Object-Oriented and State-Based Testing - Project Report

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OBJECT-ORIENTED AND STATE-BASED TESTING

GOAL

The goal of this project is to test and *account* class that exhibits state behavior specified by the given source code of the class *account* and EFSM model given below:

Figure 1: EFSM of ACCOUNT
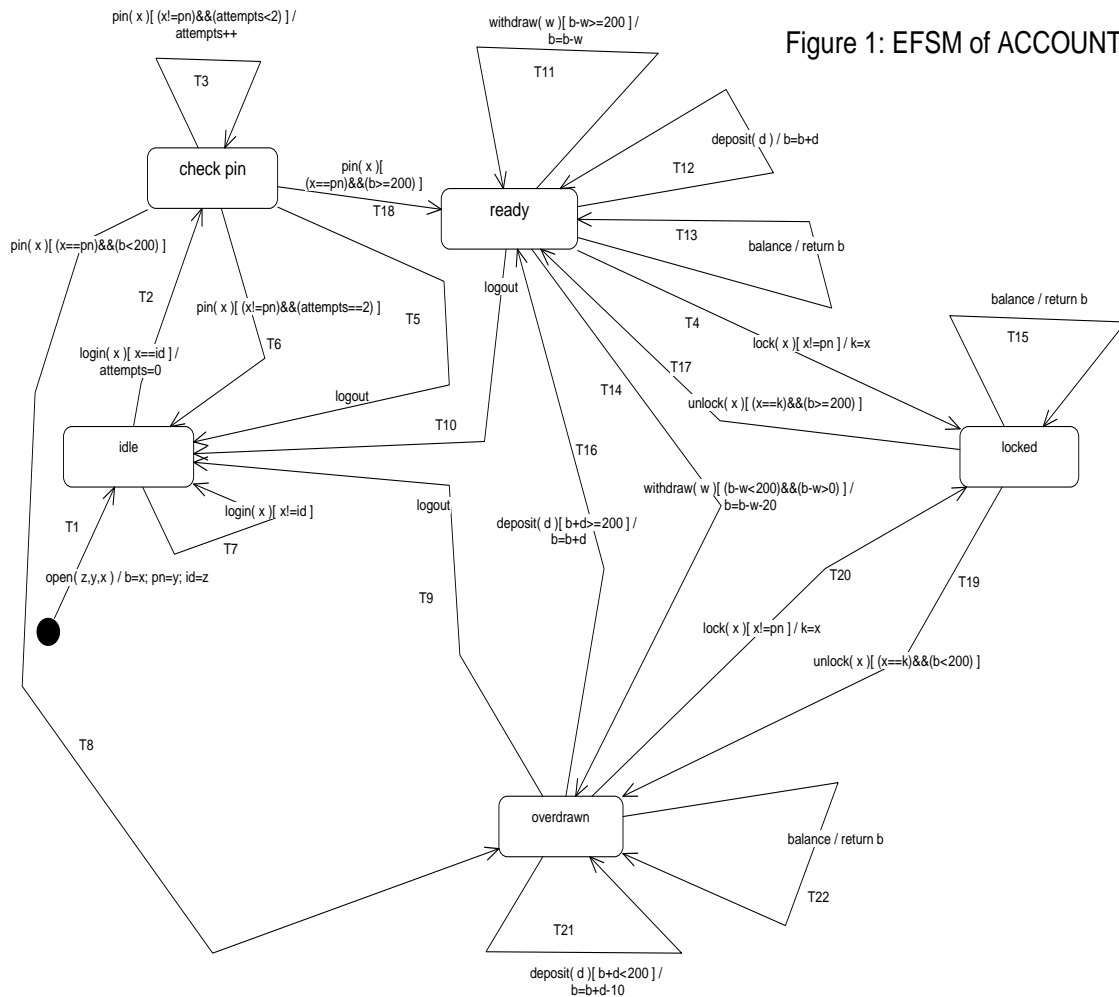
Figure 1: EFSM of *Account* class

Figure 2: Java Code of *Account* class

```
1  //************************************************
2  //************* CLASS ACCOUNT *******************
3  //************************************************
4
5
6
7  public class account
8  {
9      private int x0;
10     private int x1;
11     private int x2;
12     private int x3;
13     private int x4;
14     private int x5;
15     private int x6;
16     private int x7;
17     private int x8;
18     private int x9;
19
20  public final int show_balance()
21  {
22      return x1;
23  } //testing oriented method
24
25  public account()
26  {
27      x2 = 0;
28      x4 = -1;
29      x6 = 20;
30      x7 = 200;
31      x9 = 0;
32      x0 = 3;
33  }
34  public final int open(int z, int y, int x)
35  {
36      if ((x > 0) && (x4 == -1) && (y > 0) && (z > 0))
37      {
38          x1 = x;
39          x3 = y;
40          x5 = z;
41          x4 = 0;
42          return 0;
43      };
44      return -1;
45  }
46  public final int pin(int x)
47  {
48      if (x4 != 1)
49      {
50          return -1;
51      }
52      if (x == x3)
53      {
54          x4 = 2;
55          return 0;
56      }
57      else
```

```
 58        {
 59            x9++;
 60        }
 61        if (x9 >= x0)
 62        {
 63            x4 = 0;
 64        }
 65        return -1;
 66 }
 67 public final int logout()
 68 {
 69     if ((x4 == 0) || (x2 == 1))
 70     {
 71         return -1;
 72     }
 73     x4 = 0;
 74     return 0;
 75 }
 76 public final int login(int x)
 77 {
 78     if (x4 != 0)
 79     {
 80         return -1;
 81     }
 82     if (x5 == x)
 83     {
 84         x4 = 1;
 85         x9 = 0;
 86         return 0;
 87     }
 88     return -1;
 89 }
 90 public final int balance()
 91 {
 92     if (x4 != 2)
 93     {
 94         return -1;
 95     }
 96     return x1;
 97 }
 98 public final int lock(int x)
 99 {
100     if (x4 != 2)
101     {
102         return -1;
103     }
104     if (x == x3)
105     {
106         return -1;
107     }
108     if (x2 == 0)
109     {
110         x2 = 1;
111         x8 = x;
112         return 0;
113     }
114     else
```

```
115        {
116            return -1;
117        }
118 }
119 public final int unlock(int x)
120 {
121        if (x4 != 2)
122        {
123            return -1;
124        }
125        if ((x2 == 1) && (x == x8))
126        {
127            x2 = 0;
128        return 0;
129        }
130        else
131        {
132            return -1;
133        }
134 }
135 public final int deposit(int d)
136 {
137        if (x4 != 2)
138        {
139            return -1;
140        }
141        if (x2 == 1)
142        {
143            return -1;
144        };
145        if ((x1 + d < x7) && (d>0))
146        {
147            x1 = x1 + d - x6;
148            return 0;
149        }
150        else
151        {
152            if (d > 0)
153            {
154            x1 = x1 + d;
155            return 0;
156            }
157        }
158  return -1;
159 }
160 public final int withdraw(int w)
161 {
162 if (x4 != 2)
163 {
164        return -1;
165 }
166 if (x2 == 1)
167 {
168        return -1;
169 };
170 if ((x1 > w) && (w > 0))
171 {
```

```
172    if (x1 < x7)
173    {
174        return -1;
175    }
176    else
177    {
178        x1 = x1 - w;
179    };
180    if (x1 < x7)
181    {
182        x1 = x1 - x6;
183    }
184    return 0;
185 }
186 return -1;
187 }
188 }
```

In this project, the goal is to test the provided implementation (source code) of the account class. To test the *account* class, we are supposed to implement a testing environment that should contain a class driver to execute test cases. The following testing methods should be used:

1. **Model-based testing of the *Account* class:** Use the provided EFSM model to test the *account* class. Design test cases for the *account* class so that all 2-transition sequences testing criterion (all transition-pairs) is satisfied based on the provided EFSM, i.e., all 2- transition sequences are exercised during testing.
2. **Default (ghost) transition testing of the *Account* class:** Design a set of additional test cases so each default (ghost) transition in the EFSM is tested.
3. **Multiple-condition Testing of the *Account* Class:** Use multiple-condition testing to design additional test cases to test predicates of conditional statements in operations/methods. Notice that if a predicate contains only a simple condition, the multiple-condition testing is equivalent to the branch testing for this predicate.

In the testing environment, we must introduce "testing-oriented" methods (in the *account* class) that will be used to watch the "internal states" of an *account* object to determine the correctness/incorrectness of the results for the test cases.

DESCRIPTIOIN OF *ACCOUNT* CLASS

An account requires a minimum balance of 200. If a balance is below a minimum balance in the account, a fee is imposed on each transaction (withdraw, deposit). Before any account transactions can be performed on the account, operation *login()* must be issued followed by *pin()* operation. The *pin()* operation must contain the valid pin # (parameter x) that must be the same as the pin # provided in the *open()* operation (parameter y). It is allowed a maximum of 3 attempts to "provide" an invalid pin. An account can be locked. When an account is locked, no transaction can be performed on the account (except *unlock()* and *balance()* operations). For the simplicity of implementation, all deposit and withdrawal transactions are performed in the whole dollar amounts only (no cents).

The EFSM model for the *account* class is provided above. Notice that the EFSM model specifies the expected behavior of the account class.

OPERATION SUPPORTED BY THE *ACCOUNT* CLASS*:*

The following operations are supported by the *account* class:

Class *Account*:	
Operation	**Description**
account()	Constructor
int open(int z, int y, int x)	Sets balance to the value of x, pin number to the value of y, and an account # to the value of z
int login(int x)	Allows to login to the account, where x is an account #
int logout()	Allows to logout from the account
int pin(int x)	Provides pin # (parameter x)
int deposit (int d)	Deposits amount d to the account
int withdraw (int w)	Withdraws amount w from the account
int balance ()	Returns the value of the account balance
int lock (int x)	Locks an account where x is the lock #
int unlock (int x)	Unlocks an account when x equals to the correct lock #

Unless stated differently, each method (operation) returns 0 when the operation is successfully completed; otherwise, negative value -1 is returned.

TESTING

DRIVER CLASS FOR TESTING

To test the *account* class, a test driver class named "TestDriver" and a few testing-oriented methods in *account* class such as *show_balance(), getCurrentState(), getLockedStatus()* and *getNumbeOfUnsuccessfulLoginAttemts().* The file named "TestDriver.java" and updated "account.java" is provided and has been submitted in blackboard. The test cases are performed as below:

1. MODEL-BASED TESTING OF THE *ACCOUNT* CLASS

INBOUND AND OUTBOUND TRANSITION FOR EACH STATE

To start with model-based testing, firstly we have found the Inbound and Outbound Transition for each state as given below:

State	Inbound Transition	Outbound Transition
IDLE	T1, T5, T6, T7, T9, T10	T2, T7
CHECK PIN	T2, T3	T3, T5, T6, T8, T18
READY	T11, T12, T13, T16, T17, T18	T4, T10, T11, T12, T13, T14
OVERDRAWN	T8, T14, T19, T21, T22	T9, T16, T20, T21, T22
LOCKED	T4, T15, T20	T15, T17, T19

TRANSITION-PAIR FOR IDLE STATE

Using the above inbound and outbound transition we have found the below transition pair. For each transition-pair which test case in the test suite (TS.txt file) executes and covers that transition-pair is also provided. All the test case given are described later in this report.

Transition-pair		Covered by Test Case Number
Inbound	**Outbound**	
T1	T2	TestCase#2
T1	T7	TestCase#1
T5	T2	TestCase#2
T5	T7	TestCase#1
T6	T2	TestCase#2
T6	T7	TestCase#1
T7	T2	TestCase#1
T7	T7	TestCase#1
T9	T2	TestCase#2
T9	T7	TestCase#2
T10	T2	TestCase#3
T10	T7	TestCase#1

TRANSITION-PAIR FOR CHECK PIN STATE

Using the above inbound and outbound transition we have found the below transition pair. For each transition-pair which test case in the test suite (TS.txt file) executes and covers that transition-pair is also provided.

Transition-pair		Covered by Test Case Number
Inbound	**Outbound**	
T2	T3	TestCase#1
T2	T5	TestCase#1
T2	T6	Impossible
T2	T8	TestCase#2
T2	T18	TestCase#1
T3	T3	TestCase#1

Transition-pair		Covered by Test Case Number
Inbound	Outbound	
T3	T5	TestCase#2
T3	T6	TestCase#1
T3	T8	TestCase#2
T3	T18	TestCase#3

TRANSITION-PAIR FOR READY STATE

Using the above inbound and outbound transition we have found the below transition pair. For each transition-pair which test case in the test suite (TS.txt file) executes and covers that transition-pair is also provided.

Transition-pair		Covered by Test Case Number
Inbound	Outbound	
T11	T4	TestCase#3
T11	T10	TestCase#5
T11	T11	TestCase#1
T11	T12	TestCase#3
T11	T13	TestCase#1
T11	T14	TestCase#5
T12	T4	TestCase#1
T12	T10	TestCase#5
T12	T11	TestCase#3
T12	T12	TestCase#1
T12	T13	TestCase#3
T12	T14	TestCase#3
T13	T4	TestCase#3
T13	T10	TestCase#1
T13	T11	TestCase#1
T13	T12	TestCase#1
T13	T13	TestCase#1
T13	T14	TestCase#1
T16	T4	TestCase#5
T16	T10	TestCase#3
T16	T11	TestCase#3
T16	T12	TestCase#3
T16	T13	TestCase#1
T16	T14	TestCase#2
T17	T4	TestCase#1
T17	T10	TestCase#5
T17	T11	TestCase#5
T17	T12	TestCase#3

Transition-pair		Covered by Test Case Number
Inbound	Outbound	
T17	T13	TestCase#1
T17	T14	TestCase#3
T18	T4	TestCase#5
T18	T10	TestCase#5
T18	T11	TestCase#5
T18	T12	TestCase#5
T18	T13	TestCase#1
T18	T14	TestCase#3

TRANSITION-PAIR FOR **OVERDRAWN** STATE

Using the above inbound and outbound transition we have found the below transition pair. For each transition-pair which test case in the test suite (TS.txt file) executes and covers that transition-pair is also provided.

Transition-pair		Covered by Test Case Number
Inbound	Outbound	
T8	T9	TestCase#4
T8	T16	TestCase#3
T8	T20	TestCase#2
T8	T21	TestCase#2
T8	T22	TestCase#2
T14	T9	TestCase#3
T14	T16	TestCase#3
T14	T20	TestCase#1
T14	T21	TestCase#3
T14	T22	TestCase#2
T19	T9	TestCase#3
T19	T16	TestCase#3
T19	T20	TestCase#2
T19	T21	TestCase#1
T19	T22	TestCase#1
T21	T9	TestCase#2
T21	T16	TestCase#2
T21	T20	TestCase#2
T21	T21	TestCase#2
T21	T22	TestCase#1
T22	T9	TestCase#1
T22	T16	TestCase#1
T22	T20	TestCase#1
T22	T21	TestCase#1

Transition-pair		Covered by Test Case Number
Inbound	Outbound	
T22	T22	TestCase#1

TRANSITION-PAIR FOR LOCKED STATE

Using the above inbound and outbound transition we have found the below transition pair. For each transition-pair which test case in the test suite (TS.txt file) executes and covers that transition-pair is also provided.

