

# Vending Machine

Group 29

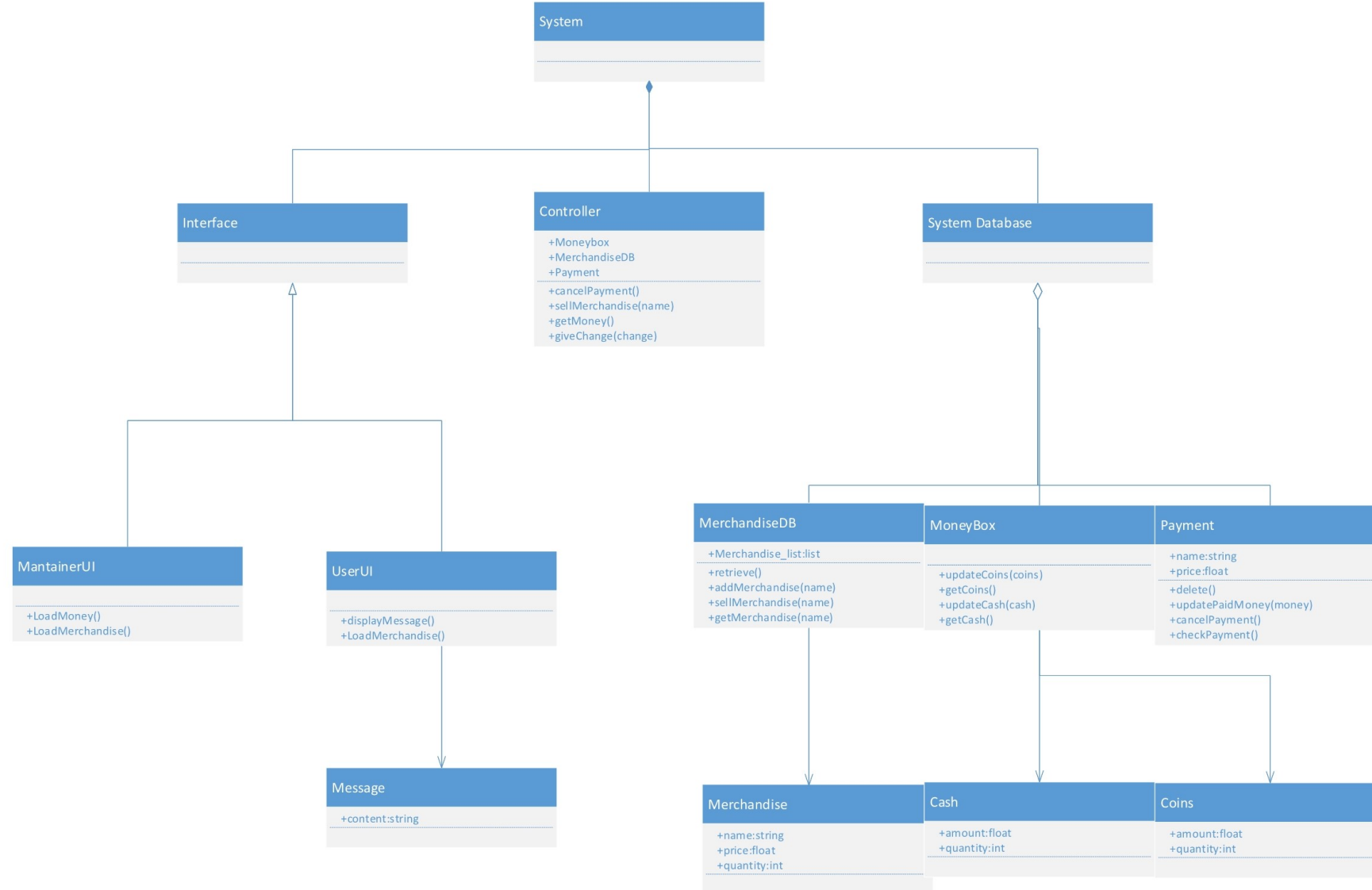
**What we have done**

# Requirement

# System Objective

- In this project, we are developing a software that simulates a normal and classical vending machine. The software will take care of the User Interface, ensure every merchandise can be sold correctly and the user can get correct change. Also, a manager will check all merchandise for its stock and the money box to ensure the machine's normal operation. A UPPAAL model will be provided to check whether the machine works correctly.

