CMPE 202 - Team Hackathon (Part 2)

Team 12 Demo Presentation

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Project Requirements

The Gas Pump Machine:

A gas pump machine contains a numeric keypad, a credit card reader (with receipt printer) and a display screen with two rows of four buttons (as shown below). The two rows of buttons map to available options displayed on the screen for customers to select. Options displayed on the screen depends on which step the machine is currently on while waiting for customer actions.
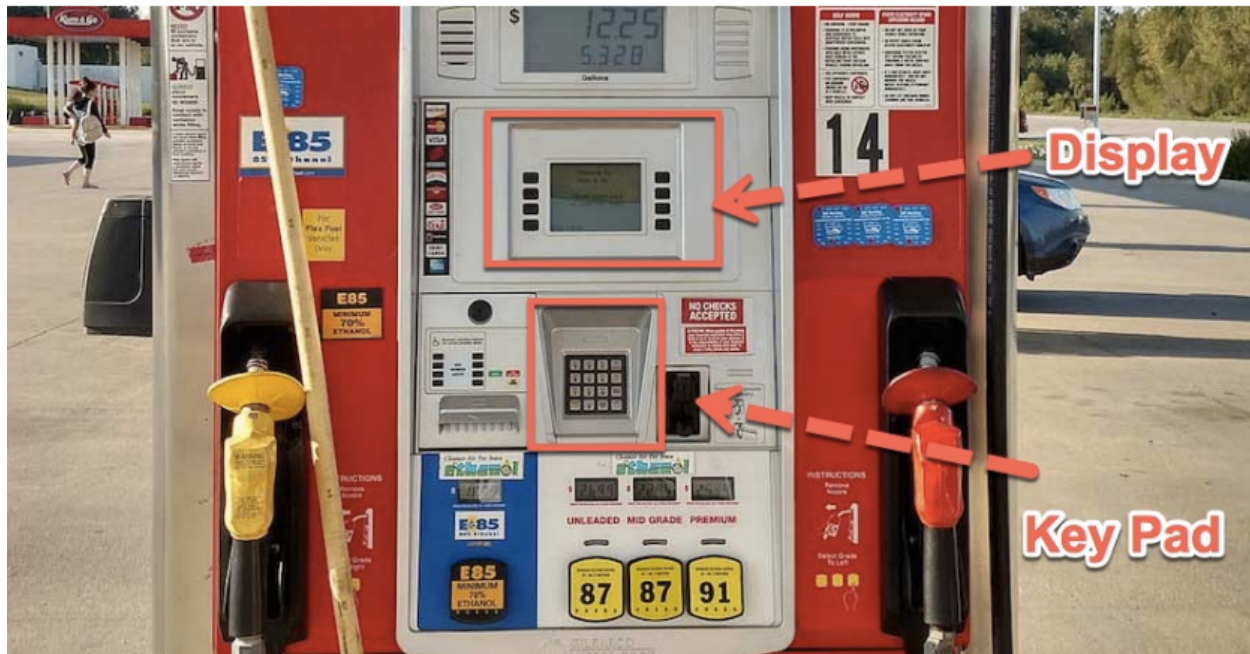
The Gas Pump Machine Processes Orders as follows:

1. Customer must first insert a credit card.   If no card is scanned, no options on the screen are displayed and pressing any of the buttons on the screen results in a "Beep" audible alert.

2. If a credit card is scanned, the screen displays a prompt for the customer to validate with a Zip Code. If not validated, selecting the fuel type should not be allowed.

3. If the credit card has been validated, the example screen to the left is shown. The customer is presented with options (mapped to the button as shown) to either cancel the transaction or display help information. If the customer wants to proceed, the customer would select the Gas/Fuel type (buttons not shown) and remove the pump nozzle to dispense gas.

4. When pumping is completed, the customer inserts the nozzle back into the holder. The display now shows a message asking if the customer wants to print a receipt. Two options are shown, "Yes" or "No".

5. If the customer chooses "Yes", a receipt is printed.

6. The machine prints out a message "Thank You" after printing the receipt or after a timeout of 30 seconds.

Sample Scenarios:

Scenario #1:

The customer goes through the steps to pump gas, selects the "Yes" option to print the receipt at then end and then drives off "Happy".

Scenario #2:

The gas station is equipped with a car wash and offers a discounted Price when pumping gas with car wash, then a receipt is automatically printed at the end with the car wash code. That is, the customer is not given the option (Yes or No) to print the receipt.

Scenario #3:

A picky gas station wants to the ask the customer if they want to print a receipt at the beginning of the process rather than at the end of the process.
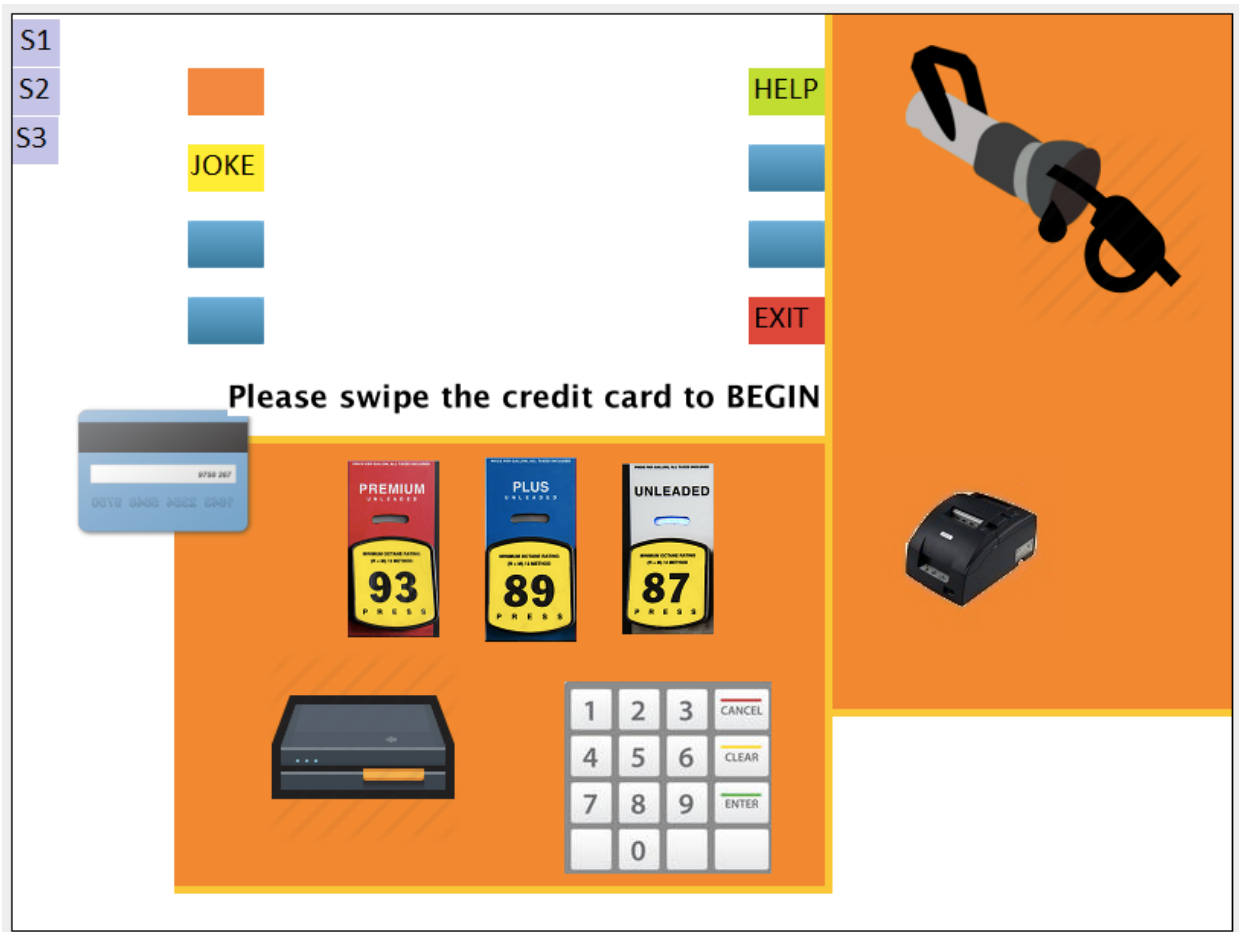
Implementation Requirements

