

GRID LABORATORY

DIGITAL ALARM CLOCK

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Summary

- An alarm clock is a clock that is designed to make a sound, or some other signal, at a specific time. The primary utility of these clocks is to awaken people from their night's sleep or short naps; they are sometimes used for other reminders as well.

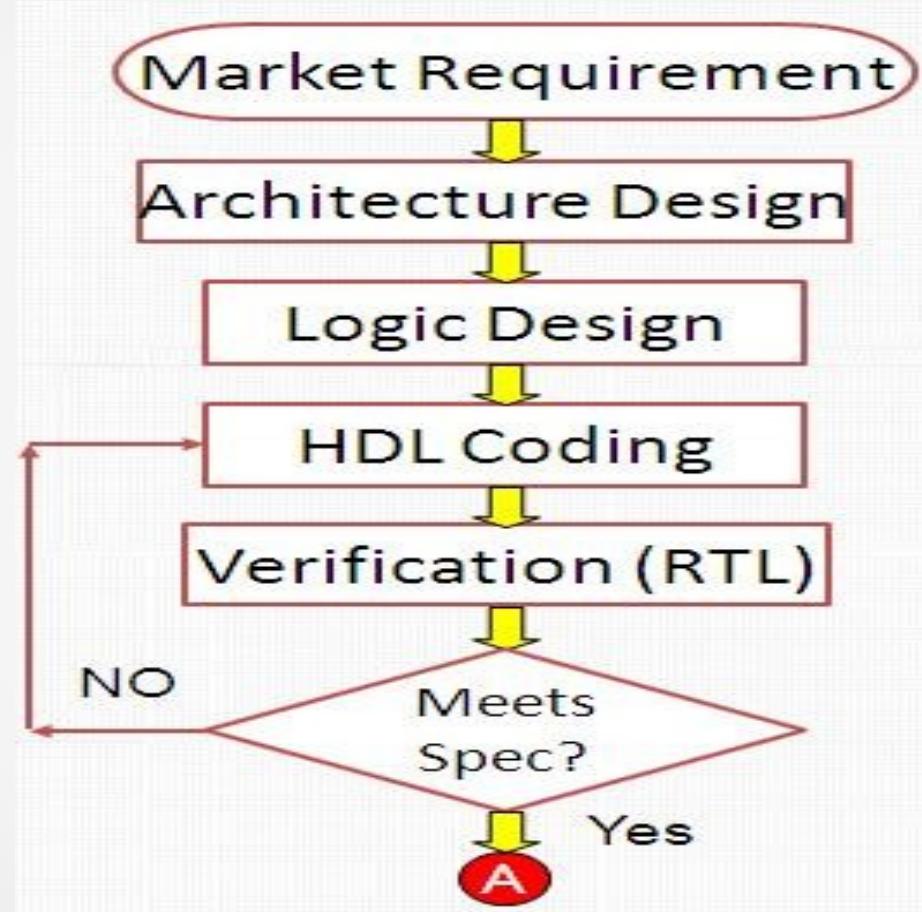
--> [Wikipedia](#)

The goal is to present the alarm clock in a digital format.

