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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}

$7^n = 7^3 = 343$ where n=3 because there are three variables

Half implemted = 173 cases

Case	Pin	Amount	Accountnum	Expected Output
1.	**-1111**	**0000**	**0000**	Invalid
2.	**-1111**	**0000**	**1234**	Invalid
3.	**-1111**	**0000**	**3456**	Invalid
4.	**-1111**	**0000**	**5678**	Invalid
5.	**-1111**	**0000**	**7898**	Invalid
6.	**-1111**	**0000**	**9898**	Invalid
7.	**-1111**	**0000**	**9999**	Invalid
8.	**-1111**	**400**	**0000**	Invalid
9.	**-1111**	**400**	**1234**	Invalid
10.	**-1111**	**400**	**3456**	Invalid
11.	**-1111**	**400**	**5678**	Invalid

12.	**-1111**	**400**	**7898**	Invalid
13.	**-1111**	**400**	**9898**	Invalid
14.	**-1111**	**400**	**9999**	Invalid
15.	**-1111**	**500**	**0000**	Invalid
16.	**-1111**	**500**	**1234**	Invalid
17.	**-1111**	**500**	**3456**	Invalid
18.	**-1111**	**500**	**5678**	Invalid
19.	**-1111**	**500**	**7898**	Invalid
20.	**-1111**	**500**	**9898**	Invalid
21.	**-1111**	**500**	**9999**	Invalid
22.	**-1111**	**7000**	**0000**	Invalid
23.	**-1111**	**7000**	**1234**	Invalid
24.	**-1111**	**7000**	**3456**	Invalid
25.	**-1111**	**7000**	**5678**	Invalid
26.	**-1111**	**7000**	**7898**	Invalid
27.	**-1111**	**7000**	**9898**	Invalid
28.	**-1111**	**7000**	**9999**	Invalid
29.	**-1111**	**12000**	**0000**	Invalid
30.	**-1111**	**12000**	**1234**	Invalid
31.	**-1111**	**12000**	**3456**	Invalid
32.	**-1111**	**12000**	**5678**	Invalid
33.	**-1111**	**12000**	**7898**	Invalid
34.	**-1111**	**12000**	**9898**	Invalid
35.	**-1111**	**12000**	**9999**	Invalid
36.	**-1111**	**14999**	**0000**	Invalid
37.	**-1111**	**14999**	**1234**	Invalid
38.	**-1111**	**14999**	**3456**	Invalid
39.	**-1111**	**14999**	**5678**	Invalid
40.	**-1111**	**14999**	**7898**	Invalid
41.	**-1111**	**14999**	**9898**	Invalid
42.	**-1111**	**14999**	**9999**	Invalid
43.	**-1111**	**15000**	**0000**	Invalid
44.	**-1111**	**15000**	**1234**	Invalid
45.	**-1111**	**15000**	**3456**	Invalid
46.	**-1111**	**15000**	**5678**	Invalid
47.	**-1111**	**15000**	**7898**	Invalid
48.	**-1111**	**15000**	**9898**	Invalid
49.	**-1111**	**15000**	**9999**	Invalid
50.	0000	**400**	**0000**	Invalid
51.	0000	**400**	**1234**	Invalid
52.	0000	**400**	**3456**	Invalid
53.	0000	**400**	**5678**	Invalid
54.	0000	**400**	**7898**	Invalid
55.	0000	**400**	**9898**	Invalid
56.	0000	**400**	**9999**	Invalid
57.	0000	**400**	**0000**	Invalid
58.	0000	**400**	**1234**	Invalid
59.	0000	**400**	**3456**	Invalid
60.	0000	**400**	**5678**	Invalid
61.	0000	**400**	**7898**	Invalid
62.	0000	**400**	**9898**	Invalid