- Teams must implement the Gas Pump Display and Key Pad in Greenfoot or Processing.
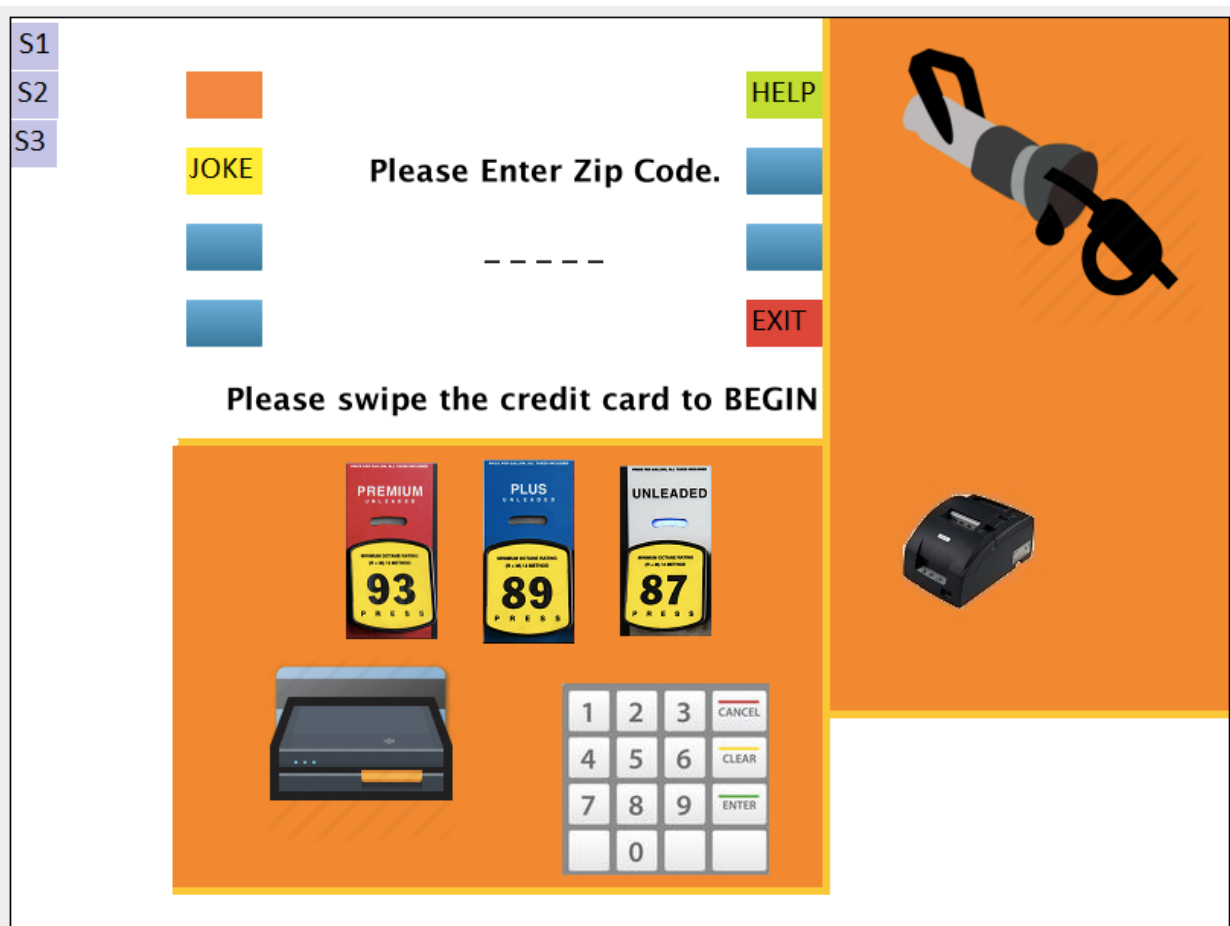- Implementation must be in the Java Programming Language

Scenario #1 Implementation:

In this scenario, the customer could go through the steps to pump gas, where customer selects the "Yes" option to print the receipt at the end and then can drive off. The pattern involved in implementing this scenario are Composite Pattern, Observer Pattern and Singleton Pattern.
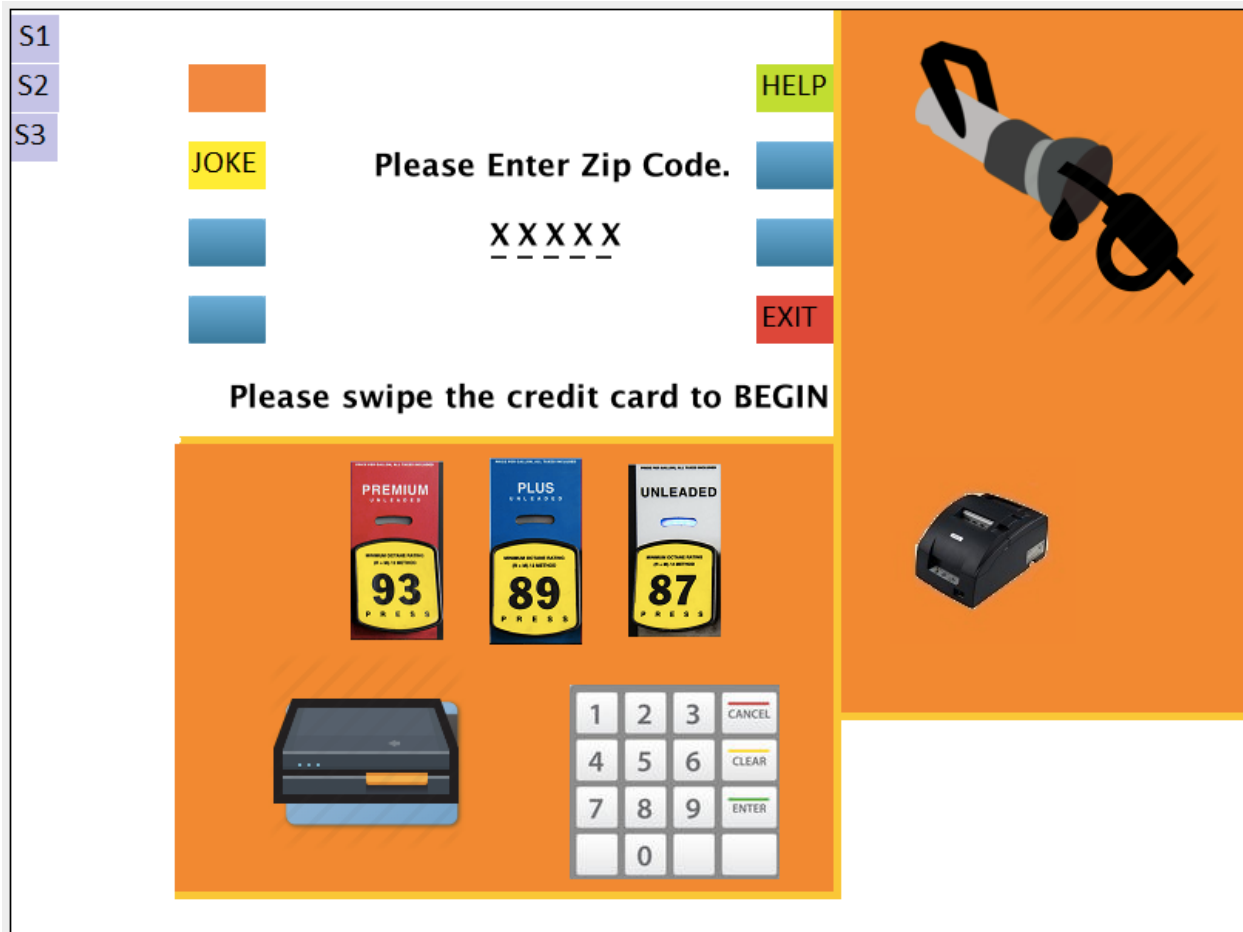
Step 1: Select Scenario 1 by clicking on "S1" on top-left side of the screen. After selecting, Scenario 1, customer will be prompted to swipe the card.

Step 2: The customer then drags the card on the swipe machine, as shown in the screen. It will make the machine prompt to enter the ZIP Code.

Step 3: The user can use the keypad to enter the ZIP Code and can press ENTER to continue.

S1
S2
S3

HELP

JOKE

Please Enter Zip Code.

X X X X X

EXIT

Please swipe the credit card to BEGIN

PREMIUM
UNLEADED

PLUS
UNLEADED

UNLEADED

93
PRESS

89
PRESS

87
PRESS

1	2	3	CANCEL
4	5	6	CLEAR
7	8	9	ENTER
	0		

Step 4: In this step, customer will be asked to choose Fuel Type by making a choice between "PREMIUM", "PLUS" and "UNLEADED". In the below case, customer has chosen "PREMIUM".

HELP

JOKE

You have selected Premium Fuel Type

Please start filling your tank

EXIT

PREMIUM
UNLEADED
93
PRESS

PLUS
UNLEADED
89
PRESS

UNLEADED
87
PRESS

1	2	3	CANCEL
4	5	6	CLEAR
7	8	9	ENTER
	0		

Step 5: In this step, the customer can start filling Fuel by removing the nozzle.

S1
S2
S3

JOKE

HELP

EXIT

Fuel Filling in progress...

PREMIUM
UNLEADED

PLUS
UNLEADED

UNLEADED

93
PRESS

89
PRESS

87
PRESS

1 2 3 CANCEL
4 5 6 CLEAR
7 8 9 ENTER
0

Price: $2.00/gal.
Fuel: 6.05gal.
Bill: $12.10

Step 6: The customer can stop filling the fuel by putting the Nozzle back into the pump. The customer will then be prompted if a receipt is required or not.

S1
S2
S3

HELP

JOKE

NO

Do you want to print Receipt ?

YES

EXIT

PREMIUM
UNLEADED

93
PRESS

PLUS
UNLEADED

89
PRESS

UNLEADED

87
PRESS

1	2	3	CANCEL
4	5	6	CLEAR
7	8	9	ENTER
	0		
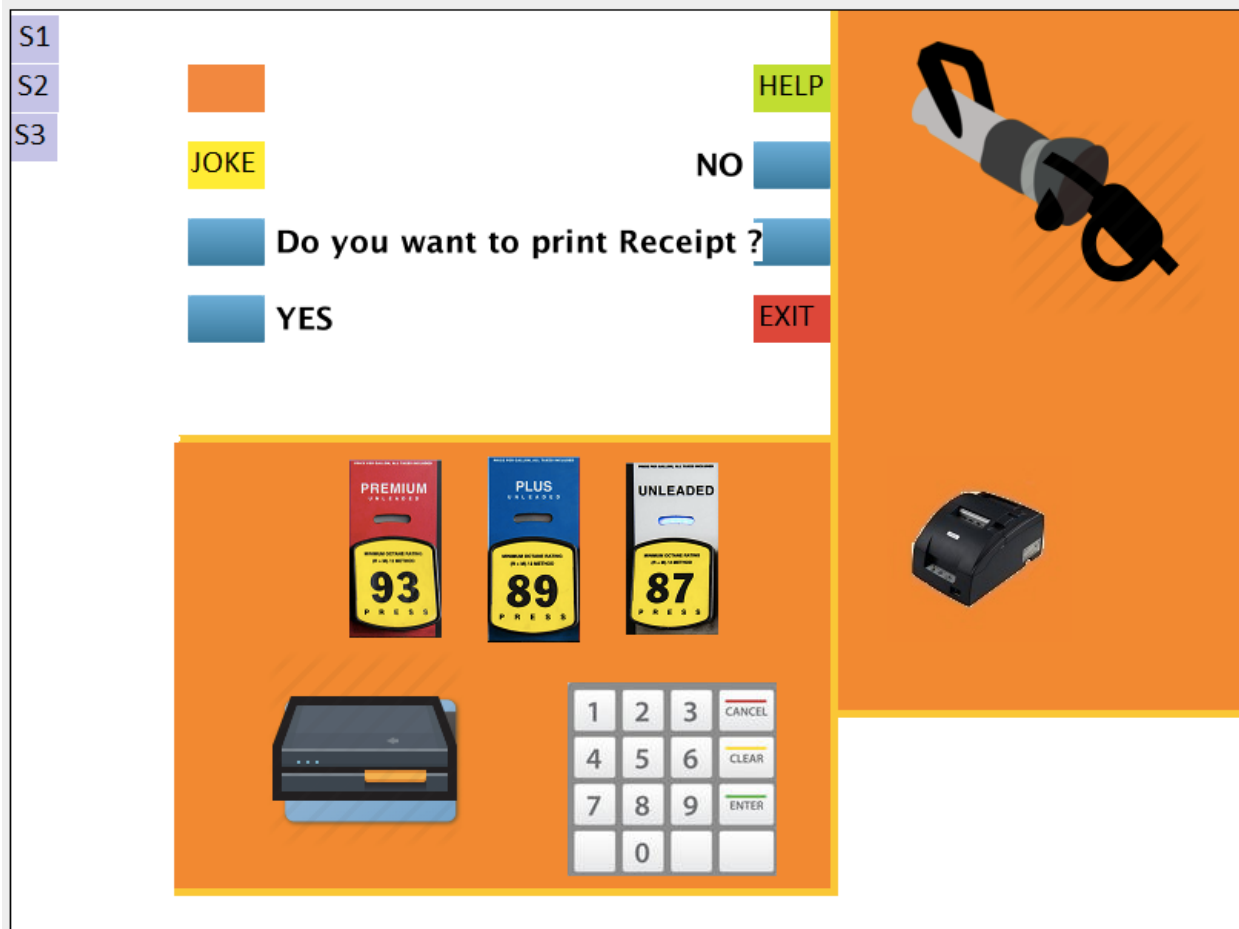
Step 7: In this step, customer has chosen to print a receipt by clicking on "YES".