Transition-pair		Covered by Test Case Number
Inbound	Outbound	
T4	T15	TestCase#1
T4	T17	TestCase#1
T4	T19	Impossible
T15	T15	TestCase#1
T15	T17	TestCase#1
T15	T19	TestCase#1
T20	T15	TestCase#1
T20	T17	Impossible
T20	T19	TestCase#1

NON-EXECUTABLE TRANSITION PAIR

TRANSITION PAIR T2-T6 (CHECK PIN STATE)

After T2 transition the system is in CHECK PIN state then *attempt = 0*, so it is never possible to take T6 transition path just after T2 transition.

TRANSITION PAIR T4-T19 (LOCKED STATE)

After T4 transition the system is in LOCKED state then it is a precondition that balance $b \geq 200$, so it was in READY state before and it is never possible to take T19 transition just after T4, unlocking and moved to OVERDRAWN state.

TRANSITION PAIR T20-T17 (LOCKED STATE)

After T20 transition the system is in LOCKED state then it is a precondition that balance $b < 200$, so it was in OVERDRAWN state and it is never possible to take T17 transition just after T20, unlocking and moved to READY state.

2. DEFAULT (GHOST) TRANSITION TESTING OF THE ACCOUNT CLASS

The default transitions for each state are given below:

DEFAULT TRANSITION FOR IDLE STATE

Transition Operation	Covered by Test Case#
open(z, y, x)	TestCase#6
logout()	TestCase#6
pin(x)	TestCase#6
deposit(d)	TestCase#6
withdraw(w)	TestCase#6
balance()	TestCase#6
lock(x)	TestCase#6
unlock(x)	TestCase#6

DEFAULT TRANSITION FOR CHECK PIN STATE

Transition Operation	Covered by Test Case#
open(z, y, x)	TestCase#7
login(x)	TestCase#7
deposit(d)	TestCase#7
withdraw(w)	TestCase#7
balance()	TestCase#7
lock(x)	TestCase#7
unlock(x)	TestCase#7

DEFAULT TRANSITION FOR READY STATE

Transition Operation	Covered by Test Case#
open(z, y, x)	TestCase#8
login(x)	TestCase#8
pin(x)	TestCase#8
withdraw(w)[b-w<=0]	TestCase#8
lock(x)[x==pn]	TestCase#8
unlock(x)	TestCase#8

DEFAULT TRANSITION FOR OVERDRAWN STATE

Transition Operation	Covered by Test Case#
open(z, y, x)	TestCase#9
login(x)	TestCase#9
pin(x)	TestCase#9
withdraw(w)	TestCase#9
lock(x)[x==pn]	TestCase#9
unlock(x)	TestCase#9

DEFAULT TRANSITION FOR LOCKED STATE

Transition Operation	Covered by Test Case#
open(z, y, x)	TestCase#10
login(x)	TestCase#10
logout()	TestCase#10
pin(x)	TestCase#10
deposit(d)	TestCase#10
withdraw(w)	TestCase#10
lock(x)	TestCase#10
Unlock(x)[x!=k]	TestCase#10

NON-EXECUTABLE DEFAULT TRANSITION

There are no non-executable default transition.

3. MULTIPLE-CONDITION TESTING OF THE ACCOUNT CLASS

For multi-condition testing truth tables for each method are listed below with test case numbers, which covers them.

MULTIPLE-CONDITION TESTING FOR *OPEN(Z, Y, X)*

TRUTH TABLE 1 FOR *OPEN(Z, Y, X)*

x>0	x4 == -1	y>0	z>0	Covered by Test Case#
T	T	T	T	TestCase#1
T	T	T	F	TestCase#11
T	T	F	T	TestCase#11

x>0	x4 == -1	y>0	z>0	Covered by Test Case#
T	T	F	F	TestCase#11
T	F	T	T	TestCase#6
T	F	T	F	TestCase#7
T	F	F	T	TestCase#8
T	F	F	F	TestCase#9
F	T	T	T	TestCase#11
F	T	T	F	TestCase#11
F	T	F	T	TestCase#11
F	T	F	F	TestCase#11
F	F	T	T	TestCase#10
F	F	T	F	TestCase#11
F	F	F	T	TestCase#11
F	F	F	F	TestCase#11

MULTIPLE-CONDITION TESTING FOR *PIN(X)*

TRUTH TABLE 1 FOR *PIN(X)*

x4!=1	Covered by Test Case#
T	TestCase#6
F	TestCase#1

TRUTH TABLE 2 FOR *PIN(X)*

x == x3	Covered by Test Case#
T	TestCase#1
F	TestCase#1

TRUTH TABLE 3 FOR *PIN(X)*

x9 >= x0	Covered by Test Case#
T	TestCase#1
F	TestCase#1

MULTIPLE-CONDITION TESTING FOR *LOGOUT()*

TRUTH TABLE 1 FOR *LOGOUT()*

x4 == 0	x2 == 1	Covered by Test Case#
T	T	Impossible
T	F	TestCase#6
F	T	TestCase#10
F	F	TestCase#1

MULTIPLE-CONDITION TESTING FOR *LOGIN(X)*

TRUTH TABLE 1 FOR *LOGIN(X)*

x4 != 0	Test#
T	TestCase#7
F	TestCase#1

TRUTH TABLE 2 FOR *LOGIN(X)*

x5 == x	Covered by Test Case#
T	TestCase#1
F	TestCase#1

MULTIPLE-CONDITION TESTING FOR *BALANCE()*

TRUTH TABLE 1 FOR *BALANCE()*

x4 != 2	Covered by Test Case#
T	TestCase#6
F	TestCase#1

MULTIPLE-CONDITION TESTING FOR *LOCK(X)*

TRUTH TABLE 1 FOR *LOCK(X)*

x4 != 2	Covered by Test Case#
T	TestCase#6
F	TestCase#1

TRUTH TABLE 2 FOR *LOCK(X)*

x == x3	Covered by Test Case#
T	TestCase#8
F	TestCase#1

TRUTH TABLE 3 FOR *LOCK(X)*

x2 == 0	Covered by Test Case#
T	TestCase#1
F	TestCase#10

MULTIPLE-CONDITION TESTING FOR *UNLOCK(X)*

TRUTH TABLE 1 FOR *UNLOCK(X)*

x4 != 2	Covered by Test Case#
T	TestCase#6
F	TestCase#1

TRUTH TABLE 2 FOR *UNLOCK(X)*

x2 == 1	x == x8	Covered by Test Case#
T	T	TestCase#1
T	F	TestCase#10
F	T	TestCase#7
F	F	TestCase#8

MULTIPLE-CONDITION TESTING FOR *DEPOSIT(D)*

TRUTH TABLE 1 FOR *DEPOSIT(D)*

x4 != 2	Covered by Test Case#
T	TestCase#6
F	TestCase#1

TRUTH TABLE 2 FOR *DEPOSIT(D)*

x2 == 1	Covered by Test Case#
T	TestCase#10
F	TestCase#1

TRUTH TABLE 3 FOR *DEPOSIT(D)*

x1 + d < x7	d > 0	Covered by Test Case#
T	T	TestCase#1
T	F	TestCase#11
F	T	TestCase#1
F	F	TestCase#11

TRUTH TABLE 4 FOR *DEPOSIT(D)*

d > 0	Covered by Test Case#
T	TestCase#1
F	TestCase#11

MULTIPLE-CONDITION TESTING FOR *WITHDRAW(W))*

TRUTH TABLE 1 FOR *WITHDRAW(W)*

x4 != 2	Covered by Test Case#
T	TestCase#6
F	TestCase#1

TRUTH TABLE 2 FOR *WITHDRAW(W)*

x2 == 1	Covered by Test Case#
T	TestCase#10
F	TestCase#1

TRUTH TABLE 3 FOR *WITHDRAW(W)*

x1 > w	w > 0	Covered by Test Case#
T	T	TestCase#1
T	F	TestCase#8
F	T	TestCase#11
F	F	TestCase#11

TRUTH TABLE 4 FOR *WITHDRAW(W)*

x1 < x7	Covered by Test Case#
T	TestCase#9
F	TestCase#1

TRUTH TABLE 5 FOR *WITHDRAW(W)*

x1 < x7	Covered by Test Case#
T	TestCase#1
F	TestCase#1

NON-EXECUTABLE MULTI-CONDITION

In *logout()* the combination of *(x4 == 0)* → *True* and *(x2 == 1)* → *False* is impossible for execution because *x4 = 0* when the system is in *IDLE* state and *x2 = 1* when the system is in *LOCKED* state. The system cannot be present in two states at the same time. The truth table for this can be found in section Truth Table 1 for *logout()*.

TEST SUIT

The test suit is created and stored in TS.txt. The detailed instruction to execute the test cases are given later in this report in the section Instruction to Execute Test Cases.

Test#1: open 100 123 200 login 150 login 140 login 100 pin 1 pin 2 pin 3 login 150 login 100 logout login 140 login 100 pin 123 balance balance deposit 50 deposit 50 lock 321 balance balance unlock 321 lock 321 unlock 321 balance withdraw 10 withdraw 10 balance withdraw 100 lock 321 balance unlock 321 balance balance deposit 20 balance lock 321 unlock 321 balance deposit 100 balance logout login 140

Test#2: open 100 123 190 login 100 pin 123 balance logout login 135 login 100 pin 123 deposit 10 deposit 10 lock 321 unlock 321 deposit 10 deposit 100 withdraw 100 balance logout login 100 pin 1 logout login 100 pin 2 pin 2 pin 2 login 100 pin 2 pin 123 lock 321 unlock 321 lock 321 unlock 321 deposit 10 logout

Test#3: open 100 123 190 login 100 pin 123 deposit 100 logout login 100 pin 2 pin 123 withdraw 100 deposit 10 lock 321 unlock 321 deposit 100 deposit 10 balance lock 321 unlock 321 withdraw 100 deposit 100 withdraw 10 deposit 10 withdraw 10 lock 321 unlock 321 deposit 10 withdraw 100 logout login 100 pin 123 logout

Test#4: open 100 123 190 login 100 pin 123 logout

Test#5: open 100 123 300 login 100 pin 123 lock 321 unlock 321 withdraw 10 withdraw 100 deposit 100 lock 321 unlock 321 logout login 100 pin 123 deposit 10 logout login 100 pin 123 withdraw 10 logout login 100 pin 123 logout

Test#6: open 100 123 200 open 100 123 200 logout pin 123 deposit 100 withdraw 100 balance lock 321 unlock 321

Test#7: open 100 123 200 login 100 open −100 123 200 login 100 deposit 100 withdraw 100 balance lock 321 unlock 0

Test#8: open 100 123 200 login 100 pin 123 open 100 −123 200 login 100 pin 123 withdraw 0 lock 123 unlock 123

Test#9: open 100 123 190 login 100 pin 123 open −100 −123 200 login 100 pin 123 withdraw 100 lock 123 unlock 321

Test#10: open 100 123 190 login 100 pin 123 lock 321 open 100 123 −200 login 100 logout pin 123 deposit 100 withdraw 100 lock 321 unlock 12

Test#11: open −100 123 200 open 100 −123 200 open −100 −123 200 open 100 123 −200 open −100 123 −200 open 100 −123 −200 open −100 −123 −200 open 100 123 200 open −100 123 −200 open 100 −123 −200 open −100 −123 −200 login 100 pin 123 deposit 0 withdraw 190 deposit 0 withdraw 50 withdraw −10

$$

TEST CASE EXECUTION, TEST RESULTS AND CORRECTNESS

TESTCASE#1

TEST CASE

From TS.txt
Test#1: open 100 123 200 login 150 login 140 login 100 pin 1 pin 2 pin 3 login 150 login 100 logout login 140 login 100 pin 123 balance balance deposit 50 deposit 50 lock 321 balance balance unlock 321 lock 321 unlock 321 balance withdraw 10 withdraw 10 balance withdraw 100 lock 321 balance unlock 321 balance balance deposit 20 balance lock 321 unlock 321 balance deposit 100 balance logout login 140

As method call
Test#1: open(100,123,200), login(150), login(140), login(100), pin(1), pin(2), pin(3), login(150), login(100), logout(), login(140), login(100), pin(123), balance(), balance(), deposit(50), deposit(50), lock(321), balance(), balance(), unlock(321), lock(321), unlock(321), balance(), withdraw(10), withdraw(10), balance(), withdraw(100), lock(321), balance(), unlock(321), balance(), balance(), deposit(20), balance(), lock(321), unlock(321), balance(), deposit(100), balance(), logout(), login(140)

TRANSITION TRAVERSED

T1, T7, T7, T2, T3, T3, T6, T7, T2, T5, T7, T2, T18, T13, T13, T12, T12, T4, T15, T15, T17, T4, T17, T13, T11, T11, T13, T14, T20, T15, T19, T22, T22, T21, T22, T20, T19, T22, T16, T13, T10, T7

OUTPUT OF *ACCOUNT* CLASS

```
        CS 589; Fall 2021
           PROJECT
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_____
_____


Press Enter key to continue...
```

```
Driver for the Account
_____

            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT


Testing-Oriented Methods
_____

            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

0

Your choice is : 0
```

```
_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

100
Enter PIN:

123
Enter initial balance:

200

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____

            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT


Testing-Oriented Methods
_____

            a. SHOW BALANCE
            b. SHOW STATE
```

```
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

150

                    The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

140
```

The value returned by the method is: −1 (FAILED)

Press Enter key to continue...

Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing—Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

6

Your choice is : 6

_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

100

                The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing—Oriented Methods
_____

```
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver
```

Enter your choice:

7

Your choice is : 7

```
_____
Class: Account
Type: Class Method
Method: PIN
_____
```

Enter PIN:

1

                    The value returned by the method is: −1 (FAILED)

Press Enter key to continue...

Driver for the Account
```
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT
```

Testing−Oriented Methods
```
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver
```

Enter your choice:

7

Your choice is : 7

```
_____
Class: Account
Type: Class Method
Method: PIN
_____
```

Enter PIN:

2

```
                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:
```

7

```
Your choice is : 7




_____
Class: Account
Type: Class Method
Method: PIN
_____
Enter PIN:
```

3

```
                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT
```

```
Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

150

                The value returned by the method is: -1 (FAILED)

Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
```

```
_____
Enter Account#:
100
                The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:
8
Your choice is : 8




_____
Class: Account
Type: Class Method
Method: LOGOUT
_____

                The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT
```

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

6

Your choice is : 6

_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

140

              The value returned by the method is: -1 (FAILED)

Press Enter key to continue...

Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

6

Your choice is : 6

_____
Class: Account
Type: Class Method
Method: LOGIN

```
_____
Enter Account#:

100

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:

7

Your choice is : 7
```

```
_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

123

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
```

```
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

3

Your choice is : 3




_____
Class: Account
Type: Class Method
Method: BALANCE
_____


                The value returned by the method is: Balance = 200 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

3

Your choice is : 3




_____
Class: Account
Type: Class Method
Method: BALANCE
```

———

                      The value returned by the method is: Balance = 200 (SUCCESS)

Press Enter key to continue...