# Domain Analysis



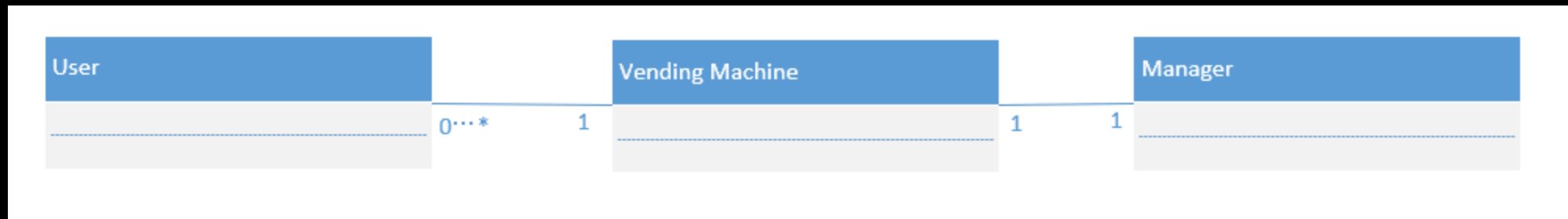
# Domain Analysis

Vending Machine
merchandise coin cash
sellmerchandise() givechange() receivemoney() showmerchandise()

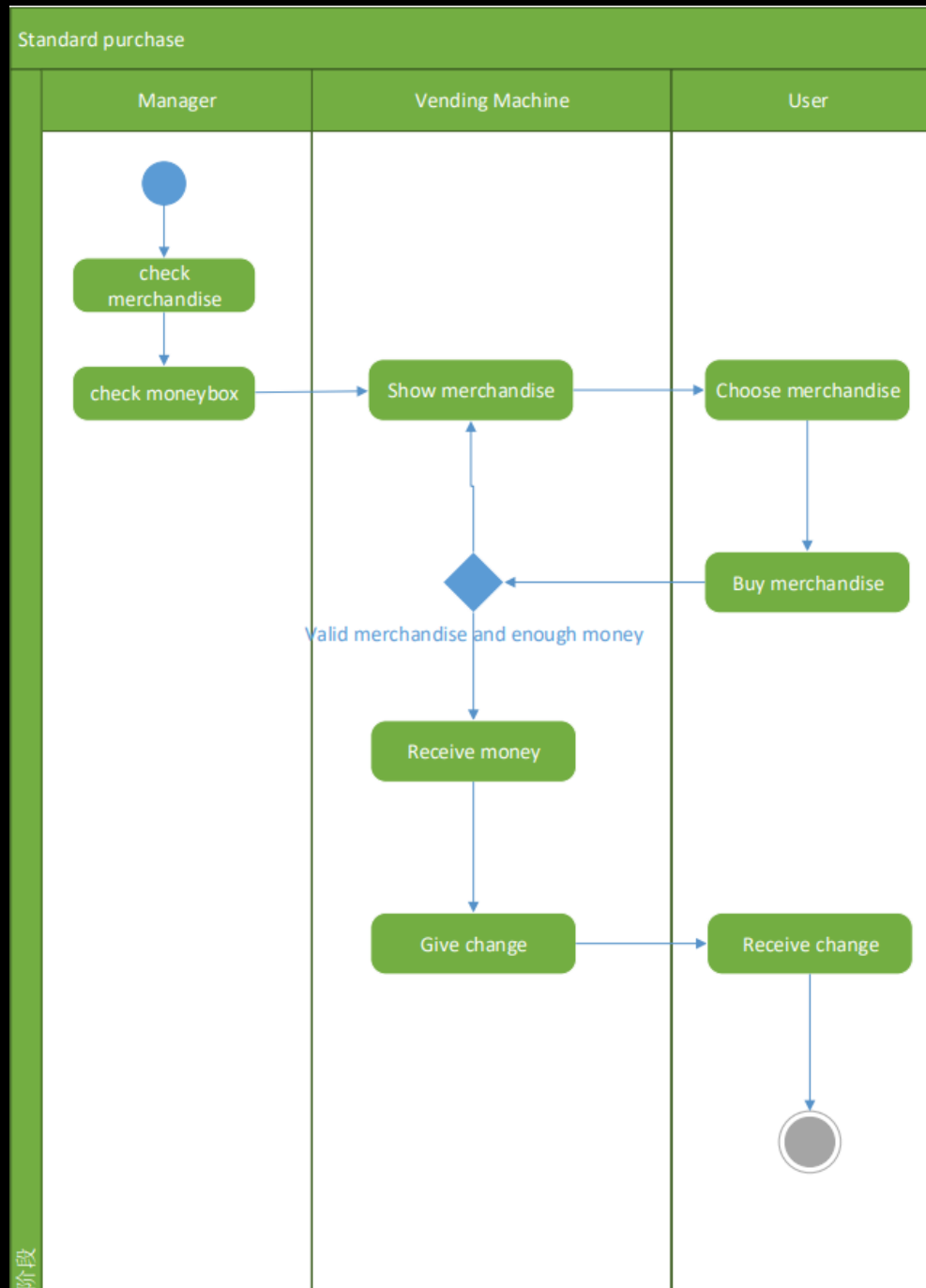
User
coin cash
buymerchandise() getchange()