Scenario #2 Implementation:

In this scenario, the gas station is equipped with a car wash and offers a Discounted Price when pumping gas with car wash. Also, a receipt is automatically printed in the end of the scenario, and the customer doesn't have any option if receipt is to be printed or not. The pattern involved in implementing this scenario are Composite Pattern, Observer Pattern and Singleton Pattern.

Step 1: Select Scenario 2 by clicking on "S2" on top-left side of the screen. After selecting, Scenario 2, customer will be prompted to swipe the card.

Step 2: The customer then drags the card on the swipe machine, as shown in the screen. It will make the machine prompt to enter the ZIP Code.

S1
S2
S3

JOKE

HELP

Please Enter Zip Code.

_ _ _ _ _

EXIT

Please swipe the credit card to BEGIN

PREMIUM
UNLEADED
93
PRESS

PLUS
UNLEADED
89
PRESS

UNLEADED
87
PRESS

1	2	3	CANCEL
4	5	6	CLEAR
7	8	9	ENTER
	0		

Step 3: The user can use the keypad to enter the ZIP Code and can press ENTER to continue.

S1
S2
S3

JOKE

HELP

Please Enter Zip Code.

X X X X X

EXIT

Please swipe the credit card to BEGIN

PREMIUM
UNLEADED
93
PRESS

PLUS
UNLEADED
89
PRESS

UNLEADED
87
PRESS

1	2	3	CANCEL
4	5	6	CLEAR
7	8	9	ENTER
	0		
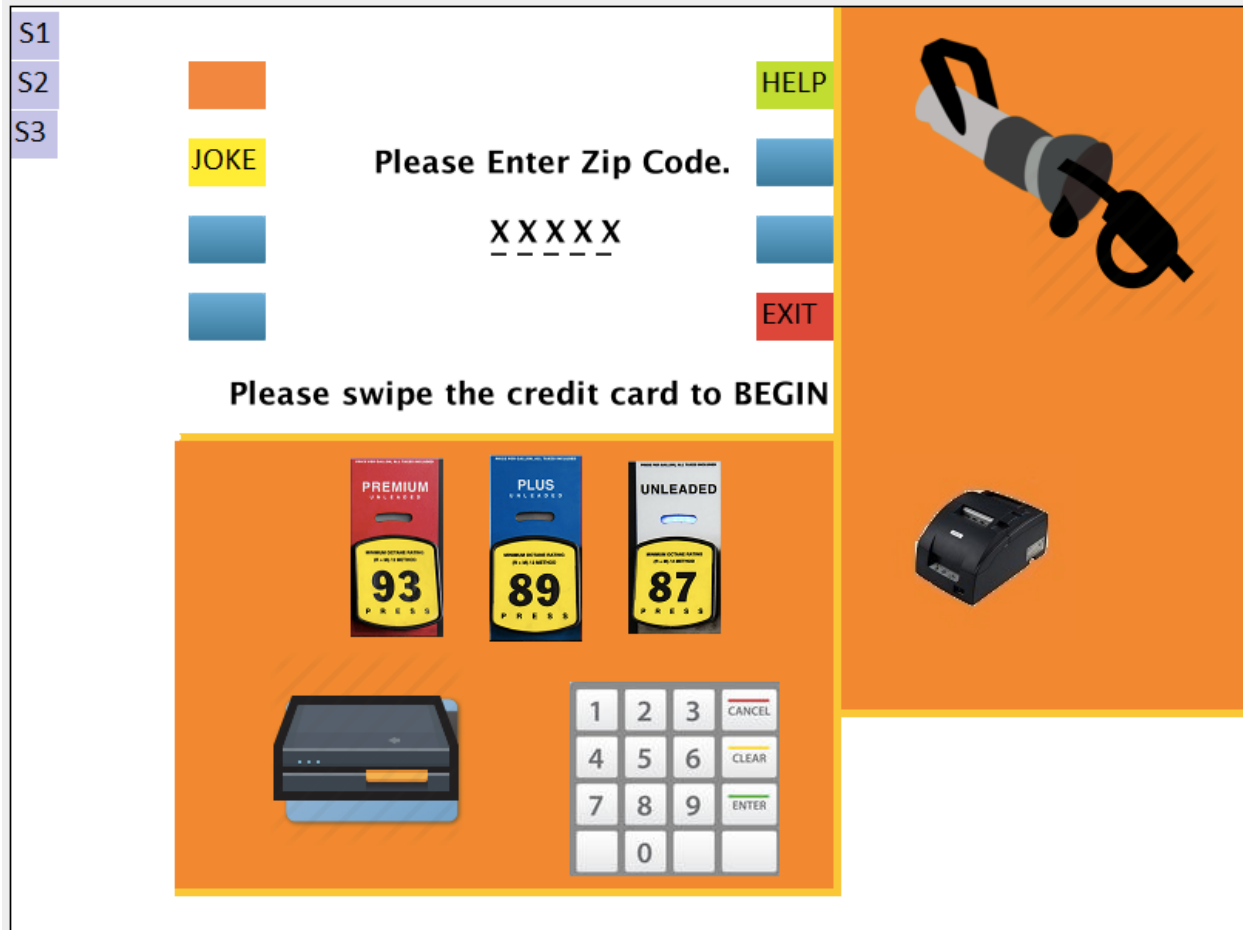
Step 4: In this step, customer will be asked to add Car Wash as well. The customer can make an option by clicking on "OK" or "NO".

