



For Lab 6 Part IV, here is a suggested architecture that you can use for your design. Feel free to modify this architecture or use another approach.

There should be a top-level reset signal, not shown in the figure that resets the FSM to its starting state.

The Start signal tells the FSM to output the flashes according to the SymbolCode. The SymbolCode input specifies the letter to output.

"Symbol" in the following descriptions refers to Q, R, S etc. and not to dots/dashes.

Symbol Shift Reg: contains a 1 or 0 for each dot or dash in the symbol to be displayed up to a maximum of 4 dots/dashes.

Symbol Down Counter: contains the number of dots/dashes for the symbol to be displayed (max 4 dots/dashes hence 2 bits). It is loaded with the number of dots/dashes and counts down to zero to indicate that all dots/dashes have been output to the LED.

0.5 Sec Timer: starts counting to 0.5s after it is reset. elapsed goes high for 1 cycle every 0.5s after the reset. There are many ways to do the required timing, so you may choose to use another method. The main point is that you need something to do the timing.

Symbol Decode Logic: translates the SymbolCode to the Morse Code as a pattern of 1's and 0's and also specifies the number of bits (dots/dashes) in the Morse Code. These values can then be loaded in the Symbol Shift Reg and the Symbol Down Counter.

FSM is then used to control each element in the system. Inputs to the FSM are Start, ShiftOut, elapsed, CounterIsZero. Outputs are enables, loads, resets, FlashingLED.