closed or its late night everyone can access their money.

The ATM basically, provides many services to the user.

Following are some listed below:

1. Transection of money any time you want.
2. Transfer of money from your account to another.

For the transection of money one only need to insert card enter pin and then enter the amount he wants. It should be noted that there is a limit of how much money one can withdraw from the account. Because ATM is not for the transection of heavy money but for simple scenarios, and also there must be at least Rs.500 present in the account. If someone thinks that he can withdraw all the money or the amount that is not sufficient in the account he cannot.

Transfer money is another service that ATM provides like you want to send someone money very urgently ATM can help you, no need to worry. To transfer money first you will enter the account number where you want to send money to, the system will verify the account number that weather it exists or not, then you will enter the amount then again the backend program will run to check that weather the entered amount is not less than the current balance and also there must always be Rs.500 present in the account. Then in the last you also have to provide your PIN for verification or say security purpose.

The automated teller machine consists of mainly two input devices and four output devices that are:

### Input Devices:

* Card reader
* Keypad

### Output Devices:

* Speaker
* Display Screen
* Receipt Printer
* Cash Depositor

## **ADVANTAGES OF ATM:**

1. The ATM provides 24 hours service
2. The ATMs reduce the workload banks staff
3. The ATMs are convenient for banks customers
4. The ATM is very beneficial for travelers

## **IDENTIFIED FUNCTIONS:**

FUNCTION1: The very first function basically is to verify the PIN of the account holder before letting him login and use the service. If the PIN matches the PIN that is saved in data base then the user can proceed and use the Service of ATM.

FUNCTION2: The second function is about the withdraw of money from account where the user will enter the amount he/she likes to withdraw and after the insertion of amount certain conditions will be verified like weather the entered amount is less than the actual amount of account “Bank basically won’t like to give extra money to anyone especially which is not there”. And also there must be at least Rs.500 present in the account.

FUNCTION3: The 3rd and the last function is about the transfer of money from your account to the desired one where you want to send your money too. A function with 3 parameters will be used function (string pin, double amount, string accountnum), the very first thing that will be checked will be the account number that you entered i.e. the other account that you entered where your money will be send. After that confirmation you will enter the current PIN and the amount you want to send, current PIN to verify you and the amount to check the entered amount is less than the amount in account and there must be at least Rs.500 there in the amount.

## **BlackBox Testing:**

### **Worst Case BVA**

### Function 1: int Pincheck (string pin)

**Total test cases**= 5^1 =5   
**Input Values:**  
**Pin:** min = 0000, min+ =1111, nom = 5555, max- = 8888, max = 9999

|  |  |  |
| --- | --- | --- |
| **Case** | **Pin** | **Expected Output** |
| 1 | 0000 | Invalid |
| 2 | 1111 | Valid |
| 3 | 5555 | Invalid |
| 4 | 8888 | Invalid |
| 5 | 9999 | Invalid |

### Function 2: int Transection(double Amount)

**Total test cases**= 5^1 =5   
**Input Values:**  
**Amount:** min = 400, min+ =500, nom = 7000, max- = 12000, max = 14999

|  |  |  |
| --- | --- | --- |
| **Case** | **Amount** | **Expected Output** |
| 1 | 400 | Invalid |
| 2 | 500 | Invalid |
| 3 | 7000 | Valid |
| 4 | 12000 | Valid |
| 5 | 14999 | Valid |

### Function 3: int Transfermoney (string pin, double amount, string accountnum)

**Total test cases**= 5^3 =125   
**Half test cases implemented** = 63  
**Input Values:**  
**pin:** min = 0000, min+ =1111, nom =5555, max- = 8888, max =9999  
**amount:** min = 400, min+ = 500, nom = 7000, max- = 12000, max = 14999 **accountnum:** min = 1234, min+ = 3456, nom = 5678, max- = 7898, max = 9898