S1
S2
S3

JOKE

HELP

NO

Do you want to add a
Car wash for $5.00?
Discount 20% on Fuel

OK

EXIT

PREMIUM
UNLEADED

PLUS
UNLEADED

UNLEADED

93
PRESS

89
PRESS

87
PRESS

1 2 3 CANCEL
4 5 6 CLEAR
7 8 9 ENTER
0
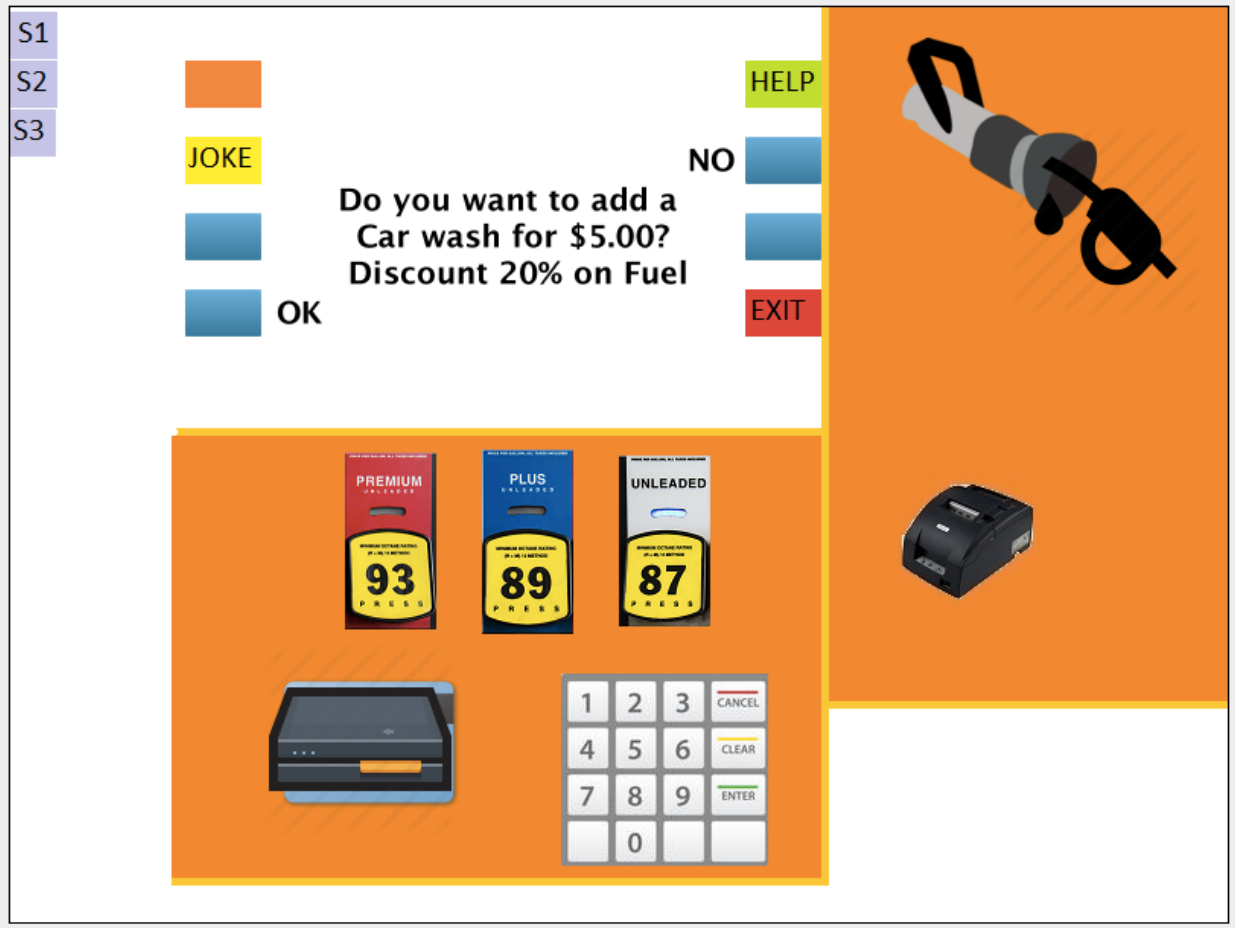
Step 5: (Suppose customer clicked "OK" in precious step). In this step, customer will be asked to choose Fuel Type by making a choice between "PREMIUM", "PLUS" and "UNLEADED". In the below case, customer has chosen "PREMIUM".

S1
S2
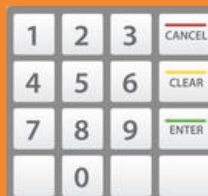S3

JOKE

HELP

Please select the Fuel type

EXIT

$2.00/ gal. $1.50/ gal. $1.00/ gal.

PREMIUM
UNLEADED
93
PRESS

PLUS
UNLEADED
89
PRESS

UNLEADED
87
PRESS

1	2	3	CANCEL
4	5	6	CLEAR
7	8	9	ENTER
	0		

S1
S2
S3

HELP

JOKE You have selected Premium Fuel Type

Please start filling your tank

EXIT

PREMIUM
UNLEADED

MINIMUM OCTANE RATING
93
PRESS

PLUS
UNLEADED

MINIMUM OCTANE RATING
89
PRESS

UNLEADED

MINIMUM OCTANE RATING
87
PRESS

1	2	3	CANCEL
4	5	6	CLEAR
7	8	9	ENTER
	0		

Step 6: In this step, the customer can start filling Fuel by removing the nozzle.

S1
S2
S3

JOKE

HELP

EXIT

Fuel Filling in progress...

PREMIUM
UNLEADED

93
PRESS

PLUS
UNLEADED

89
PRESS

UNLEADED

87
PRESS

| 1 | 2 | 3 | CANCEL |
4	5	6	CLEAR
7	8	9	ENTER
	0		

Price: $2.00/gal.
Fuel: 6.05gal.
Bill: $12.10

Step 7: The customer can stop filling the fuel by putting the Nozzle back into the pump. The customer will then be prompted with a receipt.

