Soda fountain machine

3daweya Thirsty

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Abstract

A soda fountain machine used to help user get soda cups fill. The user is prompted through an LCD to enter a password using a keypad to activate the machine. The machine monitors the remaining soda level using an ultrasonic and then it gives feedback to the user using a blue led if the soda is available and red led if soda is too low and the system is blocked in this case till the user fill the soda tank. Once the soda level exceeds a certain level while filling the system automatically unblocks.

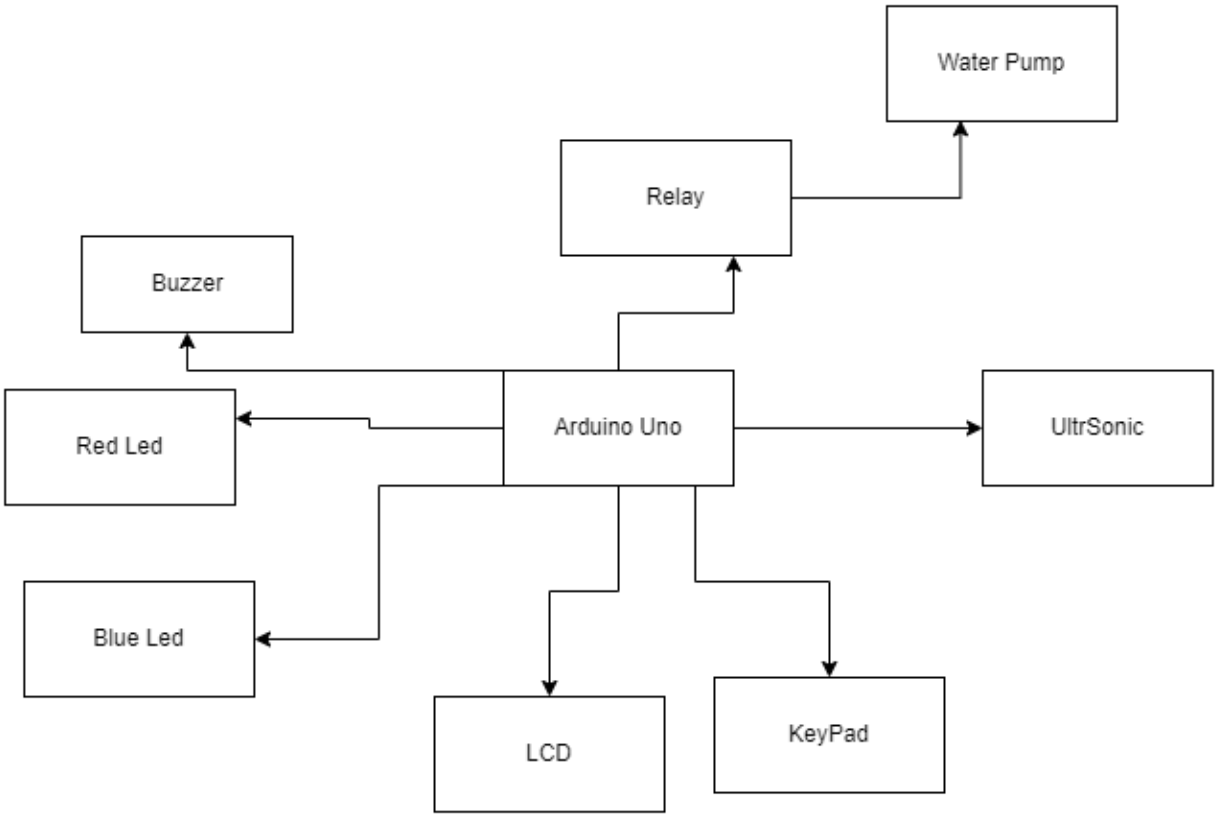
The machine operates on two modes for filling cups (large, medium). The amount of soda for each cup is determined mainly by activating the water pump DC-Motor until the soda level decreases to a certain degree (using the ultrasonic). There's also a timer used to stop pouring in case something went wrong with the ultrasonic.

