

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:

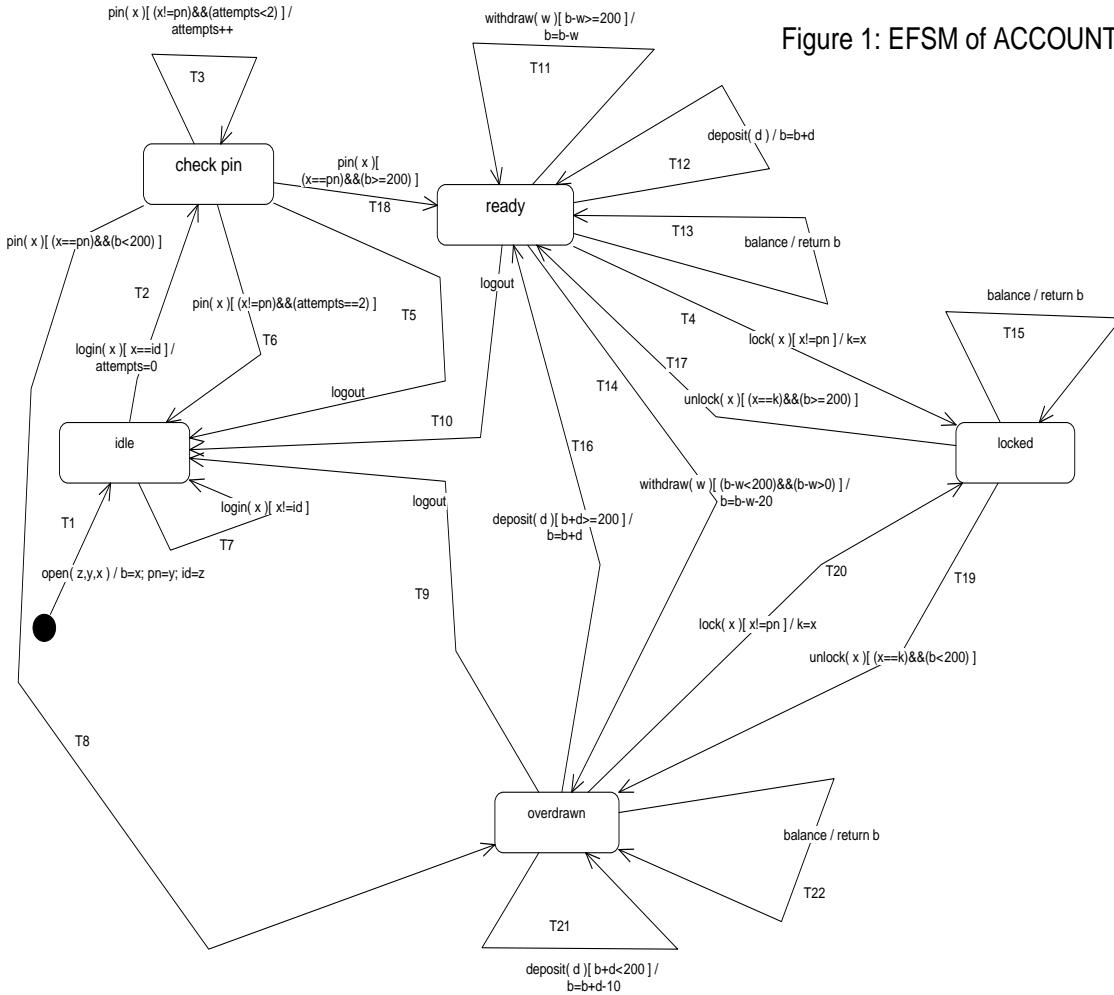


Figure 1: EFSM of ACCOUNT

Figure 1: EFSM of *Account* class

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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
```

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```
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
```

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```
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.

DESCRIPTION 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).

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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
<code>account()</code>	Constructor
<code>int open(int z, int y, int x)</code>	Sets balance to the value of x, pin number to the value of y, and an account # to the value of z
<code>int login(int x)</code>	Allows to login to the account, where x is an account #
<code>int logout()</code>	Allows to logout from the account
<code>int pin(int x)</code>	Provides pin # (parameter x)
<code>int deposit (int d)</code>	Deposits amount d to the account
<code>int withdraw (int w)</code>	Withdraws amount w from the account
<code>int balance ()</code>	Returns the value of the account balance
<code>int lock (int x)</code>	Locks an account where x is the lock #
<code>int unlock (int x)</code>	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 `getNumberofUnsuccessfulLoginAttempts()`. 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:

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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

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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

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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

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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:

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DEFAULT TRANSITION FOR IDLE STATE

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

DEFAULT TRANSITION FOR CHECK PIN STATE

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

DEFAULT TRANSITION FOR READY STATE

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

DEFAULT TRANSITION FOR OVERDRAWN STATE

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

DEFAULT TRANSITION FOR LOCKED STATE

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

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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	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()

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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)*

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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)*

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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

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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 $(x4 == 0) \rightarrow True$ and $(x2 == 1) \rightarrow False$ 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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](#). The test cases are given as below:

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 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 12 pin 123 lock 321 unlock 321 unlock 321

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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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TEST SUITE VERIFICATION

The test suite provided in “*TS.txt*” file is verified as syntax and error free. The output of the test suite checker on this file is given below:

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PROJECT

Test Suite Checker

Press any key to continue

Test#1:

```
open(100,123,200) method
login(150) method
login(140) method
login(100) method
pin(1) method
pin(2) method
pin(3) method
login(150) method
login(100) method
logout() method
login(140) method
login(100) method
pin(123) method
balance() method
balance() method
deposit(50) method
deposit(50) method
lock(321) method
balance() method
balance() method
```

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```
unlock(321) method  
lock(321) method  
unlock(321) method  
balance() method  
withdraw(10) method  
withdraw(10) method  
balance() method  
withdraw(100) method  
lock(321) method  
balance() method  
unlock(321) method  
balance() method  
balance() method  
deposit(20) method  
balance() method  
lock(321) method  
unlock(321) method  
balance() method  
deposit(100) method  
balance() method  
logout() method  
login(140) method
```

Test#2:

```
open(100,123,190) method  
login(100) method  
pin(123) method  
balance() method  
logout() method  
login(135) method  
login(100) method  
pin(123) method  
deposit(10) method  
deposit(10) method  
lock(321) method
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

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```
unlock(321) method
deposit(10) method
deposit(100) method
withdraw(100) method
balance() method
logout() method
login(100) method
pin(1) method
logout() method
login(100) method
pin(2) method
pin(2) method
pin(2) method
login(100) method
pin(2) method
pin(123) method
lock(321) method
unlock(321) method
lock(321) method
unlock(321) method
deposit(10) method
logout() method
```

Test#3:

```
open(100,123,190) method
login(100) method
pin(123) method
deposit(100) method
logout() method
login(100) method
pin(2) method
pin(123) method
withdraw(100) method
deposit(10) method
lock(321) method
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
unlock(321) method  
deposit(100) method  
deposit(10) method  
balance() method  
lock(321) method  
unlock(321) method  
withdraw(100) method  
deposit(100) method  
withdraw(10) method  
deposit(10) method  
withdraw(10) method  
lock(321) method  
unlock(321) method  
deposit(10) method  
withdraw(100) method  
logout() method  
login(100) method  
pin(123) method  
logout() method
```

Test#4:

```
open(100,123,190) method  
login(100) method  
pin(123) method  
logout() method
```

Test#5:

```
open(100,123,300) method  
login(100) method  
pin(123) method  
lock(321) method  
unlock(321) method  
withdraw(10) method  
withdraw(100) method  
deposit(100) method  
lock(321) method
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
unlock(321) method  
logout() method  
login(100) method  
pin(123) method  
deposit(10) method  
logout() method  
login(100) method  
pin(123) method  
withdraw(10) method  
logout() method  
login(100) method  
pin(123) method  
logout() method
```

Test#6:

```
open(100,123,200) method  
open(100,123,200) method  
logout() method  
pin(123) method  
deposit(100) method  
withdraw(100) method  
balance() method  
lock(321) method  
unlock(321) method
```

Test#7:

```
open(100,123,200) method  
login(100) method  
open(-100,123,200) method  
login(100) method  
deposit(100) method  
withdraw(100) method  
balance() method  
lock(321) method  
unlock(12) method  
pin(123) method
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
lock(321) method
```