Driver for the Account
———
                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
                4. LOCK
                5. UNLOCK
                6. LOGIN
                7. PIN
                8. LOGOUT

Testing—Oriented Methods
———
                a. SHOW BALANCE
                b. SHOW STATE
                c. SHOW LOCKED STATUS
                d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

                q. Quit Account Driver

Enter your choice:

1

Your choice is : 1

———
Class: Account
Type: Class Method
Method: DEPOSIT
———

Enter Deposit Amount:

50

                   The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
———
                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
                4. LOCK
                5. UNLOCK
                6. LOGIN
                7. PIN
                8. LOGOUT

```
Testing—Oriented Methods
————————————————————————————————————————————————————————————————
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver


Enter your choice:

1

Your choice is : 1




————————————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: DEPOSIT
————————————————————————————————————————————————————————————————

Enter Deposit Amount:

50

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
————————————————————————————————————————————————————————————————
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
————————————————————————————————————————————————————————————————
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver


Enter your choice:

4

Your choice is : 4




————————————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: LOCK
```

_____

```
Enter Lock#:

321

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing—Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:

3

Your choice is : 3
```

```
_____
Class: Account
Type: Class Method
Method: BALANCE
_____


                    The value returned by the method is: Balance = 300 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT
```

```
Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver


Enter your choice:

3

Your choice is : 3




_____
Class: Account
Type: Class Method
Method: BALANCE
_____

                The value returned by the method is: Balance = 300 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver


Enter your choice:

5

Your choice is : 5




_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:
```

321

```
                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:
```
4
```
Your choice is : 4




_____
Class: Account
Type: Class Method
Method: LOCK
_____

Enter Lock#:
```
321
```
                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT
```

Testing—Oriented Methods
_____

          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

          q. Quit Account Driver

Enter your choice:

5

Your choice is : 5

_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:

321

                    The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
_____

          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing—Oriented Methods
_____

          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

          q. Quit Account Driver

Enter your choice:

3

Your choice is : 3

_____
Class: Account
Type: Class Method
Method: BALANCE

———

The value returned by the method is: Balance = 300 (SUCCESS)

Press Enter key to continue...

Driver for the Account
———
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
———
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

2

Your choice is : 2

———
Class: Account
Type: Class Method
Method: WITHDRAW
———

Enter Withdraw Amount:

10

            The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
———
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing—Oriented Methods
——
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

2

Your choice is : 2

——
Class: Account
Type: Class Method
Method: WITHDRAW
——

Enter Withdraw Amount:

10

                    The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
——
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
——
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

3

Your choice is : 3

——
Class: Account
Type: Class Method
Method: BALANCE

_____

The value returned by the method is: Balance = 280 (SUCCESS)

Press Enter key to continue...

Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

2

Your choice is : 2

_____
Class: Account
Type: Class Method
Method: WITHDRAW
_____

Enter Withdraw Amount:

100

              The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

```
Testing—Oriented Methods
————————————————————————————————————————————————————————
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver


Enter your choice:

4

Your choice is : 4




————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: LOCK
————————————————————————————————————————————————————————

Enter Lock#:

321

               The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
————————————————————————————————————————————————————————
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
————————————————————————————————————————————————————————
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver


Enter your choice:

3

Your choice is : 3




————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: BALANCE
```

_____

The value returned by the method is: Balance = 160 (SUCCESS)

Press Enter key to continue...

Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

5

Your choice is : 5

_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:

321

                The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
──

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

3

Your choice is : 3

──
Class: Account
Type: Class Method
Method: BALANCE
──

                The value returned by the method is: Balance = 160 (SUCCESS)

Press Enter key to continue...

Driver for the Account
──

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
──

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

3

Your choice is : 3

──
Class: Account
Type: Class Method
Method: BALANCE
──

```
                    The value returned by the method is: Balance = 160 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver

Enter your choice:

1

Your choice is : 1




_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____

Enter Deposit Amount:

20

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____
```

```
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver
```

Enter your choice:

3

Your choice is : 3

```
_____
Class: Account
Type: Class Method
Method: BALANCE
_____
```

                    The value returned by the method is: Balance = 160 (SUCCESS)

Press Enter key to continue...

Driver for the Account
```
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT
```

Testing-Oriented Methods
```
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver
```

Enter your choice:

4

Your choice is : 4

```
_____
Class: Account
Type: Class Method
Method: LOCK
_____
```

Enter Lock#:

321

```
                        The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
                4. LOCK
                5. UNLOCK
                6. LOGIN
                7. PIN
                8. LOGOUT

Testing-Oriented Methods
_____
                a. SHOW BALANCE
                b. SHOW STATE
                c. SHOW LOCKED STATUS
                d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


                q. Quit Account Driver

Enter your choice:

5

Your choice is : 5
```

```
_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:

321

                        The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
                4. LOCK
                5. UNLOCK
                6. LOGIN
                7. PIN
                8. LOGOUT

Testing-Oriented Methods
_____
```

```
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver


Enter your choice:

3

Your choice is : 3




_____
Class: Account
Type: Class Method
Method: BALANCE
_____

                The value returned by the method is: Balance = 160 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver


Enter your choice:

1

Your choice is : 1




_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____

Enter Deposit Amount:

100
```

```
                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
————————————————————————————————————————————————————————————
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing—Oriented Methods
————————————————————————————————————————————————————————————
          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


          q. Quit Account Driver

Enter your choice:

3

Your choice is : 3
```

```
————————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: BALANCE
————————————————————————————————————————————————————————————

             The value returned by the method is: Balance = 260 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
————————————————————————————————————————————————————————————
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing—Oriented Methods
————————————————————————————————————————————————————————————
          a. SHOW BALANCE
          b. SHOW STATE
```

```
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver
```

Enter your choice:

8

Your choice is : 8

```
_____
Class: Account
Type: Class Method
Method: LOGOUT
_____
```

                    The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver
```

Enter your choice:

6

Your choice is : 6

```
_____
Class: Account
Type: Class Method
Method: LOGIN
_____
Enter Account#:
```

140

                    The value returned by the method is: -1 (FAILED)

```
Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:

q

Your choice is : q
Quitting Account Driver...
_____
                THANK YOU!!!


_____
```

CORRECTNESS

Function Called	Transition	Expected Result				Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt		State After Transition	Balance	No. of Unsuccessful Attempt
OPEN 100 123 200	T1	IDLE	200	0		IDLE	200	0
LOGIN 150	T7	IDLE	200	0		IDLE	200	0
LOGIN 140	T7	IDLE	200	0		IDLE	200	0
LOGIN 100	T2	CHECK PIN	200	0		CHECK PIN	200	0

Function Called	Transi tion	Expected Result			Produced Result		
		State After Transition	Bala nce	No. of Unsuccessful Attempt	State After Transition	Bala nce	No. of Unsuccessful Attempt
PIN 1	T3	CHECK PIN	200	1	CHECK PIN	200	1
PIN 2	T3	CHECK PIN	200	2	CHECK PIN	200	2
PIN 3	T6	IDLE	200	2	IDLE	200	3
LOGIN 150	T7	IDLE	200	2	IDLE	200	3
LOGIN 100	T2	CHECK PIN	200	0	CHECK PIN	200	0
LOGOUT	T5	IDLE	200	0	IDLE	200	0
LOGIN 140	T7	IDLE	200	0	IDLE	200	0
LOGIN 100	T2	CHECK PIN	200	0	CHECK PIN	200	0
PIN 123	T18	READY	200	0	READY	200	0
BALANCE	T13	READY	200	0	READY	200	0
BALANCE	T13	READY	200	0	READY	200	0
DEPOSIT 50	T12	READY	250	0	READY	250	0
DEPOSIT 50	T12	READY	300	0	READY	300	0
LOCK 321	T4	LOCKED	300	0	LOCKED	300	0
BALANCE	T15	LOCKED	300	0	LOCKED	300	0
BALANCE	T15	LOCKED	300	0	LOCKED	300	0
UNLOCK 321	T17	READY	300	0	READY	300	0
LOCK 321	T4	LOCKED	300	0	LOCKED	300	0
UNLOCK 321	T17	READY	300	0	READY	300	0
BALANCE	T13	READY	300	0	READY	300	0

Function Called	Transition	Expected Result				Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
WITHDRAW 10	T11	READY	290	0	READY	290	0
WITHDRAW 10	T11	READY	280	0	READY	280	0
BALANCE	T13	READY	280	0	READY	280	0
WITHDRAW 100	T14	OVERDRAWN	160	0	OVERDRAWN	160	0
LOCK 321	T20	LOCKED	160	0	LOCKED	160	0
BALANCE	T15	LOCKED	160	0	LOCKED	160	0
UNLOCK 321	T19	OVERDRAWN	160	0	OVERDRAWN	160	0
BALANCE	T22	OVERDRAWN	160	0	OVERDRAWN	160	0
BALANCE	T22	OVERDRAWN	160	0	OVERDRAWN	160	0
DEPOSIT 20	T21	OVERDRAWN	170	0	OVERDRAWN	160	0
BALANCE	T22	OVERDRAWN	170	0	OVERDRAWN	160	0
LOCK 321	T20	LOCKED	170	0	LOCKED	160	0
UNLOCK 321	T19	OVERDRAWN	170	0	OVERDRAWN	160	0
BALANCE	T22	OVERDRAWN	170	0	OVERDRAWN	160	0
DEPOSIT 100	T16	READY	270	0	READY	260	0
BALANCE	T13	READY	270	0	READY	260	0
LOGOUT	T10	IDLE	270	0	IDLE	260	0
LOGIN 140	T7	IDLE	270	0	IDLE	260	0

As from the above table we can see that expected results are not matched with produced result. Hence the test case is **FAILED**. The contradicting operations are highlighted in RED color in the above table. This test case is also mentioned later in this report in the section

TESTCASE#2

TEST CASE

From TS.txt

Test#2: open 100 123 190 login 100 pin 123 balance logout login 135 login 100 pin 123 deposit 10 deposit 10 lock 321 unlock 321 deposit 10 deposit 100 withdraw 100 balance logout login 100 pin 1 logout login 100 pin 2 pin 2 pin 2 login 100 pin 2 pin 123 lock 321 unlock 321 lock 321 unlock 321 deposit 10 logout

As method call

Test#2: open(100,123,190), login(100), pin(123), balance(), logout(), login(135), login(100), pin(123), deposit(10), deposit(10), lock(321), unlock(321), deposit(10), deposit(100), withdraw(100), balance(), logout(), login(100), pin(1), logout(), login(100), pin(2), pin(2), pin(2), login(100), pin(2), pin(123), lock(321), unlock(321), lock(321), unlock(321), deposit(10), logout()

TRANSITION TRAVERSED

T1, T2, T8, T22, T9, T7, T2, T8, T21, T21, T20, T19, T21, T16, T14, T22, T9, T2, T3, T5, T2, T3, T3, T6, T2, T3, T8, T20, T19, T20, T19, T21, T9

OUTPUT OF *ACCOUNT* CLASS

```
        CS 589; Fall 2021
           PROJECT
        Sukanta Sharma
           A2042623

_____
_____


Press Enter key to continue...




Driver for the Account
_____
```

```
                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
                4. LOCK
                5. UNLOCK
                6. LOGIN
                7. PIN
                8. LOGOUT


Testing-Oriented Methods
————————————————————————————————————————————————————————

                a. SHOW BALANCE
                b. SHOW STATE
                c. SHOW LOCKED STATUS
                d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


                q. Quit Account Driver


Enter your choice:

0

Your choice is : 0




————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: OPEN
————————————————————————————————————————————————————————

Enter Account#:

100
Enter PIN:

123
Enter initial balance:

190

                 The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
————————————————————————————————————————————————————————

                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
                4. LOCK
                5. UNLOCK
                6. LOGIN
                7. PIN
                8. LOGOUT


Testing-Oriented Methods
————————————————————————————————————————————————————————

                a. SHOW BALANCE
                b. SHOW STATE
                c. SHOW LOCKED STATUS
                d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


                q. Quit Account Driver
```

```
Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

100

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

7

Your choice is : 7




_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

123

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
─────────────────────────────────────────────────────────
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing—Oriented Methods
─────────────────────────────────────────────────────────
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

3

Your choice is : 3




─────────────────────────────────────────────────────────
Class: Account
Type: Class Method
Method: BALANCE
─────────────────────────────────────────────────────────

              The value returned by the method is: Balance = 190 (SUCCESS)


Press Enter key to continue...




Driver for the Account
─────────────────────────────────────────────────────────
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing—Oriented Methods
─────────────────────────────────────────────────────────
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver
```

```
Enter your choice:

8

Your choice is : 8




_____
Class: Account
Type: Class Method
Method: LOGOUT
_____


                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

135
                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
————————————————————————————————————————————————————————
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing—Oriented Methods
————————————————————————————————————————————————————————
          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


          q. Quit Account Driver


Enter your choice:

6

Your choice is : 6




————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: LOGIN
————————————————————————————————————————————————————————

Enter Account#:

100

              The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
————————————————————————————————————————————————————————
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing—Oriented Methods
————————————————————————————————————————————————————————
          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


          q. Quit Account Driver
```

Enter your choice:

7

Your choice is : 7

```
_____
Class: Account
Type: Class Method
Method: PIN
_____
```

Enter PIN:

123

                        The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...


```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver
```

Enter your choice:

1

Your choice is : 1


```
_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____
```

Enter Deposit Amount:

10

                        The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:

1

Your choice is : 1




_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____

Enter Deposit Amount:

10

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS
```

```
        q. Quit Account Driver

Enter your choice:

4

Your choice is : 4




_____
Class: Account
Type: Class Method
Method: LOCK
_____

Enter Lock#:

321

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

5

Your choice is : 5




_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:

321

                The value returned by the method is: 0 (SUCCESS)
```

```
Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver

Enter your choice:

1

Your choice is : 1




_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____
Enter Deposit Amount:

10

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
```

```
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

1

Your choice is : 1




_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____

Enter Deposit Amount:

100

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

2

Your choice is : 2




_____
Class: Account
Type: Class Method
Method: WITHDRAW
_____

Enter Withdraw Amount:

100
```

```
                  The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
—————————————————————————————————————————————————————————
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
—————————————————————————————————————————————————————————
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver

Enter your choice:

3

Your choice is : 3




—————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: BALANCE
—————————————————————————————————————————————————————————

                The value returned by the method is: Balance = 220 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
—————————————————————————————————————————————————————————
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
—————————————————————————————————————————————————————————
            a. SHOW BALANCE
            b. SHOW STATE
```

```
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

8

Your choice is : 8




_____
Class: Account
Type: Class Method
Method: LOGOUT
_____

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

100

                The value returned by the method is: 0 (SUCCESS)
```

```
Press Enter key to continue...




Driver for the Account
───────────────────────────────────────────────────────
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
───────────────────────────────────────────────────────
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:

7

Your choice is : 7




───────────────────────────────────────────────────────
Class: Account
Type: Class Method
Method: PIN
───────────────────────────────────────────────────────
Enter PIN:

1

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
───────────────────────────────────────────────────────
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
───────────────────────────────────────────────────────
        a. SHOW BALANCE
        b. SHOW STATE
```

```
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver
```

Enter your choice:

8

Your choice is : 8

```
_____
Class: Account
Type: Class Method
Method: LOGOUT
_____

                    The value returned by the method is: 0 (SUCCESS)
```

Press Enter key to continue...

```
Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver
```

Enter your choice:

6

Your choice is : 6

```
_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:
```

100

```
                    The value returned by the method is: 0 (SUCCESS)
```

```
Press Enter key to continue...




Driver for the Account
──────────────────────────────────────────────────────
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing-Oriented Methods
──────────────────────────────────────────────────────
          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


          q. Quit Account Driver

Enter your choice:

7

Your choice is : 7




──────────────────────────────────────────────────────
Class: Account
Type: Class Method
Method: PIN
──────────────────────────────────────────────────────

Enter PIN:

2

               The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
──────────────────────────────────────────────────────
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing-Oriented Methods
──────────────────────────────────────────────────────
          a. SHOW BALANCE
          b. SHOW STATE
```

```
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

7

Your choice is : 7




_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

2

                    The value returned by the method is: −1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____

            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____

            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

7

Your choice is : 7




_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

2
```

                    The value returned by the method is: −1 (FAILED)

Press Enter key to continue...

Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing−Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

6

Your choice is : 6

_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

100

                The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing−Oriented Methods
_____

```
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver


Enter your choice:

7

Your choice is : 7




_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

2

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver


Enter your choice:

7

Your choice is : 7




_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:
```

123

```
                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
—————————————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing—Oriented Methods
—————————————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:
```

4

```
Your choice is : 4
```

```
—————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: LOCK
—————————————————————————————————————————————————————————

Enter Lock#:
```

321

```
                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
—————————————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT
```

Testing-Oriented Methods
_____
           a. SHOW BALANCE
           b. SHOW STATE
           c. SHOW LOCKED STATUS
           d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

           q. Quit Account Driver

Enter your choice:

5

Your choice is : 5

_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:

321

                 The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
_____
           0. OPEN
           1. DEPOSIT
           2. WITHDRAW
           3. BALANCE
           4. LOCK
           5. UNLOCK
           6. LOGIN
           7. PIN
           8. LOGOUT

Testing-Oriented Methods
_____
           a. SHOW BALANCE
           b. SHOW STATE
           c. SHOW LOCKED STATUS
           d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

           q. Quit Account Driver

Enter your choice:

4

Your choice is : 4

_____
Class: Account
Type: Class Method
Method: LOCK

_____

Enter Lock#:

321

                   The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

5

Your choice is : 5

_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:

321

                   The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN

```
            7. PIN
            8. LOGOUT


Testing-Oriented Methods
_____

            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

1

Your choice is : 1




_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____

Enter Deposit Amount:

10

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____

            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____

            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

8

Your choice is : 8
```

_____

```
Class: Account
Type: Class Method
Method: LOGOUT
_____

                 The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____

           0. OPEN
           1. DEPOSIT
           2. WITHDRAW
           3. BALANCE
           4. LOCK
           5. UNLOCK
           6. LOGIN
           7. PIN
           8. LOGOUT

Testing-Oriented Methods
_____

           a. SHOW BALANCE
           b. SHOW STATE
           c. SHOW LOCKED STATUS
           d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


           q. Quit Account Driver

Enter your choice:

q

Your choice is : q
Quitting Account Driver...
_____
                   THANK YOU!!!
_____
```

CORRECTNESS

Function Called	Transition	Expected Result			Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
OPEN 100 123 190	T1	IDLE	190	0	IDLE	190	0
LOGIN 100	T2	CHECK PIN	190	0	CHECK PIN	190	0

		Expected Result			Produced Result		
Function Called	Transition	State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
PIN 123	T8	OVERDRAWN	190	0	OVERDRAWN	190	0
BALANCE	T22	OVERDRAWN	190	0	OVERDRAWN	190	0
LOGOUT	T9	IDLE	190	0	IDLE	190	0
LOGIN 135	T7	IDLE	190	0	IDLE	190	0
LOGIN 100	T2	CHECK PIN	190	0	CHECK PIN	190	0
PIN 123	T8	OVERDRAWN	190	0	OVERDRAWN	190	0
DEPOSIT 10	T21	OVERDRAWN	190	0	READY	200	0
DEPOSIT 10	T21	OVERDRAWN	190	0	READY	210	0
LOCK 321	T20	LOCKED	190	0	LOCKED	210	0
UNLOCK 321	T19	OVERDRAWN	190	0	READY	210	0
DEPOSIT 10	T21	OVERDRAWN	190	0	READY	220	0
DEPOSIT 100	T16	READY	290	0	READY	320	0
WITHDRAW 100	T14	OVERDRAWN	170	0	READY	220	0
BALANCE	T22	OVERDRAWN	170	0	READY	220	0
LOGOUT	T9	IDLE	170	0	IDLE	220	0
LOGIN 100	T2	CHECK PIN	170	0	CHECK PIN	220	0
PIN 1	T3	CHECK PIN	170	0	CHECK PIN	220	1
LOGOUT	T5	IDLE	170	0	IDLE	220	1
LOGIN 100	T2	CHECK PIN	170	0	CHECK PIN	220	0

Function Called	Transition	Expected Result				Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt		State After Transition	Balance	No. of Unsuccessful Attempt
PIN 2	T3	CHECK PIN	170		1	CHECK PIN	220	1
PIN 2	T3	CHECK PIN	170		2	CHECK PIN	220	2
PIN 2	T6	IDLE	170		2	IDLE	220	3
LOGIN 100	T2	CHECK PIN	170		0	CHECK PIN	220	0
PIN 2	T3	CHECK PIN	170		1	CHECK PIN	220	1
PIN 123	T8	OVERDRAWN	170		1	READY	220	1
LOCK 321	T20	LOCKED	170		1	LOCKED	220	1
UNLOCK 321	T19	OVERDRAWN	170		1	READY	220	1
LOCK 321	T20	LOCKED	170		1	LOCKED	220	1
UNLOCK 321	T19	OVERDRAWN	170		1	READY	220	1
DEPOSIT 10	T21	OVERDRAWN	170		1	READY	230	1
LOGOUT	T9	IDLE	170		1	IDLE	230	1

As from the above table we can see that expected results are not matched with produced result. Hence the test case is **FAILED**. The contradicting operations are highlighted in RED color in the above table. This test case is also mentioned later in this report in the section List of Failed Test Cases

TESTCASE#3

TEST CASE

From TS.txt
```
Test#3: open 100 123 190 login 100 pin 123 deposit 100 logout login 100 pin 2
pin 123 withdraw 100 deposit 10 lock 321 unlock 321 deposit 100 deposit 10
balance lock 321 unlock 321 withdraw 100 deposit 100 withdraw 10 deposit 10
withdraw 10 lock 321 unlock 321 deposit 10 withdraw 100 logout login 100 pin
123 logout
```

As method call

Test#3: open(100,123,190), login(100), pin(123), deposit(100), logout(), login(100), pin(2), pin(123), withdraw(100), deposit(10), lock(321), unlock(321), deposit(100), deposit(10), balance(), lock(321), unlock(321), withdraw(100), deposit(100), withdraw(10), deposit(10), withdraw(10), lock(321), unlock(321), deposit(10), withdraw(100), logout(), login(100), pin(123), logout()

TRANSITION TRAVERSED

T1, T2, T8, T16, T10, T2, T3, T18, T14, T21, T20, T19, T16, T12, T13, T4, T17, T14, T16, T11, T12, T11, T4, T17, T12, T14, T9, T2, T8, T9

OUTPUT OF *ACCOUNT* CLASS

```
              CS 589; Fall 2021
                  PROJECT
              Sukanta Sharma
                 A2042623

_____
_____


Press Enter key to continue...




Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:

0

Your choice is : 0
```

```
_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

100
Enter PIN:

123
Enter initial balance:

190

                   The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

6

Your choice is : 6
```

```
_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

100

                   The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing-Oriented Methods
_____
          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


          q. Quit Account Driver


Enter your choice:

7

Your choice is : 7




_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

123

              The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing-Oriented Methods
_____
          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS
```

        q. Quit Account Driver

Enter your choice:

1

Your choice is : 1

_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____

Enter Deposit Amount:

100

                The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

8

Your choice is : 8

_____
Class: Account
Type: Class Method
Method: LOGOUT
_____

                The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

```
Driver for the Account
─────────────────────────────────────────────────────────
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
─────────────────────────────────────────────────────────
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:

6

Your choice is : 6




─────────────────────────────────────────────────────────
Class: Account
Type: Class Method
Method: LOGIN
─────────────────────────────────────────────────────────

Enter Account#:

100

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
─────────────────────────────────────────────────────────
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
─────────────────────────────────────────────────────────
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS
```

```
        q. Quit Account Driver

Enter your choice:

7

Your choice is : 7




_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

2

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

7

Your choice is : 7




_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

123

                The value returned by the method is: 0 (SUCCESS)
```

```
Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:

2

Your choice is : 2




_____
Class: Account
Type: Class Method
Method: WITHDRAW
_____

Enter Withdraw Amount:

100

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
```

```
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

1

Your choice is : 1




_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____

Enter Deposit Amount:

10

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

4

Your choice is : 4




_____
Class: Account
Type: Class Method
Method: LOCK
_____

Enter Lock#:

321
```

```
                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
                4. LOCK
                5. UNLOCK
                6. LOGIN
                7. PIN
                8. LOGOUT

Testing-Oriented Methods
_____
                a. SHOW BALANCE
                b. SHOW STATE
                c. SHOW LOCKED STATUS
                d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


                q. Quit Account Driver


Enter your choice:

5

Your choice is : 5
```

```
_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:

321

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
                4. LOCK
                5. UNLOCK
                6. LOGIN
                7. PIN
                8. LOGOUT

Testing-Oriented Methods
_____
```

```
          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

          q. Quit Account Driver
```

Enter your choice:

1

Your choice is : 1

```
_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____
```

Enter Deposit Amount:

100

                    The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
```
_____
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT
```

Testing-Oriented Methods
```
_____
          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

          q. Quit Account Driver
```

Enter your choice:

1

Your choice is : 1

```
_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____
```

Enter Deposit Amount:

```
10
                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver

Enter your choice:

3

Your choice is : 3




_____
Class: Account
Type: Class Method
Method: BALANCE
_____

                The value returned by the method is: Balance = 270 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
_____
```

```
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

4

Your choice is : 4





_____
Class: Account
Type: Class Method
Method: LOCK
_____

Enter Lock#:

321

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...





Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

5

Your choice is : 5





_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:
```

321

```
                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:
```

2

```
Your choice is : 2




_____
Class: Account
Type: Class Method
Method: WITHDRAW
_____

Enter Withdraw Amount:
```

100

```
                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT
```

```
Testing—Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver


Enter your choice:

1

Your choice is : 1




_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____

Enter Deposit Amount:

100

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver


Enter your choice:

2

Your choice is : 2




_____
Class: Account
Type: Class Method
Method: WITHDRAW
```

——

Enter Withdraw Amount:

10

                    The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
——
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
——
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

1

Your choice is : 1

——
Class: Account
Type: Class Method
Method: DEPOSIT
——

Enter Deposit Amount:

10

                    The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
——
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN

```
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

2

Your choice is : 2
```

```
_____
Class: Account
Type: Class Method
Method: WITHDRAW
_____

Enter Withdraw Amount:

10

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

4

Your choice is : 4
```

_____

```
Class: Account
Type: Class Method
Method: LOCK
_____

Enter Lock#:

321

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____

                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
                4. LOCK
                5. UNLOCK
                6. LOGIN
                7. PIN
                8. LOGOUT

Testing-Oriented Methods
_____

                a. SHOW BALANCE
                b. SHOW STATE
                c. SHOW LOCKED STATUS
                d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


                q. Quit Account Driver

Enter your choice:

5

Your choice is : 5
```

```
_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:

321

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____

                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
```

```
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT


Testing-Oriented Methods
_____

            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

1

Your choice is : 1




_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____

Enter Deposit Amount:

10

              The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____

            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____

            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

2

Your choice is : 2
```

```
————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: WITHDRAW
————————————————————————————————————————————————————

Enter Withdraw Amount:

100

                 The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
————————————————————————————————————————————————————
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
————————————————————————————————————————————————————
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver

Enter your choice:

8

Your choice is : 8




————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: LOGOUT
————————————————————————————————————————————————————

                 The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...




Driver for the Account
————————————————————————————————————————————————————
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
```

```
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing—Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

100

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing—Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

7

Your choice is : 7
```

```
─────────────────────────────────────────────────────
Class: Account
Type: Class Method
Method: PIN
─────────────────────────────────────────────────────

Enter PIN:

123

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
─────────────────────────────────────────────────────
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
─────────────────────────────────────────────────────
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:

8

Your choice is : 8
```

```
─────────────────────────────────────────────────────
Class: Account
Type: Class Method
Method: LOGOUT
─────────────────────────────────────────────────────

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
─────────────────────────────────────────────────────
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
```

```
    4. LOCK
    5. UNLOCK
    6. LOGIN
    7. PIN
    8. LOGOUT


Testing-Oriented Methods
_____

    a. SHOW BALANCE
    b. SHOW STATE
    c. SHOW LOCKED STATUS
    d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


    q. Quit Account Driver


Enter your choice:

q

Your choice is : q
Quitting Account Driver...
_____
                    THANK YOU!!!
_____
```

CORRECTNESS

Function Called	Transition	Expected Result			Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
OPEN 100 123 190	T1	IDLE	190	0	IDLE	190	0
LOGIN 100	T2	CHECK PIN	190	0	CHECK PIN	190	0
PIN 123	T8	OVERDRAWN	190	0	OVERDRAWN	190	0
DEPOSIT 100	T16	READY	290	0	READY	290	0
LOGOUT	T10	IDLE	290	0	IDLE	290	0
LOGIN 100	T2	CHECK PIN	290	0	CHECK PIN	290	0
PIN 2	T3	CHECK PIN	290	1	CHECK PIN	290	1
PIN 123	T18	READY	290	1	READY	290	1

Function Called	Transition	Expected Result			Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
WITHDRAW 100	T14	OVERDRAWN	170	1	OVERDRAWN	170	1
DEPOSIT 10	T21	OVERDRAWN	170	1	OVERDRAWN	160	1
LOCK 321	T20	LOCKED	170	1	LOCKED	160	1
UNLOCK 321	T19	OVERDRAWN	170	1	OVERDRAWN	160	1
DEPOSIT 100	T16	READY	270	1	READY	260	1
DEPOSIT 10	T12	READY	280	1	READY	270	1
BALANCE	T13	READY	280	1	READY	270	1
LOCK 321	T4	LOCKED	280	1	LOCKED	270	1
UNLOCK 321	T17	READY	280	1	READY	270	1
WITHDRAW 100	T14	OVERDRAWN	160	1	OVERDRAWN	150	1
DEPOSIT 100	T16	READY	260	1	READY	250	1
WITHDRAW 10	T11	READY	250	1	READY	240	1
DEPOSIT 10	T12	READY	260	1	READY	250	1
WITHDRAW 10	T11	READY	250	1	READY	240	1
LOCK 321	T4	LOCKED	250	1	LOCKED	240	1
UNLOCK 321	T17	READY	250	1	READY	240	1

Function Called	Transition	Expected Result			Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
DEPOSIT 10	T12	READY	260	1	READY	250	1
WITHDRAW 100	T14	OVERDRAWN	140	1	OVERDRAWN	130	1
LOGOUT	T9	IDLE	140	1	IDLE	130	1
LOGIN 100	T2	CHECK PIN	140	0	CHECK PIN	130	0
PIN 123	T8	OVERDRAWN	140	0	OVERDRAWN	130	0
LOGOUT	T9	IDLE	140	0	IDLE	130	0

As from the above table we can see that expected results are not matched with produced result. Hence the test case is **FAILED**. The contradicting operations are highlighted in RED color in the above table. This test case is also mentioned later in this report in the section List of Failed Test Cases

TESTCASE#4

TEST CASE

From TS.txt
```
Test#4: open 100 123 190 login 100 pin 123 logout
```

As method call
```
Test#4: open(100,123,190), login(100), pin(123), logout()
```

TRANSITION TRAVERSED

```
T1, T2, T8, T9
```

OUTPUT OF ACCOUNT CLASS

```
CS 589; Fall 2021
     PROJECT
  Sukanta Sharma
    A2042623
```

_____
_____

Press Enter key to continue...

Driver for the Account
_____

            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____

            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

0

Your choice is : 0

_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

100
Enter PIN:

123
Enter initial balance:

190

                The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...