Manager
checkmerchandise() checkmoneybox()

# Domain Analysis

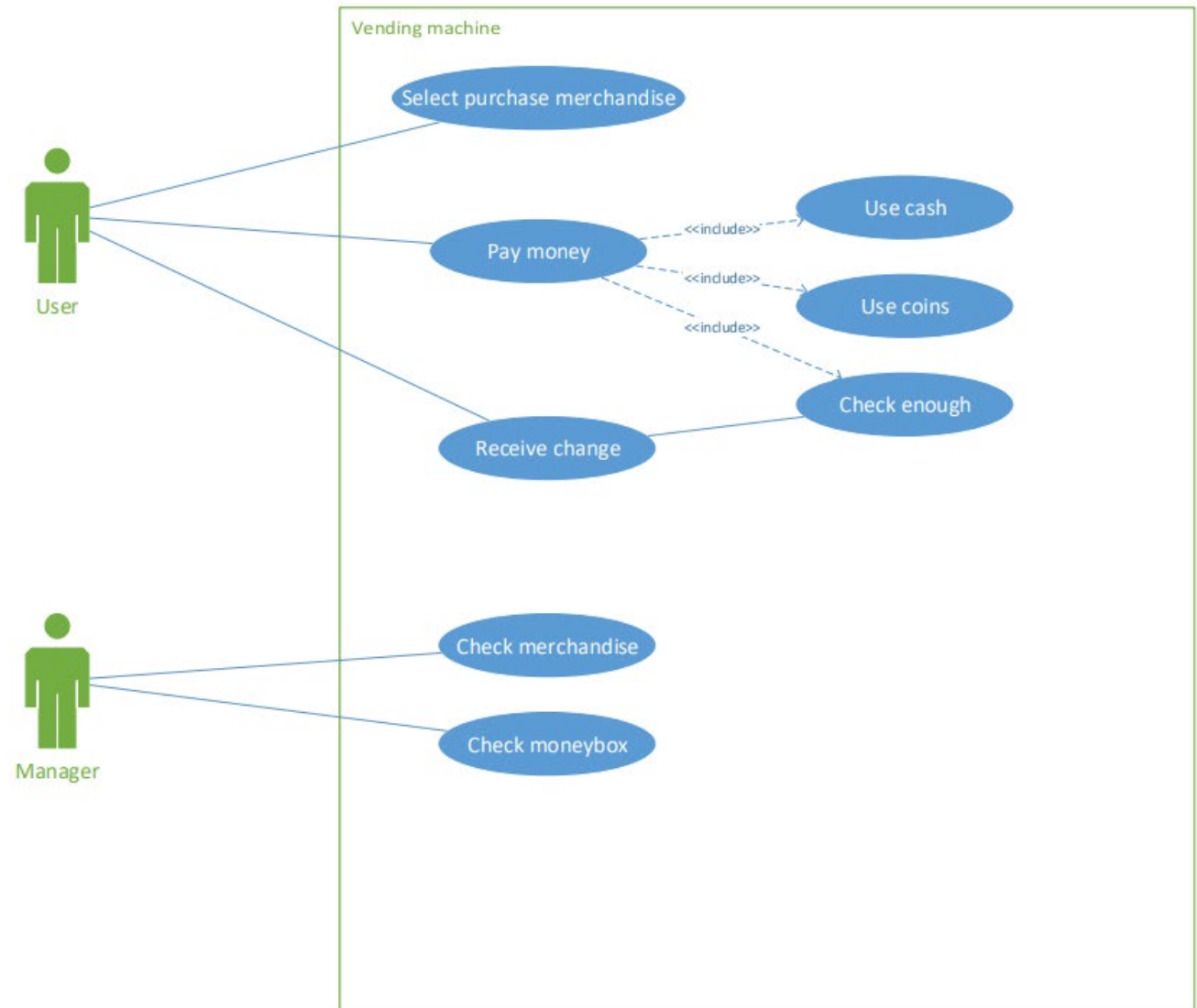


# Domain Analysis





# Use Case

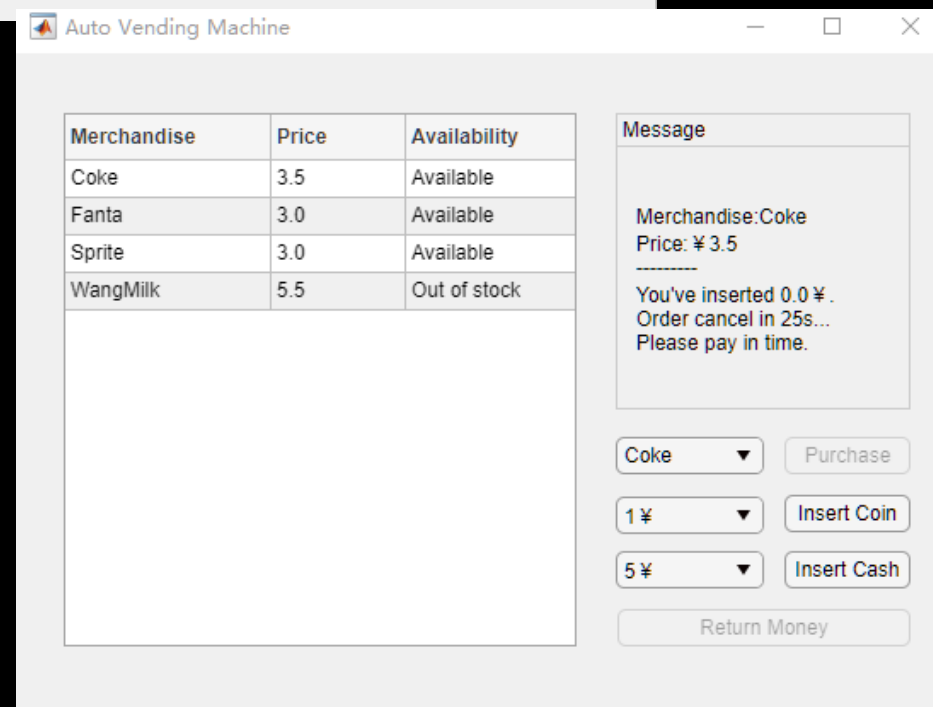
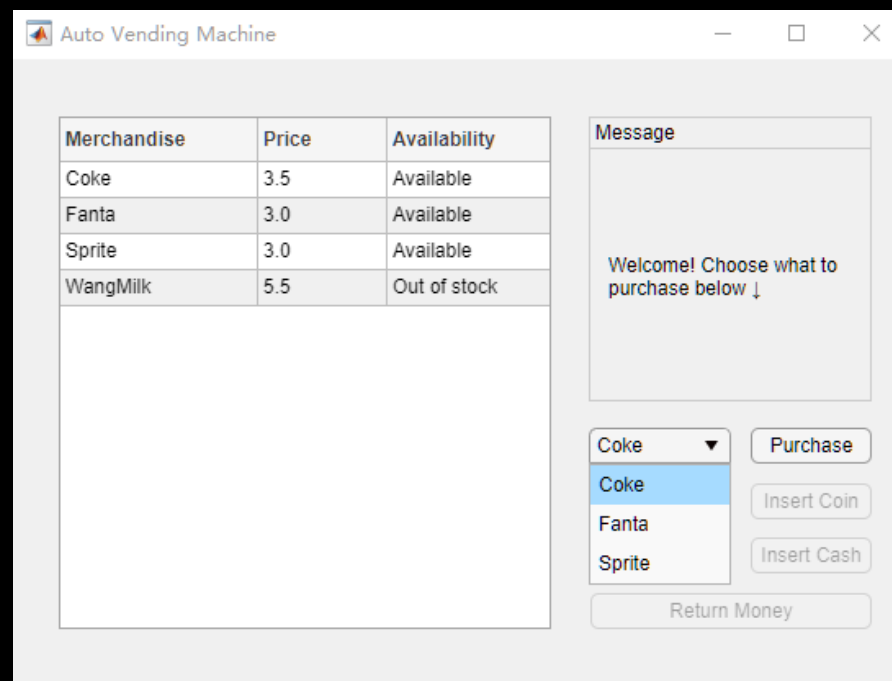