```
unlock(321) method
```

```
unlock(321) method
```

Test#8:

```
open(100,123,200) method
```

```
login(100) method
```

```
pin(123) method
```

```
open(100,-123,200) method
```

```
login(100) method
```

```
pin(123) method
```

```
withdraw(0) method
```

```
lock(123) method
```

```
unlock(123) method
```

Test#9:

```
open(100,123,190) method
```

```
login(100) method
```

```
pin(123) method
```

```
open(-100,-123,200) method
```

```
login(100) method
```

```
pin(123) method
```

```
withdraw(100) method
```

```
lock(123) method
```

```
unlock(321) method
```

Test#10:

```
open(100,123,190) method
```

```
login(100) method
```

```
pin(123) method
```

```
lock(321) method
```

```
open(100,123,-200) method
```

```
login(100) method
```

```
logout() method
```

```
pin(123) method
```

```
deposit(100) method
```

```
withdraw(100) method
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
lock(321) method  
unlock(12) method  
Test#11:  
open(-100,123,200) method  
open(100,-123,200) method  
open(-100,-123,200) method  
open(100,123,-200) method  
open(-100,123,-200) method  
open(100,-123,-200) method  
open(-100,-123,-200) method  
open(100,123,200) method  
open(-100,123,-200) method  
open(100,-123,-200) method  
open(-100,-123,-200) method  
login(100) method  
pin(123) method  
deposit(0) method  
withdraw(190) method  
deposit(0) method  
withdraw(50) method  
withdraw(-10) method
```

The test suite has been checked.

No errors have been detected.

Press any key to continue

SOURCE CODE

Source code of account class has not been changed at all. Although, some testing oriented methods and comments added for better readability.

TESTDRIVER.JAVA

```
1 /**
2  * 
3  */
4 /**
5  * @author sukanta
6  *
7  */
8 /**
9  * 
10 */
11 import java.util.Scanner;
12 import java.util.ArrayList;
13
14 enum LockedStatus {
15     LOCKED, UNLOCKED
16 }
17
18 enum State {
19     START, IDLE, CHECK_PIN, READY, LOCKED, OVERDRAWN
20 }
21
22 enum TestDriverMethod {
23     OPEN, DEPOSIT, WITHDRAW, BALANCE, LOCK, UNLOCK, LOGIN, PIN, LOGOUT
24 }
25
26 enum TestingOrientedMethod {
27     SHOW_BALANCE, SHOW_STATE, SHOW_LOCKED_STATUS,
28     SHOW_NUMBER_OF_UNSECESSFUL_LOGIN_ATTEMPTS
29     // SHOW_TRANSITION
30 }
31 /**
32 * Driver Class for the Account Class
33 *
34 * @author sukanta
35 */
36 public class TestDriver {
37
38     private static final String strLine =
39     "____________________________________";
40     private static final int NUMBER_OF_NEW_LINES = 30;
41     private static Scanner scanner = new Scanner(System.in);
42
43     /**
44      * Main Method
45      *
46      * @param args
47      */
48     public static void main(String[] args) {
49         // TODO Auto-generated method stub
50
51         String choice = "";
52         TestDriverMethod currentMethodCalled = null;
53         TestingOrientedMethod currentTestingOrientedMethodCalled = null;
54         // ArrayList<String> methodsCalled = new ArrayList<String>();
55         String parameters = "";
56         int returnedValue = -2;
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

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```
56
57     account acc = new account();
58
59     // show welcome message
60     // TODO uncomment
61     showWelcomeMessage();
62
63     // show menu
64     do {
65         choice = showMenu();
66         System.out.println("\nYour choice is : " + choice);
67         currentMethodCalled = null;
68         currentTestingOrientedMethodCalled = null;
69         parameters = "";
70         returnedValue = -2;
71
72         int accountNumber;
73         int pin;
74         int balance;
75         int amount;
76         int lockNumber;
77
78         switch (choice) {
79             case "0": // OPEN
80                 currentMethodCalled = TestDriverMethod.OPEN;
81                 printCurrentMethodInfo(currentMethodCalled,
currentTestingOrientedMethodCalled);
82                 accountNumber = getInputFromUser("Enter Account#");
83                 pin = getInputFromUser("Enter PIN");
84                 balance = getInputFromUser("Enter initial balance");
85                 returnedValue = acc.open(accountNumber, pin, balance);
86                 parameters = String.format("%d %d %d", accountNumber, pin, balance);
87                 System.out.println(String.format("\n\t\tThe value returned by the
method is: %d (%s)\n", returnedValue,
                                         (returnedValue != -1) ? "SUCCESS" : "FAILED"));
88                 pressEnterKeyToContinue();
89                 break;
90
91             case "1": // DEPOSIT
92                 currentMethodCalled = TestDriverMethod.DEPOSIT;
93                 printCurrentMethodInfo(currentMethodCalled,
currentTestingOrientedMethodCalled);
94                 amount = getInputFromUser("Enter Deposit Amount");
95                 returnedValue = acc.deposit(amount);
96                 parameters = String.format("%d", amount);
97                 System.out.println(String.format("\n\t\tThe value returned by the
method is: %d (%s)\n", returnedValue,
                                         (returnedValue != -1) ? "SUCCESS" : "FAILED"));
98                 pressEnterKeyToContinue();
99                 break;
100
101             case "2": // WITHDRAW
102                 currentMethodCalled = TestDriverMethod.WITHDRAW;
103                 printCurrentMethodInfo(currentMethodCalled,
currentTestingOrientedMethodCalled);
104                 amount = getInputFromUser("Enter Withdraw Amount");
105                 returnedValue = acc.withdraw(amount);
106                 parameters = String.format("%d", amount);
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

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```
109 |             System.out.println(String.format("\n\t\tThe value returned by the
method is: %d (%s)\n", returnedValue,
110 |                     (returnedValue != -1) ? "SUCCESS" : "FAILED"));
111 |         pressEnterKeyToContinue();
112 |     break;
113 |
114 |     case "3": // BALANCE
115 |         currentMethodCalled = TestDriverMethod.BALANCE;
116 |         printCurrentMethodInfo(currentMethodCalled,
currentTestingOrientedMethodCalled);
117 |         returnedValue = acc.balance();
118 |         System.out.println(String.format("\n\t\tThe value returned by the
method is: Balance = %d (%s)\n",
119 |                     returnedValue, (returnedValue != -1) ? "SUCCESS" : "FAILED")));
120 |         pressEnterKeyToContinue();
121 |     break;
122 |
123 |     case "4": // LOCK
124 |         currentMethodCalled = TestDriverMethod.LOCK;
125 |         printCurrentMethodInfo(currentMethodCalled,
currentTestingOrientedMethodCalled);
126 |         lockNumber = getInputFromUser("Enter Lock#");
127 |         returnedValue = acc.lock(lockNumber);
128 |         parameters = String.format("%d", lockNumber);
129 |         System.out.println(String.format("\n\t\tThe value returned by the
method is: %d (%s)\n", returnedValue,
130 |                     (returnedValue != -1) ? "SUCCESS" : "FAILED"));
131 |         pressEnterKeyToContinue();
132 |     break;
133 |
134 |     case "5": // UNLOCK
135 |         currentMethodCalled = TestDriverMethod.UNLOCK;
136 |         printCurrentMethodInfo(currentMethodCalled,
currentTestingOrientedMethodCalled);
137 |         lockNumber = getInputFromUser("Enter Lock#");
138 |         returnedValue = acc.unlock(lockNumber);
139 |         parameters = String.format("%d", lockNumber);
140 |         System.out.println(String.format("\n\t\tThe value returned by the
method is: %d (%s)\n", returnedValue,
141 |                     (returnedValue != -1) ? "SUCCESS" : "FAILED"));
142 |         pressEnterKeyToContinue();
143 |     break;
144 |
145 |     case "6": // LOGIN
146 |         currentMethodCalled = TestDriverMethod.LOGIN;
147 |         printCurrentMethodInfo(currentMethodCalled,
currentTestingOrientedMethodCalled);
148 |         accountNumber = getInputFromUser("Enter Account#");
149 |         returnedValue = acc.login(accountNumber);
150 |         parameters = String.format("%d", accountNumber);
151 |         System.out.println(String.format("\n\t\tThe value returned by the
method is: %d (%s)\n", returnedValue,
152 |                     (returnedValue != -1) ? "SUCCESS" : "FAILED"));
153 |         pressEnterKeyToContinue();
154 |     break;
155 |
156 |     case "7": // PIN
157 |         currentMethodCalled = TestDriverMethod.PIN;
158 |         printCurrentMethodInfo(currentMethodCalled,
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

