

## Software Testing and Analysis (CS-589)

### Project Report

The goal of this project is to test the GasPump class that exhibits state behavior specified by the EFSM model. The source code of the class GasPump is provided in a separate file.

#### Problem 1. Model-Based Testing

##### Incoming and Outgoing Transitions and their pairs

###### Incoming Transitions: -

For State S0= T1, T3, T5, T13, T14, T19

For State S1= T17, T18

For State S2= T2

For State S3= T4, T6

For State S4= T7, T8, T15

For State S5= T9, T10

For State S6= T11, T12, T16

###### Outgoing Transitions: -

For State S0= T2, T6, T20

For State S1= T16, T17

For State S2= T3, T4

For State S3= T5, T7, T8, T15

For State S4= T9, T18, T19

For State S5= T10, T11, T12

For State S6= T13, T14

##### Transition Pairs for the States

State	Pair
S0	(T1, T2), (T1, T6), (T1, T20), (T3, T2),(T3,T6),(T3, T20), (T5,T2), (T5, T6), (T5, T20), (T13, T2),(T13,T6),(T13, T20), (T14, T2), (T14, T6), (T14, T20),(T19, T2),(T19, T6), (T19, T20)
S1	(T17,T16), (T17, T17), (T18, T16),(T18, T17)
S2	(T2, T3), (T2, T4)
S3	(T4, T5), (T4, T7), (T4, T8), (T4, T15), (T6,T5), (T6, T7), (T6, T8), (T6, T15)
S4	(T7, T9), (T7, T18), (T7, T19), (T8, T9),(T8,T18),(T8, T19), (T15,T9), (T15, T18), (T15, T19)
S5	(T9, T10), (T9, T11), (T9, T12), (T10, T10), (T10, T11), (T10, T12)

S6	(T11, T13), (T11, T14), (T12, T13),(T12, T14), (T16, T13), (T16, T14)
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### Path for the Model

Path 1= T1, T20 => Test case 1

Pair 1= (T1, T20)

Path 2= T1, T2, T4, T8, T18, T17, T16, T13, T20=>Test case 2

Pair 2= (T1, T2)(T2, T4)(T4, T8)(T8, T18)(T18, T17)(T17, T16)(T16, T13)(T13, T20)

Path 3=T1, T6, T7, T9, T10, T11, T14, T20=>Test case 3

Pair 3= (T1, T6) (T6, T7)(T7, T9)(T9, T10)(T10, T11) (T11, T14) (T14, T20)

Path 4=T1, T2, T4, T15, T19, T20=>Test case 4

Pair 4= (T1, T2)(T2, T4)(T4, T15)(T15, T19)(T19, T20)

Path 5=T1, T2, T4, T7, T19, T6, T5, T20=>Test case 5

Pair 5= (T1, T2)(T2, T4)(T4, T7)(T7, T19)(T19, T6)(T6, T5)(T5, T20)

Path 6=T1, T2, T4, T7, T19, T2, T3, T20=>Test case 6

Pair 6= (T1, T2)(T2, T4)(T4, T7)(T7, T19)(T19, T2)(T2, T3)(T3, T20)

Path 7=T1, T2, T4, T8, T19, T20=>Test case 7

Pair 7= (T1, T2) (T2, T4) (T4, T8) (T8, T19) (T19, T20)

Path8=T1, T2, T3, T2, T4, T7, T18, T17, T16, T14, T20=>Test case 8

Pair 8= (T1, T2)(T2, T3)(T3, T2)(T2, T4)(T4, T7)(T7, T18)(T18, T17)(T17, T16)(T16, T14)(T14, T20)

Path 9=T1, T6, T8, T9, T12, T13, T20=> Test case 9

Pair 9= (T1, T6) (T6, T8)(T8, T9) (T9, T12)(T12, T13)(T13, T20)

Path 10=T1, T2, T4, T8, T18, T16, T14, T20=> Test case 10

Pair 10= (T1, T2) (T2, T4)(T4, T8)(T8, T18)(T18, T16)(T16, T14)(T14, T20)

Path 11=T1, T2, T3, T6, T15, T9, T10, T10, T10, T12, T14, T20=> Test case 11

Pair 11= (T1, T2)(T2, T3)(T3, T6)(T6, T15)(T15, T9)(T9, T10)(T10, T10)(T10, T10)(T10, T12)(T12, T14)(T14, T20)

Path 12=T1, T2, T4, T15, T18, T16, T13, T20=>Test case 12

Pair 12= (T1, T2) (T2, T4)(T4, T15)(T15, T18)(T18, T16)(T16, T13)(T13, T20)

Path 13=T1, T2, T4, T5, T20=>Test case 13

Pair 13 = (T1, T2)(T2, T4)(T4, T5)(T5, T20)

Path 14=T1, T2, T4, T5, T2, T3, T20=>Test case 14

Pair 14= (T1, T2)(T2, T4)(T4, T5)(T5, T2)(T2, T3)(T3, T20)