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Case** | **Pin** | **Amount** | **Accountnum** | **Expected Output** |
| 1 | 0000 | 400 | 1234 | Invalid |
| 2 | 0000 | 400 | 3456 | Invalid |
| 3 | 0000 | 400 | 5678 | Invalid |
| 4 | 0000 | 400 | 7898 | Invalid |
| 5 | 0000 | 400 | 9898 | Invalid |
| 6 | 0000 | 500 | 1234 | Invalid |
| 7 | 0000 | 500 | 3456 | Invalid |
| 8 | 0000 | 500 | 5678 | Invalid |
| 9 | 0000 | 500 | 7898 | Invalid |
| 10 | 0000 | 500 | 9898 | Invalid |
| 11 | 0000 | 7000 | 1234 | Invalid |
| 12 | 0000 | 7000 | 3456 | Invalid |
| 13 | 0000 | 7000 | 5678 | Invalid |
| 14 | 0000 | 7000 | 7898 | Invalid |
| 15 | 0000 | 7000 | 9898 | Invalid |
| 16 | 0000 | 12000 | 1234 | Invalid |
| 17 | 0000 | 12000 | 3456 | Invalid |
| 18 | 0000 | 12000 | 5678 | Invalid |
| 19 | 0000 | 12000 | 7898 | Invalid |
| 20 | 0000 | 12000 | 9898 | Invalid |
| 21 | 0000 | 14999 | 1234 | Invalid |
| 22 | 0000 | 14999 | 3456 | Invalid |
| 23 | 0000 | 14999 | 5678 | Invalid |
| 24 | 0000 | 14999 | 7898 | Invalid |
| 25 | 0000 | 14999 | 9898 | Invalid |
| 26 | 1111 | 400 | 1234 | Invalid |
| 27 | 1111 | 400 | 3456 | Invalid |
| 28 | 1111 | 400 | 5678 | Invalid |
| 29 | 1111 | 400 | 7898 | Invalid |
| 30 | 1111 | 400 | 9898 | Invalid |
| 31 | 1111 | 500 | 1234 | Invalid |
| 32 | 1111 | 500 | 3456 | Invalid |
| 33 | 1111 | 500 | 5678 | Invalid |
| 34 | 1111 | 500 | 7898 | Invalid |
| 35 | 1111 | 500 | 9898 | Invalid |
| 36 | 1111 | 7000 | 1234 | Valid |
| 37 | 1111 | 7000 | 3456 | Valid |
| 38 | 1111 | 7000 | 5678 | Valid |
| 39 | 1111 | 7000 | 7898 | Valid |
| 40 | 1111 | 7000 | 9898 | Valid |
| 41 | 1111 | 12000 | 1234 | Valid |
| 42 | 1111 | 12000 | 3456 | Valid |
| 43 | 1111 | 12000 | 5678 | Valid |
| 44 | 1111 | 12000 | 7898 | Valid |
| 45 | 1111 | 12000 | 9898 | Valid |
| 46 | 1111 | 14999 | 1234 | Valid |
| 47 | 1111 | 14999 | 3456 | Valid |
| 48 | 1111 | 14999 | 5678 | Valid |
| 49 | 1111 | 14999 | 7898 | Valid |
| 50 | 1111 | 14999 | 9898 | Valid |
| 51 | 5555 | 400 | 1234 | Invalid |
| 52 | 5555 | 400 | 3456 | Invalid |
| 53 | 5555 | 400 | 5678 | Invalid |
| 54 | 5555 | 400 | 7898 | Invalid |
| 55 | 5555 | 500 | 9898 | Invalid |
| 56 | 5555 | 500 | 1234 | Invalid |
| 57 | 5555 | 500 | 3456 | Invalid |
| 58 | 5555 | 500 | 5678 | Invalid |
| 59 | 5555 | 500 | 7898 | Invalid |
| 60 | 5555 | 1 | 9898 | Invalid |
| 61 | 5555 | 3 | 1234 | Invalid |
| 62 | 5555 | 3 | 3456 | Invalid |
| 63 | 5555 | 3 | 5678 | Invalid |

