Software Requirements Specification
VENDING MACHINE

1 INTRODUCTION

The following section provides an overview of the derived Software Requirements Specification (SRS) for the subject VENDING MACHINE. To begin with, the purpose of the document is presented and its intended audience outlined. Subsequently, the scope of the project specified by the document is given with a particular focus on what the resultant software will do and the relevant benefits associated with it. The nomenclature used throughout the SRS is also offered. To conclude, a complete document overview is provided to facilitate increased reader comprehension and navigation.

1.1 Purpose

The purpose of this SRS is to outline both the functional and non-functional requirements of the subject VENDING MACHINE. In addition to said requirements, the document also provides a detailed profile of the external interfaces, performance considerations and design constraints imposed on the subsequent implementation. It is the intention that the presented set of requirements possesses the following qualities; correctness, unambiguousness, completeness, consistency, verifiability, modifiability and traceability. Consequently, the document should act as a foundation for efficient and well-managed project completion and further serve as an accurate reference in the future.

The basic idea of the Vending machine is to dispense daily commodities without the cashier.

Recently ,the need for laborsaving vending functions in the work place has increased in response to the call for curtailment of work welfare expenses, and therefore, multipurpose vending machine that are able to sell various commodities from a single machine are required. In the market of vending machines, in order to increase the no. of new installations, which are mostly indoor use, and to improve the sales per machine, a vending machine with novel concept is desired. In order to satisfy such needs, a multi-purpose food vending machine is equipped with a commodity catcher system and is able to sell various commodities such as prepackaged lunches, sandwiches and rice balls, snacks, cold drinks .

1.2 Scope

In current formal dining environments, some form of physical static menu is utilised to convey the available food and beverage choices to customers. The benefit of vending machine is that: now the customers can buy the items more easily and can get item at a fast rate. The customer has to just choose the item and according to his choice he can get the desired item. No manual operation is required in this process. It should be noted that while the suggested strategy incorporates the use of various hardware components, the primary focus of the presented SRS relates to the constituent software elements.

Must Have:

1. Products

   - Ability to change price and name of product

   - Ability to add and remove stock

2. Payment

   - Refunding of money should be dynamic.

   - Inform user that he is unable to buy a certain product if there is no change available.

   - Payment by card would result in the appropriate amount being deducted from it.

   - User has the option to insert both cash and card.

3. Display

   - User will only be to select up to the maximum number of stocks left.

Constraints

1. Payment

   - Although user can insert both cash and card, he is allowed to pay using only one of them.

2. Shelf/Products

   - Each vending machine, once created, will have a fixed number of shelves and products per shelf. It is not possible to add one more shelf, or remove a shelf from it. This is to simulate a real vending machine, whereby you can have an empty shelf, but you cannot remove the shelf itself from it.

The benefits :

1. "Convenience", speed

2. 24h/7 availability
3. "Versatility": machines can sell almost any product
4. A wide range of payment options
5. Clean, hygienic, safe, always at the right temperature
6. Quality of food and drinks, household brands
7. Offers a place to meet with colleagues
8. Practical: comes with a clean cup every time
9. Machine branding adaptable to the clients requirements (schools, banks etc)
10. Hydration & energy – for a competitive workforce
11. Flexible placing options (sell, lease or rent)

Operators: The machines are managed by (the so-called) operators. They run the machines as their core business. They conclude commercial agreements with companies or public institutions for the placing of the machines, invest funds into the hardware, and are responsible for cleaning and filling the machines with products (be it cups, snacks, coffee beans, cans, etc…).

Machine manufacturers: they make the machines used by the operators. Machines exist in different types and sizes. The vending industry tailors its offer to the size of the companies where the machines will be placed, from free-standing to table-top machines and anything in between. Machines can sell almost any product, including hot and/or cold drinks, as well as ambient or refrigerated foods, deep-frozen food and hot meals. So called "combi" machines offer the possibility to sell different food and drink products and some can even operate simultaneously at different temperature levels. Machine manufacturers sell machines to the operators – the operator decides which payment system and water filter (for hot drink machines) he will use.

