



# USER MANUAL

Vending Machine

Group 1

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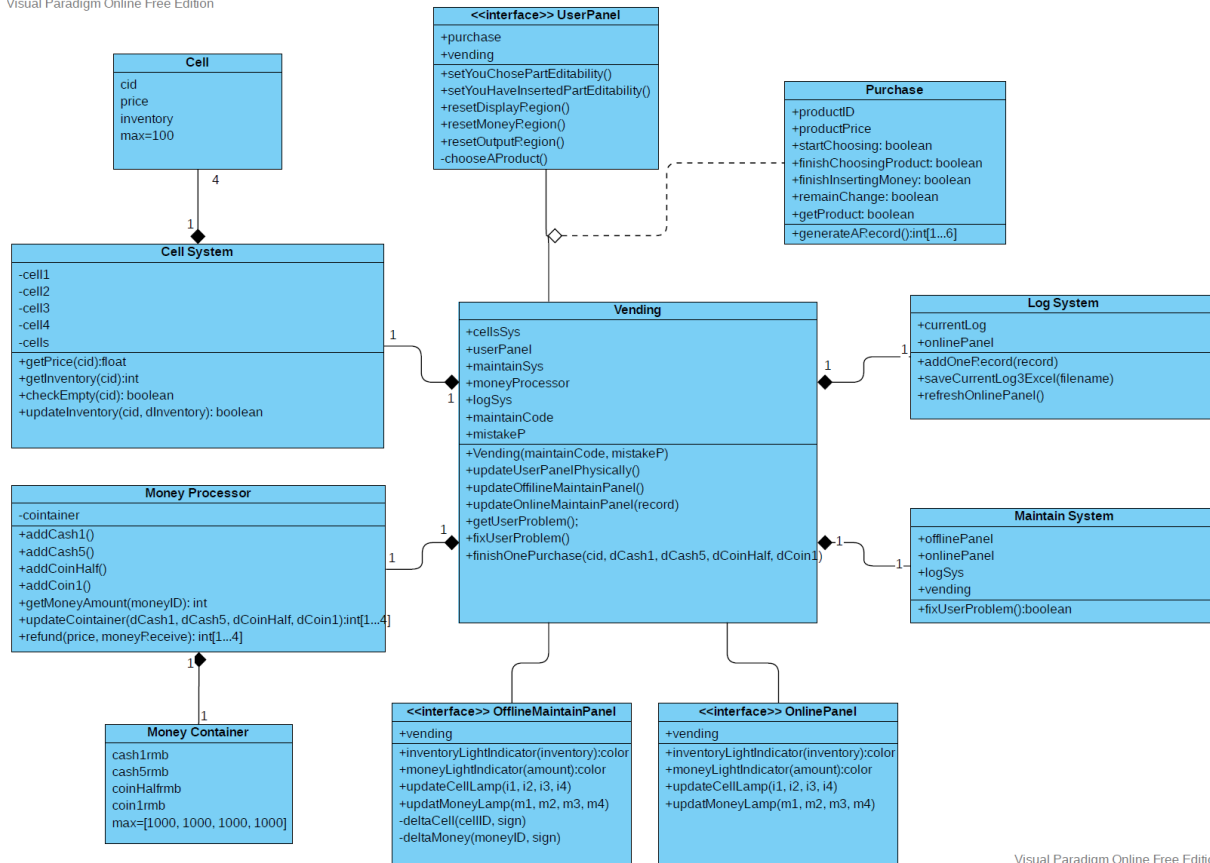
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## System Architecture

The system architecture is shown below:

Visual Paradigm Online Free Edition



Visual Paradigm Online Free Edition

## How to Use & Notion for Maintainer

Input `Vending(maintainCode, mistakeProbability)` in the command line. If the maintain code is the same as a pre-defined value (1 here), the offline maintain panels will be out and can be edited. Since only one computer is used and responsible for displaying and taking the input, the maintain panel and the user panel will be shown at the same time. If the code is not correct for the command line input, then the offline panel will not be able to be accessed, which is set to Unable in the implementation.