Driver for the Account
_____

            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK

```
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
―――――――――――――――――――――――――――――――――――――――――――――――――

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

6

Your choice is : 6
```

```
―――――――――――――――――――――――――――――――――――――――――――――――――
Class: Account
Type: Class Method
Method: LOGIN
―――――――――――――――――――――――――――――――――――――――――――――――――

Enter Account#:

100

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
―――――――――――――――――――――――――――――――――――――――――――――――――

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
―――――――――――――――――――――――――――――――――――――――――――――――――

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

7

Your choice is : 7
```

```
_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

123

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

8

Your choice is : 8




_____
Class: Account
Type: Class Method
Method: LOGOUT
_____

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
```

```
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

q

Your choice is : q
Quitting Account Driver...
_____
                        THANK YOU!!!
_____
```

CORRECTNESS

Function Called	Expected Result			Produced Result		
	State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
OPEN 100 123 190	IDLE	190	0	IDLE	190	0
LOGIN 100	CHECK PIN	190	0	CHECK PIN	190	0
PIN 123	OVERDRAWN	190	0	OVERDRAWN	190	0
LOGOUT	IDLE	190	0	IDLE	190	0

As from the above table we can see that expected results are matched with produced result. Hence the test case is **PASSED**.

TESTCASE#5

TEST CASE

From TS.txt

```
Test#5: open 100 123 300 login 100 pin 123 lock 321 unlock 321 withdraw 10
withdraw 100 deposit 100 lock 321 unlock 321 logout login 100 pin 123 deposit
10 logout login 100 pin 123 withdraw 10 logout login 100 pin 123 logout
```

As method call
Test#5: open(100,123,300), login(100), pin(123), lock(321), unlock(321), withdraw(10), withdraw(100), deposit(100), lock(321), unlock(321), logout(), login(100), pin(123), deposit(10), logout(), login(100), pin(123), withdraw(10), logout(), login(100), pin(123), logout()

TRANSITION TRAVERSED

T1, T2, T18, T4, T17, T11, T14, T16, T4, T17, T10, T2, T18, T12, T10, T2, T18, T11, T10, T2, T18, T10

OUTPUT OF *ACCOUNT* CLASS

```
CS 589; Fall 2021
PROJECT
Sukanta Sharma
A2042623
```

CORRECTNESS

Function Called	Expected Result			Produced Result		
	State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
OPEN 100 123 300	IDLE	300	0	IDLE	300	0
LOGIN 100	CHECK PIN	300	0	CHECK PIN	300	0
PIN 123	READY	300	0	READY	300	0
LOCK 321	LOCKED	300	0	LOCKED	300	0
UNLOCK 321	READY	300	0	READY	300	0
WITHDRAW 10	READY	290	0	READY	290	0
WITHDRAW 100	OVERDRAWN	170	0	OVERDRAWN	170	0

Function Called	Expected Result			Produced Result		
	State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
DEPOSIT 100	READY	270	0	READY	270	0
LOCK 321	LOCKED	270	0	LOCKED	270	0
UNLOCK 321	READY	270	0	READY	270	0
LOGOUT	IDLE	270	0	IDLE	270	0
LOGIN 100	CHECK PIN	270	0	CHECK PIN	270	0
PIN 123	READY	270	0	READY	270	0
DEPOSIT 10	READY	280	0	READY	280	0
LOGOUT	IDLE	280	0	IDLE	280	0
LOGIN 100	CHECK PIN	280	0	CHECK PIN	280	0
PIN 123	READY	280	0	READY	280	0
WITHDRAW 10	READY	270	0	READY	270	0
LOGOUT	IDLE	270	0	IDLE	270	0
LOGIN 100	CHECK PIN	270	0	CHECK PIN	270	0
PIN 123	READY	270	0	READY	270	0
LOGOUT	IDLE	270	0	IDLE	270	0

As from the above table we can see that expected results are matched with produced result. Hence the test case is **PASSED**.

TESTCASE#6

TEST CASE

From TS.txt
```
Test#6: open 100 123 200 open 100 123 200 logout pin 123 deposit 100 withdraw
100 balance lock 321 unlock 321
```

As method call

Test#6: open(100,123,200), open(100,123,200), logout(), pin(123), deposit(100), withdraw(100), balance(), lock(321), unlock(321)

TRANSITION TRAVERSED

T1

OUTPUT OF *ACCOUNT* CLASS

```
                CS 589; Fall 2021
                    PROJECT
                 Sukanta Sharma
                   A2042623


_____
_____



Press Enter key to continue...





Driver for the Account
_____

          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing-Oriented Methods
_____

          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


          q. Quit Account Driver

Enter your choice:

0

Your choice is : 0




_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

100
```

```
Enter PIN:

123
Enter initial balance:

200

                  The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing-Oriented Methods
_____
          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

          q. Quit Account Driver

Enter your choice:

0

Your choice is : 0
```

```
_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

100
Enter PIN:

123
Enter initial balance:

200

                  The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____
```

```
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
————————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

8

Your choice is : 8




————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: LOGOUT
————————————————————————————————————————————————————


                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
————————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
————————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

7

Your choice is : 7
```

```
_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

123

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

1

Your choice is : 1
```

```
_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____

Enter Deposit Amount:

100

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____
```

```
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing—Oriented Methods
——————————————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

2

Your choice is : 2




——————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: WITHDRAW
——————————————————————————————————————————————————————————

Enter Withdraw Amount:

100

                The value returned by the method is: —1 (FAILED)


Press Enter key to continue...




Driver for the Account
——————————————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing—Oriented Methods
——————————————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

3

Your choice is : 3
```

```
_____
Class: Account
Type: Class Method
Method: BALANCE
_____

              The value returned by the method is: Balance = -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

4

Your choice is : 4
```

```
_____
Class: Account
Type: Class Method
Method: LOCK
_____

Enter Lock#:

321

              The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____
```

```
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
─────────────────────────────────────────────────────────────────
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

5

Your choice is : 5




─────────────────────────────────────────────────────────────────
Class: Account
Type: Class Method
Method: UNLOCK
─────────────────────────────────────────────────────────────────

Enter Lock#:

321

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
─────────────────────────────────────────────────────────────────
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
─────────────────────────────────────────────────────────────────
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

q

Your choice is : q
```

```
Quitting Account Driver...
_____
                    THANK YOU!!!
_____
```

CORRECTNESS

Function Called	Expected Result				Produced Result			
	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value
OPEN 100 123 200	IDLE	200	0	0	IDLE	200	0	0
OPEN 100 123 200	IDLE	200	0	-1	IDLE	200	0	-1
LOGOUT	IDLE	200	0	-1	IDLE	200	0	-1
PIN 123	IDLE	200	0	-1	IDLE	200	0	-1
DEPOSIT 100	IDLE	200	0	-1	IDLE	200	0	-1
WITHDRAW 100	IDLE	200	0	-1	IDLE	200	0	-1
BALANCE	IDLE	200	0	-1	IDLE	200	0	-1
LOCK 321	IDLE	200	0	-1	IDLE	200	0	-1
UNLOCK 321	IDLE	200	0	-1	IDLE	200	0	-1

As from the above table we can see that expected results are matched with produced result. Hence the test case is **PASSED**.

TESTCASE#7

TEST CASE

From TS.txt
```
Test#7: open 100 123 200 login 100 open −100 123 200 login 100 deposit 100
withdraw 100 balance lock 321 unlock 0
```

As method call
```
Test#7:  open(100,123,200),  login(100),  open(−100,123,200),  login(100),
deposit(100), withdraw(100), balance(), lock(321), unlock(0)
```

TRANSITION TRAVERSED

T1, T2

OUTPUT OF *ACCOUNT* CLASS

```
                        CS 589; Fall 2021
                           PROJECT
                        Sukanta Sharma
                           A2042623


_____
_____


Press Enter key to continue...




Driver for the Account
_____

                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
                4. LOCK
                5. UNLOCK
                6. LOGIN
                7. PIN
                8. LOGOUT

Testing-Oriented Methods
_____

                a. SHOW BALANCE
                b. SHOW STATE
                c. SHOW LOCKED STATUS
                d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


                q. Quit Account Driver

Enter your choice:

0

Your choice is : 0




_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

100
Enter PIN:

123
Enter initial balance:

200

                The value returned by the method is: 0 (SUCCESS)

Press Enter key to continue...
```

```
Driver for the Account
————————————————————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing—Oriented Methods
————————————————————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

6

Your choice is : 6
```

```
————————————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: LOGIN
————————————————————————————————————————————————————————————————

Enter Account#:

100

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
————————————————————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing—Oriented Methods
————————————————————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
```

```
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

0

Your choice is : 0




_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

-100
Enter PIN:

123
Enter initial balance:

200

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
_____
```

```
Enter Account#:

100

                    The value returned by the method is: −1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
─────────────────────────────────────────────────────────────
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing−Oriented Methods
─────────────────────────────────────────────────────────────
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

1

Your choice is : 1
```

```
─────────────────────────────────────────────────────────────
Class: Account
Type: Class Method
Method: DEPOSIT
─────────────────────────────────────────────────────────────

Enter Deposit Amount:

100

                    The value returned by the method is: −1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
─────────────────────────────────────────────────────────────
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
```

```
        8. LOGOUT

Testing-Oriented Methods
———————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

2

Your choice is : 2




———————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: WITHDRAW
———————————————————————————————————————————————————

Enter Withdraw Amount:

100

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
———————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
———————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

3

Your choice is : 3




———————————————————————————————————————————————————
Class: Account
```

```
Type: Class Method
Method: BALANCE
_____

                    The value returned by the method is: Balance = −1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

4

Your choice is : 4
```

```
_____
Class: Account
Type: Class Method
Method: LOCK
_____
Enter Lock#:

321

                    The value returned by the method is: −1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
```

```
        8. LOGOUT

Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver

Enter your choice:

5

Your choice is : 5




_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:

0

                    The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver

Enter your choice:

q

Your choice is : q
Quitting Account Driver...
_____
                    THANK YOU!!!


_____
```

CORRECTNESS

Function Called	Expected Result				Produced Result			
	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value
OPEN 100 123 200	IDLE	200	0	0	IDLE	200	0	0
LOGIN 100	CHECK PIN	200	0	0	CHECK PIN	200	0	0
OPEN - 100 123 200	**CHECK PIN**	**200**	**0**	**-1**	**CHECK PIN**	**200**	**0**	**-1**
LOGIN 100	**CHECK PIN**	**200**	**0**	**-1**	**CHECK PIN**	**200**	**0**	**-1**
DEPOSIT 100	**CHECK PIN**	**200**	**0**	**-1**	**CHECK PIN**	**200**	**0**	**-1**
WITHDRAW 100	CHECK PIN	200	0	-1	CHECK PIN	200	0	-1
BALANCE	**CHECK PIN**	**200**	**0**	**-1**	**CHECK PIN**	**200**	**0**	**-1**
LOCK 321	CHECK PIN	200	0	-1	CHECK PIN	200	0	-1
UNLOCK 0	**CHECK PIN**	**200**	**0**	**-1**	**CHECK PIN**	**200**	**0**	**-1**

As from the above table we can see that expected results are matched with produced result. Hence the test case is **PASSED**.

TESTCASE#8

TEST CASE

From TS.txt
Test#8: open 100 123 200 login 100 pin 123 open 100 –123 200 login 100 pin 123 withdraw 0 lock 123 unlock 123

As method call
Test#8:   open(100,123,200),   login(100),   pin(123),   open(100,–123,200), login(100), pin(123), withdraw(0), lock(123), unlock(123)

TRANSITION TRAVERSED

T1, T2, T18

OUTPUT OF *ACCOUNT* CLASS

```
                    CS 589; Fall 2021
                        PROJECT
                    Sukanta Sharma
                        A2042623


_____
_____


Press Enter key to continue...
```

```
Driver for the Account
_____

            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____

            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

0

Your choice is : 0




_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

100
Enter PIN:

123
Enter initial balance:

200

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
                4. LOCK
                5. UNLOCK
                6. LOGIN
                7. PIN
                8. LOGOUT

Testing—Oriented Methods
_____
                a. SHOW BALANCE
                b. SHOW STATE
                c. SHOW LOCKED STATUS
                d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


                q. Quit Account Driver


Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

100

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...





Driver for the Account
_____
                0. OPEN
                1. DEPOSIT
                2. WITHDRAW
                3. BALANCE
                4. LOCK
                5. UNLOCK
                6. LOGIN
                7. PIN
                8. LOGOUT

Testing—Oriented Methods
_____
                a. SHOW BALANCE
                b. SHOW STATE
                c. SHOW LOCKED STATUS
                d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


                q. Quit Account Driver


Enter your choice:
```

7

Your choice is : 7

```
————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: PIN
————————————————————————————————————————————————

Enter PIN:
```

123

```
                    The value returned by the method is: 0 (SUCCESS)
```

Press Enter key to continue...

```
Driver for the Account
————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:
```

0

Your choice is : 0

```
————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: OPEN
————————————————————————————————————————————————

Enter Account#:
```

100
Enter PIN:

-123
Enter initial balance:

200

```
                    The value returned by the method is: -1 (FAILED)
```

```
Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver

Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
_____
Enter Account#:

100

                 The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
```

```
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

7

Your choice is : 7




_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

123

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

2

Your choice is : 2




_____
Class: Account
Type: Class Method
Method: WITHDRAW
_____

Enter Withdraw Amount:

0
```

```
                    The value returned by the method is: −1 (FAILED)


Press Enter key to continue...






Driver for the Account
_____
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing−Oriented Methods
_____
          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


          q. Quit Account Driver

Enter your choice:

4

Your choice is : 4





_____
Class: Account
Type: Class Method
Method: LOCK
_____

Enter Lock#:

123
                    The value returned by the method is: −1 (FAILED)


Press Enter key to continue...





Driver for the Account
_____
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing−Oriented Methods
_____
```

```
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver


Enter your choice:

5

Your choice is : 5




_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:

123

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver


Enter your choice:

q

Your choice is : q
Quitting Account Driver...
_____
                THANK YOU!!!


_____
```

CORRECTNESS

Function Called	Expected Result				Produced Result			
	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value
OPEN 100 123 200	IDLE	200	0	0	IDLE	200	0	0
LOGIN 100	CHECK PIN	200	0	0	CHECK PIN	200	0	0
PIN 123	READY	200	0	0	READY	200	0	0
OPEN 100 -123 200	READY	200	0	-1	READY	200	0	-1
LOGIN 100	READY	200	0	-1	READY	200	0	-1
PIN 123	READY	200	0	-1	READY	200	0	-1
WITHDRAW 0	READY	200	0	-1	READY	200	0	-1
LOCK 123	READY	200	0	-1	READY	200	0	-1
UNLOCK 123	READY	200	0	-1	READY	200	0	-1

As from the above table we can see that expected results are matched with produced result. Hence the test case is **PASSED**.