S1
S2
S3

JOKE

HELP

EXIT

PREMIUM
UNLEADED

PLUS
UNLEADED

UNLEADED

93
PRESS

89
PRESS

8
PR

1 2
4 5
7 8
0

BILL DETAILS:
Gas Bill: $4.94
Car Wash: $5
Carwash Discount: 20%
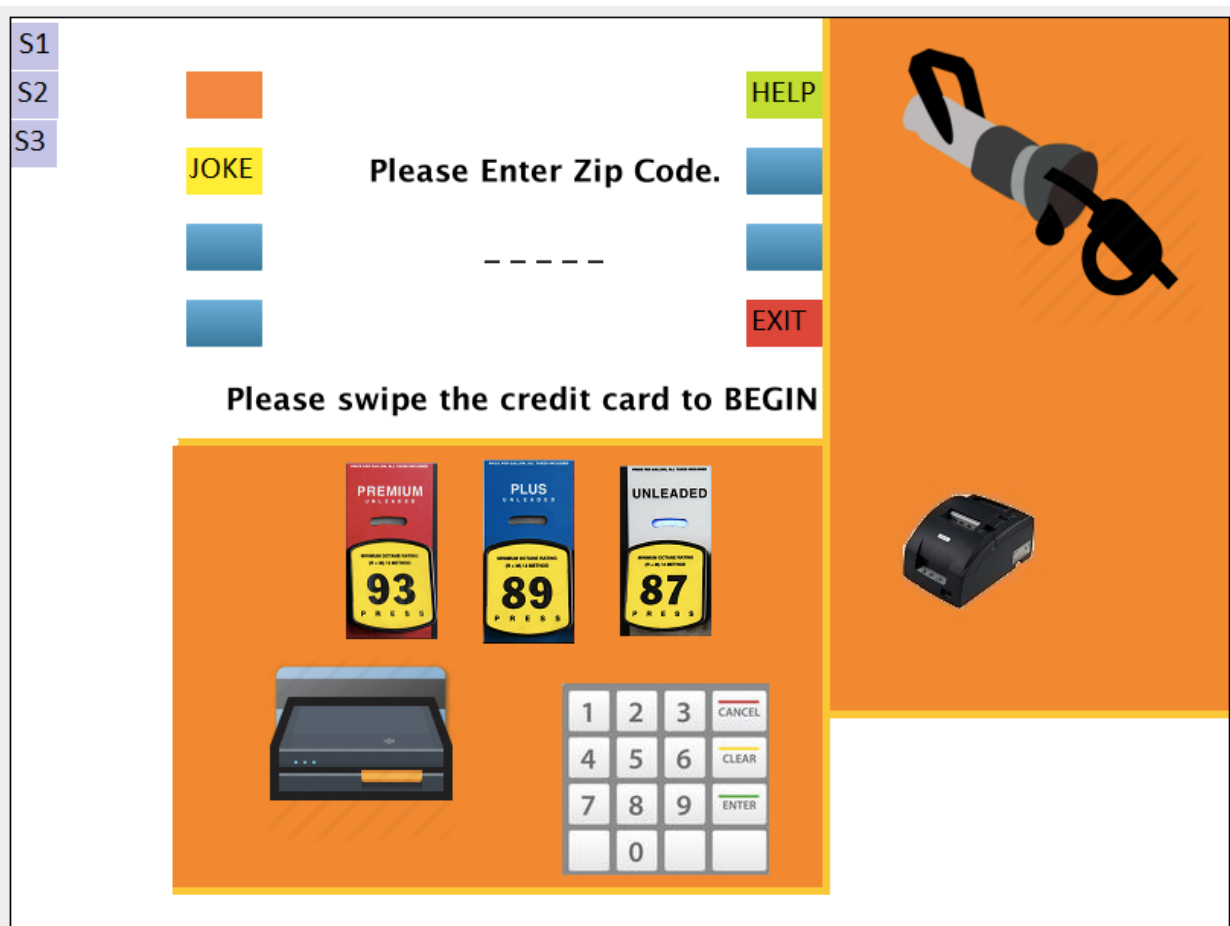DISCOUNTED BILL: $8.95
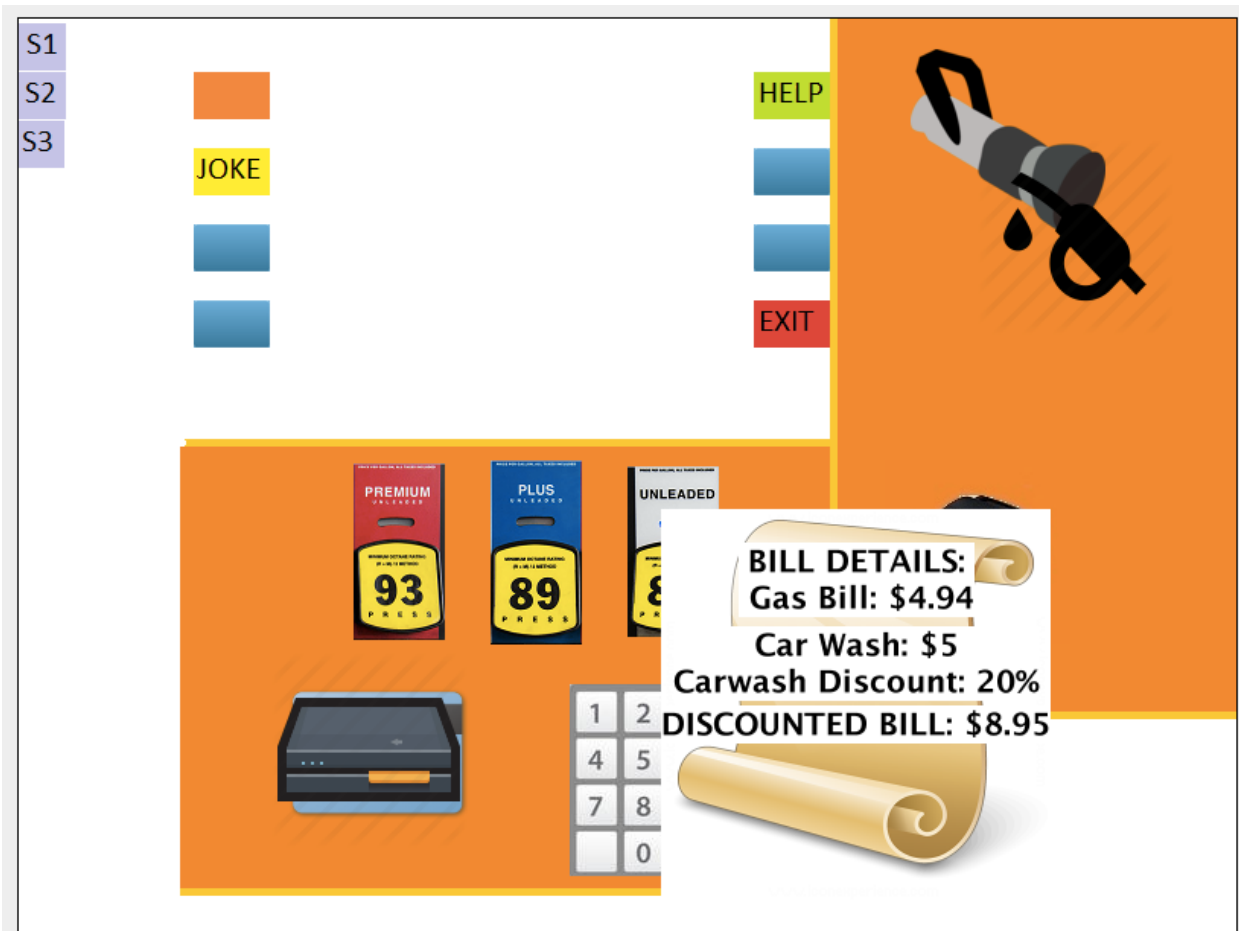
Scenario #3 Implementation:

In this scenario, the gas station asks the customers if the receipt is to be printed at the beginning of the scenario itself rather than at the end of the process/scenario. The pattern involved in implementing this scenario are Composite Pattern, Observer Pattern and Singleton Pattern.
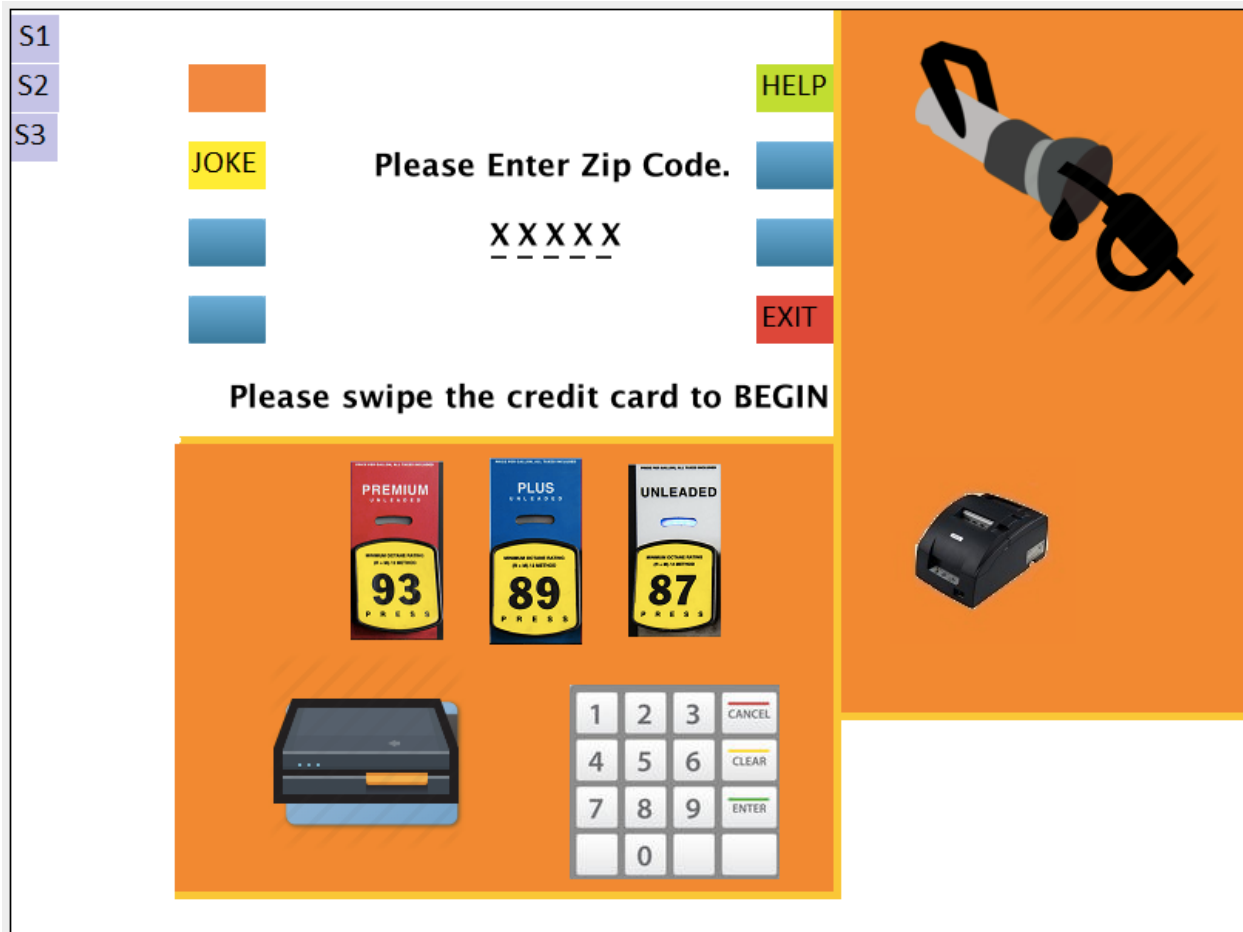
Step 1: Select Scenario 3 by clicking on "S3" on top-left side of the screen. After selecting, Scenario 3, customer will be prompted to swipe the card.
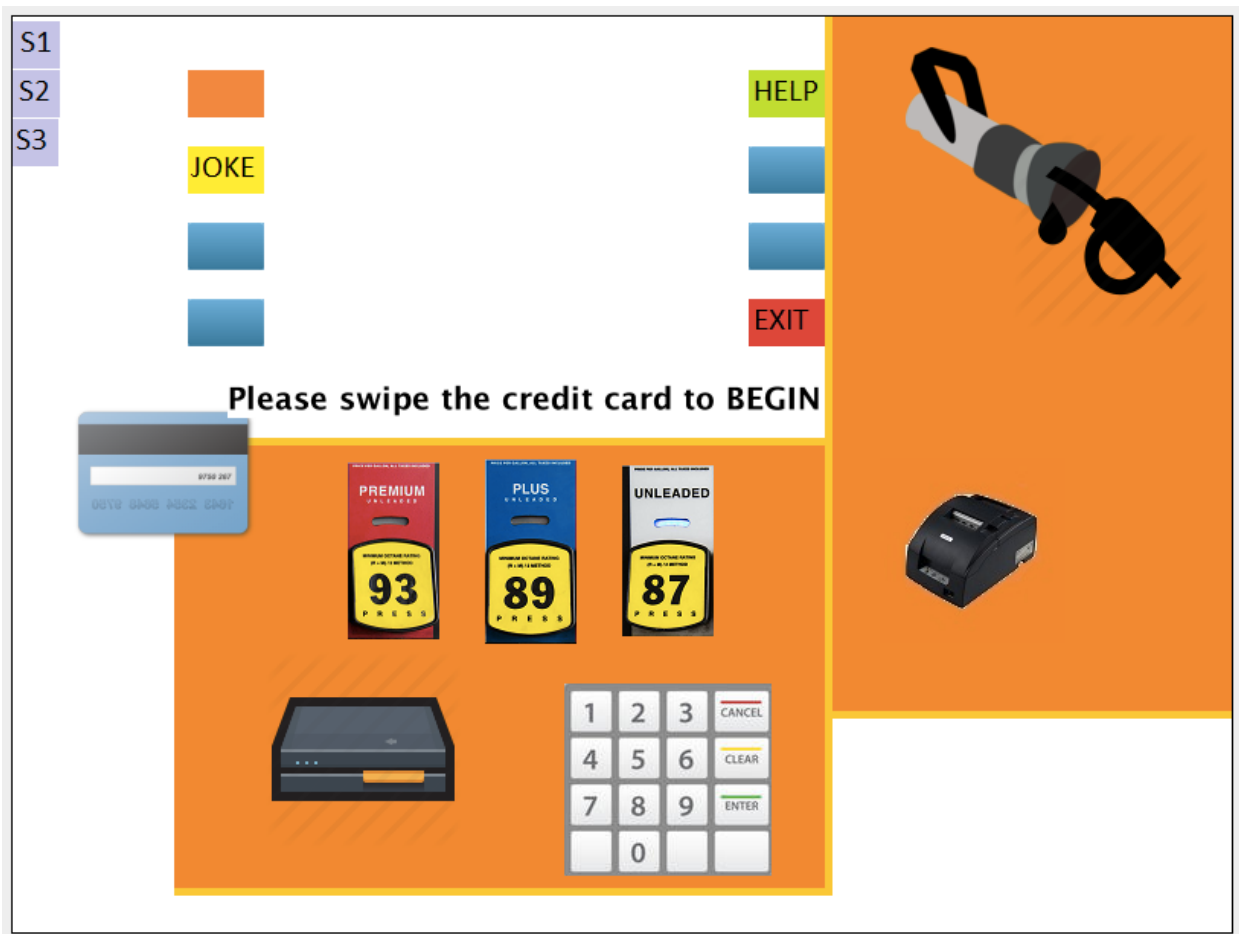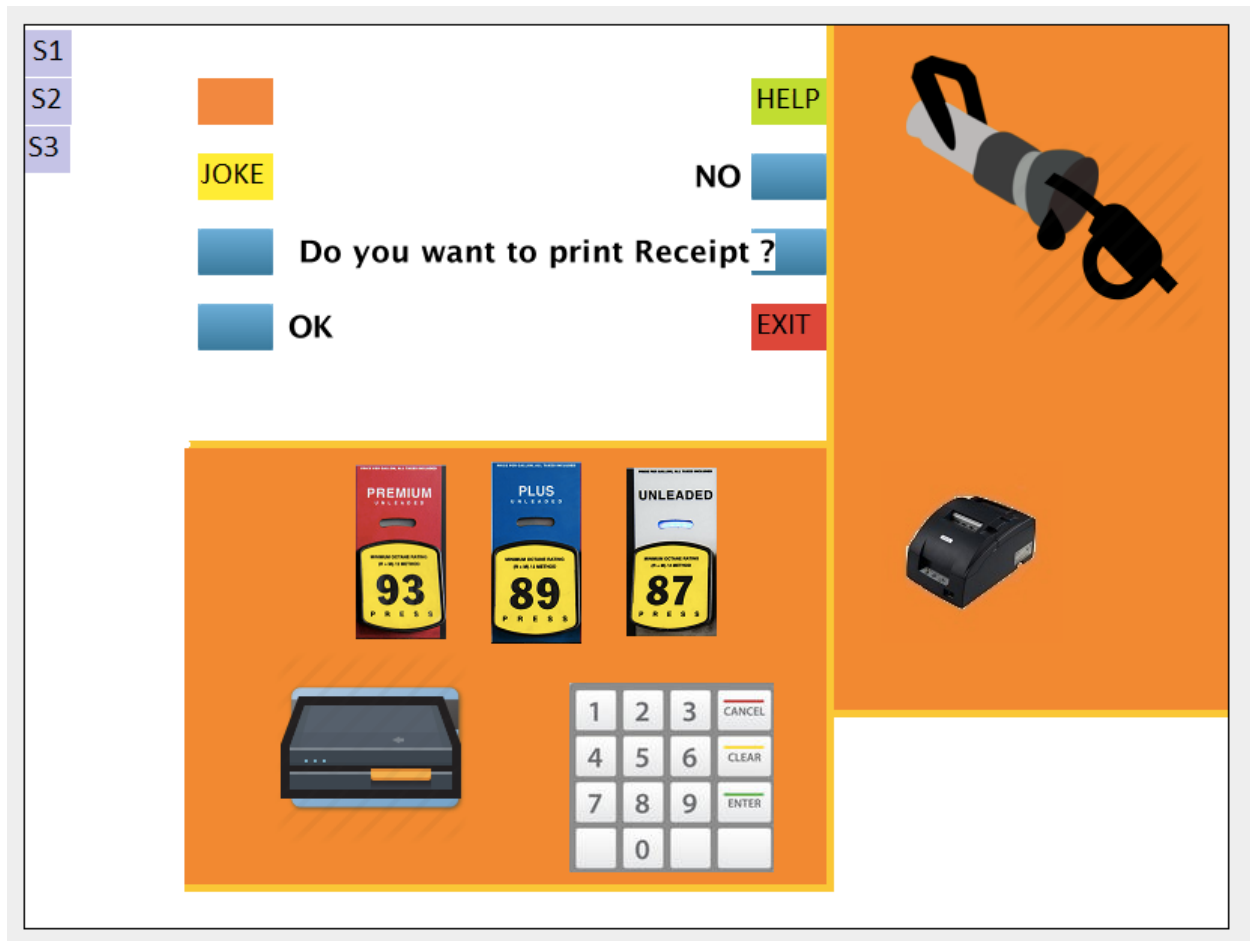
Step 2: The customer then drags the card on the swipe machine, as shown in the screen. It will make the machine prompt to enter the ZIP Code.