Example input: `Vending(1, 0.1)`, `Vending(2, 0.1)`.

## User Interaction: User Panel


The user panel includes 5 parts: Cells, Display Region, Money Input and Change & Product Output, one button “Call Maintainer”, which allows the user to contact the maintainer by pushing it, and Go Maintaining.


**Offline User Panel**


Maintain Code


---

**Cells**

1  ☐

2  ☐

3  ☐

4  ☐

---

**Change & Product Output**

☐ Change out

☐ Product Out

coin:0.5r

cash:1r

coin:1r

cash:5r

---

**Display Region**

**You chose**

product

It costs

**You have Insert**

cash:1r

coin:0.5r

Total money inserted

cash:5r

coin:1r

☐

---

**Money Input**

Only take cash (1r, 5r) and coin (0.5r, 1r).

**Cash**  
☒ 1r  
☐ 5r  
☐ fake & illegal  ☐

**Coin**  
☐ 0.5r  
☒ 1r  
☐ fake & illegal  ☐

## Cells

A purchase is started by selecting a product form the Cells part. This part includes four cells, each of which has a lamp that indicates the inventory situation of the cell. If there is inventory left for this cell, the corresponding light will be green and “I want this” button will appeared be able to be pushed. If there is no inventory for the corresponding cell, the lamp will be red and “I want this” button will not be able to be pushed.

**Cells**

1  ☐

2  ☐

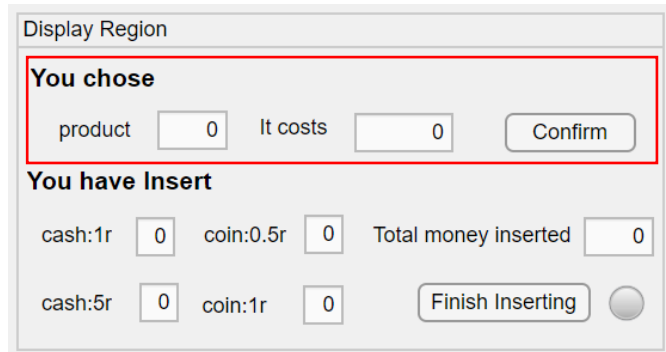
3  ☐

4  ☐

### Display Region – “You chose” part

This region indicates the current situation of product selection to the buyer.

When choosing the product, the “You chose” part will display the product ID and the product price on real time. When the user finishes choosing the product, he or she should push the confirm button and the product will not be changed again before the next purchase begins.



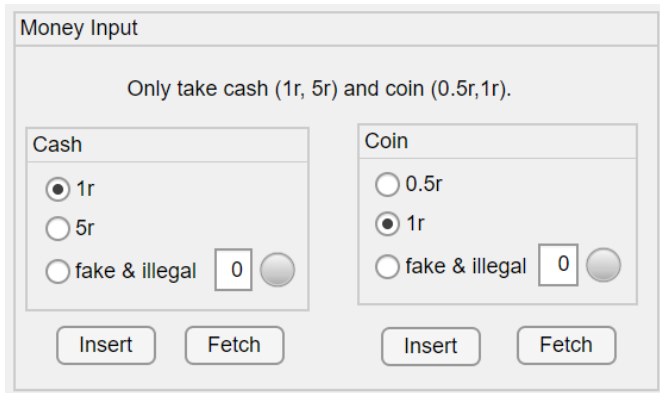
The screenshot shows a window titled "Display Region". Inside, there are two main sections. The first section, "You chose", is highlighted with a red rectangular border. It contains a label "product" followed by a text input field with the value "0", a label "It costs" followed by another text input field with the value "0", and a "Confirm" button. The second section, "You have Insert", is located below the first. It contains two rows of input fields: "cash:1r" with value "0", "coin:0.5r" with value "0", and "Total money inserted" with value "0" on the first row; and "cash:5r" with value "0", "coin:1r" with value "0", and a "Finish Inserting" button with a circular progress indicator on the second row.

When the confirm button is pushed, the money input part starts to take money.

