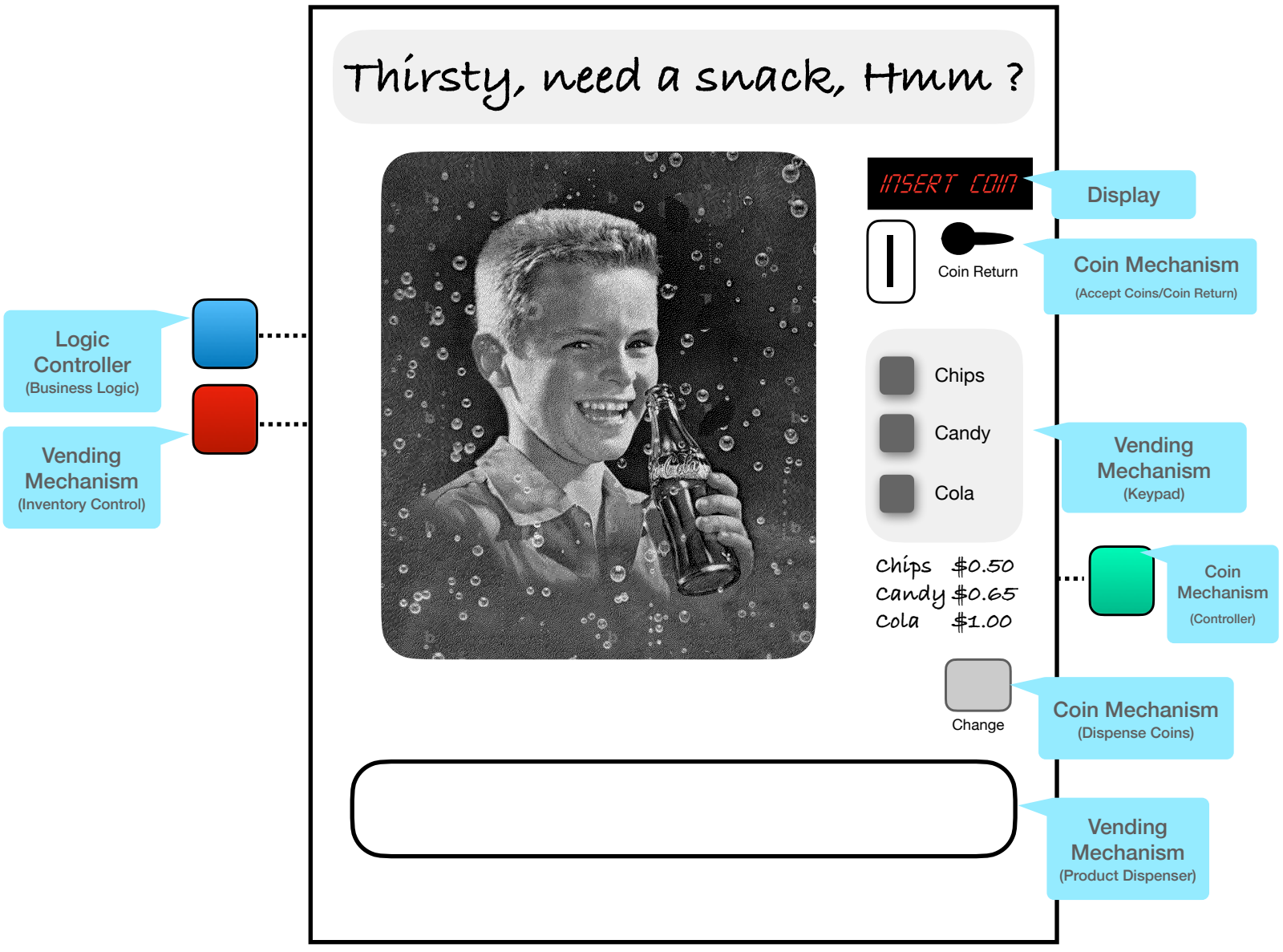
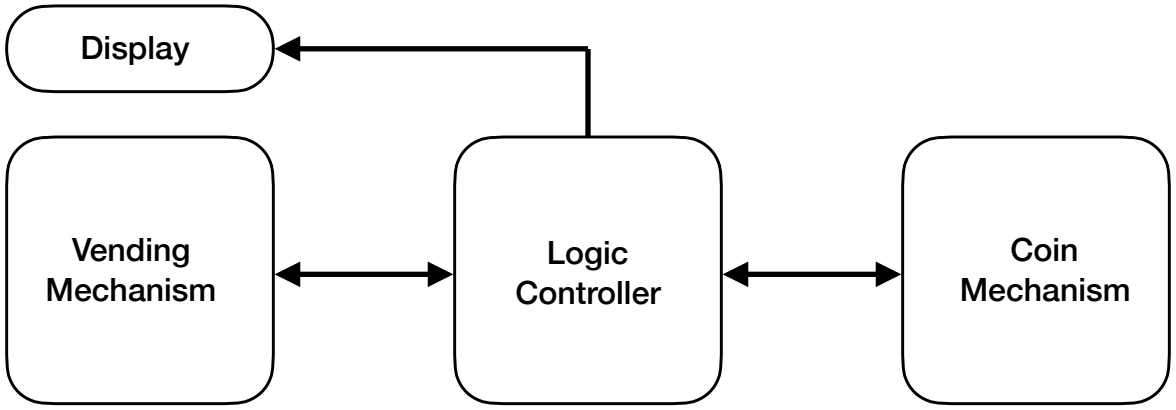
Vending Machine Sketch