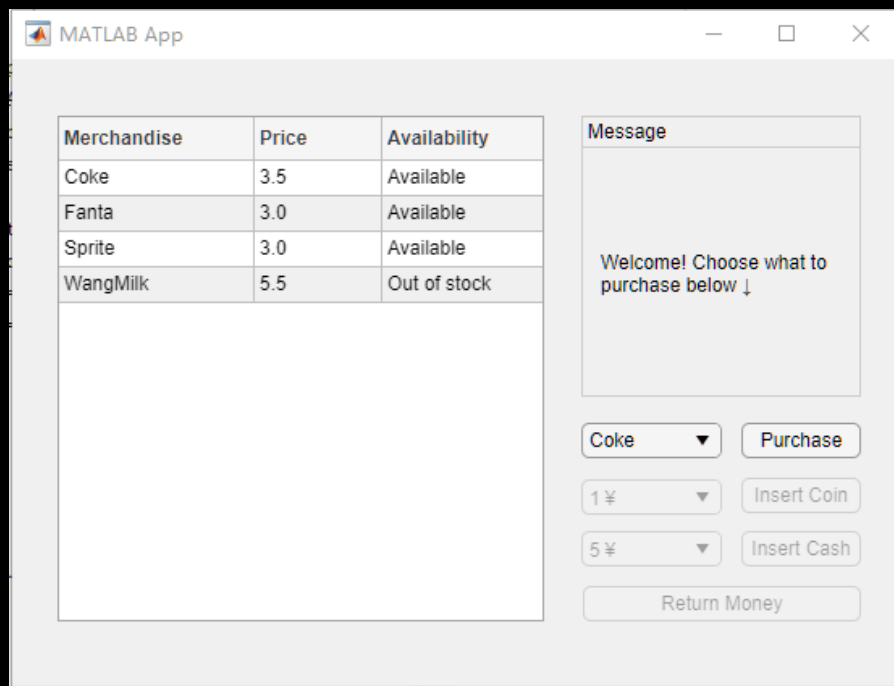


# Software Requirements

- R1: User UI
- R2: Maintainer UI
- R3: Controller

# Development

# User UI



# User UI

Auto Vending Machine

Merchandise	Price	Availability
Coke	3.5	Available
Fanta	3.0	Available
Sprite	3.0	Available
WangMilk	5.5	Out of stock

Message

Merchandise:Coke  
Price: ¥ 3.5  
-----  
You've inserted 0.0 ¥.  
Order cancel in 24s...  
Please pay in time.