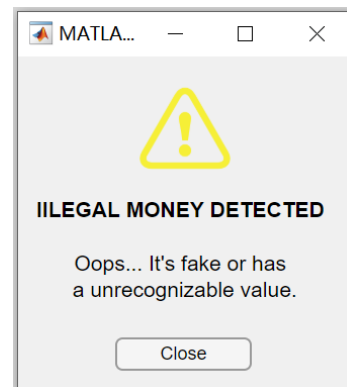
### Money Input

This part includes an indication sentence that reveals the handling ability of money of this vending machine on the top.

After the user finishes choosing the product and pushes the “confirm” button on the Display Region, the two “insert” button is able to be pushed. The user selects the value of money in the cash or coin part, and if the user inserts fake or illegal money, the vending machine will not receive it and display a warning information as shown in the right. The user can push the close button to close this window and he or she should fetch the illegal input by pushing “fetch” button before inserting anything else in this part.



The screenshot shows a window titled "Money Input". At the top, it says "Only take cash (1r, 5r) and coin (0.5r,1r).". Below this, there are two main sections: "Cash" and "Coin". The "Cash" section has three radio buttons: "1r" (selected), "5r", and "fake & illegal" (with a text input field showing "0" and a circular progress indicator). The "Coin" section has three radio buttons: "0.5r", "1r" (selected), and "fake & illegal" (with a text input field showing "0" and a circular progress indicator). At the bottom of each section are "Insert" and "Fetch" buttons.



The screenshot shows a warning dialog box titled "MATLA...". It features a yellow warning triangle icon with an exclamation mark. Below the icon, the text reads "IILEGAL MONEY DETECTED" in bold. Underneath, it says "Oops... It's fake or has a unrecognizable value." At the bottom is a "Close" button.

#### Display Region – “You have inserted” part

This region indicates the current situation of money input to the buyer.

When inserting money from the Money Input part, this region updates in real time. The total money inserted is also computed and updates. When the total money inserted reaches the product price, no money can be inserted anymore and the “finish inserting button” is able to be pushed. The user should push this button before getting the change and product.

The 'Display Region' UI is divided into two main sections. The top section, titled 'You chose', contains a 'product' label followed by a text input field with the value '0', an 'It costs' label followed by another text input field with the value '0', and a 'Confirm' button. The bottom section, titled 'You have Insert', is highlighted with a red border and contains four labels with corresponding text input fields: 'cash:1r' (0), 'coin:0.5r' (0), 'cash:5r' (0), and 'coin:1r' (0). To the right of these is a 'Total money inserted' label with a text input field showing '0'. At the bottom right of this section is a 'Finish Inserting' button and a grey circular indicator.

#### Change & Product Output

After pushing “Finish Inserting”, the user can fetch change and product in this region. There are two lamps which indicate whether change and product are out respectively. If out normally, the lamp will be green. If not, the lamp will be red. The four money texts indicate the number of corresponding money value. When the change is not enough, all of the inserted money will be out here and the change out lamp will be red indicating an abnormal behavior and the product out lamp will be red too since no product will be out in this case.

The 'Change & Product Output' UI features two status lamps at the top: 'Change out' and 'Product Out', both currently shown as grey circles. Below each lamp are two text input fields. Under 'Change out', the fields are 'coin:0.5r' (0) and 'coin:1r' (0). Under 'Product Out', the fields are 'cash:1r' (0) and 'cash:5r' (0). A 'fetch all' button is located at the bottom center of the UI.

When “fetch out” is pushed, the user can get things that are outputted here.