Tools Used

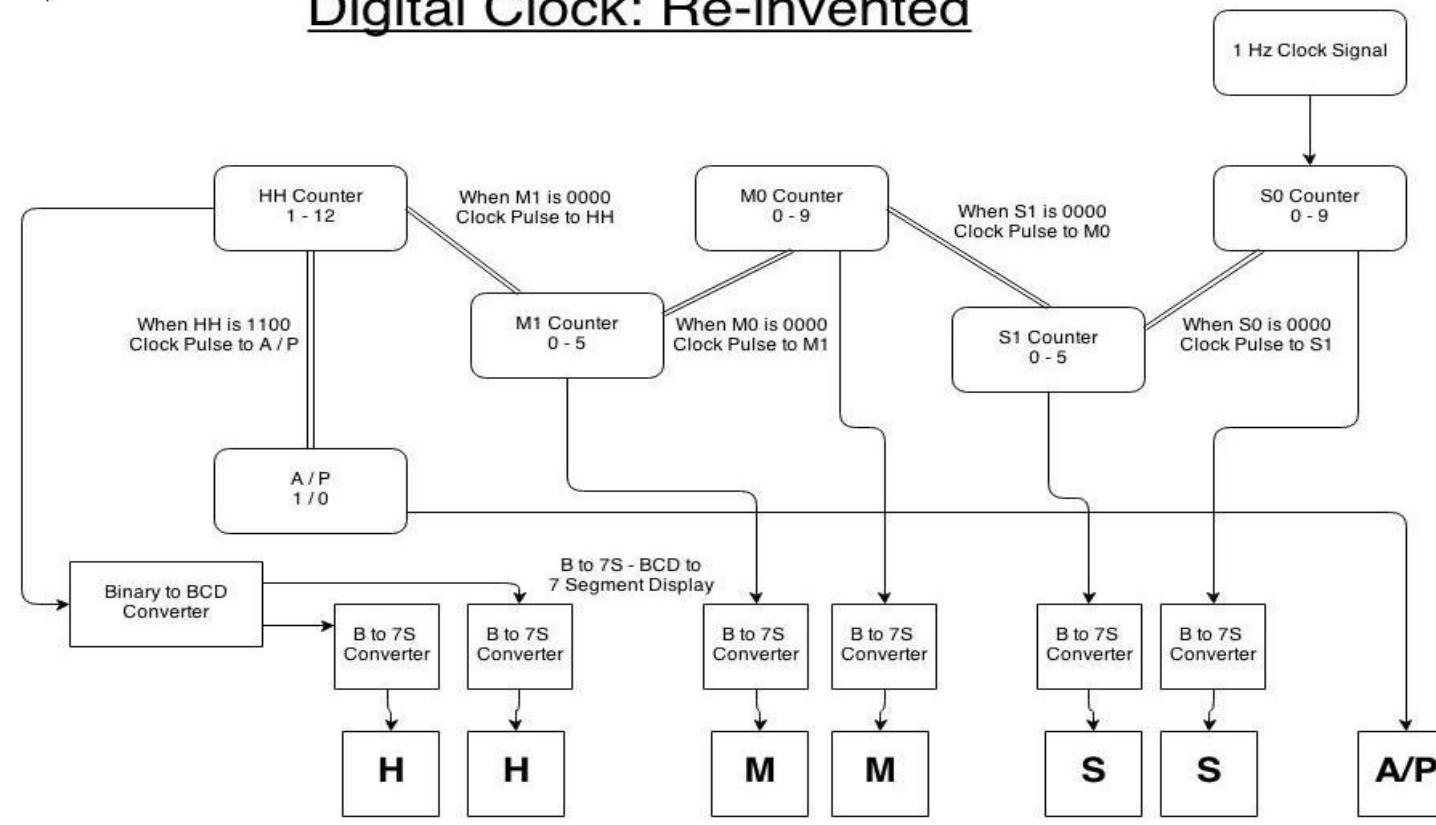
- ALTERA DE2-70 FPGA BOARD
- QUARTUS 9.1 ENVIRONMENT
- VHDL(Very High Speed Integrated Circuit Hardware Description Language)