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```
159     currentTestingOrientedMethodCalled);
160         pin = getInputFromUser("Enter PIN");
161         returnedValue = acc.pin(pin);
162         parameters = String.format("%d", pin);
163         System.out.println(String.format("\n\t\tThe value returned by the
method is: %d (%s)\n", returnedValue,
164             (returnedValue != -1) ? "SUCCESS" : "FAILED"));
165         pressEnterKeyToContinue();
166         break;
167
168     case "8": // LOGOUT
169         currentMethodCalled = TestDriverMethod.LOGOUT;
170         printCurrentMethodInfo(currentMethodCalled,
171         currentTestingOrientedMethodCalled);
172         returnedValue = acc.logout();
173         System.out.println(String.format("\n\t\tThe value returned by the
method is: %d (%s)\n", returnedValue,
174             (returnedValue != -1) ? "SUCCESS" : "FAILED"));
175         pressEnterKeyToContinue();
176         break;
177
178     case "a": // SHOW BALANCE
179         currentTestingOrientedMethodCalled =
TestingOrientedMethod.SHOW_BALANCE;
180         printCurrentMethodInfo(currentMethodCalled,
181         currentTestingOrientedMethodCalled);
182         System.out.println(String.format("\n\t\tBalance: %d",
acc.show_balance()));
183         pressEnterKeyToContinue();
184         break;
185
186     case "b": // SHOW STATE
187         currentTestingOrientedMethodCalled = TestingOrientedMethod.SHOW_STATE;
188         printCurrentMethodInfo(currentMethodCalled,
189         currentTestingOrientedMethodCalled);
190         System.out.println(String.format("\n\t\tState: %s",
acc.getCurrentState().replace(" ", " ")));
191         pressEnterKeyToContinue();
192         break;
193
194     case "c": // SHOW LOCKED STATUS
195         currentTestingOrientedMethodCalled =
TestingOrientedMethod.SHOW_LOCKED_STATUS;
196         printCurrentMethodInfo(currentMethodCalled,
197         currentTestingOrientedMethodCalled);
198         System.out.println(String.format("\n\t\tLocked Status: %s",
acc.getLockedStatus().replace(" ", " ")));
199         pressEnterKeyToContinue();
200         break;
201
202     case "d": // SHOW NUMBER OF UNSUCCESSFUL LOGIN ATTEMPTS
203         currentTestingOrientedMethodCalled =
TestingOrientedMethod.SHOW_NUMBER_OF_UNSECCESFUL_LOGIN_ATTEMPTS;
204         printCurrentMethodInfo(currentMethodCalled,
205         currentTestingOrientedMethodCalled);
206         System.out.println(String.format("\n\t\tNumber of Unsuccessful Login
Attempts: %d",
acc.getNumbeOfUnsuccessfulLoginAttempts()));
207         pressEnterKeyToContinue();
208         break;
```

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```
204
205     default:
206         break;
207     }
208
209     TestSuiteData.add(currentMethodCalled, parameters, acc.getCurrentState(),
acc.show_balance(),
210                         acc.getNumbeOfUnsuccessfulLoginAttempts(), returnedValue);
211
212     } while (!choice.equals("q"));
213
214     System.out.println("Quitting Account Driver...");
215     System.out.println(strLine + "\n\tTHANK YOU!!!\n" + strLine);
216     System.out.println(String.format("\n\n\tTest Case Performed:\n%s",
TestSuiteData.getTestCase()));
217     System.out.println(
218         String.format("\n\n\tTest Case Performed as function:\n%s",
TestSuiteData.getFunctionTestCase()));
219     System.out.println(String.format("\n%s\n%s", strLine,
TestSuiteData.getResult()));
220   }
221
222 /**
223 * Get Valid User Input
224 *
225 * @param message Message to print for taking input from user
226 * @return Valid User Input
227 */
228 private static int getInputFromUser(String message) {
229   // TODO Auto-generated method stub
230   int data = -1;
231   boolean hasError = false;
232
233   System.out.println(message + ":\n");
234   String input = scanner.nextLine().toLowerCase();
235   do {
236     if (hasError) {
237       System.out.println("Invalid Input!!!");
238       System.out.println("Please try again...");
239       System.out.println(message + ":\n");
240     }
241
242     try {
243       data = Integer.parseInt(input);
244       hasError = false;
245     } catch (Exception e) {
246       hasError = true;
247     }
248   } while (hasError);
249
250   return data;
251 }
252
253 /**
254 * Print Current Invoked Method Information
255 *
256 * @param currentMethodCalled           TestDriverMethod enum value of
257 *                                     current Test Driver Method or null
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
258 * @param currentTestingOrientedMethodCalled TestingOrientedMethod enum value of
259 *                                         current Test-Oriented Method or
260 *                                         null
261 */
262 private static void printCurrentMethodInfo(TestDriverMethod currentMethodCalled,
263 ,                                         TestingOrientedMethod currentTestingOrientedMethodCalled) {
264     // TODO Auto-generated method stub
265     for (int i = 0; i <= NUMBER_OF_NEW_LINES; i++)
266         System.out.println("\n");
267     System.out.println(strLine);
268     if (currentMethodCalled != null) {
269         System.out.println("Class: Account");
270         System.out.println("Type: Class Method");
271         System.out.println("Method: " + currentMethodCalled);
272     }
273
274     if (currentTestingOrientedMethodCalled != null) {
275         System.out.println("Class: Account");
276         System.out.println("Type: Testing - Oriented Method");
277         System.out.println("Method: " + currentTestingOrientedMethodCalled);
278     }
279     System.out.println(strLine + "\n");
280 }
281 /**
282 * Show Menu
283 *
284 * @return Valid choice
285 */
286 private static String showMenu() {
287     // TODO Auto-generated method stub
288     int i = 0;
289     char j = 'a';
290
291     // Show Driver Method for the Account Class
292     System.out.println("\n\nDriver for the Account" + "\n" + strLine + "\n");
293
294     for (TestDriverMethod testDriverMethod : TestDriverMethod.values()) {
295         System.out.println(String.format("\t%d. %s", i++, testDriverMethod));
296     }
297
298     // Show Testing-Oriented Method for Account Class
299     System.out.println("\n\nTesting-Oriented Methods" + "\n" + strLine + "\n");
300     for (TestingOrientedMethod testingOrientedMethod :
301          TestingOrientedMethod.values()) {
302         System.out.println(String.format("\t%c. %s", j++,
303             testingOrientedMethod.replace('_', ' ')));
304     }
305
306     System.out.println(String.format("\n\n\t%c. %s", 'q', "Quit Account Driver"));
307     System.out.println("\n\nEnter your choice:\n");
308
309     String choice = scanner.nextLine().toLowerCase();
310
311     // Validate Input
312     while (!validateInput(choice, i, j)) {
313         System.out.println("\n\nINVALID INPUT!!!");
314         System.out.println("Enter your choice:\n");
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
314         choice = scanner.nextLine().toLowerCase();
315     }
316 
317     return choice;
318 }
319 
320 /**
321 * Validate input of user for choice
322 */
323 private static boolean validateInput(String choice, int i, char j) {
324     // TODO Auto-generated method stub
325     boolean isValidInput = false;
326     int ch = -1;
327     try {
328         ch = Integer.parseInt(choice);
329         isValidInput = (ch >= 0 && ch < i);
330     } catch (Exception e) {
331         if (choice.length() == 1) {
332             char c = choice.charAt(0);
333             isValidInput = (c >= 'a' && c < j) || (c == 'q');
334         }
335     }
336     return isValidInput;
337 }
338 
339 /**
340 * Shows Welcome Message
341 */
342 @SuppressWarnings("unused")
343 private static void showWelcomeMessage() {
344     // TODO Auto-generated method stub
345     System.out.println("\t\tTCS 589; Fall 2021");
346     System.out.println("\t\t\tPROJECT");
347     System.out.println("\t\t\tSukanta Sharma");
348     System.out.println("\t\t\tA2042623");
349     System.out.println("\n" + strLine + "\n" + strLine + "\n\n");
350 
351     pressEnterKeyToContinue();
352 }
353 
354 /**
355 * Press Enter Key to Continue
356 */
357 private static void pressEnterKeyToContinue() {
358     // TODO Auto-generated method stub
359     System.out.println("\nPress Enter key to continue...\"");
360     try {
361         String ip = scanner.nextLine().toLowerCase();
362     } catch (Exception e) {
363     }
364     for (int i = 0; i <= NUMBER_OF_NEW_LINES; i++)
365         System.out.println("\n");
366 }
367 
368 }
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

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```
371 |
372 /**
373 * Responsible for Test Suite Data for Test Case
374 *
375 * @author sukanta
376 */
377 class TestSuiteData {
378     private static StringBuilder testCase;
379     private static StringBuilder result;
380
381     private static ArrayList<String> methodsCalled = new ArrayList<String>();
382     private static ArrayList<String> functionsCalled = new ArrayList<String>();
383     private static ArrayList<String> results = new ArrayList<String>();
384
385     /**
386      * @return the testCase
387     */
388     public static String getTestCase() {
389         testCase = new StringBuilder();
390
391         boolean isFirst = true;
392
393         for (String cur : methodsCalled) {
394             if (isFirst) {
395                 testCase.append(cur);
396                 isFirst = false;
397             } else {
398                 testCase.append(" " + cur);
399             }
400         }
401     }
402
403     return testCase.toString().toLowerCase();
404 }
405
406 /**
407  * @return the testCase as function()
408 */
409 public static String getFunctionTestCase() {
410     testCase = new StringBuilder();
411
412     boolean isFirst = true;
413
414     for (String cur : functionsCalled) {
415         if (isFirst) {
416             testCase.append(cur);
417             isFirst = false;
418         } else {
419             testCase.append(", " + cur);
420         }
421     }
422
423     return testCase.toString().toLowerCase();
424 }
425
426 /**
427 */
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
428     * @return the result
429     */
430    public static String getResult() {
431        result = new StringBuilder();
432
433        boolean isFirst = true;
434
435        for (String cur : results) {
436            if (isFirst) {
437                result.append(cur);
438                isFirst = false;
439            } else {
440                result.append("\n" + cur);
441            }
442
443        }
444
445        return result.toString();
446    }
447
448 /**
449 * Stores called method with parameter for the performed test cases
450 *
451 * @param currentMethodCalled Current Called Method for Test Driver Class
452 * @param parameters          parameters given if any
453 * @param stateAfterTransition State after the transition is done due to the
454 *                             current method called
455 * @param balance              Current Balance
456 * @param stateAfterTransition Number of unsuccessful login attempts
457 * @param returnedValue        Value returned by the account method
458 */
459    public static void add(TestDriverMethod currentMethodCalled, String parameters,
State stateAfterTransition,
460 ,           int balance, int numberUnsuccessfulLoginAttempts, int returnedValue) {
461     // TODO Auto-generated method stub
462     if (currentMethodCalled != null) {
463         String method = String.format("%s%s", currentMethodCalled,
464             (parameters.trim().isEmpty()) ? "" : " " + parameters));
465         String performedResult = String.format("%s,%s,%s,%s,%s", method,
466             stateAfterTransition.toString().replace("_", " "), balance,
467             numberUnsuccessfulLoginAttempts,
468             returnedValue);
469
470         String function = "";
471
472         switch (currentMethodCalled) {
473             case BALANCE:
474                 function = String.format("%s()", currentMethodCalled.toString().toLowerCase());
475                 break;
476             case DEPOSIT:
477             case LOCK:
478             case LOGIN:
479             case PIN:
480             case UNLOCK:
481             case WITHDRAW:
482                 function = String.format("%s(%s)",
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
        currentMethodCalled.toString().toLowerCase(), parameters);
483            break;
484        case OPEN:
485            String param = parameters.replace(" ", ",");
486            function = String.format("%s(%s)",
487                currentMethodCalled.toString().toLowerCase(), param);
488            break;
489        default:
490            break;
491        }
492
493        methodsCalled.add(method);
494        functionsCalled.add(function);
495        results.add(performedResult);
496
497    }
498}
499
500}
```