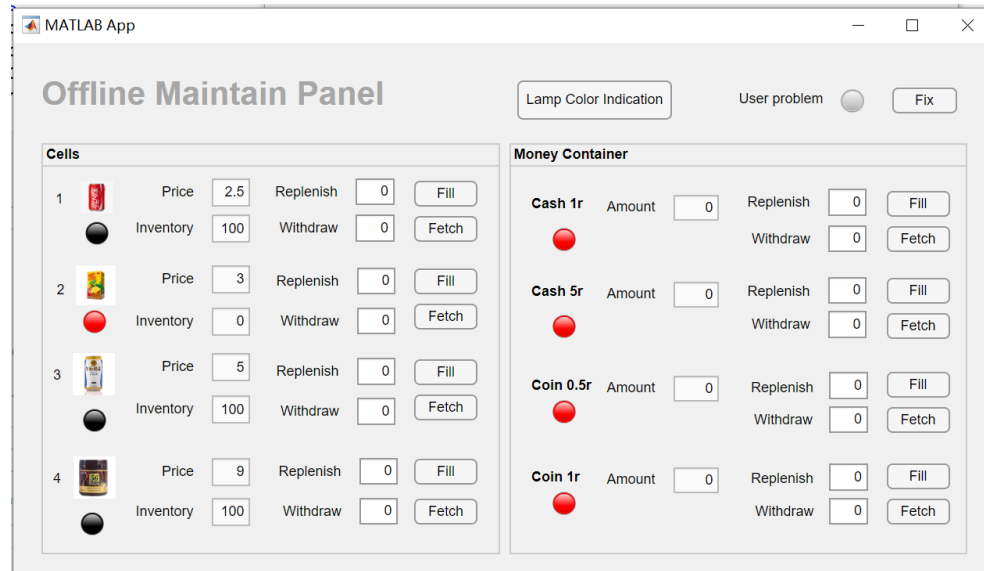
#### Go Maintain

If the maintainer needs to operate offsite, he/she should input the correct maintain code and push Go.

The 'Go Maintaining' UI consists of a single text input field labeled 'Maintain Code' containing the value '0', and a 'Go' button positioned to its right.

## User Interaction: Offline Maintain Panel

The offline panel includes 2 parts: Cells and Money Container, one lamp that indicates whether there is a user who needs help from the maintainer, one button “Fix”, which allows the user to maintainer to answer the user’s call, and a Lamp Color Indication Panel.



## Color Lamp Indication

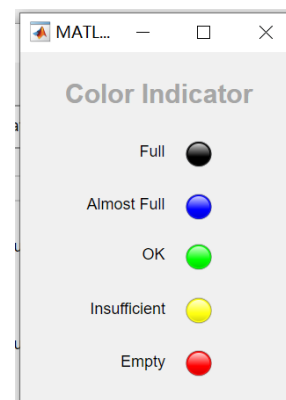
When pushing the “lamp color indication” button, this color indicator panel will be shown. This is in accordance with the color indication of the lamps in the cells and the money container part.

Cell:

- ✓ Amount == 100: Full, black
- ✓  $95 < \text{amount} < 100$ : Almost Full, blue
- ✓  $5 \leq \text{amount} \leq 95$ : OK, green
- ✓  $0 < \text{amount} < 5$ : Insufficient, yellow
- ✓ Amount == 0: Empty, red









Money Container:

- ✓ Amount == 1000: Full, black
- ✓  $950 < \text{amount} < 1000$ : Almost Full, blue
- ✓  $50 \leq \text{amount} \leq 950$ : OK, green
- ✓  $0 < \text{amount} < 50$ : Insufficient, yellow
- ✓ Amount == 0: Empty, red







### Cells

Cells part indicates the price and inventory of the products and the user can replenish or withdraw products by changing the text number and pushing “fill” or “fetch” button respectively.

Cells						
1		Price	<input type="text" value="2.5"/>	Replenish	<input type="text" value="0"/>	<input type="button" value="Fill"/>
		Inventory	<input type="text" value="0"/>	Withdraw	<input type="text" value="0"/>	<input type="button" value="Fetch"/>
2		Price	<input type="text" value="3"/>	Replenish	<input type="text" value="0"/>	<input type="button" value="Fill"/>
		Inventory	<input type="text" value="0"/>	Withdraw	<input type="text" value="0"/>	<input type="button" value="Fetch"/>
3		Price	<input type="text" value="5"/>	Replenish	<input type="text" value="0"/>	<input type="button" value="Fill"/>
		Inventory	<input type="text" value="0"/>	Withdraw	<input type="text" value="0"/>	<input type="button" value="Fetch"/>
4		Price	<input type="text" value="9"/>	Replenish	<input type="text" value="0"/>	<input type="button" value="Fill"/>
		Inventory	<input type="text" value="0"/>	Withdraw	<input type="text" value="0"/>	<input type="button" value="Fetch"/>

### Money Container

Money Container part indicates the number of the money of corresponding value and the user can replenish or withdraw money by changing the text number and pushing “fill” or “fetch” button respectively.