Path 15=T1, T2, T4, T8, T18, T17, T17, T16, T13, T2, T3, T20 =>Test case 15

Pair 15 : (T1, T2) (T2, T4) (T4, T8) (T8, T18)(T18, T17)(T17, T17)(T17, T16)(T16, T13)(T13, T2)(T2, T3)(T3, T20)

Path 16=T1, T6, T8, T9, T11, T13, T20=>Test case 16

Pair 16= (T1, T6) (T6, T8)(T8, T9)(T9, T11) (T11, T13)(T13, T20)

Path 17=T1, T2, T4, T5, T6, T5, T20 =>Test case 17

Pair 17= (T1, T2) (T2, T4) (T4, T5) (T5, T6)(T6, T5)(T5, T20)

Path 18=T1, T2, T4, T8, T18, T17, T16, T13, T6, T5, T20 =>Test case 18

Pair 18= (T1, T2) (T2, T4) (T4, T8) (T8, T18) (T18, T17) (T17, T16)(T16, T13)(T13, T6)(T6, T5)(T5, T20)

Path 19=T1, T2, T4, T8, T18, T17, T16, T14, T6, T5, T20 =>Test case 19

Pair 19= (T1, T2) (T2, T4)(T4, T8)(T8, T18)(T18, T17)(T17, T16)(T16, T14)(T14, T6)(T6, T5)(T5, T20)

Path 20=T1, T2, T4, T8, T18, T17, T16, T14, T2, T3, T20 =>Test case 20

Pair 20= (T1, T2) (T2, T4) (T4, T8)(T8, T18)(T18, T17)(T17, T16)(T16, T14)(T14, T2)(T2, T3)(T3, T20)

## **Problem #2- Default Transitions of Gas Pump**

### **State S0**

#### **12 Default Transitions**

Activate, Reject , Approved, Midgrade, Regular, Super, StartPump , Pump, StopPump ,NoReceipt, Receipt, Cancel

### **State S1**

#### **13 default transitions**

Activate , PayCredit, Reject, Approved, Midgrade, Regular, Super,StartPump, NoReceipt, Receipt, Cancel ,PayCash, TurnOff

### **State S2**

#### **13 default transitions**

Activate , PayCredit, Midgrade, Regular, Super, StartPump, Pump, StopPump, NoReceipt, Receipt, Cancel ,PayCash, TurnOff

### **State S3**

#### **11 default transitions**

Activate , PayCredit, Reject, Approved, StartPump, Pump, StopPump, NoReceipt, Receipt ,PayCash, TurnOff

### **State S4**

#### **13 default transitions**

Activate , PayCredit, Reject, Approved, Midgrade, Regular, Super, Pump, StopPump, NoReceipt, Receipt ,PayCash, TurnOff

### **State S5**

#### **13 default transitions**

Activate , PayCredit, Reject, Approve, Midgrade, Regular, Super, NoReceipt, Receipt, Cancel ,PayCash, TurnOff

### **State S6**

#### **13 default transitions**

Activate , PayCredit, Reject, Approved, Midgrade, Regular, Super, StartPump, Pump, StopPump, Cancel ,PayCash, TurnOff

## Test Cases and Validations for Gas Pump Problem 2

### For State S0(12 Default Transitions)

Default Transition	Test Number
Activate	Test21
Reject	Test22
Approved	Test23
Midgrade	Test24
Regular	Test24
Super	Test24
StartPump	Test25
Pump	Test25
StopPump	Test25
NoReceipt	Test26
Receipt	Test26
Cancel	Test26

### For State S2(13 Default Transitions)

Default Transition	Test Number
Activate	Test27
PayCredit	Test33
Midgrade	Test28
Regular	Test28
Super	Test28
StartPump	Test29
Pump	Test29
StopPump	Test29
NoReceipt	Test30
Receipt	Test30
Cancel	Test31
PayCash	Test31
TurnOff	Test32

### For State S3(11 Default Transitions)

Default Transition	Test Number
Activate	Test34
PayCredit	Test35
Reject	Test36
Approved	Test37
StartPump	Test38
Pump	Test38
StopPump	Test38
NoReceipt	Test38
Receipt	Test39
PayCash	Test40
TurnOff	Test41

For State S4(13 Default transitions)

Default Transition	Test Number
Activate	Test42
PayCredit	Test43
Reject	Test44
Approved	Test45
Midgrade	Test46
Regular	Test46
Super	Test46
Pump	Test47
StopPump	Test47
NoReceipt	Test48
Receipt	Test48
PayCash	Test49
TurnOff	Test49

For State S5(13 default transitions)

Default Transition	Test Number
Activate	Test50
PayCredit	Test50
Reject	Test50
Approved	Test51
Midgrade	Test51
Regular	Test51
Super	Test51
StartPump	Test52
NoReceipt	Test52
Receipt	Test52
Cancel	Test53
PayCash	Test53
TurnOff	Test53