### **Strong Robust equivalence classes**

### Function 1: int Pincheck(string pin)

**Total test cases** = 7

Pin = {-1111,0000,1111,5555,8888,9898,9999}.

|  |  |  |
| --- | --- | --- |
| **Case** | **Pin** | **Expected Output** |
| 1 | -1111 | Fall |
| 2 | 0000 | Invalid |
| 3 | 1111 | Valid |
| 4 | 5555 | Invalid |
| 5 | 8888 | Invalid |
| 6 | 9898 | Invalid |
| 7 | 9999 | Fall |

### Function 2: int Transection(string amount)

**Total test cases** = 7

Amount = {0,400,500,7000,12000,14999,15000}.

|  |  |  |
| --- | --- | --- |
| **Case** | **Amount** | **Expected Output** |
| 1 | 0 | Invalid |
| 2 | 400 | Invalid |
| 3 | 500 | Invalid |
| 4 | 7000 | Valid |
| 5 | 12000 | Valid |
| 6 | 14999 | Valid |
| 7 | 15000 | Invalid |

### Function 3: int Transfermoney (string pin, double amount, string accountnum)

Pin = {-1111,0000,1111,5555,8888,9898,9999}.

Amount = {0,400,500,7000,12000,14999,15000}.

accountnum = {0000,1234,3456,5678,7898,9898,9999}

7n =73 =343 where n=3 because there are three variables

Half implemted = 173 cases

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Case** | **Pin** | **Amount** | **Accountnum** | **Expected Output** |
|  | **-1111** | **0000** | **0000** | Invalid |
|  | **-1111** | **0000** | **1234** | Invalid |
|  | **-1111** | **0000** | **3456** | Invalid |
|  | **-1111** | **0000** | **5678** | Invalid |
|  | **-1111** | **0000** | **7898** | Invalid |
|  | **-1111** | **0000** | **9898** | Invalid |
|  | **-1111** | **0000** | **9999** | Invalid |
|  | **-1111** | **400** | **0000** | Invalid |
|  | **-1111** | **400** | **1234** | Invalid |
|  | **-1111** | **400** | **3456** | Invalid |
|  | **-1111** | **400** | **5678** | Invalid |
|  | **-1111** | **400** | **7898** | Invalid |
|  | **-1111** | **400** | **9898** | Invalid |
|  | **-1111** | **400** | **9999** | Invalid |
|  | **-1111** | **500** | **0000** | Invalid |
|  | **-1111** | **500** | **1234** | Invalid |
|  | **-1111** | **500** | **3456** | Invalid |
|  | **-1111** | **500** | **5678** | Invalid |
|  | **-1111** | **500** | **7898** | Invalid |
|  | **-1111** | **500** | **9898** | Invalid |
|  | **-1111** | **500** | **9999** | Invalid |
|  | **-1111** | **7000** | **0000** | Invalid |
|  | **-1111** | **7000** | **1234** | Invalid |
|  | **-1111** | **7000** | **3456** | Invalid |
|  | **-1111** | **7000** | **5678** | Invalid |
|  | **-1111** | **7000** | **7898** | Invalid |
|  | **-1111** | **7000** | **9898** | Invalid |
|  | **-1111** | **7000** | **9999** | Invalid |
|  | **-1111** | **12000** | **0000** | Invalid |
|  | **-1111** | **12000** | **1234** | Invalid |
|  | **-1111** | **12000** | **3456** | Invalid |
|  | **-1111** | **12000** | **5678** | Invalid |
|  | **-1111** | **12000** | **7898** | Invalid |
|  | **-1111** | **12000** | **9898** | Invalid |
|  | **-1111** | **12000** | **9999** | Invalid |
|  | **-1111** | **14999** | **0000** | Invalid |
|  | **-1111** | **14999** | **1234** | Invalid |
|  | **-1111** | **14999** | **3456** | Invalid |
|  | **-1111** | **14999** | **5678** | Invalid |