Coke

1 ¥  
0.5 ¥  
1 ¥  
Fake Coin

Money

Purchase

Insert Coin

Insert Cash

Auto Vending Machine

Merchandise	Price	Availability
Coke	3.5	Available
Fanta	3.0	Available
Sprite	3.0	Available
WangMilk	5.5	Out of stock

Message

Merchandise:Coke  
Price: ¥ 3.5  
-----  
You've inserted 0.0 ¥.  
Order cancel in 15s...  
time.

1 ¥  
5 ¥  
10 ¥  
20 ¥  
Fake Cash  
5 ¥

Purchase

Insert Coin

Insert Cash

Return Money

# User UI

Auto Vending Machine

Merchandise	Price	Availability
Coke	3.5	Available
Fanta	3.0	Available
Sprite	3.0	Available
WangMilk	5.5	Out of stock

Message

Payment Time-out  
Please try again.

Coke ▼

Purchase

1 ¥ ▼

Insert Coin

5 ¥ ▼

Insert Cash

Return Money

Auto Vending Machine

Merchandise	Price	Availability
Coke	3.5	Available
Fanta	3.0	Available
Sprite	3.0	Available
WangMilk	5.5	Out of stock

Message

Payment success!  
Get your Coke and  
0.5 ¥ change below ↓

Coke ▼

Purchase

1 ¥ ▼

Insert Coin

5 ¥ ▼

Insert Cash

Return Money

# User UI

Auto Vending Machine

Merchandise	Price	Availability
Coke	3.5	Available
Fanta	3.0	Available
Sprite	3.0	Available
WangMilk	5.5	Out of stock

Message

Get your 0.5 ¥ below ↓  
-----  
0.5 ¥ Coin\*1

Coke ▼

Purchase

1 ¥ ▼

Insert Coin

5 ¥ ▼

Insert Cash

Return Money

# Maintainer UI

Maintainer Backend

Message

[06-09 21:40:46] (++)Out of WangMilk!  
[06-09 21:40:46] Auto Vending Machine ver2.2 is running.

Merchandise Status

Merchandise	Price	Quantity
Coke	3.5	10
Fanta	3.0	10
Sprite	3.0	10
WangMilk	5.5	0

Add Panel

Item Name

+

Maintainer Backend

Message

[06-09 21:40:46] (++)Out of WangMilk!  
[06-09 21:40:46] Auto Vending Machine ver2.2 is running.

Merchandise Status

Money	Quantity
0.5 ¥ Coin	50
1 ¥ Coin	50
1 ¥ Cash	30
5 ¥ Cash	30
10 ¥ Cash	30
20 ¥ Cash	0

Money Box Status

Payment Record

Maintainer Backend

Message

[06-09 21:49:16] (++)Out of WangMilk!  
[06-09 21:40:46] (++)Out of WangMilk!  
[06-09 21:40:46] Auto Vending Machine ver2.2 is running.