For State S6(13 default Transitions)

Default Transition	Test Number
Activate	Test54
PayCredit	Test54
Reject	Test54
Approved	Test55
Midgrade	Test55
Regular	Test55
Super	Test54
StartPump	Test56
Pump	Test56
StopPump	Test56
Cancel	Test57
PayCash	Test57
TurnOff	Test57

For State S1(13 Default Transitions)

Default Transition	Test Number
Activate	Test58
PayCredit	Test59
Reject	Test59
Approved	Test59
Midgrade	Test60
Regular	Test60
Super	Test60
StartPump	Test61
NoReceipt	Test61
Receipt	Test61
Cancel	Test62
PayCash	Test62
TurnOff	Test62

### Problem #3

#### Multiple Condition Testing

int Activate (float a, float b, float d)

if ((k == -1) && (a > 0) && (b > 0) && (d > 0))

k == -1	a > 0	b > 0	d > 0	Test Number
T	T	T	T	Test2
T	T	T	F	Test21
T	T	F	T	Test22
T	T	F	F	Test23
T	F	T	T	Test24
T	F	T	F	Test25
T	F	F	T	Test26
T	F	F	F	Test26
F	T	T	T	Test21
F	T	T	F	Test27
F	T	F	T	Test34
F	T	F	F	Test42
F	F	T	T	Test50
F	F	T	F	Test54
F	F	F	T	Test58
F	F	F	F	Test59

int PayCredit()

if (k == 0)

k == 0	Test Number
T	Test2
F	Test27

int Reject()

if (k == 2)

k == 2	Test Number
T	Test6
F	Test22

int Cancel()

if ((k == 3) || (k == 4))

k == 3	k == 4	Test Number
T	T	Not Executable
T	F	Test16
F	T	Test6
F	F	Test26

Since the values of k mean what the state of the program is now. So, we cannot have two states at the same time  
Hence, when k==3 and K==4 is true then it is non-executable.

int Approved()

if (k == 2)

k == 2	Test Number
T	Test2
F	Test23

int PayCash(float c)

if (k == 0)

k == 0	c > 0	Test Number
T	T	Test3
T	F	Test34
F	T	Test57
F	F	Test58

int Regular()

if (k == 3)

k == 3	Test Number
T	Test6
F	Test24

int Super()

if (k == 3)

k == 3	Test Number
T	Test2
F	Test24

int Midgrade()

if (k == 3)

k == 3	Test Number
T	Test4
F	Test24

int StartPump()

if (k == 4)

k == 4	Test Number
T	Test2
F	Test25

int Pump()

if (k == 5)

k ==5	Test Number
T	Test2
F	Test25

if ((w == 1) || (cash > price \* (L + 1)) && (w == 0))

w == 1	cash ≥ price * (L+1)	w == 0	Test Number
T	T	T	Not Executable
T	T	F	Not Executable
T	F	T	Not Executable
T	F	F	Test2
F	T	T	Test3
F	T	F	Not Executable
F	F	T	Test11
F	F	F	Not Executable

The value of w can be either 0 or 1 but it cannot accept both values of 0 and 1 and the conditions can be true or false and are non-executable regardless of the other conditions. If the value of w =1 then the equation  $\text{cash} \geq \text{price} * (\text{L} + 1)$  cannot be true.

w == 0	cash < price * (L+1)	Test Number
T	T	Test11
T	F	Test3
F	T	Not Executable
F	F	Not Executable

If w==0 is true the outer if condition  $w == 1 \mid \mid \text{cash} > \text{price} * (\text{L} + 1) \&\& w == 0$  must be true and that is contradictory.

if ((w == 0) && (total < cash))

w == 0	total < cash	Test Number
T	T	Test11
T	F	Test62
F	T	Not Executable



F	F	Not Executable
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If w==0 is false, the program does not reach to that condition and hence, any conditions which says w==0 is not executable in this.

int StopPump()

if (k == 5)

k ==5	Test Number
T	Test2
F	Test25

if ((w == 0) && (total < cash))

w == 0	total <cash	Test Number
T	T	Test3
T	F	Test61
F	T	Not Executable
F	F	Test10

int NoReceipt()

if (k == 6)

k ==6	Test Number
T	Test3
F	Test30

int Receipt()

if (k == 6)

k ==6	Test Number
T	Test2
F	Test30

int TurnOff()

if (k == 0)

k ==0	Test Number
T	Test2
F	Test32

## Test Results/Test Cases Validations

Test#1 Activate 1 2 3 TurnOff (Passed)

### Expected

Activate 1, 2, 3: Rprice=1, Sprice=2, Dprice=3, w=0, price=0.0, L=0, total=0.0, cash=0.0, State=S0, Return 1