63.	0000	**400**	**9999**	Invalid
64.	0000	**400**	**0000**	Invalid
65.	0000	**400**	**1234**	Invalid
66.	0000	**400**	**3456**	Invalid
67.	0000	**400**	**5678**	Invalid
68.	0000	**400**	**7898**	Invalid
69.	0000	**400**	**9898**	Invalid
70.	0000	**400**	**9999**	Invalid
71.	0000	**400**	**0000**	Invalid
72.	0000	**400**	**1234**	Invalid
73.	0000	**400**	**3456**	Invalid
74.	0000	**400**	**5678**	Invalid
75.	0000	**400**	**7898**	Invalid
76.	0000	**400**	**9898**	Invalid
77.	0000	**400**	**9999**	Invalid
78.	0000	**400**	**0000**	Invalid
79.	0000	**400**	**1234**	Invalid
80.	0000	**400**	**3456**	Invalid
81.	0000	**400**	**5678**	Invalid
82.	0000	**400**	**7898**	Invalid
83.	0000	**400**	**9898**	Invalid
84.	0000	**400**	**9999**	Invalid
85.	0000	**400**	**0000**	Invalid
86.	0000	**400**	**1234**	Invalid
87.	0000	**400**	**3456**	Invalid
88.	0000	**400**	**5678**	Invalid
89.	0000	**400**	**7898**	Invalid
90.	0000	**400**	**9898**	Invalid
91.	0000	**400**	**9999**	Invalid
92.	**1111**	**500**	**0000**	Invalid
93.	**1111**	**500**	**1234**	Invalid
94.	**1111**	**500**	**3456**	Invalid
95.	**1111**	**500**	**5678**	Invalid
96.	**1111**	**500**	**7898**	Invalid
97.	**1111**	**500**	**9898**	Invalid
98.	**1111**	**500**	**9999**	Invalid
99.	**1111**	**500**	**0000**	Invalid
100.	**1111**	**500**	**1234**	Invalid
101.	**1111**	**500**	**3456**	Invalid
102.	**1111**	**500**	**5678**	Invalid
103.	**1111**	**500**	**7898**	Invalid
104.	**1111**	**500**	**9898**	Invalid
105.	**1111**	**500**	**9999**	Invalid
106.	**1111**	**500**	**0000**	Invalid
107.	**1111**	**500**	**1234**	Invalid
108.	**1111**	**500**	**3456**	Invalid
109.	**1111**	**500**	**5678**	Invalid
110.	**1111**	**500**	**7898**	Invalid
111.	**1111**	**500**	**9898**	Invalid
112.	**1111**	**500**	**9999**	Invalid
113.	**1111**	**500**	**0000**	Invalid

114.	**1111**	**500**	**1234**	Invalid
115.	**1111**	**500**	**3456**	Invalid
116.	**1111**	**500**	**5678**	Invalid
117.	**1111**	**500**	**7898**	Invalid
118.	**1111**	**500**	**9898**	Invalid
119.	**1111**	**500**	**9999**	Invalid
120.	**1111**	**500**	**0000**	Invalid
121.	**1111**	**7000**	**1234**	Valid
122.	**1111**	**7000**	**3456**	Valid
123.	**1111**	**7000**	**5678**	Valid
124.	**1111**	**7000**	**7898**	Valid
125.	**1111**	**7000**	**9898**	Valid
126.	**1111**	**7000**	**9999**	Valid
127.	**1111**	**7000**	**0000**	Valid
128.	**1111**	**7000**	**1234**	Valid
129.	**1111**	**7000**	**3456**	Valid
130.	**1111**	**7000**	**5678**	Valid
131.	**1111**	**7000**	**7898**	Valid
132.	**1111**	**7000**	**9898**	Valid
133.	**1111**	**7000**	**9999**	Valid
134.	**1111**	**7000**	**0000**	Valid
135.	**1111**	**7000**	**1234**	Valid
136.	**1111**	**7000**	**3456**	Valid
137.	**1111**	**7000**	**5678**	Valid
138.	**1111**	**7000**	**7898**	Valid
139.	**1111**	**7000**	**9898**	Valid
140.	**1111**	**7000**	**9999**	Valid
141.	**5555**	**7000**	**0000**	Invalid
142.	**5555**	**7000**	**1234**	Invalid
143.	**5555**	**7000**	**3456**	Invalid
144.	**5555**	**7000**	**5678**	Invalid
145.	**5555**	**7000**	**7898**	Invalid
146.	**5555**	**7000**	**9898**	Invalid
147.	**5555**	**7000**	**9999**	Invalid
148.	**5555**	**7000**	**0000**	Invalid
149.	**5555**	**7000**	**1234**	Invalid
150.	**5555**	**7000**	**3456**	Invalid
151.	**5555**	**7000**	**5678**	Invalid
152.	**5555**	**7000**	**7898**	Invalid
153.	**5555**	**7000**	**9898**	Invalid
154.	**5555**	**7000**	**9999**	Invalid
155.	**5555**	**7000**	**0000**	Invalid
156.	**5555**	**7000**	**1234**	Invalid
157.	**5555**	**7000**	**3456**	Invalid
158.	**5555**	**7000**	**5678**	Invalid
159.	**5555**	**7000**	**7898**	Invalid
160.	**5555**	**7000**	**9898**	Invalid
161.	**5555**	**7000**	**9999**	Invalid
162.	**5555**	**7000**	**0000**	Invalid
163.	**5555**	**7000**	**1234**	Invalid
164.	**5555**	**7000**	**3456**	Invalid

165.	**5555**	**7000**	**5678**	Invalid
166.	**5555**	**7000**	**7898**	Invalid
167.	**5555**	**7000**	**9898**	Invalid
168.	**5555**	**7000**	**9999**	Invalid
169.	**5555**	**7000**	**0000**	Invalid
170.	**5555**	**7000**	**1234**	Invalid
171.	**5555**	**7000**	**3456**	Invalid
172.	**5555**	**7000**	**5678**	Invalid
173.	**5555**	**7000**	**7898**	Invalid