|  | **-1111** | **14999** | **7898** | Invalid |
|  | **-1111** | **14999** | **9898** | Invalid |
|  | **-1111** | **14999** | **9999** | Invalid |
|  | **-1111** | **15000** | **0000** | Invalid |
|  | **-1111** | **15000** | **1234** | Invalid |
|  | **-1111** | **15000** | **3456** | Invalid |
|  | **-1111** | **15000** | **5678** | Invalid |
|  | **-1111** | **15000** | **7898** | Invalid |
|  | **-1111** | **15000** | **9898** | Invalid |
|  | **-1111** | **15000** | **9999** | Invalid |
|  | 0000 | **400** | **0000** | Invalid |
|  | 0000 | **400** | **1234** | Invalid |
|  | 0000 | **400** | **3456** | Invalid |
|  | 0000 | **400** | **5678** | Invalid |
|  | 0000 | **400** | **7898** | Invalid |
|  | 0000 | **400** | **9898** | Invalid |
|  | 0000 | **400** | **9999** | Invalid |
|  | 0000 | **400** | **0000** | Invalid |
|  | 0000 | **400** | **1234** | Invalid |
|  | 0000 | **400** | **3456** | Invalid |
|  | 0000 | **400** | **5678** | Invalid |
|  | 0000 | **400** | **7898** | Invalid |
|  | 0000 | **400** | **9898** | Invalid |
|  | 0000 | **400** | **9999** | Invalid |
|  | 0000 | **400** | **0000** | Invalid |
|  | 0000 | **400** | **1234** | Invalid |
|  | 0000 | **400** | **3456** | Invalid |
|  | 0000 | **400** | **5678** | Invalid |
|  | 0000 | **400** | **7898** | Invalid |
|  | 0000 | **400** | **9898** | Invalid |
|  | 0000 | **400** | **9999** | Invalid |
|  | 0000 | **400** | **0000** | Invalid |
|  | 0000 | **400** | **1234** | Invalid |
|  | 0000 | **400** | **3456** | Invalid |
|  | 0000 | **400** | **5678** | Invalid |
|  | 0000 | **400** | **7898** | Invalid |
|  | 0000 | **400** | **9898** | Invalid |
|  | 0000 | **400** | **9999** | Invalid |
|  | 0000 | **400** | **0000** | Invalid |
|  | 0000 | **400** | **1234** | Invalid |
|  | 0000 | **400** | **3456** | Invalid |
|  | 0000 | **400** | **5678** | Invalid |
|  | 0000 | **400** | **7898** | Invalid |
|  | 0000 | **400** | **9898** | Invalid |
|  | 0000 | **400** | **9999** | Invalid |
|  | 0000 | **400** | **0000** | Invalid |
|  | 0000 | **400** | **1234** | Invalid |
|  | 0000 | **400** | **3456** | Invalid |
|  | 0000 | **400** | **5678** | Invalid |
|  | 0000 | **400** | **7898** | Invalid |
|  | 0000 | **400** | **9898** | Invalid |
|  | 0000 | **400** | **9999** | Invalid |
|  | **1111** | **500** | **0000** | Invalid |
|  | **1111** | **500** | **1234** | Invalid |
|  | **1111** | **500** | **3456** | Invalid |
|  | **1111** | **500** | **5678** | Invalid |
|  | **1111** | **500** | **7898** | Invalid |
|  | **1111** | **500** | **9898** | Invalid |
|  | **1111** | **500** | **9999** | Invalid |
|  | **1111** | **500** | **0000** | Invalid |
|  | **1111** | **500** | **1234** | Invalid |
|  | **1111** | **500** | **3456** | Invalid |
|  | **1111** | **500** | **5678** | Invalid |
|  | **1111** | **500** | **7898** | Invalid |
|  | **1111** | **500** | **9898** | Invalid |
|  | **1111** | **500** | **9999** | Invalid |
|  | **1111** | **500** | **0000** | Invalid |
|  | **1111** | **500** | **1234** | Invalid |
|  | **1111** | **500** | **3456** | Invalid |