TurnOff: Rprice=1, Sprice=2, Dprice=3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending State, Return 1

### Actual:

Activate 1,2,3: Rprice=1, Sprice=2, Dprice=3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

TurnOff: Rprice=1, Sprice=2, Dprice=3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending State, Return 1

## Test#2 Activate 4 5 6 PayCredit Approved Super StartPump StopPump Receipt TurnOff (Failed)

### Expected:

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=0, Return 1  
PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=2, Return 1  
Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=3, Return 1  
Super : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=4, Return 1  
StartPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=1, Return 1  
Pump: Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=1, total=5.0, State=1, Return 1  
Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=1, Return 1 StopPump :  
Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=6, Return 1  
Receipt : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=0, Return 1  
TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=Ending, Return 1

### Actual:

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Super : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S1, Return 1  
Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=1, total=5.0, State=S1, Return 1  
Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S1, Return 1  
StopPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S6, Return 1  
Receipt : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1  
TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=Ending State, Return 1

**Reason-** The value of State is different after StartPump. Since the method 'StartPump' does not check whether w == 0 or w == 1, the next state is always S5 instead of S1. Consequently, Pump has been invoked at S5.

## Test#3 Activate 4 5 6 PayCash 6 Regular StartPump Pump StopPump No Receipt TurnOff(Passed)

### Expected:

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Regular : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=10.0, w=0, price=4.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=10.0, w=0, price=4.0, L=0, total=0.0, State=S5, Return 1  
Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=10.0, w=0, price=4.0, L=1, total=4.0, State=S5, Return 1  
StopPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=10.0, w=0, price=4.0, L=1, total=4.0, State=S6, Return 1  
NoReceipt : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=10.0, w=0, price=4.0, L=1, total=4.0, State=S0, Return 1

TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=10.0, w=0, price=4.0, L=1, total=4.0, State=Ending state, Return 1

**Actual:**

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Super : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S5, Return 1

PumpLiter : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=1, total=5.0, State=S5, Return 1

PumpLiter : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S5, Return 1

StopPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S6, Return 1

Receipt : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1

TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=Ending state, Return 1

Test#4: Activate 4 5 6 PayCredit Approved Midgrade Cancel TurnOff(Passed)

**Expected:**

Activate 4 5 6: Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Midgrade : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=6.0, L=0, total=0.0, State=S4, Return 1

Cancel : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=6.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=6.0, L=0, total=0.0, State=Ending state, Return 1

**Actual:**

Activate 4 5 6: Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Midgrade : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=6.0, L=0, total=0.0, State=S4, Return 1

Cancel : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=6.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=6.0, L=0, total=0.0, State=Ending, Return 1

Test#5: Activate 4 5 6 PayCredit Approved Regular Cancel PayCash 5 Cancel TurnOff (Passed)

**Expected:**

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Regular : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=S4, Return 1

Cancel : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=S0, Return 1

PayCash 5 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=5.0, w=0, price=4.0, L=0, total=0.0, State=S3, Return 1

Cancel : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=5.0, w=0, price=4.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=5.0, w=0, price=4.0, L=0, total=0.0, State=Ending state, Return 1

**Actual:**

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Regular : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=S4, Return 1

Cancel : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=S0, Return 1

PayCash 5 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=5.0, w=0, price=4.0, L=0, total=0.0, State=S3, Return 1

Cancel : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=5.0, w=0, price=4.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=5.0, w=0, price=4.0, L=0, total=0.0, State=Ending state, Return 1

Test#6: Activate 4 5 6 PayCredit Approved Regular Cancel PayCredit Reject TurnOff (Passed)

**Expected:**

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Regular : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=S4, Return 1

Cancel : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=S2, Return 1

Reject : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=Ending state, Return 1

**Actual:**

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Regular : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=S4, Return 1

Cancel : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=S2, Return 1

Reject : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=4.0, L=0, total=0.0, State=Ending state, Return 1

Test#7: Activate 4 5 6 PayCredit Approved Super Cancel TurnOff (Passed)

**Expected:**

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Super : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S4, Return 1  
Cancel : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=Ending state, Return 1

**Actual:**

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Super : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S4, Return 1  
Cancel : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=Ending state, Return 1

Test#8: Activate 1 2 3 PayCredit Reject PayCredit Approved Regular StartPump Pump StopPump TurnOff (Passed)

**Expected:**

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 1  
Pump: Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=1, total=1.0, State=S1, Return 1  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=1, total=1.0, State=S6, Return 1  
NoReceipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=1, total=1.0, State=S0, Return 1

**Actual:**

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 1  
Pump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=1, total=1.0, State=S1, Return 1  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=1, total=1.0, State=S6, Return 1

NoReceipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=1, total=1.0, State=S0, Return 1

Test#9: Activate 1 5 3 PayCash 3 Super StartPump Pump Receipt TurnOff (Passed)

**Expected:**

Activate 1 5 3 : Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCash 3 : Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=3.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1