ACCOUNT.JAVA

```
1 //*****
2 //***** CLASS ACCOUNT *****
3 //*****
4
5 public class account {
6     /**
7      * Maximum Login Attempt
8      */
9     private int x0;
10    /**
11     * Balance
12     */
13    private int x1;
14    /**
15     * Locked Status <br/>
16     * 0 --> UNLOCKED <br/>
17     * 1 --> LOCKED
18     */
19    private int x2;
20    /**
21     * PIN
22     */
23    private int x3;
24    /**
25     * State <br/>
26     * -1 --> START <br/>
27     * 0 --> IDLE <br/>
28     * 1 --> CHECK PIN --> LOGGED IN <br/>
29     * 2 --> x2(LOCKED STATUS) = 1 --> LOCKED <br/>
30     * x1(Balance) < x7(Minimum Balance) --> OVERDRAWN <br/>
31     * otherwise READY
32     */
33    private int x4;
34    /**
35     * Account Number
36     */
37    private int x5;
38    /**
39     * Transaction Fee
40     */
41    private int x6;
42    /**
43     * Minimum Balance
44     */
45    private int x7;
46    /**
47     * Lock Number
48     */
49    private int x8;
50    /**
51     * Number of Unsuccessful Login Attempt
52     */
53    private int x9;
54
55    /**
56     * Shows Balance (Testing-Oriented Method)
57     *
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
58     * @return Current Balance
59     */
60     public final int show_balance() {
61         return x1;
62     } // testing oriented method
63
64     /**
65      * Get Current State (Testing-Oriented Method)
66      *
67      * @return Current State
68      */
69     public final State getCurrentState() {
70         switch (x4) {
71             case -1:
72                 return State.START;
73
74             case 0:
75                 return State.IDLE;
76
77             case 1:
78                 return State.CHECK_PIN;
79
80             case 2:
81                 return (x2 == 1) ? State.LOCKED : ((x1 < x7) ? State.OVERDRAWN :
82             State.READY);
83
84             default:
85                 break;
86         }
87         return null;
88     }
89
90     /**
91      * Get Locked Status (Testing-Oriented Method)
92      *
93      * @return Locked Status
94      */
94     public final LockedStatus getLockedStatus() {
95         return (x2 == 0) ? LockedStatus.UNLOCKED : LockedStatus.LOCKED;
96     }
97
98     /**
99      * Get Number of Unsuccessful Login Attempts (Testing-Oriented Method)
100     *
101     * @return Number of Unsuccessful Login Attempts
102     */
103    public final int getNumbeOfUnsuccessfulLoginAttempts() {
104        return x9;
105    }
106
107    /**
108     * Constructor for parameters initialization
109     */
110    public account() {
111        x2 = 0;
112        x4 = -1;
113        x6 = 20;
114        x7 = 200;
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
115     x9 = 0;
116     x0 = 3;
117 }
118 /**
119 * sets balance to the value of x, pin number to the value of y, and an account
120 * # to the value of z
121 *
122 * @param z Account Number
123 * @param y PIN
124 * @param x Amount
125 * @return the value returned by the method 0 --> Successful, -1 --> ERROR
126 */
127 public final int open(int z, int y, int x) {
128     if ((x > 0) && (x4 == -1) && (y > 0) && (z > 0)) {
129         x1 = x;
130         x3 = y;
131         x5 = z;
132         x4 = 0;
133         return 0;
134     }
135     ;
136     return -1;
137 }
138 /**
139 * provides pin # (parameter x)
140 *
141 * @param x PIN
142 * @return the value returned by the method 0 --> Successful, -1 --> ERROR
143 */
144 public final int pin(int x) {
145     if (x4 != 1) { // Check if the current state is CHECK PIN
146         return -1;
147     }
148     if (x == x3) {
149         x4 = 2;
150         return 0;
151     } else {
152         x9++;
153     }
154     if (x9 >= x0) {
155         x4 = 0;
156     }
157     return -1;
158 }
159 }
160 }
161 /**
162 * allows to logout from the account
163 *
164 * @return the value returned by the method 0 --> Successful, -1 --> ERROR
165 */
166 public final int logout() {
167     if ((x4 == 0) || (x2 == 1)) {
168         return -1;
169     }
170     x4 = 0;
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
172     return 0;
173 }
174
175 /**
176 * allows to login to the account, where x is an account #
177 *
178 * @param x Account Number
179 * @return the value returned by the method 0 --> Successful, -1 --> ERROR
180 */
181 public final int login(int x) {
182     if (x4 != 0) {
183         return -1;
184     }
185     if (x5 == x) {
186         x4 = 1;
187         x9 = 0;
188         return 0;
189     }
190     return -1;
191 }
192
193 /**
194 * returns the value of the account balance
195 *
196 * @return the value of the account balance
197 */
198 public final int balance() {
199     if (x4 != 2) {
200         return -1;
201     }
202     return x1;
203 }
204
205 /**
206 * locks an account where x is the lock #
207 *
208 * @param x Lock Number
209 * @return the value returned by the method 0 --> Successful, -1 --> ERROR
210 */
211 public final int lock(int x) {
212     if (x4 != 2) {
213         return -1;
214     }
215     if (x == x3) {
216         return -1;
217     }
218     if (x2 == 0) {
219         x2 = 1;
220         x8 = x;
221         return 0;
222     } else {
223         return -1;
224     }
225 }
226
227 /**
228 * unlocks an account when x equals to the correct lock #
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
229 |
230 |     *
231 |     * @param x Lock Number
232 |     * @return the value returned by the method 0 --> Successful, -1 --> ERROR
233 |     */
234 |     public final int unlock(int x) {
235 |         if (x4 != 2) {
236 |             return -1;
237 |         }
238 |         if ((x2 == 1) && (x == x8)) {
239 |             x2 = 0;
240 |             return 0;
241 |         } else {
242 |             return -1;
243 |         }
244 |
245 | /**
246 |     * deposits amount d to the account
247 |     *
248 |     * @param d Amount to deposit
249 |     * @return the value returned by the method 0 --> Successful, -1 --> ERROR
250 |     */
251 |     public final int deposit(int d) {
252 |         if (x4 != 2) {
253 |             return -1;
254 |         }
255 |         if (x2 == 1) {
256 |             return -1;
257 |         }
258 |         ;
259 |         if ((x1 + d < x7) && (d > 0)) {
260 |             x1 = x1 + d - x6; // TODO BUG
261 |             return 0;
262 |         } else {
263 |             if (d > 0) {
264 |                 x1 = x1 + d;
265 |                 return 0;
266 |             }
267 |         }
268 |         return -1;
269 |     }
270 |
271 | /**
272 |     * withdraws amount w from the account
273 |     *
274 |     * @param w Amount to withdraw from the account
275 |     * @return the value returned by the method 0 --> Successful, -1 --> ERROR
276 |     */
277 |     public final int withdraw(int w) {
278 |         if (x4 != 2) {
279 |             return -1;
280 |         }
281 |         if (x2 == 1) {
282 |             return -1;
283 |         }
284 |         ;
285 |         if ((x1 > w) && (w > 0)) {
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