List of Components

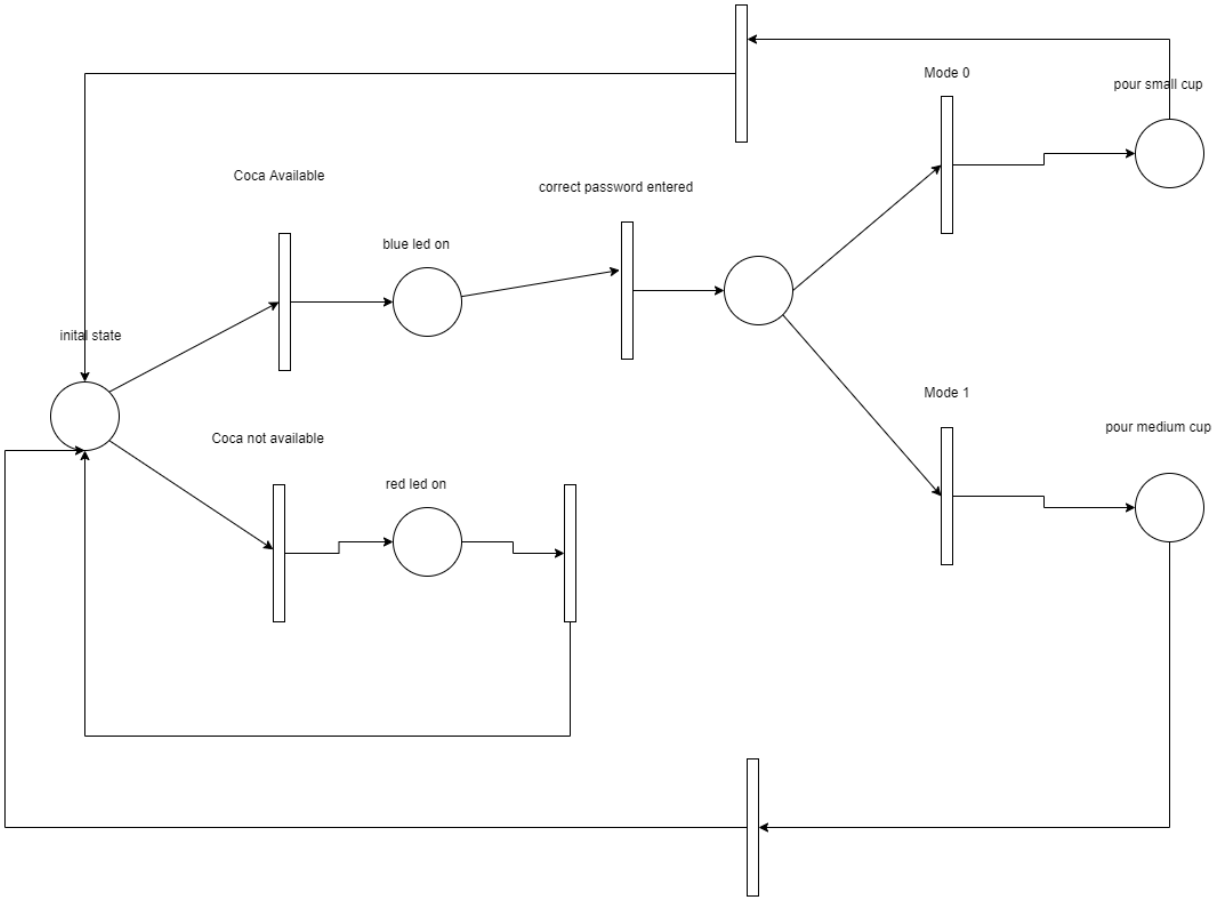
1. Arduino Uno
2. Water Pump – Ultra-Quiet Brushless DC12V
3. Keypad 4x3
4. LCD 16x2
5. Adapter 12V
6. Ultrasonic HC-SR04: Monitor the soda level
7. Relay module: Control the water pump
8. LM7805: Supply Arduino with 5 volts

