The basic goal of this lab is to design logic to design a state machine for a candy machine. The machine takes in nickels and dimes and has just one type of candy that costs 20 cents. Your state machine will take in two inputs from the buttons – btn0 indicates that a nickel was inserted and btn1 indicates that a dime was inserted.

The 7-segment LED display should display how much money has already been inserted. Once 20 cents has been inserted, the state machine should signal that the candy can be dispensed by lighting LED0. The display should indicate 0 cents and LED0 should remain lit until you insert a new coin. It is possible to get to 25 cents if you insert three nickels and then a dime. In this case, the display should indicate a balance of 5 cents and LED0 will be lit until a coin is inserted.

You should not use a counter to maintain the accumulated value. You can keep track of the accumulated value with states. You can use a Mealy or Moore Machine design.

The buttons will need to be debounced to make sure that you don’t get multiple nickel or dime insertions. The nickel and dime buttons will never be pressed at the same time, but each signal could be active for an arbitrary length of time.