```
286 |     if (x1 < x7) {
287 |         return -1;
288 |     } else {
289 |         x1 = x1 - w;
290 |     }
291 | ;
292 |     if (x1 < x7) {
293 |         x1 = x1 - x6;
294 |     }
295 |     return 0;
296 |
297 |     return -1;
298 |
299 |}
```

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
Sukanta Sharma
A2042623

Press Enter key to continue...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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)

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- c. SHOW LOCKED STATUS
- d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

q. Quit Account Driver

Enter your choice:

7

Your choice is : 7

Class: Account
Type: Class Method
Method: PIN

Enter PIN:

2

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

q. Quit Account Driver

Enter your choice:

6

Your choice is : 6

Class: Account
Type: Class Method
Method: LOGIN

Enter Account#:

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

q. Quit Account Driver

Enter your choice:

6

Your choice is : 6

Class: Account
Type: Class Method
Method: LOGIN

Enter Account#:

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

Testing-Oriented Methods

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

- q. Quit Account Driver

Enter your choice:

3

Your choice is : 3

Class: Account
Type: Class Method
Method: BALANCE

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

q. Quit Account Driver

Enter your choice:

4

Your choice is : 4

Class: Account
Type: Class Method
Method: LOCK

Enter Lock#:

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

q. Quit Account Driver

Enter your choice:

5

Your choice is : 5

Class: Account
Type: Class Method
Method: UNLOCK

Enter Lock#:

321

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

q. Quit Account Driver

Enter your choice:

3

Your choice is : 3

Class: Account
Type: Class Method
Method: BALANCE

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

q. Quit Account Driver

Enter your choice:

3

Your choice is : 3

Class: Account
Type: Class Method
Method: BALANCE

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

q. Quit Account Driver

Enter your choice:

3

Your choice is : 3

Class: Account
Type: Class Method
Method: BALANCE

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- a. SHOW BALANCE
- b. SHOW STATE
- c. SHOW LOCKED STATUS
- d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL 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)

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- c. SHOW LOCKED STATUS
- d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL 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)

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- c. SHOW LOCKED STATUS
- d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL 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)

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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
PIN 1	T3	CHECK PIN	200	1	CHECK PIN	200	1

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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	200	2	CHECK PIN	200	2
PIN 3	T6	IDLE	200	2	IDLE	200	2
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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 [List of Failed Test Cases](#)

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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS
- q. Quit Account Driver

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS
- q. Quit Account Driver

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

- q. Quit Account Driver

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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)

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- c. SHOW LOCKED STATUS
- d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- c. SHOW LOCKED STATUS
- d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL 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)

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- c. SHOW LOCKED STATUS
- d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL 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)

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- c. SHOW LOCKED STATUS
- d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

q. Quit Account Driver

Enter your choice:

7

Your choice is : 7

Class: Account
Type: Class Method
Method: PIN

Enter PIN:

2

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

q. Quit Account Driver

Enter your choice:

7

Your choice is : 7

Class: Account
Type: Class Method
Method: PIN

Enter PIN:

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

Testing-Oriented Methods

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

- q. Quit Account Driver

Enter your choice:

4

Your choice is : 4

Class: Account
Type: Class Method
Method: LOCK

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 7. PIN
- 8. LOGOUT

Testing-Oriented Methods

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

- q. Quit Account Driver

Enter your choice:

8

Your choice is : 8

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

Function Called	Transition	Expected Result			Produced Result		
		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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL LOGIN ATTEMPTS
- q. Quit Account Driver

Enter your choice:

0

Your choice is : 0

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCCESSFUL 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...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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)

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- c. SHOW LOCKED STATUS
- d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

q. Quit Account Driver

Enter your choice:

4

Your choice is : 4

Class: Account
Type: Class Method
Method: LOCK

Enter Lock#:

321

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

q. Quit Account Driver

Enter your choice:

1

Your choice is : 1

Class: Account
Type: Class Method
Method: DEPOSIT

Enter Deposit Amount:

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

q. Quit Account Driver

Enter your choice:

5

Your choice is : 5

Class: Account
Type: Class Method
Method: UNLOCK

Enter Lock#:

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

Testing-Oriented Methods

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

- q. Quit Account Driver

Enter your choice:

2

Your choice is : 2

Class: Account
Type: Class Method
Method: WITHDRAW

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 7. PIN
- 8. LOGOUT

Testing-Oriented Methods

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

- q. Quit Account Driver

Enter your choice:

4

Your choice is : 4

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 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 UNSECCESFUL 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 UNSECCESFUL LOGIN ATTEMPTS

- q. Quit Account Driver

Enter your choice:

2

Your choice is : 2

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

- q. Quit Account Driver

Enter your choice:

7

Your choice is : 7

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 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 UNSECCESFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

- q. Quit Account Driver

Enter your choice:

7

Your choice is : 7

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 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 UNSECCESFUL 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	Bala nce	No. of Unsuccessful Attempt		State After Transition	Bala nce	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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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), 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	Bala nce	No. of Unsuccessful Attempt	State After Transition	Bala nce	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		

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL LOGIN ATTEMPTS

q. Quit Account Driver

Enter your choice:

0

Your choice is : 0

Class: Account
Type: Class Method
Method: OPEN

Enter Account#:

100

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS
- q. Quit Account Driver

Enter your choice:

7

Your choice is : 7

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS
- q. Quit Account Driver

Enter your choice:

3

Your choice is : 3

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS
- q. Quit Account Driver

Enter your choice:

q

Your choice is : q

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 12 pin 123 lock 321 unlock 321 unlock 321

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(12), pin(123), lock(321), unlock(321), unlock(321)

TRANSITION TRAVERSED

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

T1, T2, T18, T4, T17

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 UNSECESSFUL 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...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCCESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

q. Quit Account Driver

Enter your choice:

6

Your choice is : 6

Class: Account
Type: Class Method
Method: LOGIN

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

8. LOGOUT

Testing-Oriented Methods

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

- q. Quit Account Driver

Enter your choice:

3

Your choice is : 3

Class: Account

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

8. LOGOUT

Testing-Oriented Methods

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

- q. Quit Account Driver

Enter your choice:

7

Your choice is : 7

Class: Account

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 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 UNSECCESFUL 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 UNSECCESFUL LOGIN ATTEMPTS

- q. Quit Account Driver

Enter your choice:

5

Your choice is : 5

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL LOGIN ATTEMPTS
- q. Quit Account Driver

Enter your choice:

0

Your choice is : q
Quitting Account Driver...

THANK YOU!!!

CORRECTNESS

Function Called	Expected Result					Produced Result				
	State After Transition	Bala nce	No. of Unsuccessful Attempt	Return Value	State After Transition	Bala nce	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		

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

Function Called	State After Transition	Expected Result			Return Value	State After Transition	Produced Result		
		Balance	No. of Unsuccessful Attempt	Balance			No. of Unsuccessful Attempt	Balance	Return Value
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 12	CHECK PIN	200	0	-1	CHECK PIN	200	0	-1	
PIN 123	READY	200	0	0	READY	200	0	0	
LOCK 321	LOCKED	200	0	0	LOCKED	200	0	0	
UNLOCK 321	READY	200	0	0	READY	200	0	0	
UNLOCK 321	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#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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

- q. Quit Account Driver

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

- q. Quit Account Driver

Enter your choice:

2

Your choice is : 2

Class: Account
Type: Class Method
Method: WITHDRAW

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

Testing-Oriented Methods

- a. SHOW BALANCE
- b. SHOW STATE
- c. SHOW LOCKED STATUS
- d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

- q. Quit Account Driver

Enter your choice:

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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)

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- c. SHOW LOCKED STATUS
- d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

q. Quit Account Driver

Enter your choice:

q

Your choice is : q
Quitting Account Driver...

THANK YOU!!!

CORRECTNESS

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

CS 589; Fall 2021
PROJECT
Sukanta Sharma
A20472623

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 UNSECCESFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

- q. Quit Account Driver

Enter your choice:

7

Your choice is : 7

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCCESSFUL 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...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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)

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- c. SHOW LOCKED STATUS
- d. SHOW NUMBER OF UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

q. Quit Account Driver

Enter your choice:

q

Your choice is : q
Quitting Account Driver...

THANK YOU!!!

CORRECTNESS

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

Function Called	State After Transition	Expected Result			Return Value	State After Transition	Produced Result		
		Balance	No. of Unsuccessful Attempt	Balance			Balance	No. of Unsuccessful Attempt	Return Value
OPEN 100 123 190	IDLE	190	0	0	IDLE	190	0	0	0
LOGIN 100	CHECK PIN	190	0	0	CHECK PIN	190	0	0	0
PIN 123	OVERDRAWN	190	0	0	OVERDRAWN	190	0	0	0
LOCK 321	LOCKED	190	0	0	LOCKED	190	0	0	0
OPEN 100 123 -200	LOCKED	190	0	-1	LOCKED	190	0	0	-1
LOGIN 100	LOCKED	190	0	-1	LOCKED	190	0	0	-1
LOGOUT	LOCKED	190	0	-1	LOCKED	190	0	0	-1
PIN 123	LOCKED	190	0	-1	LOCKED	190	0	0	-1
DEPOSIT 100	LOCKED	190	0	-1	LOCKED	190	0	0	-1
WITHDRAW 100	LOCKED	190	0	-1	LOCKED	190	0	0	-1
LOCK 321	LOCKED	190	0	-1	LOCKED	190	0	0	-1
UNLOCK 12	LOCKED	190	0	-1	LOCKED	190	0	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)
```