Design Models

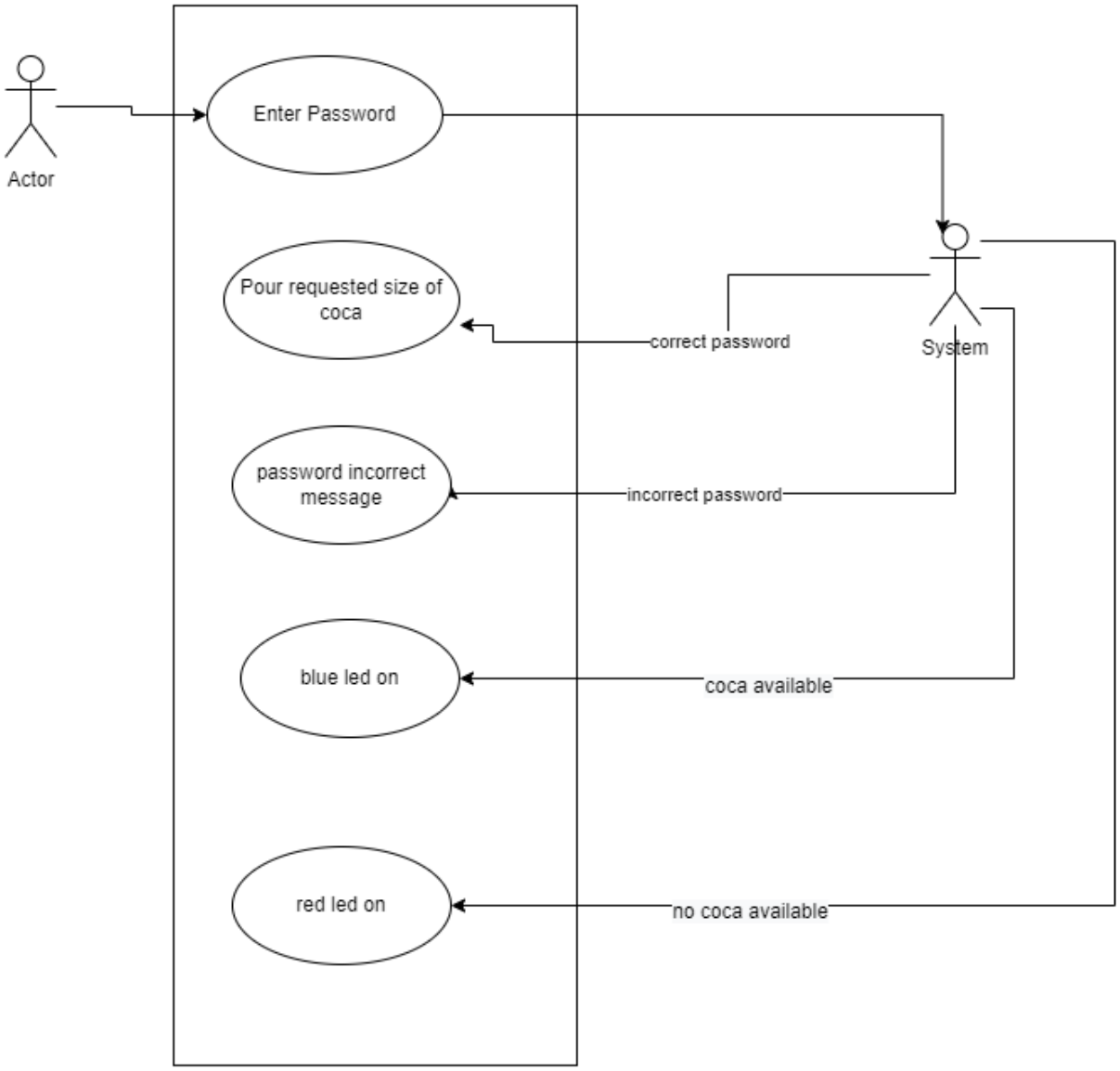
- Wiring Diagram



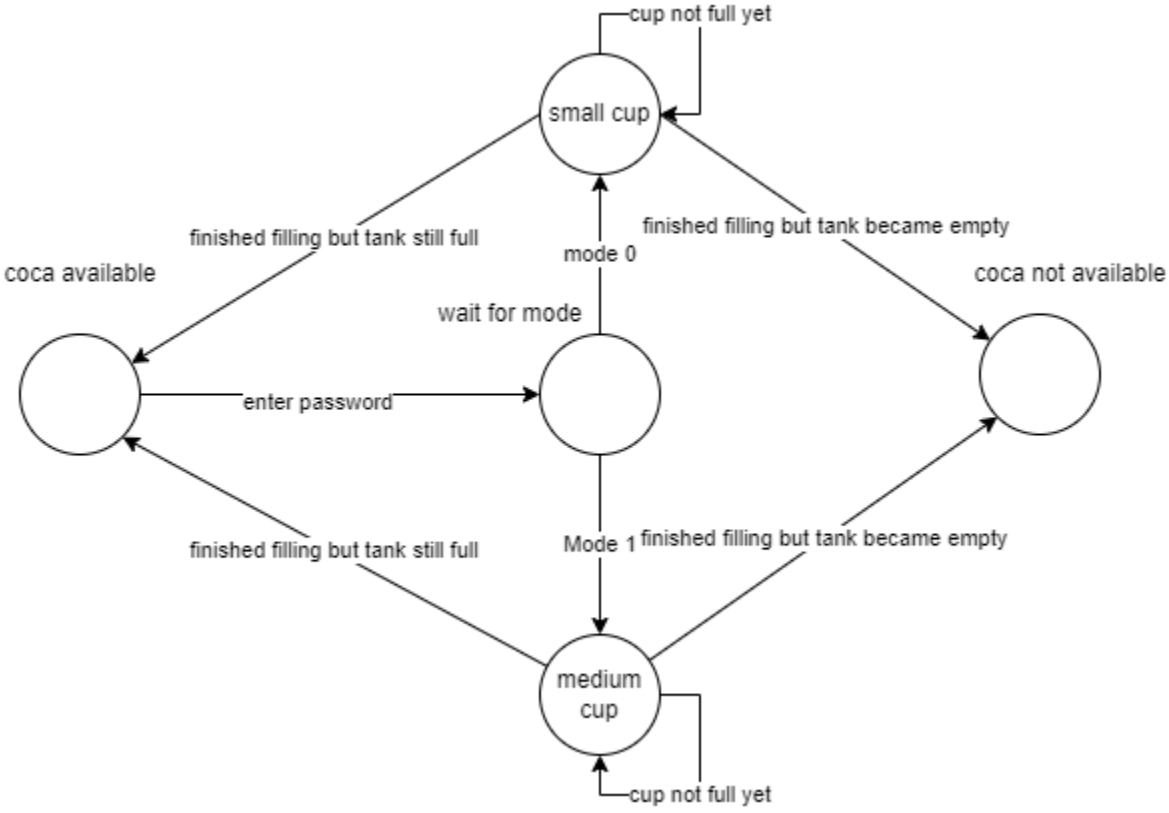
- Petri Net


Mode 0
pour small cup
Coca Available
correct password entered
blue led on
inital state
Mode 1
pour medium cup
Coca not available
red led on

- Use Cases


Actor
Enter Password
Pour requested size of coca
password incorrect message
blue led on
red led on
correct password
incorrect password
coca available
no coca available
System

- Finite State Machine



- Sequence Chart