Eco-Friendly VENDING MACHINE:
- ❖ Vending companies invest a lot in research and development in the areas of ecoefficiency and refrigeration.
- ❖ Paper cups or biodegradable cups are on offer as alternatives to traditional plastic cups.
- ❖ The value of plastic cups is enhanced at the end of their lifecycle;when incinerated they release a lot of heat which is used for heating water or generating electricity.
- ❖ Soft drinks and bottled water are packaged with PET, which has a high recycling rate. Some companies have developed lighter packaging for their soft drinks.
- ❖ Solar-powered vending machines also exist, even though their development is limited to certain locations due to acts of vandalism.
- ❖ With hot drinks vending machines, no water is wasted, contrary to kettles with which people always boil more water than necessary.
- ❖ Small devices can also be installed on vending machines to turn off lights and cooling systems at night or during other, less vending-intensive, periods, whilst continually maintaining a safe temperature, in compliance with food legislation.
- ❖ Vending manufacturers pack their machines in innovative ways, with less packaging, and on smaller or recyclable pallets.
- ❖ LED lights are being introduced in new machines because they consume less energy;
- ❖ Vending machines, placed outdoors are now made with special glass and with an isolating structure, to limit the energy.
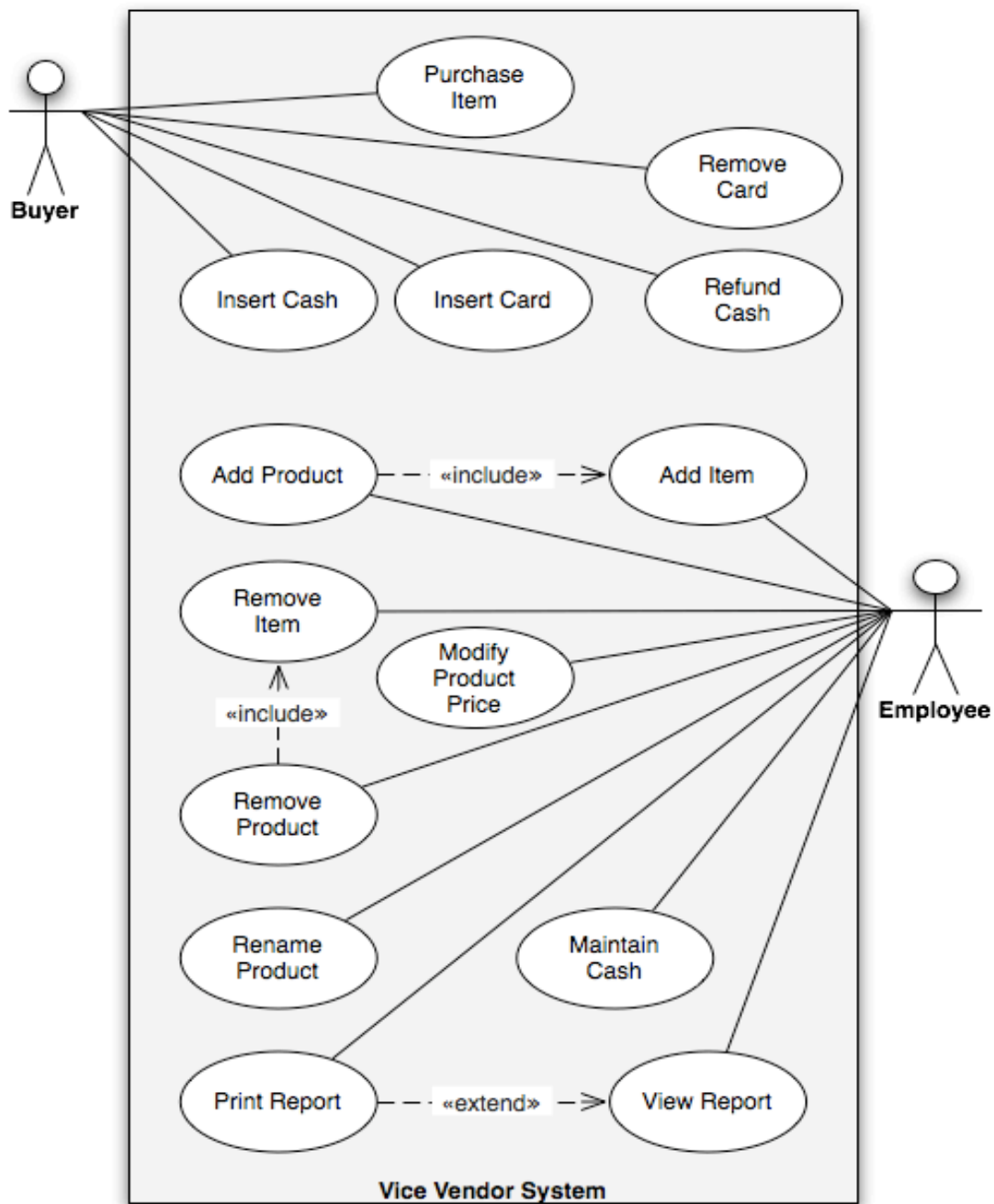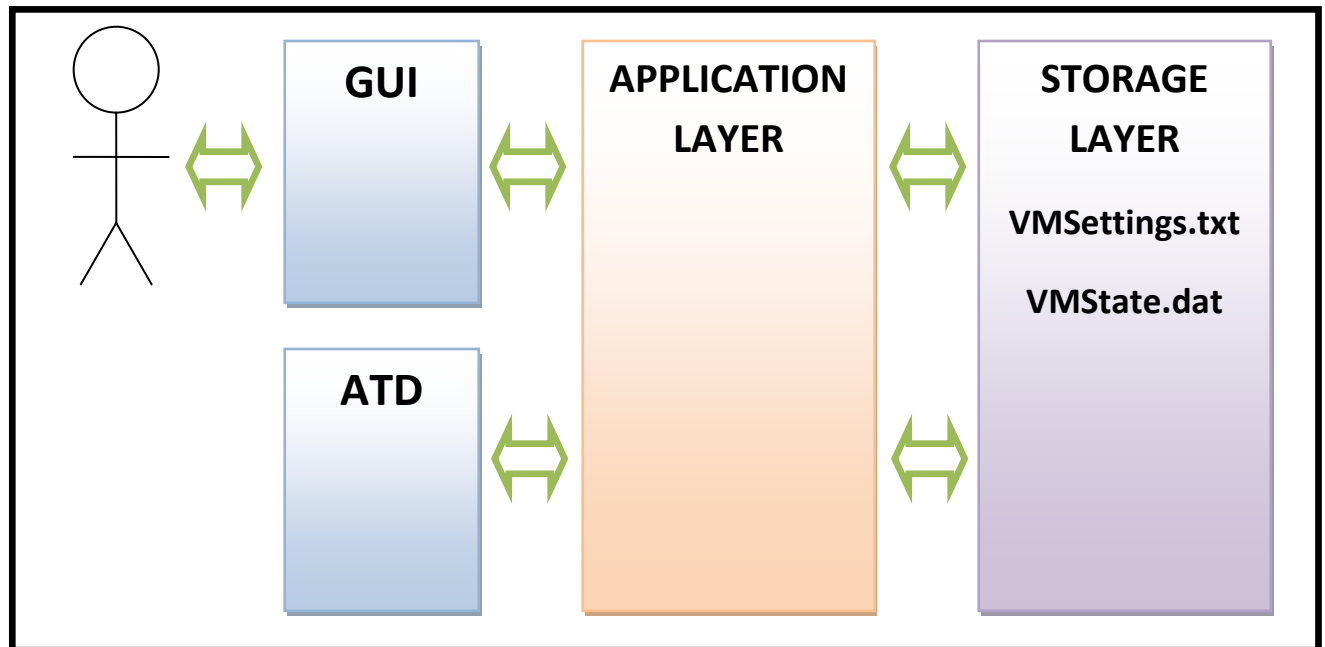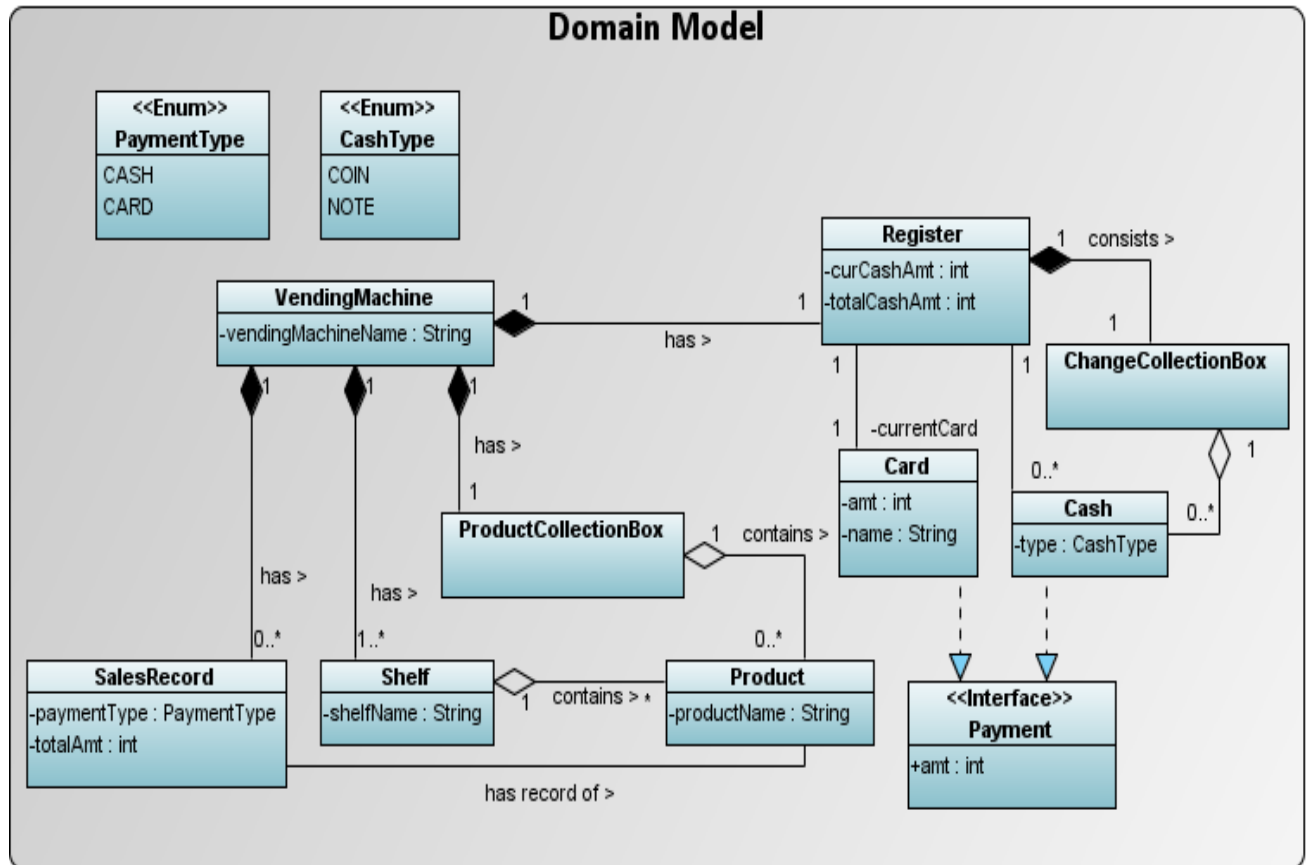
Use Case:

Vice Vendor System

Diagram to Illustrate Sub-Systems:

Domain Model:
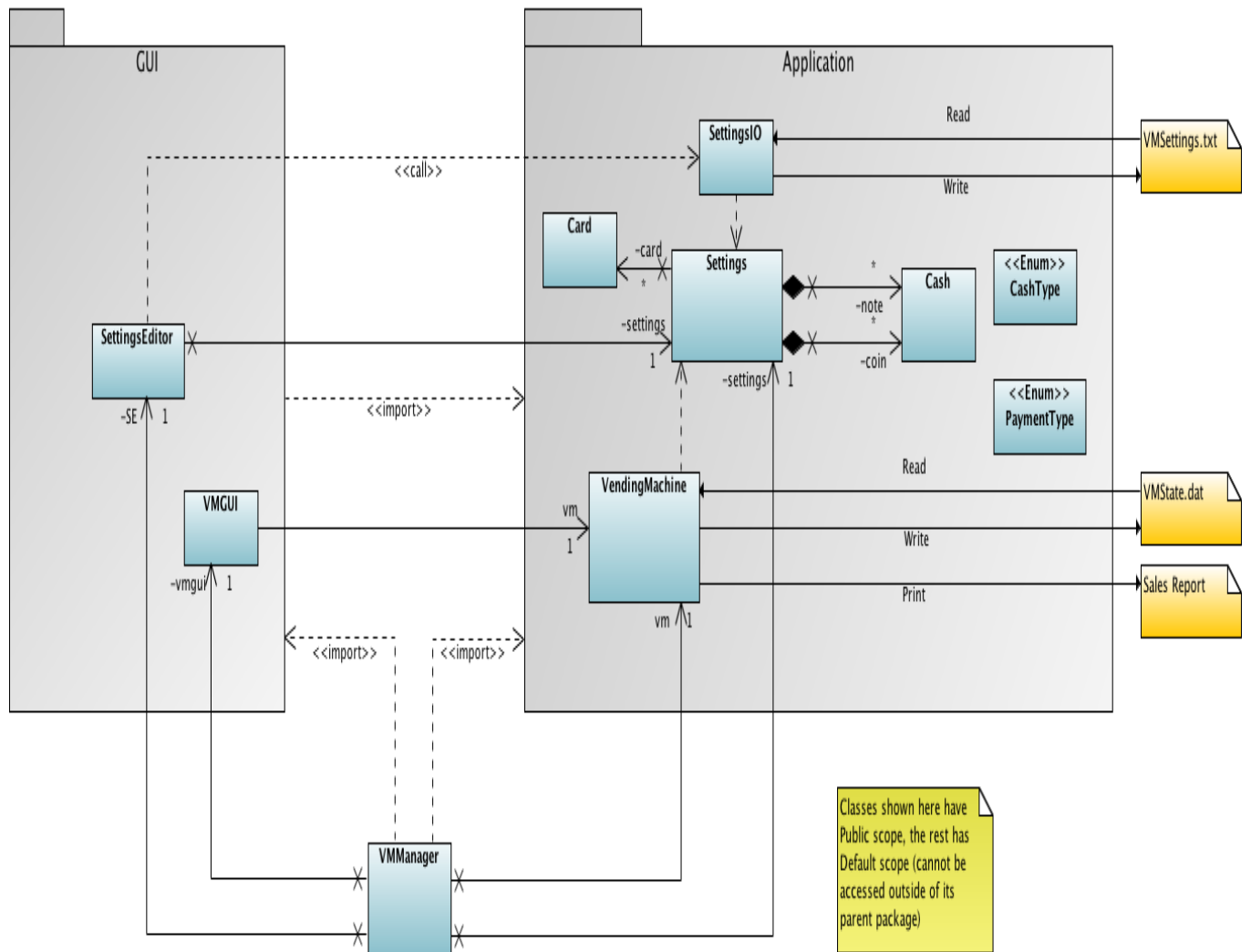
Interaction Diagrams:

Item Selection
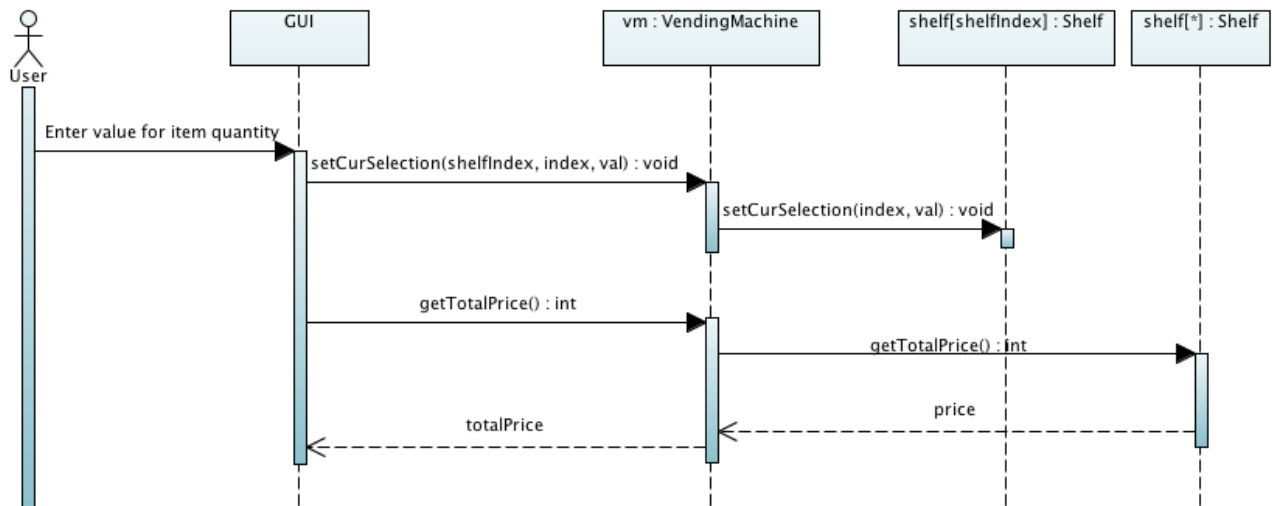
Purchase Item

State Charts:

VMGUI

EXIT
do / save current state to file

EXIT is not a state. It is a function.

close window [if card inside]   changeMode(MachineMode) [MachineMode == USER]

changeMode(MachineMode)
[MachineMode == SALESRECORD]

close window [if no card inside]

USER
entry / change mode of right panel; reset transaction; set status to empty
do / set all buttons to enabled; update the minimum and maximum stock, name and price for each product; save current state to file; show user panel

changeMode(MachineMode)
[MachineMode == REGISTERADMIN]

changeMode(MachineMode) [MachineMode == [PRODUCTADMIN]

changeMode(MachineMode) [MachineMode == USER]

close window [if card inside]   changeMode(MachineMode) [MachineMode == PRODUCTADMIN]

PRODUCTADMIN
entry / change mode of right panel; reset transaction; set status to empty
do / set unused buttons to disabled; set the current quantity, name and price for each product; save current state to file; show product panel

close window [if no card inside]

changeMode(MachineMode) [MachineMode == REGISTERADMIN]

changeMode(MachineMode)
[MachineMode == USER]

changeMode(MachineMode) [MachineMode == PRODUCTADMIN]

close window [if card inside]   changeMode(MachineMode) [MachineMode == REGISTERADMIN]

REGISTERADMIN
entry / change mode of right panel; reset transaction; set status to empty
do / set unused buttons to disabled; set the current quantity for each type of payment; save current state to file; show register panel

close window [if no card inside]

changeMode(MachineMode) [MachineMode == SALESRECORD]

changeMode(MachineMode)
[MachineMode == PRODUCTADMIN]

changeMode(MachineMode) [MachineMode == REGISTERADMIN]
close window [if card inside]   changeMode(MachineMode) [MachineMode == SALESRECORD]

changeMode(MachineMode)
[MachineMode == SALESRECORD]

SALESRECORD
entry / change mode of right panel; reset transaction; set status to empty
do / set unused buttons to disabled; retrieve sales record from vending machine; show sales record panel

changeMode(MachineMode) [MachineMode == USER]

close window [if no card inside]

CollectionBox (Change)

Save Box State
do / save box state

close vending machine

check box [box is empty]

check box [box is non-empty]

Empty Collection Box

user purchases items

Box Has Change

view change collection box

Display Empty Box
do / display message that there is no change

view change collection box

Display Non-Empty Box
do / display change and clear box

close vending machine

These are functions, not states.

CollectionBox (Item)

Save Box State
do / save box state

close vending machine

check box [box is empty]

check box [box is non-empty]

Empty Collection Box

user purchases items

Box Has Product

view change collection box

Display Empty Box
do / display message that there is no product

view change collection box

Display Non-Empty Box
do / display product(s) and clear box

close vending machine

These are functions, not states.