|  | **1111** | **500** | **5678** | Invalid |
|  | **1111** | **500** | **7898** | Invalid |
|  | **1111** | **500** | **9898** | Invalid |
|  | **1111** | **500** | **9999** | Invalid |
|  | **1111** | **500** | **0000** | Invalid |
|  | **1111** | **500** | **1234** | Invalid |
|  | **1111** | **500** | **3456** | Invalid |
|  | **1111** | **500** | **5678** | Invalid |
|  | **1111** | **500** | **7898** | Invalid |
|  | **1111** | **500** | **9898** | Invalid |
|  | **1111** | **500** | **9999** | Invalid |
|  | **1111** | **500** | **0000** | Invalid |
|  | **1111** | **7000** | **1234** | Valid |
|  | **1111** | **7000** | **3456** | Valid |
|  | **1111** | **7000** | **5678** | Valid |
|  | **1111** | **7000** | **7898** | Valid |
|  | **1111** | **7000** | **9898** | Valid |
|  | **1111** | **7000** | **9999** | Valid |
|  | **1111** | **7000** | **0000** | Valid |
|  | **1111** | **7000** | **1234** | Valid |
|  | **1111** | **7000** | **3456** | Valid |
|  | **1111** | **7000** | **5678** | Valid |
|  | **1111** | **7000** | **7898** | Valid |
|  | **1111** | **7000** | **9898** | Valid |
|  | **1111** | **7000** | **9999** | Valid |
|  | **1111** | **7000** | **0000** | Valid |
|  | **1111** | **7000** | **1234** | Valid |
|  | **1111** | **7000** | **3456** | Valid |
|  | **1111** | **7000** | **5678** | Valid |
|  | **1111** | **7000** | **7898** | Valid |
|  | **1111** | **7000** | **9898** | Valid |
|  | **1111** | **7000** | **9999** | Valid |
|  | **5555** | **7000** | **0000** | Invalid |
|  | **5555** | **7000** | **1234** | Invalid |
|  | **5555** | **7000** | **3456** | Invalid |
|  | **5555** | **7000** | **5678** | Invalid |
|  | **5555** | **7000** | **7898** | Invalid |
|  | **5555** | **7000** | **9898** | Invalid |
|  | **5555** | **7000** | **9999** | Invalid |
|  | **5555** | **7000** | **0000** | Invalid |
|  | **5555** | **7000** | **1234** | Invalid |
|  | **5555** | **7000** | **3456** | Invalid |
|  | **5555** | **7000** | **5678** | Invalid |
|  | **5555** | **7000** | **7898** | Invalid |
|  | **5555** | **7000** | **9898** | Invalid |
|  | **5555** | **7000** | **9999** | Invalid |
|  | **5555** | **7000** | **0000** | Invalid |
|  | **5555** | **7000** | **1234** | Invalid |
|  | **5555** | **7000** | **3456** | Invalid |
|  | **5555** | **7000** | **5678** | Invalid |
|  | **5555** | **7000** | **7898** | Invalid |
|  | **5555** | **7000** | **9898** | Invalid |
|  | **5555** | **7000** | **9999** | Invalid |
|  | **5555** | **7000** | **0000** | Invalid |
|  | **5555** | **7000** | **1234** | Invalid |
|  | **5555** | **7000** | **3456** | Invalid |
|  | **5555** | **7000** | **5678** | Invalid |
|  | **5555** | **7000** | **7898** | Invalid |
|  | **5555** | **7000** | **9898** | Invalid |
|  | **5555** | **7000** | **9999** | Invalid |
|  | **5555** | **7000** | **0000** | Invalid |
|  | **5555** | **7000** | **1234** | Invalid |
|  | **5555** | **7000** | **3456** | Invalid |
|  | **5555** | **7000** | **5678** | Invalid |
|  | **5555** | **7000** | **7898** | Invalid |