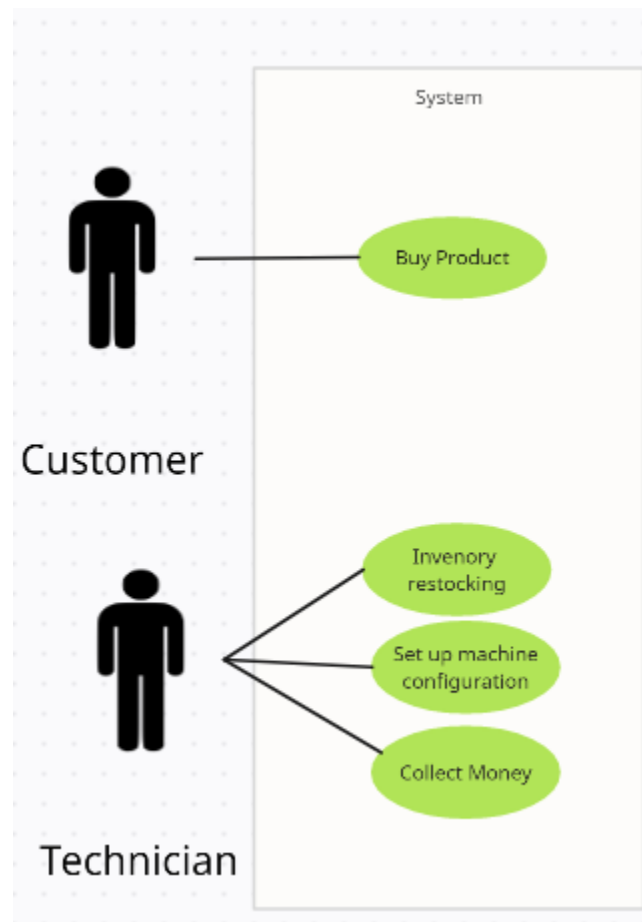# Public Vending Machine Analysis and Design
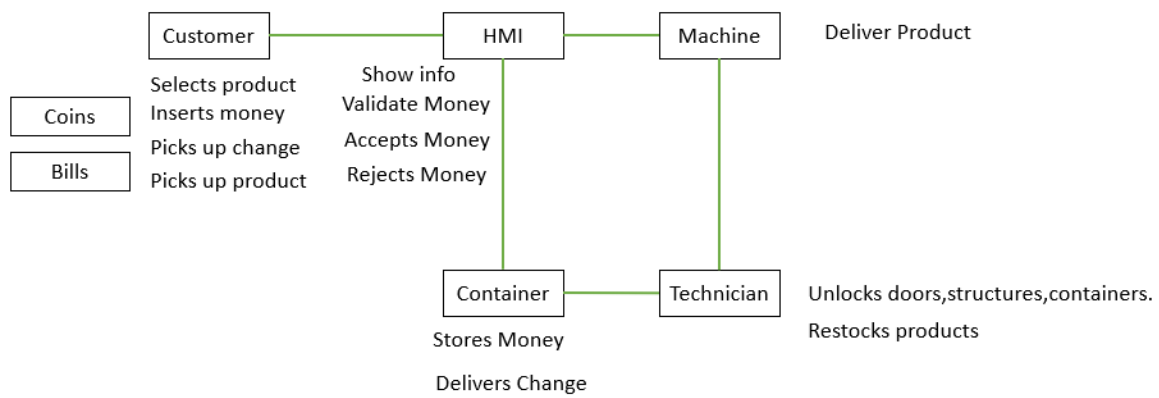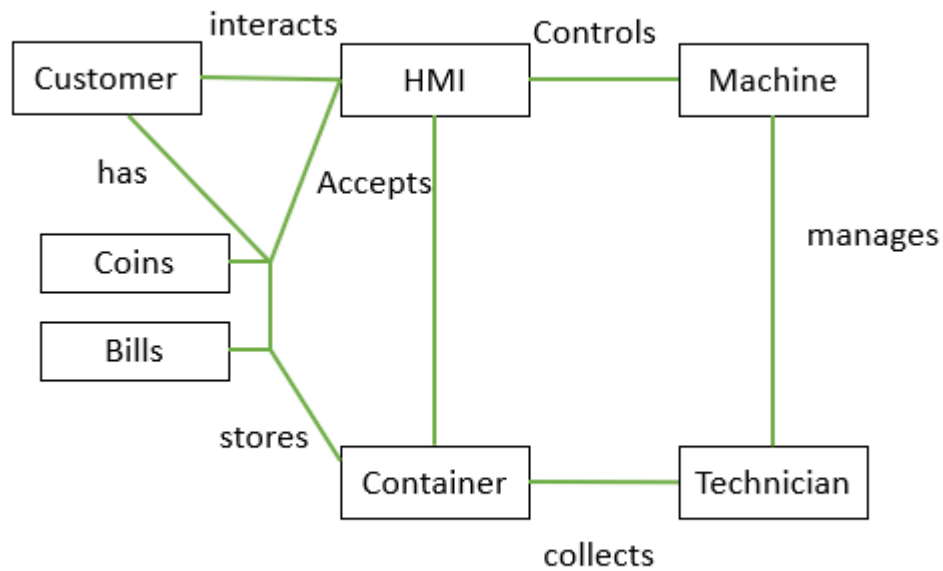
Requirements