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

TRANSITION TRAVERSED

T1, T2, T18, T12, T14, T21

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 UNSECCESFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 7. PIN
- 8. LOGOUT

Testing-Oriented Methods

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

- q. Quit Account Driver

Enter your choice:

0

Your choice is : 0

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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)

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

8. LOGOUT

Testing-Oriented Methods

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

q. Quit Account Driver

Enter your choice:

0

Your choice is : 0

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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)

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCCESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

Testing-Oriented Methods

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

- q. Quit Account Driver

Enter your choice:

6

Your choice is : 6

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

- 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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS
- q. Quit Account Driver

Enter your choice:

2

Your choice is : 2

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECCESFUL 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...

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL 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 UNSECESSFUL LOGIN ATTEMPTS

- q. Quit Account Driver

Enter your choice:

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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 UNSECESSFUL LOGIN ATTEMPTS
- q. Quit Account Driver

Enter your choice:

Q

Your choice is : q
Quitting Account Driver...

THANK YOU!!!

CORRECTNESS

Function Called	State After Transition	Expected Result			Return Value	State After Transition	Produced Result			Return Value
		Bal anc e	No. of Unsuccessful Attempt				Bal anc e	No. of Unsuccessful Attempt		
OPEN -100 123 200	START	0	0	-1	START	0	0	0	-1	

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

Function Called	State After Transition	Expected Result			Return Value	State After Transition	Produced Result		
		Balanc e	No. of Unsuccessful Attempt				Balanc e	No. of Unsuccessful Attempt	Return Value
OPEN 100 - 123 200	START	0	0	-1	START	0	0	0	-1
OPEN -100 -123 200	START	0	0	-1	START	0	0	0	-1
OPEN 100 123 -200	START	0	0	-1	START	0	0	0	-1
OPEN -100 123 -200	START	0	0	-1	START	0	0	0	-1
OPEN 100 - 123 -200	START	0	0	-1	START	0	0	0	-1
OPEN -100 -123 -200	START	0	0	-1	START	0	0	0	-1
OPEN 100 123 200	IDLE	200	0	0	IDLE	200	0	0	0
OPEN -100 123 -200	IDLE	200	0	-1	IDLE	200	0	0	-1
OPEN 100 - 123 -200	IDLE	200	0	-1	IDLE	200	0	0	-1
OPEN -100 -123 -200	IDLE	200	0	-1	IDLE	200	0	0	-1
LOGIN 100	CHECK PIN	200	0	0	CHECK PIN	200	0	0	0
PIN 123	READY	200	0	0	READY	200	0	0	0
DEPOSIT 0	READY	200	0	-1	READY	200	0	0	-1
WITHDRAW 190	OVERDRAW	-10	0	0	OVERDRAW	-10	0	0	0
DEPOSIT 0	OVERDRAW	-10	0	-1	OVERDRAW	-10	0	0	-1
WITHDRAW 50	OVERDRAW	-10	0	-1	OVERDRAW	-10	0	0	-1
WITHDRAW -10	OVERDRAW	-10	0	-1	OVERDRAW	-10	0	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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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	2
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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

Sukanta Sharma (A20472623)

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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

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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

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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

OBJECT-ORIENTED AND STATE-BASED TESTING - PROJECT REPORT

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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

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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.

```


/**
 * 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* classTRANSITION – **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.

```


/**
 * 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 7 items in the folder:

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- 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 exists, we can proceed with testing.