Money Container						
Cash 1r		Amount	<input type="text" value="0"/>	Replenish	<input type="text" value="0"/>	<input type="button" value="Fill"/>
				Withdraw	<input type="text" value="0"/>	<input type="button" value="Fetch"/>
Cash 5r		Amount	<input type="text" value="0"/>	Replenish	<input type="text" value="0"/>	<input type="button" value="Fill"/>
				Withdraw	<input type="text" value="0"/>	<input type="button" value="Fetch"/>
Coin 0.5r		Amount	<input type="text" value="0"/>	Replenish	<input type="text" value="0"/>	<input type="button" value="Fill"/>
				Withdraw	<input type="text" value="0"/>	<input type="button" value="Fetch"/>
Coin 1r		Amount	<input type="text" value="0"/>	Replenish	<input type="text" value="0"/>	<input type="button" value="Fill"/>
				Withdraw	<input type="text" value="0"/>	<input type="button" value="Fetch"/>



## User Interaction: Online Panel

The online panel includes 2 parts: Situation Check and Log, and a lamp that indicates there exists user call. The user cannot make any change to the inventory or the money container here, and he/she can only view situations and logs and export logs here.

The screenshot shows a MATLAB App window titled 'Online Maintain Panel'. It features a 'Get Called by User' button with a grey lamp icon. Below this is a 'Situation Check' section with four rows of product information, each with an inventory value and a status lamp:

Product	Inventory	Status
1 Coca-Cola	100	Black (Full)
2 Fanta	0	Red (Empty)
3 Sprite	100	Black (Full)
4 Pepsi	100	Black (Full)

Below the inventory table is a 'Money Container' section with four rows of money information, each with an amount and a status lamp:

Money Type	Amount	Status
Cash 1r	0	Red (Empty)
Cash 5r	0	Red (Empty)
Coin 0.5r	1000	Black (Full)
Coin 1r	500	Green (OK)

At the bottom, there is a table with columns: Time Stamp, ID, Price, Input Money, Remain Change, and Get Product. Below the table are two buttons: 'Clear All and Export to Excel' and 'Give an integer for naming' with a text input field containing '2333'.

### Situation Check

The lamps and texts indicate the inventory of products and the amount of money container. The lamp's color is given as followed, consistent with the offline maintain panel:

Cell:

- ✓ Amount == 100: Full, black
- ✓  $95 < \text{amount} < 100$ : Almost Full, blue
- ✓  $5 \leq \text{amount} \leq 95$ : OK, green
- ✓  $0 < \text{amount} < 5$ : Insufficient, yellow
- ✓ Amount == 0: Empty, red

Money Container:

- ✓ Amount == 1000: Full, black
- ✓  $950 < \text{amount} < 1000$ : Almost Full, blue
- ✓  $50 \leq \text{amount} \leq 950$ : OK, green
- ✓  $0 < \text{amount} < 50$ : Insufficient, yellow
- ✓ Amount == 0: Empty, red

The screenshot shows a MATLAB App window titled 'Color Indicator'. It displays a legend for the lamp colors used in the Situation Check section:

Status	Lamp Color
Full	Black
Almost Full	Blue
OK	Green
Insufficient	Yellow
Empty	Red

### Log

A record of the log includes a time stamp, which is in the form of MMDDHH(Min)(Min)SS, where M stands for month, D stands for day, H stands for hour, Min stands for minute, and S stands for seconds.

The maintainer can view the log here, which is updated with the buyers' purchases in real time. The maintainer can also push "Clear All and Export to Excel" button, and the name of the exported file can be set by the maintainer by inputting an integer for naming.

Time Stamp	ID	Price	Input Money	Remain Change	Get Product

Clear All and Export to Excel Give an integer for naming