Merchandise Status

Date	Merchandise	Price	Status
2021-06-09 21:50:34	Coke	3.5	Time Out
2021-06-09 21:49:11	Coke	3.5	Success

Money Box Status

Payment Record



# Maintainer UI

Mantainer Backend			
Message	Merchandise Status	Money Box Status	Payment Record
<div>[06-09 21:55:22] (++)Out of qwe!(++)Out of WangMilk! [06-09 21:55:22] qwe has been added successfully! [06-09 21:49:16] (++)Out of WangMilk! [06-09 21:40:46] (++)Out of WangMilk! [06-09 21:40:46] Auto Vending Machine ver2.2 is running.</div>	Merchandise	Price	Quantity
	Coke	3.5	9
	Fanta	3.0	10
	Sprite	3.0	10
	WangMilk	5.5	0
	qwe	5.0	0
Add Panel			
Item Name			
<div>qwe</div> <div>+</div>			

Mantainer Backend			
Message	Merchandise Status	Money Box Status	Payment Record
<div>[06-09 21:59:21] (++)Out of WangMilk! [06-09 21:59:02] (++)Out of WangMilk! [06-09 21:55:22] (++)Out of qwe!(++)Out of WangMilk! [06-09 21:55:22] qwe has been added successfully! [06-09 21:49:16] (++)Out of WangMilk! [06-09 21:40:46] (++)Out of WangMilk! [06-09 21:40:46] Auto Vending Machine ver2.2 is running.</div>	Merchandise	Price	Quantity
	Coke	3.5	9
	Fanta	3.0	10
	Sprite	3.0	10
	WangMilk	5.5	5
	qwe	4.0	10
Add Panel			
Item Name			
<div>qwe</div> <div>+</div>			

# Maintainer UI

Maintainer Backend

Message

[06-12 23:29:24] (++)Out of q'we!(++)Out of WangMilk!  
[06-12 23:29:24] Input price illegal!(should be able to pay)  
[06-12 23:29:11] (++)Out of q'we!(++)Out of WangMilk!  
[06-12 23:29:11] Exceed maximum capacity!  
[06-12 23:29:07] (++)Out of q'we!(++)Out of WangMilk!  
[06-12 23:29:06] q'we has been added successfully!  
[06-12 23:28:58] (++)Out of WangMilk!  
[06-12 23:28:58] Auto Vending Machine ver2.2 is running.

Add Panel

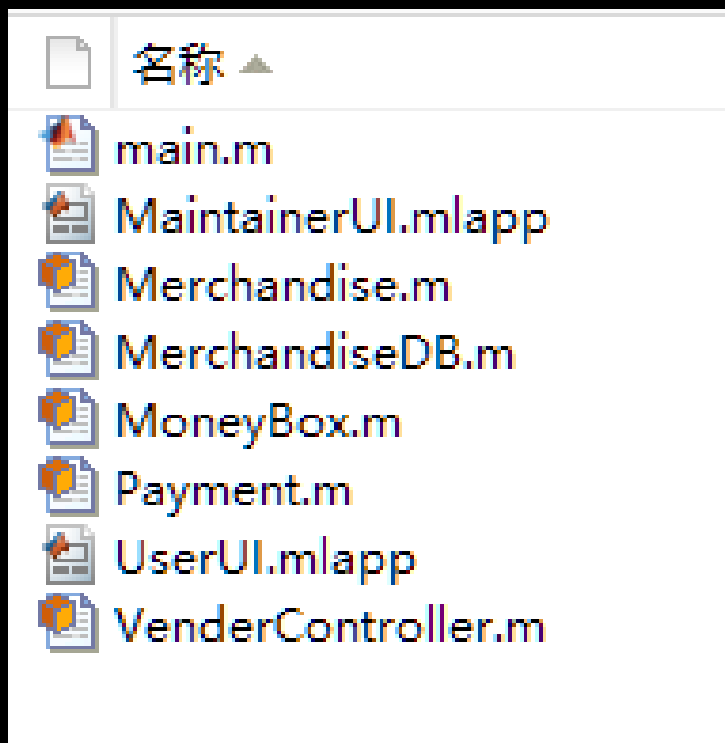
Item Name

q'we

+

Merchandise Status	Money Box Status	Payment Record
Merchandise	Price	Quantity
Coke	3.5	10
Fanta	3.0	10
Sprite	3.0	10
WangMilk	5.5	0
q'we	5.0	0

# OOP



# Vending Display

**What we're going to do next**