TESTCASE#9

TEST CASE

From TS.txt
Test#9: open 100 123 190 login 100 pin 123 open −100 −123 200 login 100 pin 123 withdraw 100 lock 123 unlock 321

As method call
Test#9: open(100,123,190), login(100), pin(123), open(−100,−123,200), login(100), pin(123), withdraw(100), lock(123), unlock(321)

TRANSITION TRAVERSED

T1, T2, T8

OUTPUT OF *ACCOUNT* CLASS

CS 589; Fall 2021

```
            PROJECT
         Sukanta Sharma
          A2042623

_____
_____


Press Enter key to continue...




Driver for the Account
_____

         0. OPEN
         1. DEPOSIT
         2. WITHDRAW
         3. BALANCE
         4. LOCK
         5. UNLOCK
         6. LOGIN
         7. PIN
         8. LOGOUT

Testing-Oriented Methods
_____

         a. SHOW BALANCE
         b. SHOW STATE
         c. SHOW LOCKED STATUS
         d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


         q. Quit Account Driver

Enter your choice:

0

Your choice is : 0




_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

100
Enter PIN:

123
Enter initial balance:

190

              The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
_____

         0. OPEN
```

```
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
——————————————————————————————————————————————————————

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

6

Your choice is : 6




——————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: LOGIN
——————————————————————————————————————————————————————

Enter Account#:

100

                 The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...





Driver for the Account
——————————————————————————————————————————————————————

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
——————————————————————————————————————————————————————

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

7

Your choice is : 7
```

```
—————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: PIN
—————————————————————————————————————————————————

Enter PIN:

123

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
—————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing—Oriented Methods
—————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:

0

Your choice is : 0




—————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: OPEN
—————————————————————————————————————————————————
Enter Account#:

—100
Enter PIN:

—123
Enter initial balance:

200

                The value returned by the method is: —1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

100
                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS
```

```
        q. Quit Account Driver


Enter your choice:

7

Your choice is : 7




_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

123

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

2

Your choice is : 2




_____
Class: Account
Type: Class Method
Method: WITHDRAW
_____

Enter Withdraw Amount:

100

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
──────────────────────────────────────────────────────────────
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT


Testing-Oriented Methods
──────────────────────────────────────────────────────────────
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

4

Your choice is : 4
```

```
──────────────────────────────────────────────────────────────
Class: Account
Type: Class Method
Method: LOCK
──────────────────────────────────────────────────────────────

Enter Lock#:

123

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
──────────────────────────────────────────────────────────────
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT


Testing-Oriented Methods
──────────────────────────────────────────────────────────────
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
```

```
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver


Enter your choice:

5

Your choice is : 5




_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:

321

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver


Enter your choice:

q

Your choice is : q
Quitting Account Driver...
_____
                THANK YOU!!!
_____
```

CORRECTNESS

Function Called	Expected Result				Produced Result			
	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value
OPEN 100 123 190	IDLE	190	0	0	IDLE	190	0	0
LOGIN 100	CHECK PIN	190	0	0	CHECK PIN	190	0	0
PIN 123	OVERDRAWN	190	0	0	OVERDRAWN	190	0	0
OPEN -100 -123 200	**OVERDRAWN**	**190**	**0**	**-1**	**OVERDRAWN**	**190**	**0**	**-1**
LOGIN 100	**OVERDRAWN**	**190**	**0**	**-1**	**OVERDRAWN**	**190**	**0**	**-1**
PIN 123	**OVERDRAWN**	190	**0**	**-1**	**OVERDRAWN**	190	**0**	**-1**
WITHDRAW 100	**OVERDRAWN**	**190**	**0**	**-1**	**OVERDRAWN**	**190**	**0**	**-1**
LOCK 123	**OVERDRAWN**	190	**0**	**-1**	**OVERDRAWN**	190	**0**	**-1**
UNLOCK 321	**OVERDRAWN**	**190**	**0**	**-1**	**OVERDRAWN**	**190**	**0**	**-1**

As from the above table we can see that expected results are matched with produced result. Hence the test case is **PASSED**.

TESTCASE#10

TEST CASE

From TS.txt
Test#10: open 100 123 190 login 100 pin 123 lock 321 open 100 123 −200 login 100 logout pin 123 deposit 100 withdraw 100 lock 321 unlock 12

As method call
Test#10: open(100,123,190), login(100), pin(123), lock(321), open(100,123,−200), login(100), logout(), pin(123), deposit(100), withdraw(100), lock(321), unlock(12)

TRANSITION TRAVERSED

T1, T2, T8, T20

OUTPUT OF *ACCOUNT* CLASS

```
                      CS 589; Fall 2021
                         PROJECT
                      Sukanta Sharma
                        A2042623


_____
_____


Press Enter key to continue...





Driver for the Account
_____

            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____

            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver

Enter your choice:

0

Your choice is : 0





_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

100
Enter PIN:

123
Enter initial balance:

190

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...





Driver for the Account
_____
```

```
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
──────────────────────────────────────────────────────────────
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

6

Your choice is : 6




──────────────────────────────────────────────────────────────
Class: Account
Type: Class Method
Method: LOGIN
──────────────────────────────────────────────────────────────

Enter Account#:

100

                The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
──────────────────────────────────────────────────────────────
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
──────────────────────────────────────────────────────────────
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

7

Your choice is : 7
```

```
_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

123

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

4

Your choice is : 4
```

```
_____
Class: Account
Type: Class Method
Method: LOCK
_____

Enter Lock#:

321

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT


Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

0

Your choice is : 0
```

```
_____
Class: Account
Type: Class Method
Method: OPEN
_____
Enter Account#:

100
Enter PIN:

123
Enter initial balance:

-200

               The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT


Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS
```

```
        q. Quit Account Driver

Enter your choice:

6

Your choice is : 6




_____
Class: Account
Type: Class Method
Method: LOGIN
_____

Enter Account#:

100

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

8

Your choice is : 8




_____
Class: Account
Type: Class Method
Method: LOGOUT
_____

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:

7

Your choice is : 7




_____
Class: Account
Type: Class Method
Method: PIN
_____

Enter PIN:

123

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS
```

```
        q. Quit Account Driver

Enter your choice:

1

Your choice is : 1




——————————————————————————————————————————————
Class: Account
Type: Class Method
Method: DEPOSIT
——————————————————————————————————————————————

Enter Deposit Amount:

100

                  The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
——————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
——————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

2

Your choice is : 2




——————————————————————————————————————————————
Class: Account
Type: Class Method
Method: WITHDRAW
——————————————————————————————————————————————

Enter Withdraw Amount:

100

                  The value returned by the method is: -1 (FAILED)
```

```
Press Enter key to continue...




Driver for the Account
────────────────────────────────────────────────────────────
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing-Oriented Methods
────────────────────────────────────────────────────────────
          a. SHOW BALANCE
          b. SHOW STATE
          c. SHOW LOCKED STATUS
          d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


          q. Quit Account Driver

Enter your choice:

4

Your choice is : 4




────────────────────────────────────────────────────────────
Class: Account
Type: Class Method
Method: LOCK
────────────────────────────────────────────────────────────
Enter Lock#:

321

               The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
────────────────────────────────────────────────────────────
          0. OPEN
          1. DEPOSIT
          2. WITHDRAW
          3. BALANCE
          4. LOCK
          5. UNLOCK
          6. LOGIN
          7. PIN
          8. LOGOUT

Testing-Oriented Methods
────────────────────────────────────────────────────────────
          a. SHOW BALANCE
          b. SHOW STATE
```

```
         c. SHOW LOCKED STATUS
         d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

         q. Quit Account Driver


Enter your choice:

5

Your choice is : 5




_____
Class: Account
Type: Class Method
Method: UNLOCK
_____

Enter Lock#:

12

              The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
         0. OPEN
         1. DEPOSIT
         2. WITHDRAW
         3. BALANCE
         4. LOCK
         5. UNLOCK
         6. LOGIN
         7. PIN
         8. LOGOUT

Testing-Oriented Methods
_____
         a. SHOW BALANCE
         b. SHOW STATE
         c. SHOW LOCKED STATUS
         d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

         q. Quit Account Driver


Enter your choice:

q

Your choice is : q
Quitting Account Driver...
_____
                  THANK YOU!!!
_____
```

CORRECTNESS

Function Called	Expected Result				Produced Result			
	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value
OPEN 100 123 190	IDLE	190	0	0	IDLE	190	0	0
LOGIN 100	CHECK PIN	190	0	0	CHECK PIN	190	0	0
PIN 123	OVERDRAWN	190	0	0	OVERDRAWN	190	0	0
LOCK 321	LOCKED	190	0	0	LOCKED	190	0	0
OPEN 100 123 -200	**LOCKED**	**190**	**0**	**-1**	**LOCKED**	**190**	**0**	**-1**
LOGIN 100	**LOCKED**	**190**	**0**	**-1**	**LOCKED**	**190**	**0**	**-1**
LOGOUT	**LOCKED**	**190**	**0**	**-1**	**LOCKED**	**190**	**0**	**-1**
PIN 123	**LOCKED**	**190**	**0**	**-1**	**LOCKED**	**190**	**0**	**-1**
DEPOSIT 100	**LOCKED**	**190**	**0**	**-1**	**LOCKED**	**190**	**0**	**-1**
WITHDRAW 100	LOCKED	190	0	-1	LOCKED	190	0	-1
LOCK 321	**LOCKED**	**190**	**0**	**-1**	**LOCKED**	**190**	**0**	**-1**
UNLOCK 12	**LOCKED**	**190**	**0**	**-1**	**LOCKED**	**190**	**0**	**-1**

As from the above table we can see that expected results are matched with produced result. Hence the test case is **PASSED**.

TESTCASE#11

TEST CASE

From TS.txt
Test#11: open −100 123 200 open 100 −123 200 open −100 −123 200 open 100 123 −200 open −100 123 −200 open 100 −123 −200 open −100 −123 −200 open 100 123 200 open −100 123 −200 open 100 −123 −200 open −100 −123 −200 login 100 pin 123 deposit 0 withdraw 190 deposit 0 withdraw 50 withdraw −10

As method call
Test#11:   open(−100,123,200),   open(100,−123,200),   open(−100,−123,200), open(100,123,−200), open(−100,123,−200), open(100,−123,−200), open(−100,−123,−200), open(100,123,200), open(−100,123,−200), open(100,−123,−200), open(−100,−123,−200), login(100), pin(123), deposit(0), withdraw(190), deposit(0), withdraw(50), withdraw(−10)

TRANSITION TRAVERSED

`T1, T2, T18, T12, T14, T21`

OUTPUT OF *ACCOUNT* CLASS

```
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                    Sukanta Sharma
                       A2042623


_____
_____


Press Enter key to continue...




Driver for the Account
_____

            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT


Testing-Oriented Methods
_____

            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver

Enter your choice:

0

Your choice is : 0




_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

-100
Enter PIN:

123
Enter initial balance:

200
```

```
                    The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver

Enter your choice:

0

Your choice is : 0




_____
Class: Account
Type: Class Method
Method: OPEN
_____
Enter Account#:

100
Enter PIN:

-123
Enter initial balance:

200
                    The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
```

```
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

0

Your choice is : 0
```

```
_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

-100
Enter PIN:

-123
Enter initial balance:

200

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT


Testing-Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

0

Your choice is : 0
```

```
————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: OPEN
————————————————————————————————————————————————————

Enter Account#:

100
Enter PIN:

123
Enter initial balance:

-200

                 The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
————————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
————————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver

Enter your choice:

0

Your choice is : 0
```

```
————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: OPEN
————————————————————————————————————————————————————

Enter Account#:

-100
Enter PIN:

123
Enter initial balance:

-200

                 The value returned by the method is: -1 (FAILED)
```

```
Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing-Oriented Methods
_____
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

0

Your choice is : 0




_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

100
Enter PIN:

-123
Enter initial balance:

-200

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
```

```
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

0

Your choice is : 0




_____
Class: Account
Type: Class Method
Method: OPEN
_____

Enter Account#:

-100
Enter PIN:

-123
Enter initial balance:

-200

                The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

0

Your choice is : 0
```

```
————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: OPEN
————————————————————————————————————————————————————

Enter Account#:

100
Enter PIN:

123
Enter initial balance:

200

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
————————————————————————————————————————————————————
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
————————————————————————————————————————————————————
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

            q. Quit Account Driver

Enter your choice:

0

Your choice is : 0




————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: OPEN
————————————————————————————————————————————————————

Enter Account#:

—100
Enter PIN:

123
Enter initial balance:

—200

                    The value returned by the method is: —1 (FAILED)
```

```
Press Enter key to continue...




Driver for the Account
─────────────────────────────────────────────────────────

         0. OPEN
         1. DEPOSIT
         2. WITHDRAW
         3. BALANCE
         4. LOCK
         5. UNLOCK
         6. LOGIN
         7. PIN
         8. LOGOUT

Testing-Oriented Methods
─────────────────────────────────────────────────────────

         a. SHOW BALANCE
         b. SHOW STATE
         c. SHOW LOCKED STATUS
         d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


         q. Quit Account Driver

Enter your choice:

0

Your choice is : 0




─────────────────────────────────────────────────────────
Class: Account
Type: Class Method
Method: OPEN
─────────────────────────────────────────────────────────

Enter Account#:

100
Enter PIN:

-123
Enter initial balance:

-200

                 The value returned by the method is: -1 (FAILED)


Press Enter key to continue...




Driver for the Account
─────────────────────────────────────────────────────────

         0. OPEN
         1. DEPOSIT
         2. WITHDRAW
         3. BALANCE
         4. LOCK
         5. UNLOCK
         6. LOGIN
         7. PIN
         8. LOGOUT
```

```
Testing—Oriented Methods
——————————————————————————————————————————————————————————
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

0

Your choice is : 0




——————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: OPEN
——————————————————————————————————————————————————————————
Enter Account#:

—100
Enter PIN:

—123
Enter initial balance:

—200

              The value returned by the method is: —1 (FAILED)


Press Enter key to continue...




Driver for the Account
——————————————————————————————————————————————————————————
            0. OPEN
            1. DEPOSIT
            2. WITHDRAW
            3. BALANCE
            4. LOCK
            5. UNLOCK
            6. LOGIN
            7. PIN
            8. LOGOUT

Testing—Oriented Methods
——————————————————————————————————————————————————————————
            a. SHOW BALANCE
            b. SHOW STATE
            c. SHOW LOCKED STATUS
            d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


            q. Quit Account Driver


Enter your choice:

6

Your choice is : 6
```

```
————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: LOGIN
————————————————————————————————————————————————————————

Enter Account#:

100

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
————————————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing—Oriented Methods
————————————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

7

Your choice is : 7




————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: PIN
————————————————————————————————————————————————————————

Enter PIN:

123

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...




Driver for the Account
————————————————————————————————————————————————————————
```

```
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT
```

Testing-Oriented Methods
──

```
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver
```

Enter your choice:

1

Your choice is : 1

──
Class: Account
Type: Class Method
Method: DEPOSIT
──

Enter Deposit Amount:

0

                    The value returned by the method is: -1 (FAILED)

Press Enter key to continue...