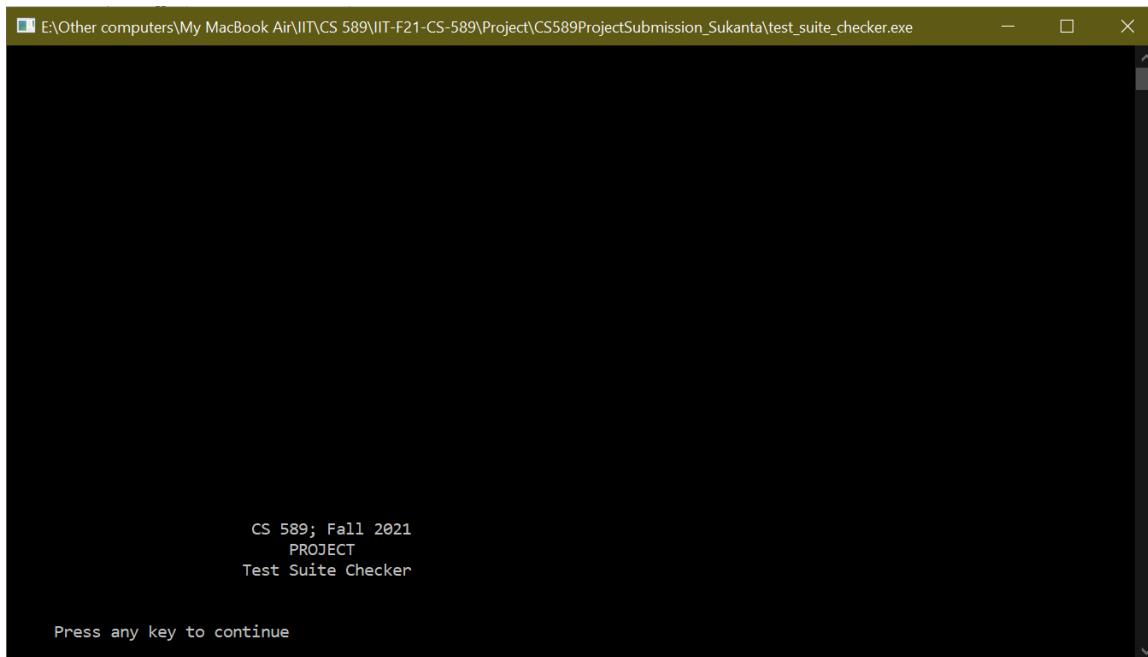


Figure 7:Test suite checker

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```
pin(123) method
deposit(100) method
withdraw(100) method
lock(321) method
unlock(12) method
Test#11:
open(-100,123,200) method
open(100,-123,200) method
open(-100,-123,200) method
open(100,123,-200) method
open(-100,123,-200) method
open(100,-123,-200) method
open(-100,-123,-200) method
open(100,123,200) method
open(-100,123,-200) method
open(100,-123,-200) method
open(-100,-123,-200) method
login(100) method
pin(123) method
deposit(0) method
withdraw(100) method
deposit(0) method
withdraw(50) method
withdraw(-10) method
The test suite has been checked.
No errors have been detected.
```

Press any key to continue

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

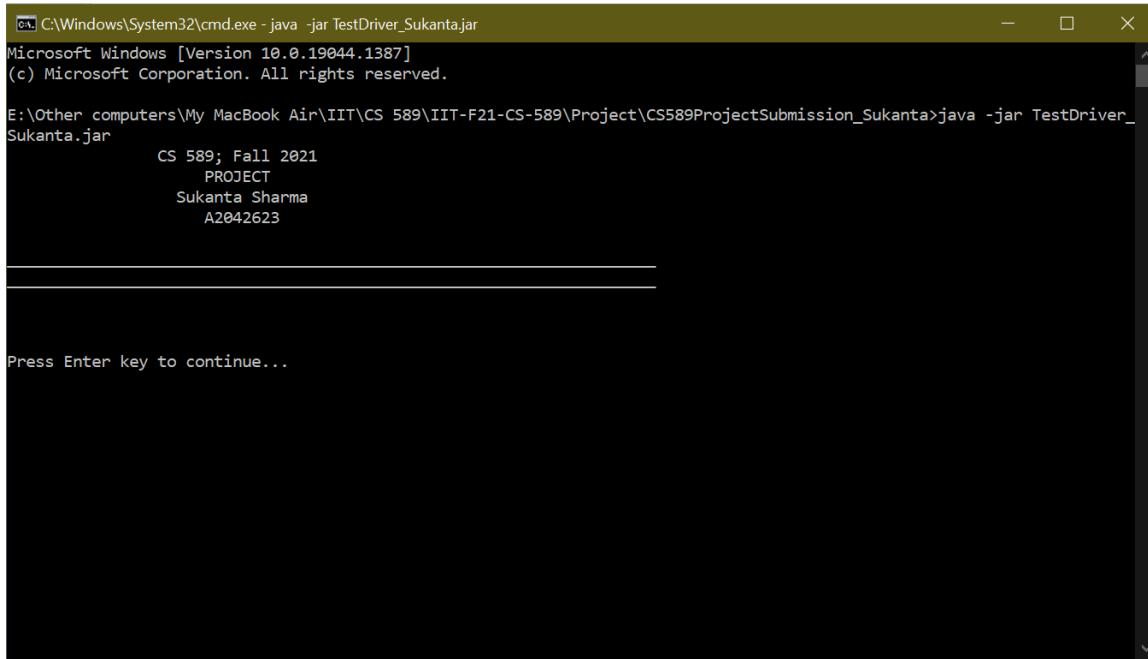
The test driver can be run on Windows machine using the following method:

1. Open command prompt in the folder location and execute the following command

"java -jar TestDriver_Sukanta.jar"

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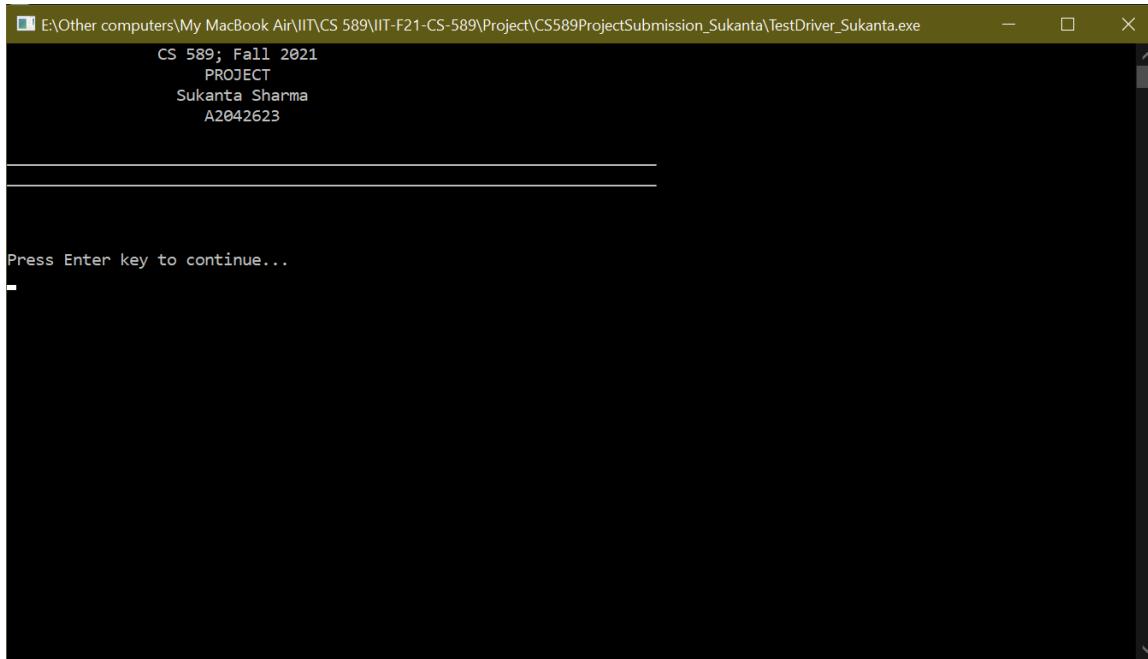


C:\Windows\System32\cmd.exe - java -jar TestDriver_Sukanta.jar
Microsoft Windows [Version 10.0.19044.1387]
(c) Microsoft Corporation. All rights reserved.
E:\Other computers\My MacBook Air\IIT\CS 589\IIT-F21-CS-589\Project\CS589ProjectSubmission_Sukanta>java -jar TestDriver_Sukanta.jar
CS 589; Fall 2021
PROJECT
Sukanta Sharma
A2042623

Press Enter key to continue...

Figure 9: Run Executable JAR file in Windows

2. Run “*TestDriver_Sukanta.exe*”



E:\Other computers\My MacBook Air\IIT\CS 589\IIT-F21-CS-589\Project\CS589ProjectSubmission_Sukanta\TestDriver_Sukanta.exe
CS 589; Fall 2021
PROJECT
Sukanta Sharma
A2042623