Super : Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=3.0, w=0, price=5.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=3.0, w=0, price=5.0, L=0, total=0.0, State=S5, Return 1

Pump: Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=3.0, w=0, price=5.0, L=0, total=0.0, State=S6, Return 1

Receipt : Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=3.0, w=0, price=5.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=3.0, w=0, price=5.0, L=0, total=0.0, State=Ending state, Return 1

**Actual:**

Activate 1 5 3 : Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCash 3 : Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=3.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1

Super : Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=3.0, w=0, price=5.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=3.0, w=0, price=5.0, L=0, total=0.0, State=S5, Return 1

Pump: Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=3.0, w=0, price=5.0, L=0, total=0.0, State=S6, Return 1

Receipt : Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=3.0, w=0, price=5.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=5.0, Dprice=3.0, cash=3.0, w=0, price=5.0, L=0, total=0.0, State=Ending state, Return 1

Test#10: Activate 4 5 6 PayCredit Approved Super StartPump StopPump NoReceipt TurnOff

**Expected:**

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Midgrade : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S1, Return 1

StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S6, Return 1

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=Ending state, Return 1

**Actual:**

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Midgrade : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S1, Return 1

StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S6, Return 1

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=Ending state, Return 1

Test#11: Activate 1 2 3 PayCredit Reject PayCash 10 Midgrade StartPump Pump Pump Pump Pump Receipt TurnOff (Passed)

**Expected:**

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1

Midgrade: Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 1

Pump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=1, total=3.0, State=S5, Return 1

Pump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=2, total=6.0, State=S5, Return 1

Pump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=3, total=9.0, State=S5, Return 1

Pump: Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=3, total=9.0, State=S6, Return 1

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=3, total=9.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=3, total=9.0, State=Ending state, Return 1

**Actual:**

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1

Midgrade: Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 1

PumpLiter : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=1, total=3.0, State=S5, Return 1

PumpLiter : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=2, total=6.0, State=S5, Return 1

PumpLiter : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=3, total=9.0, State=S5, Return 1

PumpLiter : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=3, total=9.0, State=S6, Return 1

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=3, total=9.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=3, total=9.0, State=Ending state, Return 1

Test#12: Activate 1 2 3 PayCredit Approve Midgrade StartPump StopPump Receipt TurnOff (Passed)

**Expected:**

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Midgrade : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S1, Return 1  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=Ending state, Return 1

Actual:

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, 18 State=S3, Return 1  
Midgrade : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S5, Return 1  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=3.0, L=0, total=0.0, State=Ending state, Return 1  
**Reason-** Since the method 'StartPump' does not check whether w == 0 or w == 1, the next state is always S5 instead of S1.

Test#13: Activate 1 2 3 PayCredit Approved Cancel TurnOff (Passed)

Expected:

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Actual:

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Test#14: Activate 1 2 3 PayCredit Approved Cancel PayCredit Reject TurnOff (Passed)

Expected:

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1



Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S2, Return 1  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=Ending state, Return 1  
Actual:

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S2, Return 1  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Test#15: Activate 4 5 6 PayCredit Approved Super StartPump Pump Pump StopPump Receipt PayCredit Reject  
TurnOff (Passed)

Expected

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Super : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S1, Return 1  
Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=1, total=5.0, State=S1, Return 1  
Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S1, Return 1  
StopPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S6, Return 1  
Receipt : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1  
PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S2, Return 1  
Reject : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1  
TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=Ending state, Return 1

Actual:

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Super : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S1, Return 1  
Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=1, total=5.0, State=S1, Return 1  
Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S1, Return 1

StopPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S6, Return 1  
Receipt : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1  
PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S2, Return 1  
Reject : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1  
TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=Ending state, Return 1

Test#16: Activate 1 2 3 PayCash 10 Super StartPump StopPump Receipt TurnOff (Passed)

Expected:

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Super : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=2.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=2.0, L=0, total=0.0, State=S5, Return 1  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=2.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=2.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=2.0, L=0, total=0.0, State=Ending state, Return 1

Actual:

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Super : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=2.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=2.0, L=0, total=0.0, State=S5, Return 1  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=2.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=2.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=2.0, L=0, total=0.0, State=Ending state, Return 1

Test#17: Activate 1 2 3 PayCredit Approved Cancel PayCash 10 Cancel TurnOff (Passed)

Expected:

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Actual:

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Test#18: Activate 4 5 6 PayCredit Approved Super StartPump Pump Pump StopPump Receipt PayCash 5 Cancel  
TurnOff (Passed)

Expected:

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Super : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S1, Return 1  
Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=1, total=5.0, State=S1, Return 1  
Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S1, Return 1  
StopPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S6, Return 1  
Receipt : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1  
PayCash 5 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=5.0, w=0, price=5.0, L=2, total=10.0, State=S3, Return 1  
Cancel : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=5.0, w=0, price=5.0, L=2, total=10.0, State=S0, Return 1  
TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=5.0, w=0, price=5.0, L=2, total=10.0, State=Ending state, Return 1