S1

S2   HELP

S3

JOKE   Please Enter Zip Code.

– – – – –

EXIT

Please swipe the credit card to BEGIN

PREMIUM
UNLEADED
93
PRESS

PLUS
UNLEADED
89
PRESS

UNLEADED
87
PRESS

1	2	3	CANCEL
4	5	6	CLEAR
7	8	9	ENTER
	0		

Step 3: The user can use the keypad to enter the ZIP Code and can press ENTER to continue.

S1
S2
S3

HELP

JOKE

Please Enter Zip Code.

X X X X X

EXIT

Please swipe the credit card to BEGIN

PREMIUM
UNLEADED

PLUS
UNLEADED

UNLEADED

93
PRESS

89
PRESS

87
PRESS

1	2	3	CANCEL
4	5	6	CLEAR
7	8	9	ENTER
	0		

Step 4: In this step, customer will be asked if a receipt is to be printed or not. The choices can be made by selecting "OK" or NO". (In this case, the customer has chosen "OK").

S1
S2
S3

HELP

JOKE

NO

Do you want to print Receipt ?

OK

EXIT

PREMIUM
UNLEADED

PLUS
UNLEADED

UNLEADED

93
PRESS

89
PRESS

87
PRESS

1	2	3	CANCEL
4	5	6	CLEAR
7	8	9	ENTER
	0		

Step 5: In this step, customer will be asked to choose Fuel Type by making a choice between "PREMIUM", "PLUS" and "UNLEADED". In the below case, customer has chosen "PREMIUM".

S1

S2

S3

HELP

JOKE **You have selected Premium Fuel Type**

Please start filling your tank

EXIT

PREMIUM
UNLEADED

93
PRESS

PLUS
UNLEADED

89
PRESS

UNLEADED

87
PRESS

1	2	3	CANCEL
4	5	6	CLEAR
7	8	9	ENTER
	0		

Step 6: In this step, the customer can start filling Fuel by removing the nozzle.

S1
S2
S3

JOKE

HELP

EXIT

Fuel Filling in progress...

PREMIUM
UNLEADED

PLUS
UNLEADED

UNLEADED

93
PRESS

89
PRESS

87
PRESS

1	2	3	CANCEL
4	5	6	CLEAR
7	8	9	ENTER
	0		

Price: $2.00/gal.
Fuel: 6.05gal.
Bill: $12.10

Step 7: The customer can stop filling the fuel by putting the Nozzle back into the pump. If the customer selected to print receipt earlier, a receipt would be generated. In this case, a receipt is generated as the customer choose to print a receipt in Step 4.

S1			
S2		HELP	
S3			

JOKE

EXIT

PREMIUM

PLUS

UNLEADED

93

89

8

1 2
4 5
7 8
0

Thanks for your visit !

BILL DETAILS:
Gas Bill: $21.10

*********** THE END ***********