Driver for the Account
──

```
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT
```

Testing-Oriented Methods
──

```
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver
```

Enter your choice:

2

Your choice is : 2

```
_____
Class: Account
Type: Class Method
Method: WITHDRAW
_____

Enter Withdraw Amount:

190

                    The value returned by the method is: 0 (SUCCESS)


Press Enter key to continue...
```

```
Driver for the Account
_____
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing-Oriented Methods
_____
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS

        q. Quit Account Driver

Enter your choice:

1

Your choice is : 1
```

```
_____
Class: Account
Type: Class Method
Method: DEPOSIT
_____

Enter Deposit Amount:

0

                    The value returned by the method is: -1 (FAILED)


Press Enter key to continue...
```

```
Driver for the Account
————————————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing—Oriented Methods
————————————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

2

Your choice is : 2




————————————————————————————————————————————————————————
Class: Account
Type: Class Method
Method: WITHDRAW
————————————————————————————————————————————————————————
Enter Withdraw Amount:

50

                The value returned by the method is: —1 (FAILED)


Press Enter key to continue...




Driver for the Account
————————————————————————————————————————————————————————
        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing—Oriented Methods
————————————————————————————————————————————————————————
        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:
```

2

Your choice is : 2


```
_____
Class: Account
Type: Class Method
Method: WITHDRAW
_____

Enter Withdraw Amount:

−10

                    The value returned by the method is: −1 (FAILED)


Press Enter key to continue...
```


```
Driver for the Account
_____

        0. OPEN
        1. DEPOSIT
        2. WITHDRAW
        3. BALANCE
        4. LOCK
        5. UNLOCK
        6. LOGIN
        7. PIN
        8. LOGOUT

Testing−Oriented Methods
_____

        a. SHOW BALANCE
        b. SHOW STATE
        c. SHOW LOCKED STATUS
        d. SHOW NUMBER OF UNSECCESSFUL LOGIN ATTEMPTS


        q. Quit Account Driver


Enter your choice:

Q

Your choice is : q
Quitting Account Driver...
_____
                    THANK YOU!!!
_____
```

CORRECTNESS

Function Called	Expected Result				Produced Result			
	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value
OPEN -100 123 200	START	0	0	-1	START	0	0	-1

Function Called	State After Transition	Expected Result				Produced Result			
		Balance	No. of Unsuccessful Attempt	Return Value	State After Transition	Balance	No. of Unsuccessful Attempt	Return Value	
OPEN 100 -123 200	START	0	0	-1	START	0	0	-1	
OPEN -100 -123 200	START	0	0	-1	START	0	0	-1	
OPEN 100 123 -200	START	0	0	-1	START	0	0	-1	
OPEN -100 123 -200	START	0	0	-1	START	0	0	-1	
OPEN 100 -123 -200	START	0	0	-1	START	0	0	-1	
OPEN -100 -123 -200	START	0	0	-1	START	0	0	-1	
OPEN 100 123 200	IDLE	200	0	0	IDLE	200	0	0	
OPEN -100 123 -200	IDLE	200	0	-1	IDLE	200	0	-1	
OPEN 100 -123 -200	IDLE	200	0	-1	IDLE	200	0	-1	
OPEN -100 -123 -200	IDLE	200	0	-1	IDLE	200	0	-1	
LOGIN 100	CHECK PIN	200	0	0	CHECK PIN	200	0	0	
PIN 123	READY	200	0	0	READY	200	0	0	
DEPOSIT 0	READY	200	0	-1	READY	200	0	-1	
WITHDRAW 190	OVERDRAWN	-10	0	0	OVERDRAWN	-10	0	0	
DEPOSIT 0	OVERDRAWN	-10	0	-1	OVERDRAWN	-10	0	-1	
WITHDRAW 50	OVERDRAWN	-10	0	-1	OVERDRAWN	-10	0	-1	
WITHDRAW -10	OVERDRAWN	-10	0	-1	OVERDRAWN	-10	0	-1	

As from the above table we can see that expected results are matched with produced result. Hence the test case is **PASSED**.

LIST OF FAILED TEST CASES

TESTCASE#1

INCORRECT PRODUCED OUTPUT AND EXPECTED CORRECT OUTPUT

Function Called	Transition	Expected Result				Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
OPEN 100 123 200	T1	IDLE	200	0	IDLE	200	0
LOGIN 150	T7	IDLE	200	0	IDLE	200	0
LOGIN 140	T7	IDLE	200	0	IDLE	200	0
LOGIN 100	T2	CHECK PIN	200	0	CHECK PIN	200	0
PIN 1	T3	CHECK PIN	200	1	CHECK PIN	200	1
PIN 2	T3	CHECK PIN	200	2	CHECK PIN	200	2
PIN 3	T6	IDLE	200	2	IDLE	200	3
LOGIN 150	T7	IDLE	200	2	IDLE	200	3
LOGIN 100	T2	CHECK PIN	200	0	CHECK PIN	200	0
LOGOUT	T5	IDLE	200	0	IDLE	200	0
LOGIN 140	T7	IDLE	200	0	IDLE	200	0
LOGIN 100	T2	CHECK PIN	200	0	CHECK PIN	200	0
PIN 123	T18	READY	200	0	READY	200	0
BALANCE	T13	READY	200	0	READY	200	0
BALANCE	T13	READY	200	0	READY	200	0
DEPOSIT 50	T12	READY	250	0	READY	250	0
DEPOSIT 50	T12	READY	300	0	READY	300	0
LOCK 321	T4	LOCKED	300	0	LOCKED	300	0
BALANCE	T15	LOCKED	300	0	LOCKED	300	0
BALANCE	T15	LOCKED	300	0	LOCKED	300	0

Function Called	Transition	Expected Result			Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
UNLOCK 321	T17	READY	300	0	READY	300	0
LOCK 321	T4	LOCKED	300	0	LOCKED	300	0
UNLOCK 321	T17	READY	300	0	READY	300	0
BALANCE	T13	READY	300	0	READY	300	0
WITHDRAW 10	T11	READY	290	0	READY	290	0
WITHDRAW 10	T11	READY	280	0	READY	280	0
BALANCE	T13	READY	280	0	READY	280	0
WITHDRAW 100	T14	OVERDRAWN	160	0	OVERDRAWN	160	0
LOCK 321	T20	LOCKED	160	0	LOCKED	160	0
BALANCE	T15	LOCKED	160	0	LOCKED	160	0
UNLOCK 321	T19	OVERDRAWN	160	0	OVERDRAWN	160	0
BALANCE	T22	OVERDRAWN	160	0	OVERDRAWN	160	0
BALANCE	T22	OVERDRAWN	160	0	OVERDRAWN	160	0
DEPOSIT 20	T21	OVERDRAWN	170	0	OVERDRAWN	160	0
BALANCE	T22	OVERDRAWN	170	0	OVERDRAWN	160	0
LOCK 321	T20	LOCKED	170	0	LOCKED	160	0
UNLOCK 321	T19	OVERDRAWN	170	0	OVERDRAWN	160	0

Function Called	Transition	Expected Result			Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
BALANCE	T22	OVERDRAWN	170	0	OVERDRAWN	160	0
DEPOSIT 100	T16	READY	270	0	READY	260	0
BALANCE	T13	READY	270	0	READY	260	0
LOGOUT	T10	IDLE	270	0	IDLE	260	0
LOGIN 140	T7	IDLE	270	0	IDLE	260	0

As from the above table we can see that expected results are not matched with produced result. Hence the test case is **FAILED**. The contradicting operations are highlighted in RED color in the above table. The transition *T6* and *T21* have bug in the source code. The cause of failure is given later in this report in the section of Cause of Failure.

TESTCASE#2

INCORRECT PRODUCED OUTPUT AND EXPECTED CORRECT OUTPUT

Function Called	Transition	Expected Result			Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
OPEN 100 123 190	T1	IDLE	190	0	IDLE	190	0
LOGIN 100	T2	CHECK PIN	190	0	CHECK PIN	190	0
PIN 123	T8	OVERDRAWN	190	0	OVERDRAWN	190	0
BALANCE	T22	OVERDRAWN	190	0	OVERDRAWN	190	0
LOGOUT	T9	IDLE	190	0	IDLE	190	0
LOGIN 135	T7	IDLE	190	0	IDLE	190	0

Function Called	Transition	Expected Result				Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt		State After Transition	Balance	No. of Unsuccessful Attempt
LOGIN 100	T2	CHECK PIN	190	0		CHECK PIN	190	0
PIN 123	T8	OVERDRAWN	190	0		OVERDRAWN	190	0
DEPOSIT 10	T21	OVERDRAWN	190	0		READY	200	0
DEPOSIT 10	T21	OVERDRAWN	190	0		READY	210	0
LOCK 321	T20	LOCKED	190	0		LOCKED	210	0
UNLOCK 321	T19	OVERDRAWN	190	0		READY	210	0
DEPOSIT 10	T21	OVERDRAWN	190	0		READY	220	0
DEPOSIT 100	T16	READY	290	0		READY	320	0
WITHDRAW 100	T14	OVERDRAWN	170	0		READY	220	0
BALANCE	T22	OVERDRAWN	170	0		READY	220	0
LOGOUT	T9	IDLE	170	0		IDLE	220	0
LOGIN 100	T2	CHECK PIN	170	0		CHECK PIN	220	0
PIN 1	T3	CHECK PIN	170	0		CHECK PIN	220	1
LOGOUT	T5	IDLE	170	0		IDLE	220	1
LOGIN 100	T2	CHECK PIN	170	0		CHECK PIN	220	0
PIN 2	T3	CHECK PIN	170	1		CHECK PIN	220	1
PIN 2	T3	CHECK PIN	170	2		CHECK PIN	220	2
PIN 2	T6	IDLE	170	2		IDLE	220	3
LOGIN 100	T2	CHECK PIN	170	0		CHECK PIN	220	0

Function Called	Transition	Expected Result				Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt		State After Transition	Balance	No. of Unsuccessful Attempt
PIN 2	T3	CHECK PIN	170	1		CHECK PIN	220	1
PIN 123	T8	OVERDRAWN	170	1		READY	220	1
LOCK 321	T20	LOCKED	170	1		LOCKED	220	1
UNLOCK 321	T19	OVERDRAWN	170	1		READY	220	1
LOCK 321	T20	LOCKED	170	1		LOCKED	220	1
UNLOCK 321	T19	OVERDRAWN	170	1		READY	220	1
DEPOSIT 10	T21	OVERDRAWN	170	1		READY	230	1
LOGOUT	T9	IDLE	170	1		IDLE	230	1

As from the above table we can see that expected results are not matched with produced result. Hence the test case is **FAILED**. The contradicting operations are highlighted in RED color in the above table. The transition *T6* and *T21* have bug in the source code. The cause of failure is given later in this report in the section of Cause of Failure.

TESTCASE#3

INCORRECT PRODUCED OUTPUT AND EXPECTED CORRECT OUTPUT

Function Called	Transition	Expected Result				Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt		State After Transition	Balance	No. of Unsuccessful Attempt
OPEN 100 123 190	T1	IDLE	190	0		IDLE	190	0
LOGIN 100	T2	CHECK PIN	190	0		CHECK PIN	190	0
PIN 123	T8	OVERDRAWN	190	0		OVERDRAWN	190	0

Function Called	Transition	Expected Result				Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
DEPOSIT 100	T16	READY	290	0	READY	290	0
LOGOUT	T10	IDLE	290	0	IDLE	290	0
LOGIN 100	T2	CHECK PIN	290	0	CHECK PIN	290	0
PIN 2	T3	CHECK PIN	290	1	CHECK PIN	290	1
PIN 123	T18	READY	290	1	READY	290	1
WITHDRAW 100	T14	OVERDRAWN	170	1	OVERDRAWN	170	1
DEPOSIT 10	**T21**	**OVERDRAWN**	**170**	**1**	**OVERDRAWN**	**160**	**1**
LOCK 321	T20	LOCKED	170	1	LOCKED	160	1
UNLOCK 321	T19	OVERDRAWN	170	1	OVERDRAWN	160	1
DEPOSIT 100	T16	READY	270	1	READY	260	1
DEPOSIT 10	T12	READY	280	1	READY	270	1
BALANCE	T13	READY	280	1	READY	270	1
LOCK 321	T4	LOCKED	280	1	LOCKED	270	1
UNLOCK 321	T17	READY	280	1	READY	270	1
WITHDRAW 100	T14	OVERDRAWN	160	1	OVERDRAWN	150	1
DEPOSIT 100	T16	READY	260	1	READY	250	1
WITHDRAW 10	T11	READY	250	1	READY	240	1

Function Called	Transition	Expected Result			Produced Result		
		State After Transition	Balance	No. of Unsuccessful Attempt	State After Transition	Balance	No. of Unsuccessful Attempt
DEPOSIT 10	T12	READY	260	1	READY	250	1
WITHDRAW 10	T11	READY	250	1	READY	240	1
LOCK 321	T4	LOCKED	250	1	LOCKED	240	1
UNLOCK 321	T17	READY	250	1	READY	240	1
DEPOSIT 10	T12	READY	260	1	READY	250	1
WITHDRAW 100	T14	OVERDRAWN	140	1	OVERDRAWN	130	1
LOGOUT	T9	IDLE	140	1	IDLE	130	1
LOGIN 100	T2	CHECK PIN	140	0	CHECK PIN	130	0
PIN 123	T8	OVERDRAWN	140	0	OVERDRAWN	130	0
LOGOUT	T9	IDLE	140	0	IDLE	130	0

As from the above table we can see that expected results are not matched with produced result. Hence the test case is **FAILED**. The contradicting operations are highlighted in RED color in the above table. The transition *T6* and *T21* have bug in the source code. The cause of failure is given later in this report in the section of Cause of Failure.

CAUSE OF FAILURE

TRANSITION – *T6*

According to given Figure 1: EFSM of *Account* class T6 will be executed if number of unsuccessful login attempts is 2. It will be moved to IDLE state, so the number of unsuccessful attempts will be 2 after this transition but in the given code it is being incremented always if given pin is incorrect. EFSM figure does not mention about incrementing number of attempts in transition T6. The below code is for *pin()* method from *account* class.

```java
/**
 * provides pin # (parameter x)
 *
 * @param x PIN
 * @return the value returned by the method 0 --> Successful, -1 --> ERROR
 */
public final int pin(int x) {
    if (x4 != 1) { // Check if the current state is CHECK PIN
        return -1;
    }
    if (x == x3) {
        x4 = 2;
        return 0;
    } else {
        x9++;
    }
    if (x9 >= x0) {
        x4 = 0;
    }
    return -1;
}
```

Figure 3: *pin()* **method from** *account* **class**

TRANSITION – *T21*

According to given Figure 1: EFSM of *Account* class T21 will be executed if it is already in OVERDRAWN state while depositing an amount such that after deposit the final balance will be less than $200. In such situation a $10 fee will be imposed but in the given code a $20 fee (stored in constant variable named *x6*) has been imposed here. The below code is for *variable declaration of x6, account() constructor* for variable initialization with $20 fee and *deposit()* method of account class and the portion of the and the line is highlighted that has the bug.

```java
/**
 * Transaction Fee
 */
private int x6;
```

Figure 4:Variable declaration of *x6*

```
/**
 * Constructor for parameters initialization
 */
public account() {
    x2 = 0;
    x4 = -1;
    x6 = 20;
    x7 = 200;
    x9 = 0;
    x0 = 3;
}
```

Figure 5: *account()* constructor for variable initialization with $20 fee

```
/**
 * deposits amount d to the account
 *
 * @param d Amount to deposit
 * @return the value returned by the method 0 --> Successful, -1 --> ERROR
 */
public final int deposit(int d) {
    if (x4 != 2) {
        return -1;
    }
    if (x2 == 1) {
        return -1;
    }
    ;
    if ((x1 + d < x7) && (d > 0)) {
        x1 = x1 + d - x6; // TODO BUG
        return 0;
    } else {
        if (d > 0) {
            x1 = x1 + d;
            return 0;
        }
    }
    return -1;
}
```

Figure 6: *deposit()* method of *account* class

INSTRUCTION TO EXECUTE TEST CASES

The submission is given as zip file named "CS589ProjectSubmission_Sukanta.zip". After extracting the zip, there are 6 items in the folder:

- Account class   →   account.java
- Driver class   →   TestDriver.java
- Test suit   →   TS.txt
- Test suite checker   →   test_suite_checker.exe
- Test Executable jar file   →   TestDriver_Sukanta.jar
- Test Executable exe file   →   TestDriver_Sukanta.exe
- Project Report   →   Project_Report_Sukanta.pdf

MINIMUM SYSTEM REQUIREMENT

To run the test, suit a system is required with JRE installed of minimum version of JRE SE 1.7.0.