Test#19: Activate 4 5 6 PayCredit Approved Super StartPump Pump Pump StopPump NoReceipt PayCash 15  
Cancel TurnOff (Passed)

Expected:

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Super : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S1, Return 1  
Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=1, total=5.0, State=S1, Return 1  
Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S1, Return 1  
StopPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S6, Return 1  
NoReceipt : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1  
PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S2, Return 1  
Reject : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1

TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=Ending state, Return 1

Actual:

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Super : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S1, Return 1

Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=1, total=5.0, State=S1, Return 1

Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S1, Return 1

StopPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S6, Return 1

NoReceipt : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S2, Return 1

Reject : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1

TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=Ending state, Return 1

Test#20: Activate 4 5 6 PayCredit Approved Super StartPump Pump Pump StopPump NoReceipt PayCredit Reject  
TurnOff (Passed)

Expected

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Super : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S1, Return 1

Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=1, total=5.0, State=S1, Return 1

Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S1, Return 1

StopPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S6, Return 1

NoReceipt : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S2, Return 1

Reject : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1

TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=Ending state, Return 1

Actual:

Activate 4 5 6 : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Super : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=0, total=0.0, State=S1, Return 1

Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=1, total=5.0, State=S1, Return 1

Pump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S1, Return 1

StopPump : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S6, Return 1

NoReceipt : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1

PayCredit : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S2, Return 1

Reject : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=S0, Return 1

TurnOff : Rprice=4.0, Sprice=5.0, Dprice=6.0, cash=0.0, w=1, price=5.0, L=2, total=10.0, State=Ending state, Return 1

Test#21: Activate 4.1 3.4 6.7 TurnOff(Passed)

Expected:

Activate 4.1 3.4 6.7 : Rprice=0.0, Sprice=0.0, Dprice=0.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Actual:

Activate 4.1 3.4 6.7 : Rprice=0.0, Sprice=0.0, Dprice=0.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Test#22: Activate 2.2 1.2 1.3 Activate 1.1 1.2 2 Reject Cancel TurnOff (Passed)

Expected:

Activate 1.1 1.2 2: Rprice= 1.00,Sprice= 1.20, Dprice=1.30, price=0.00,w= 0, total=0.00, L= 0,cash= 0.00, State = S0  
Return 0

Activate 1.1 1.2 2: Rprice= 1.00,Sprice= 1.20, Dprice=1.30, price=0.00,w= 0, total=0.00, L= 0,cash= 0.00, State = S0  
Return 1

Reject : Rprice= 1.00,Sprice= 1.20, Dprice=1.30, price=0.00,w= 0, total=0.00, L= 0,cash= 0.00, State = S0 Return 0

Cancel: Rprice= 1.00,Sprice= 1.20, Dprice=1.30, price=0.00,w= 0, total=0.00, L= 0,cash= 0.00, State = S0 Return 0

TurnOff: Rprice= 1.00,Sprice= 1.20, Dprice=1.30, price=0.00,w= 0, total=0.00, L= 0,cash= 0.00, State= Ending state  
Return 1

Actual:

Activate 1.1 1.2 2: Rprice= 1.00,Sprice= 1.20, Dprice=1.30, price=0.00,w= 0, total=0.00, L= 0,cash= 0.00, State = S0  
Return 0

Activate 1.1 1.2 2: Rprice= 1.00,Sprice= 1.20, Dprice=1.30, price=0.00,w= 0, total=0.00, L= 0,cash= 0.00, State = S0  
Return 1

Reject : Rprice= 1.00,Sprice= 1.20, Dprice=1.30, price=0.00,w= 0, total=0.00, L= 0,cash= 0.00, State = S0 Return 0

Cancel: Rprice= 1.00,Sprice= 1.20, Dprice=1.30, price=0.00,w= 0, total=0.00, L= 0,cash= 0.00, State = S0 Return 0

TurnOff: Rprice= 1.00,Sprice= 1.20, Dprice=1.30, price=0.00,w= 0, total=0.00, L= 0,cash= 0.00, State= Ending state  
Return 1

Test#23: Activate 1 -0.01 -0.01 Activate 1 2 3 Aproved TurnOff (Passed)

Expected

Activate 1 -0.01 -0.01 : Rprice=0.0, Sprice=0.0, Dprice=0.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

## Actual

Activate 1 -0.01 -0.01 : Rprice=0.0, Sprice=0.0, Dprice=0.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Test#24: Activate 1 1.2 1.3 Super Midgrade StartPump TurnOff (Passed)

## Expected

Activate 1 1.2 1.3 : Rprice=1, Sprice=1.2, Dprice=1.3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Super : Rprice=1.0, Sprice=1.2, Dprice=1.3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Midgrade: Rprice=1.0, Sprice=1.2, Dprice=1.3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