Vending Machine Diagram



Components And Their Responsibility

Display

- Updates message on LED display

Vending Mechanism

- Monitors 3 button product selection keypad
- Returns keypad selection when queried
- Returns inventory for products when queried
- Dispenses indicated product when commanded
- Decrements inventory count for a product after it has been dispensed

Logic Controller

- Implements all business logic
- This is the “brains” of the machine
- Manages the overall state of the vending machine
- Orchestrates interactions between components
- Processes user input and system events
- Makes decisions based on current state and conditions

Coin Mechanism

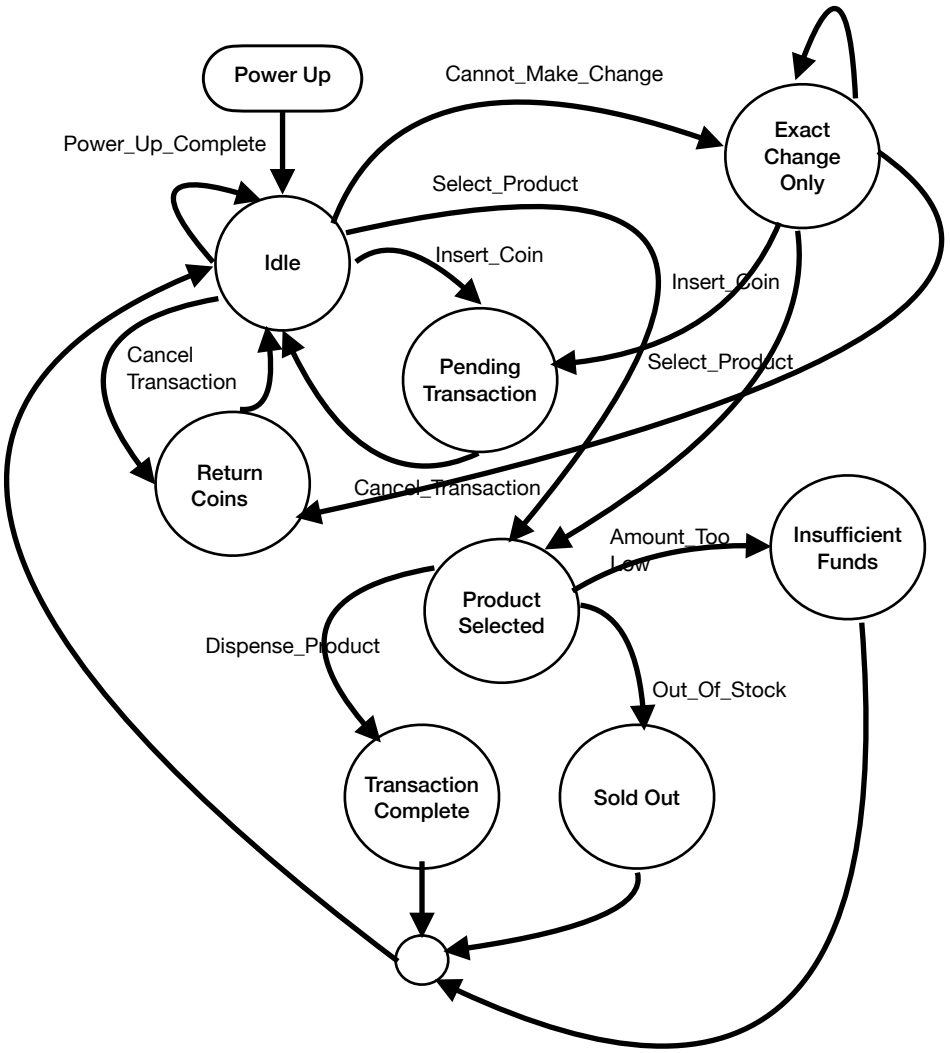
- Accepts valid coins and ignores invalid coins
- Keeps track of pending transactions balance
- Keeps count of each coin in the machine (e.g. 10 quarters, 5 nickels, 10 dimes)
- Keeps total amount of coins in the machine (e.g. $3.70)

- Dispenses coins for making change and returning canceled transaction. Note: it does not make calculations. (e.g. product costs $0.65 and user inserted $0.75 the Logic Controller would instruct the Coin Mechanism to dispense 1 dime)
- Monitors Coin Return (Cancel Transaction) when enabled
- Returns balance in Pending Transaction when queried
- Returns total balance in machine when queried
- Returns counts for each coin type in the machine

Logic Controller State Machine

States

1. Power Up
2. Idle
3. Pending Transaction
4. Product Selected
5. Insufficient Funds
6. Sold Out
7. Exact Change Only
8. Return Coins
9. Transaction Complete

Events for Transitions

1. Insert_Coin
2. Select_Product
3. Cancel_Transaction
4. Cannot_Make_Change
5. Dispense_Product
6. Return_Coins
7. Power_Up_Complete
8. Out_Of_Stock
9. Amount_Too_Low