VALIDATE TEST SUITE

To validate the test case run "test_suite_checker.exe" and press enter key to continue. It will verify the test suit and if there are no error exits, we can proceed with testing.
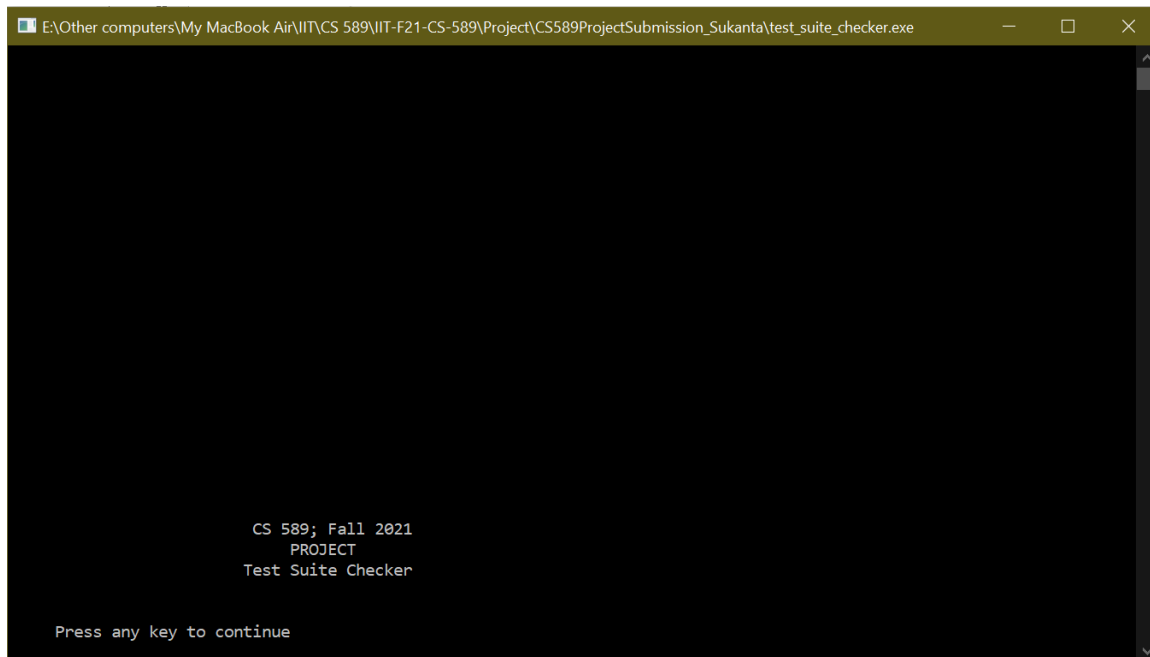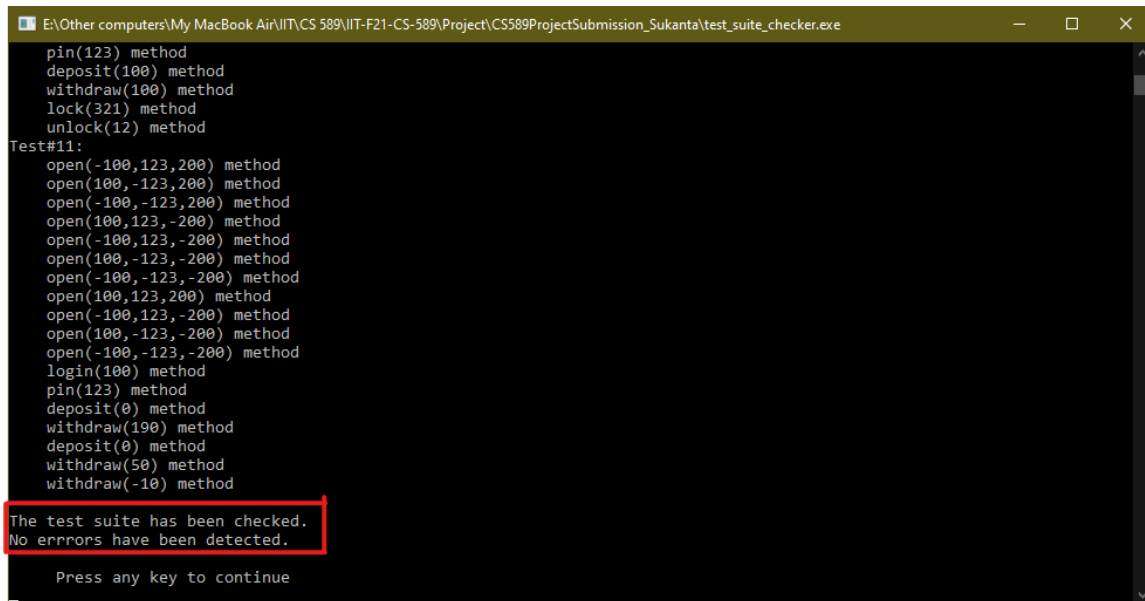
Figure 7:Test suite checker

Figure 8: Test suite checker with no errors detected

There are no errors in the test suit, so we can start with testing.

EXECUTION ON WINDOWS SYSTEM
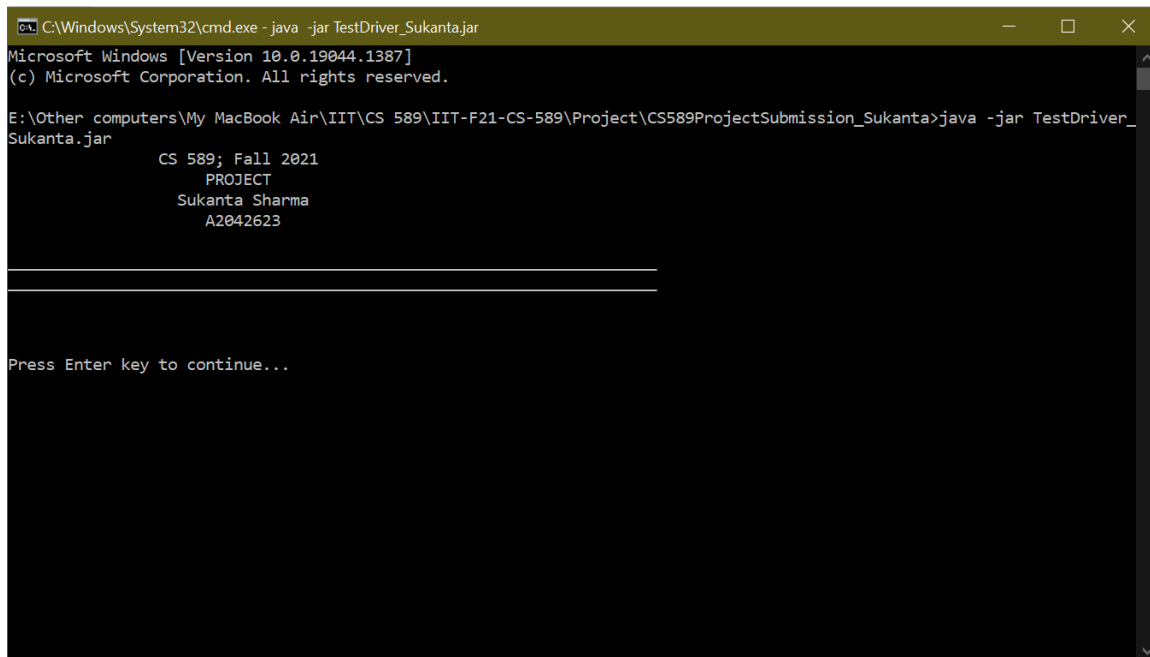
The test driver can be run on Windows machine using the following method:

1. Open command prompt in the folder location and execute the following command

   "java –jar TestDriver_Sukanta.jar"

Figure 9:Run Executable JAR file in Windows

2.   Run "TestDriver_Sukanta.exe"

Figure 10: Run executable exe file in Windows

Press enter key to continue.
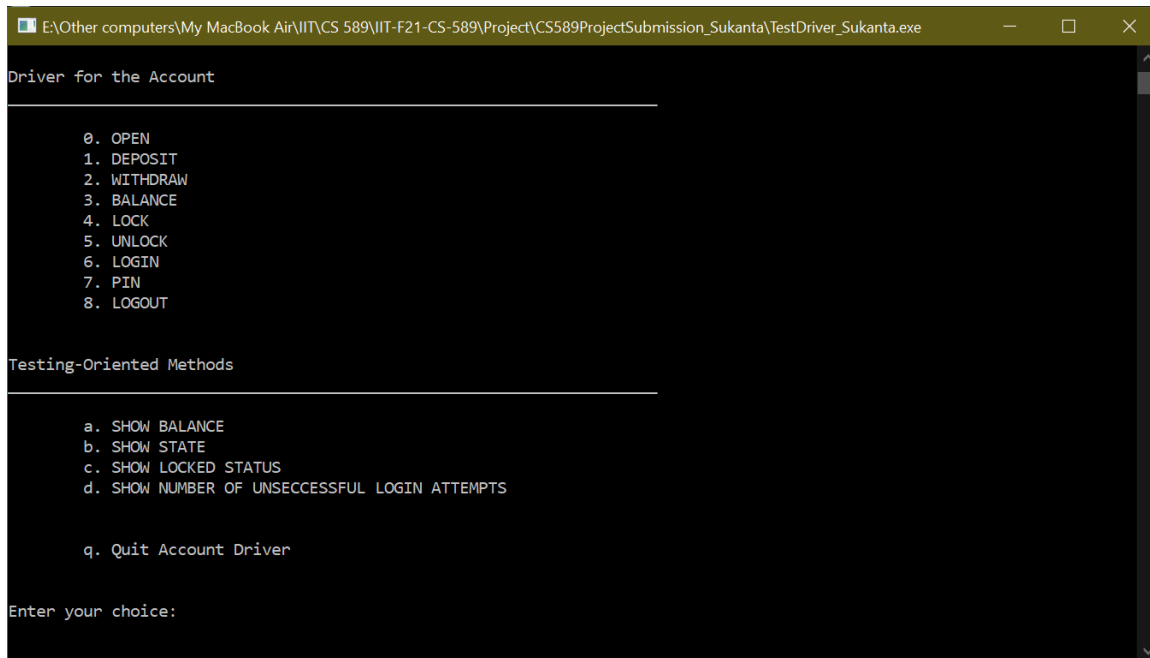
Figure 11: Test Environment Menu in Windows

EXECUTION ON MAC/NON-WINDOWS SYSTEM

Open terminal in the same folder and run the following command

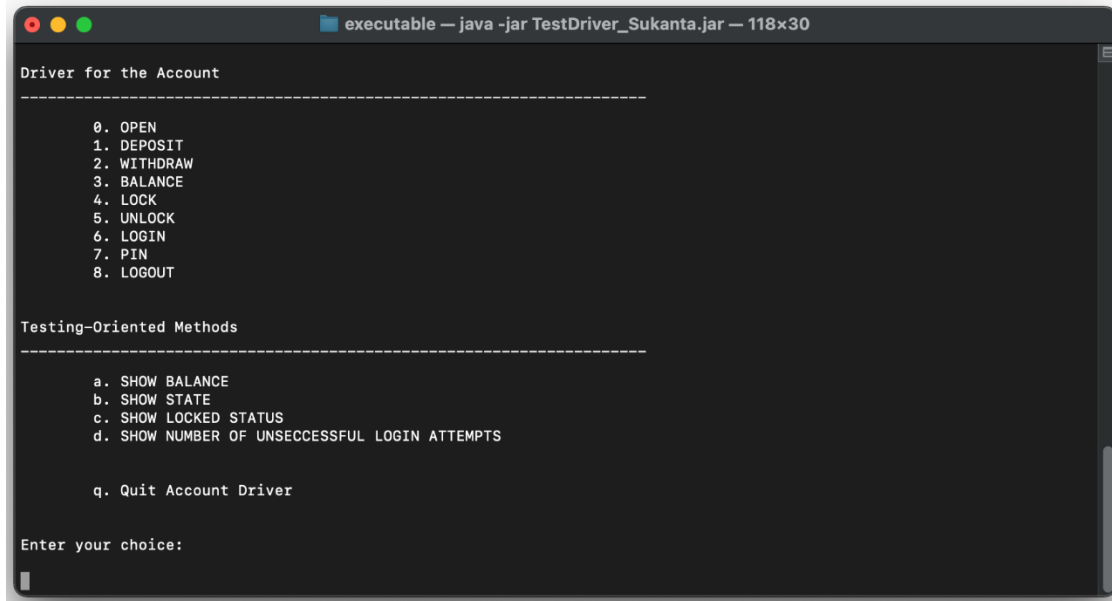*"java –jar TestDriver_Sukanta.jar"*
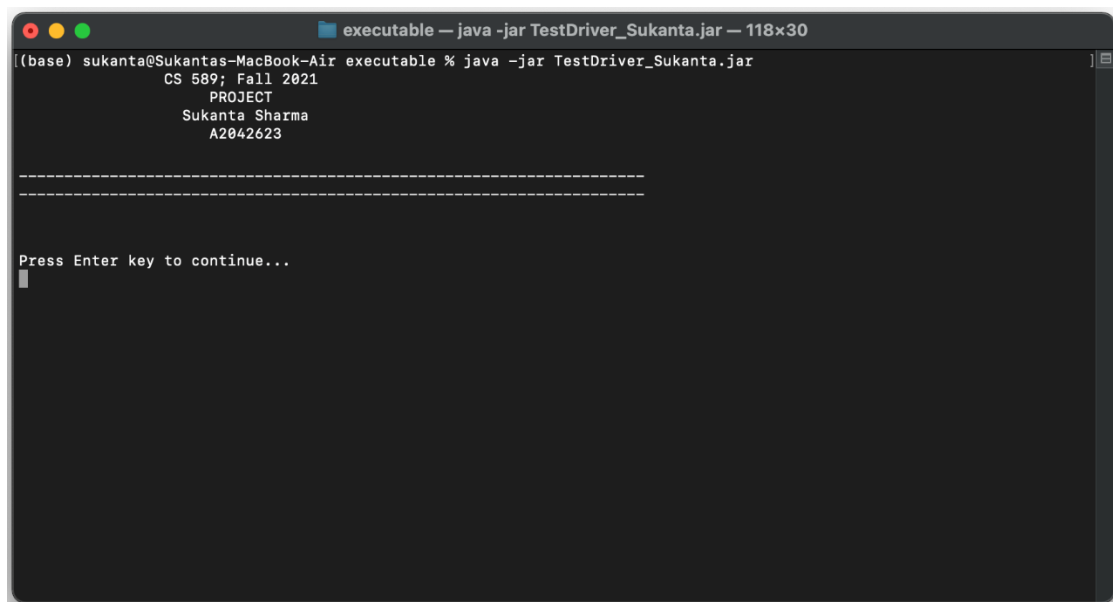
Figure 12:Run executable JAR in MAC

Press enter key to continue

Figure 13:Test environment menu in MAC

CONCLUSION AND FUTURE SCOPE

The implementation of testing environment was second most time-consuming part after the test case writing. Testing-oriented methods helped me to get the values of variables at any given point in time. The environment gives the performed test case and results at each step. This part we have semi-automated to speed up with the testing and verification part. To automate more, we can create a data set with operation and expected results and we can design a testing environment such that it accepts the given dataset as input, and it can compare the produced results with the given expected results and prompt for failed/passed test cases. Although, we need to still investigate the code to detect and fix the bug if any.

********   END OF REPORT ********