- A customer will be able to select a product to buy. (F)
- A customer will be able to insert the payment to the machine (F)
- Protection to prevent thefts. (NF)
- Store until 10 pieces of the same product. (NF)
- The machine will deliver the product when the payment is accepted (F)
- The machine will print the information of the process (F)
- Have 6 rows of products, and in each row had 5 types of products (NF)
- Works 24/7 (NF)
- The technician will be able to sets up the machine configuration(F)
- The technician will be able to restock the missing products(F)
- The technician will be able to collect the money from the machine(F)
- Accept bills from 20 dollars and below. (NF)
- Have a size of 40.709 in x 29.528 in x 74.803 in. (NF)

Uses Cases

- **Title:** Buy Product
- **Primary Actor:** Customer
- **Success Scenario:**
    1. The customer selects with the keyboard the product he wants.
    2. The LCD Screen shows the name of the product and the price.
    3. The customer inserts the money into the coin or bills acceptors.
    4. The machine delivers the product and puts a new one ready to be delivered.
    5. If necessary, the machine deliver the change.
    6. The customer picks up the product and ifs necessary, also his change.

- **Title:** Inventory Restocking
- **Primary Actor:** Technician
- **Success Scenario:**
    1. The technician opens the door of the vending machine.
    2. The technician takes out the rows structures where the products are.
    3. The technician restocks the missing products with new ones.
    4. The technician puts back the row structures.
    5. The technician closes the door.

- **Title:** Collect Money
- **Primary Actor:** Technician
- **Success Scenario:**
    1. The technician opens the door of the vending machine.
    2. The technician unlocks the containers where the coins and bills are stored.
    3. The technician collects all the bills.
    4. The technician collects the coins, leaving some coins for change.
    5. The technician put back the containers and locks them.
    6. The technician closes the door.

- **Title:** Set up machine configuration
- **Primary Actor:** Technician
- **Success Scenario:**
    1. The technician opens the door of the vending machine.
    2. The technician connects his computer to the logic board of the vending machine
    3. The technician config the machine set up.
    4. The technician uploads the configuration.
    5. The technician disconnects his computer from the logic board of the vending machine.
    6. The technician closes the door.

Identify Objects Classes and relationships in the system.

interacts   Controls

| Customer | HMI | Machine |

has   Accepts   manages

Coins

Bills

stores

Container   Technician

collects

| Customer | HMI | Machine | Deliver Product |

| | Show info | |
| Selects product | Validate Money | |
Coins   Inserts money   Accepts Money
Bills   Picks up change
Picks up product   Rejects Money

Container   Technician   Unlocks doors,structures,containers.

Stores Money   Restocks products

Delivers Change

Class Diagrams

Computer

-isConnected: boolean

+changeState(): void

Product

-name: String
-price: int
-cordinate: Sting

Customer

-totalMoney: int
-coordinateDesiredProduct: String
-product: Product

+selectProduct(String): void
+insertMoney(Int, HMI): void
+pickUpChange(): void
+pickUpProduct(): void

HMI

-moneyContainer: Container (Abstract)
-validPayment: boolean
-totalMoney: int

+showInfo(String): void
+validateMoney(): void
+acceptsMoney(): void
+rejectsMoney(): void

Machine

-remainProdcuts: int
-stateDoot: Boolean
-productContainer: Container

+deliverProduct(Customer): void
+isStateDoor(): boolean

Container (Abstract)

+stateContainer: boolean

Technician

-Computer
-product: Product

+changeStateDoor(Machine): void
+changeStateContainer(Container): void
+collectMoney(MoneyContainer): void
+changeStateContainer()
+uploadConfig(): void
+setUpConfig(): void
+restockProduct(Machine): void

MoneyConatiner

+deliverChange(int): void
+storesMoney(int): void

ProductContainer

+storesProduct()