Press Enter key to continue...

Figure 10: Run executable exe file in Windows

Press enter key to continue.

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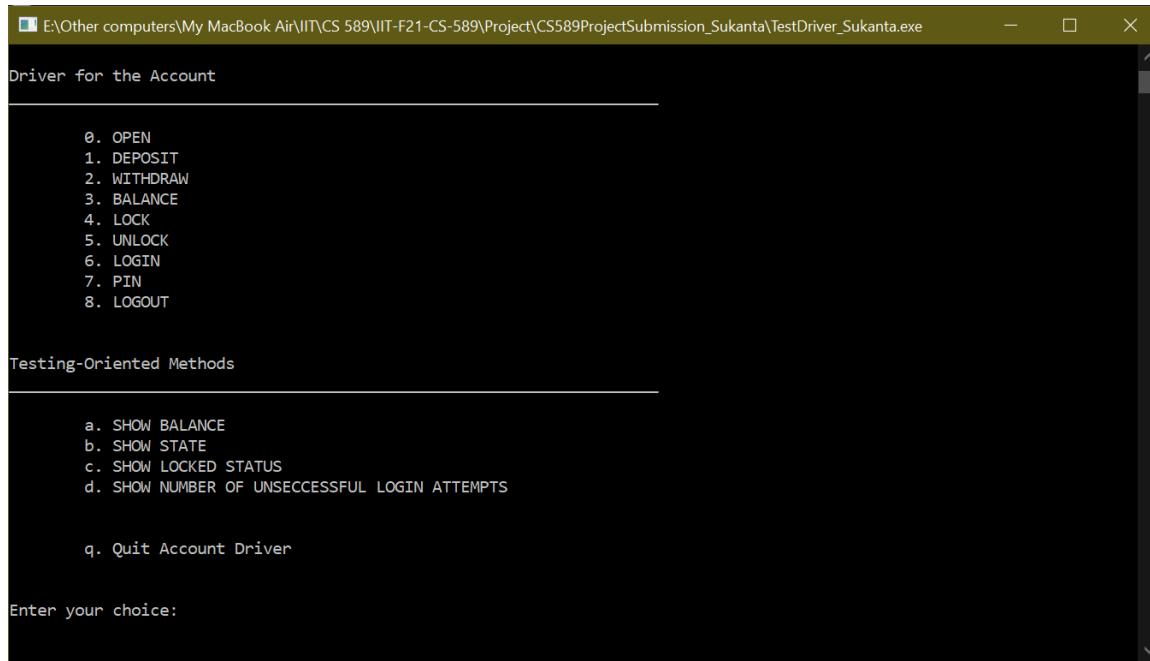


Figure 11: Test Environment Menu in Windows

EXECUTION ON MAC/NON-WINDOWS SYSTEM

Open terminal in the same folder and run the following command

"java -jar TestDriver_Sukanta.jar"

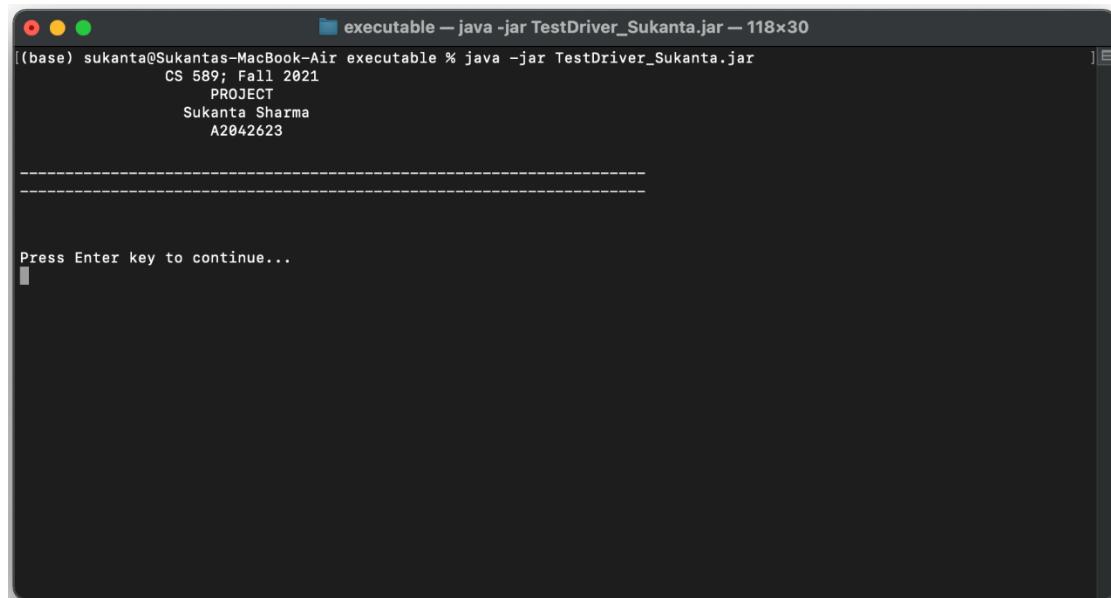


Figure 12:Run executable JAR in MAC

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Press enter key to continue

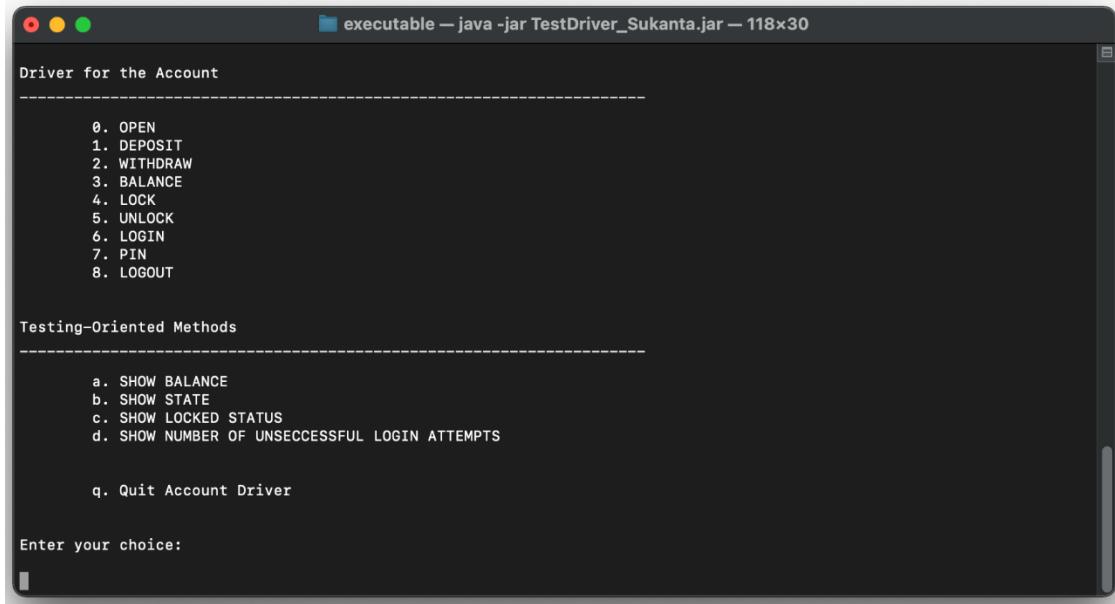


Figure 13:Test environment menu in MAC

CONCLUSION

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. To verify the code is giving the correct/expected output all the calculation was done manually in mind. These calculations are also shown in each table of correctness. It has been tried during this project to keep the number of test cases lower to reduce extensive manual work.

AUTOMATION AND FUTURE SCOPE

The test driver class has been designed such that it gives the performed test case and results at each step. This part has been **semi-automated** to speed up with the testing and verification part. **Total automation** of this testing is possible but design such testing environment is challenging. One of the possible solutions is by creating a testing environment which takes the test suite and expected results as input and using testing-oriented methods it will return the comparison of actual vs expected result as a report for failed and passed test cases. In that case a tester needs to just provide the test suite and expected results. Although, we still need to investigate the code to detect and fix the bugs if any.

***** END OF REPORT *****