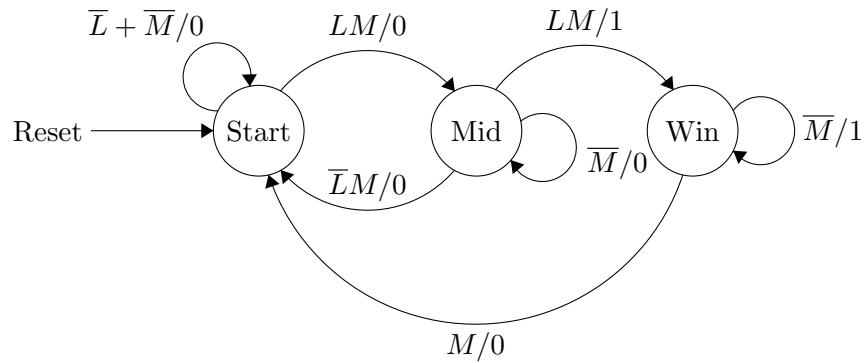


Exercise 1 – Implementing Light Game FSM

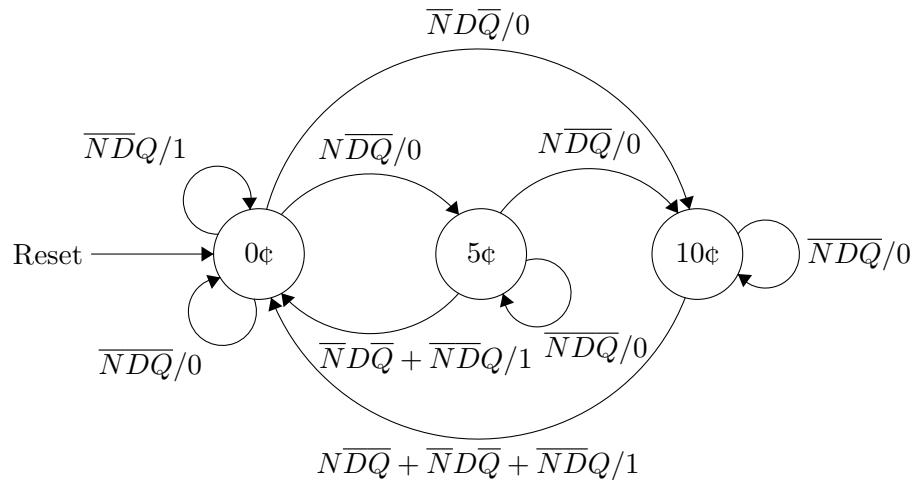
The following FSM represents a Red Light, Green Light game, where a player is only allowed to move forward ($M = 1$) when the light is green ($L = 1$). Here, the player wins (output $W = 1$) after successfully moving twice; moving when the light is red ($L = 0$) results in returning to the start



Implement this system in a module called `light_game`.

Exercise 2 – Implementing vend15 FSM

Below is an FSM for a modified vending machine with increased cost of 15¢ for gumballs that also accepting quarters (Q: 25¢); it still does not give change and can only take one coin at a time.



Implement this system in a module called `vend15`.

Exercise 3 – vend15 Test Bench

Create a test bench for vend15 and simulate it in ModelSim.

What's the minimum number of clock cycles required to thoroughly test it?