StartPump : Rprice=1.0, Sprice=1.2, Dprice=1.3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

TurnOff: Rprice=1.0, Sprice=1.2, Dprice=1.3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

## Actual:

Activate 1 1.2 1.3 : Rprice=1, Sprice=1.2, Dprice=1.3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Super : Rprice=1.0, Sprice=1.2, Dprice=1.3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Midgrade: Rprice=1.0, Sprice=1.2, Dprice=1.3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

StartPump : Rprice=1.0, Sprice=1.2, Dprice=1.3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

TurnOff: Rprice=1.0, Sprice=1.2, Dprice=1.3, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Test#25 Activate 0.01 -2 -3 Activate 1 2 3 StartPump Pump StopPump TurnOff (Passed)

## Expected

Activate 0.01 -2 -3 : Rprice=0.0, Sprice=-2.0, Dprice=0.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

PumpLiter : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

## Actual

Activate 0.01 -2 -3 : Rprice=0.0, Sprice=-2.0, Dprice=0.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

PumpLiter : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Test#26: Activate -1 -2 3 Activate -1 -2 -3 Activate 1 2 3 NoReceipt Receipt Cancel TurnOff (Passed)

Expected

Activate -1 -2 3 : Rprice=0.0, Sprice=0.0, Dprice=0.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Activate -1 -2 -3 : Rprice=0.0, Sprice=0.0, Dprice=0.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

NoReceipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Actual:

Activate -1 -2 3 : Rprice=0.0, Sprice=0.0, Dprice=0.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Activate -1 -2 -3 : Rprice=0.0, Sprice=0.0, Dprice=0.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

NoReceipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Test#27: Activate 1 2 3 PayCredit Activate 3 2 -1 Activate 3 2 1 Reject TurnOff (Passed)

Expected

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Activate 3 2 -1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0

Activate 3 2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0

Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, 30 State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Activate 3 2 -1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0

Activate 3 2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0

Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, 30 State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Test#28: Activate 1 2 3 PayCredit Midgrade Regular Super Reject TurnOff

Expected

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Diesel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0  
Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0  
Super : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

#### Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Diesel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0  
Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0  
Super : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1  
Test#29: Activate 1 2 3 PayCredit StartPump Regular Pump StopPump TurnOff(Passed)

#### Expected

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0  
Pump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

#### Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0  
Pump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Test#30: Activate 1 2 3 PayCredit NoReceipt Receipt Reject TurnOff (Passed)

#### Expected

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total =0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1



PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0

Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Test#33: Activate 1 2 3 PayCredit PayCredit Reject TurnOff (Passed)

Expected

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0

Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 0

Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Test#34 Activate 1 2 3 PayCash 0 PayCash 10 Activate 3 2 1 Activate 3 -2 1 Cancel TurnOff (Passed)

Expected

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCash 0 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1

Activate 3 2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 0

Activate 3 -2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 0

Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCash 0 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 0

PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1

Activate 3 2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 0

Activate 3 -2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 0

Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=Ending state, Return 1

Test#35: Activate 1 2 3 PayCash 10 PayCredit Cancel TurnOff (Passed)

Expected















Test# 49: Activate 1 2 3 PayCash 10 Midgrade PayCash 10 TurnOff Cancel TurnOff(Passed)

Expected

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Midgrade : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 0  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 0  
Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=Ending state, Return 1

Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Midgrade : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 0  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 0  
Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=Ending state, Return 1

Test#50: Activate 1 2 3 PayCash 10 Midgrade StartPump Activate 3 2 1 Activate -3 2 1 PayCredit Reject StopPump  
Receipt TurnOff (Passed)

Expected

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Midgrade: Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 1  
Activate 3 2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
Activate -3 2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=Ending state, Return 1

Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Midgrade: Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 1  
Activate 3 2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
Activate -3 2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=Ending state, Return 1

Test#51: Activate 1 2 3 PayCash 10 Midgrade StartPump Approved Midgrade Regular Super StopPump Receipt  
TurnOff (Passed)

Expected

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Midgrade : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
Midgrade: Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
Super : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=Ending state, Return 1

Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Midgrade : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
Midgrade: Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
Super : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=Ending state, Return 1

Test#52 Activate 1 2 3 PayCash 10 Midgrade StartPump StartPump NoReceipt Receipt StopPump NoReceipt TurnOff  
(Passed)



Midgrade : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 1  
Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 0  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 1  
NoReceipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=Ending state, Return 1

Test#54 Activate 1 2 3 PayCash 10 Midgrade StartPump StopPump Activate 3 2 1 Activate-3 2 1 PayCredit Reject  
Receipt TurnOff (Passed)

Expected

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Midgrade: Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 1  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 1  
Activate 3 2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 0  
Activate -3 2 -1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 0  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 0  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 0  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=Ending state, Return 1

Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCash 10 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=0.0, L=0, total=0.0, State=S3, Return 1  
Midgrade: Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S5, Return 1  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 1  
Activate 3 2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 0  
Activate -3 2 -1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 0  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 0  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S6, Return 0  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=10.0, w=0, price=3.0, L=0, total=0.0, State=Ending state, Return 1

Test#55: Activate 1 2 3 PayCash 10 Midgrade StartPump StopPump Approved Midgrade Regular Super Receipt  
TurnOff (Passed)





**Test#58: Activate 1 2 3 PayCredit Approved Regular StartPump Activate 3 2 1 Reject Approved Activate -3 -2 1 StopPump Receipt TurnOff (Failed)**

**Expected**

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1 Regular :  
Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 1  
Activate 3 2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0  
Reject : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0  
Activate -3 -2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=Ending state, Return 1

**Actual**

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 1  
Activate 3 2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=5, Return 0 Reject :  
Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0  
Activate -3 -2 1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=Ending state, Return 1  
Since the method 'StartPump' does not check whether w == 0 or w == 1, the next state is always S5 instead of S1.  
Consequently, all default transitions of S1 are failed.

**Test#59: Activate 1 2 3 PayCredit Approved Regular StartPump Activate -3 -2 -1 PayCredit StopPump Receipt TurnOff (Failed)**

**Expected**

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 1

Activate -3 -2 -1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=5, Return 0  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=Ending State, Return 1

Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 1  
Activate -3 -2 -1 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=5, Return 0  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=Ending State, Return 1  
Since the method 'StartPump' does not check whether  $w == 0$  or  $w == 1$ , the next state is always S5 instead of S1.  
Consequently, all default transitions of S1 are failed

Test#60: Activate 1 2 3 PayCredit Approved Regular StartPump Midgrade Regular Super Super StopPump Receipt  
TurnOff (Failed)

Expected

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1  
Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S4, Return 1  
StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 1  
Midgrade: Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0  
Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0  
Super : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0  
Super : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0  
StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S6, Return 1  
Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S0, Return 1  
TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=Ending State, Return 1

Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1  
PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1



Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1  
Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=4, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 1

Midgrade: Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0

Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0

Super : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0

Super : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0

StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S6, Return 1

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=Ending State, Return 1

Reason= The value of state is different after StatePump. Since the method 'StartPump' does not check whether w == 0 or w == 1, the next state is always S5 instead of S1. Consequently, all default transitions of S1 are failed

Test#61 Activate 1 2 3 PayCredit Approved Regular StartPump StartPump NoReceipt Receipt StopPump Receipt  
TurnOff(Passed)

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0

NoReceipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0

StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S6, Return 1

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=Ending State, Return 1

Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0

NoReceipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0

StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S6, Return 1

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=Ending State, Return 1

### Test#62: Activate 1 2 3 PayCredit Approved Regular StartPump Cancel PayCash 0 StopPump Receipt TurnOff(Failed)

#### Expected

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 1

Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0

PayCash 0 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S1, Return 0

StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S6, Return 1

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=Ending State, Return 1

#### Actual

Activate 1 2 3 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S0, Return 1

PayCredit : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=0, price=0.0, L=0, total=0.0, State=S2, Return 1

Approved : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=0.0, L=0, total=0.0, State=S3, Return 1

Regular : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S4, Return 1

StartPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 1

Cancel : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0

PayCash 0 : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S5, Return 0

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, 59 State=S5, Return 0

StopPump : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S6, Return 1

Receipt : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=S0, Return 1

TurnOff : Rprice=1.0, Sprice=2.0, Dprice=3.0, cash=0.0, w=1, price=1.0, L=0, total=0.0, State=Ending State, Return 1

**Reason-** The value of State is different after StartPump Since the method 'StartPump' does not check whether w == 0 or w == 1, the next state is always S5 instead of S1. Consequently, all default transitions of S1 are failed

## Conclusion

After evaluating the results regarding the EFSM it was observed that the "StartPump" method has a defect. The defect is that it doesn't have a conditional branch for two different values of w. This affects the "Pump" method, which can be invoked in either state S1 or state S5. Furthermore, it causes default transition tests to fail in the state S1. The transition pair testing methodology can find defects in the transition of changes because the implementation has a problem switching between different states. For example, some test cases will fail because of the different values for the state. However, it's not guaranteed that it will find all defects.

I used a multi-condition test to check every possible combination of things, and Boundary-Value analysis helped me to make sure that the tests were valid. Finally, I have found that all the activities I have done for this project can be automated, but we need to know what the expected results will be first.

The model-based testing process can take a lot of time to create test cases for all possible transition pairs. To speed up the process, I recommend using a tool to generate test cases automatically that covers all possible transition pairs. With respect to ghost transitions, we can use a partially automated process to create test cases that only include the desired transition pairs.

There is a list of the conditions that must be met for the default transition to work. Some of these conditions may have complexity, so we can speed up their testing of them by using a partially automated process.