Model Used

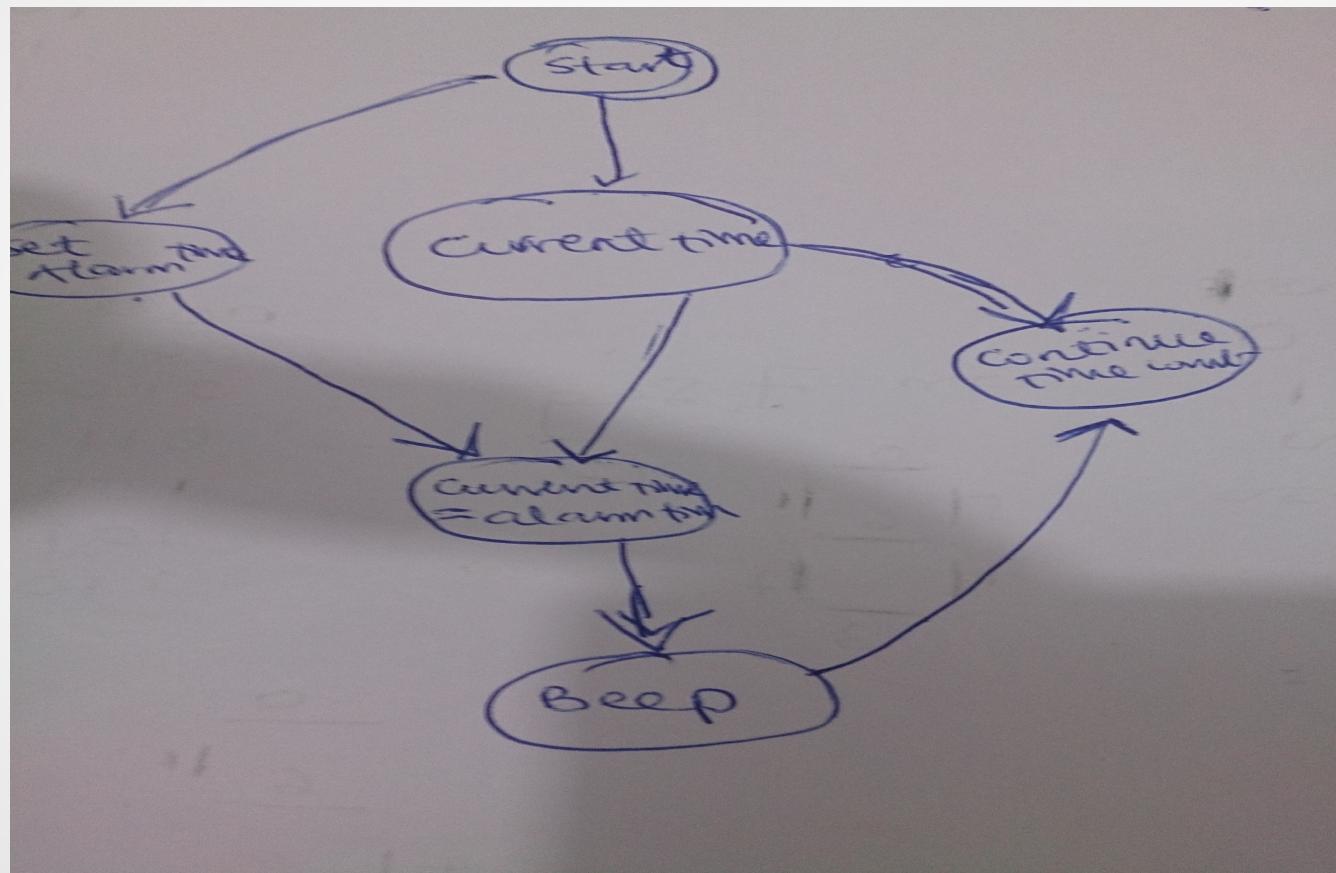


Circuit Diagram

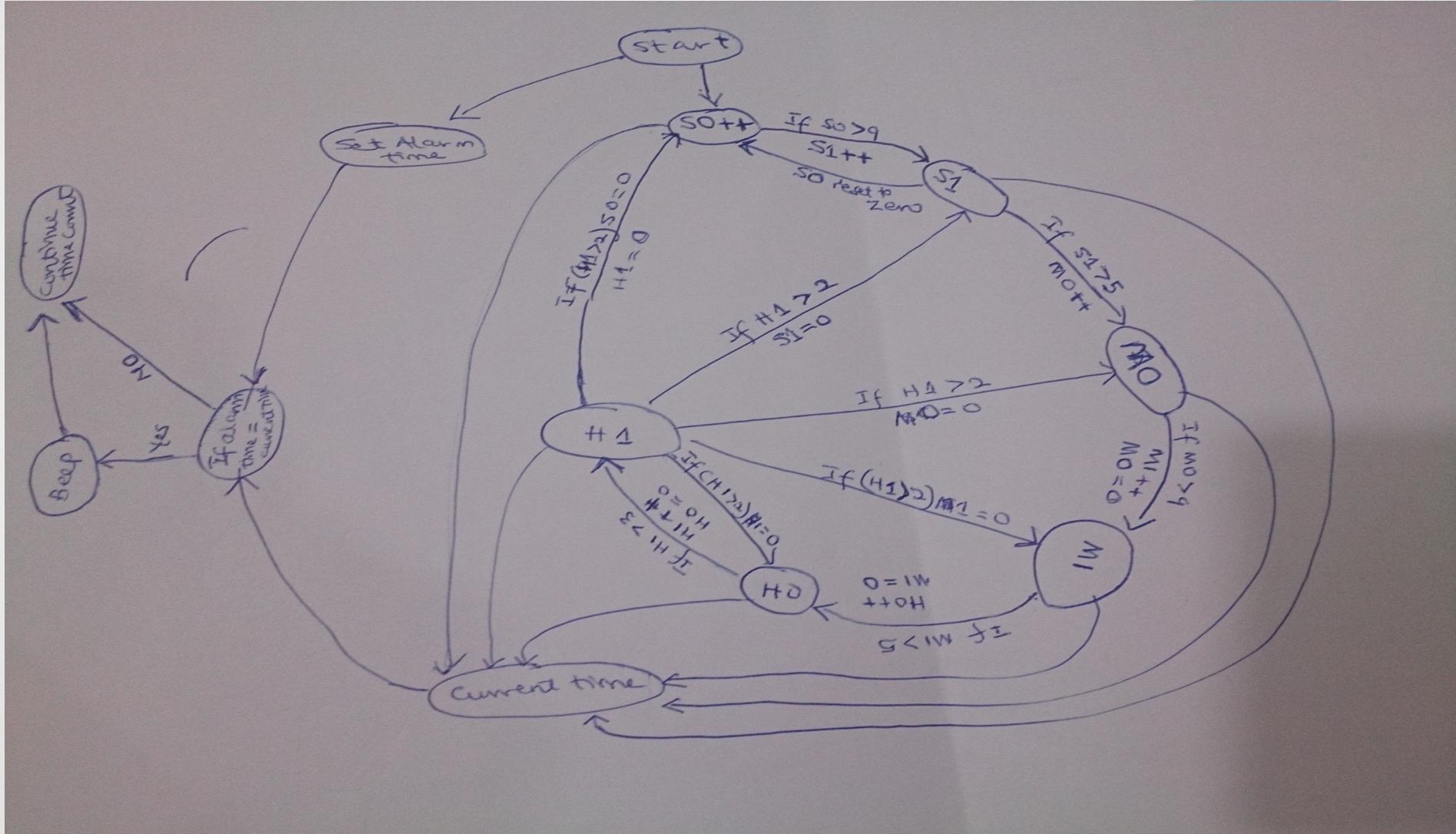
Digital Clock: Re-invented



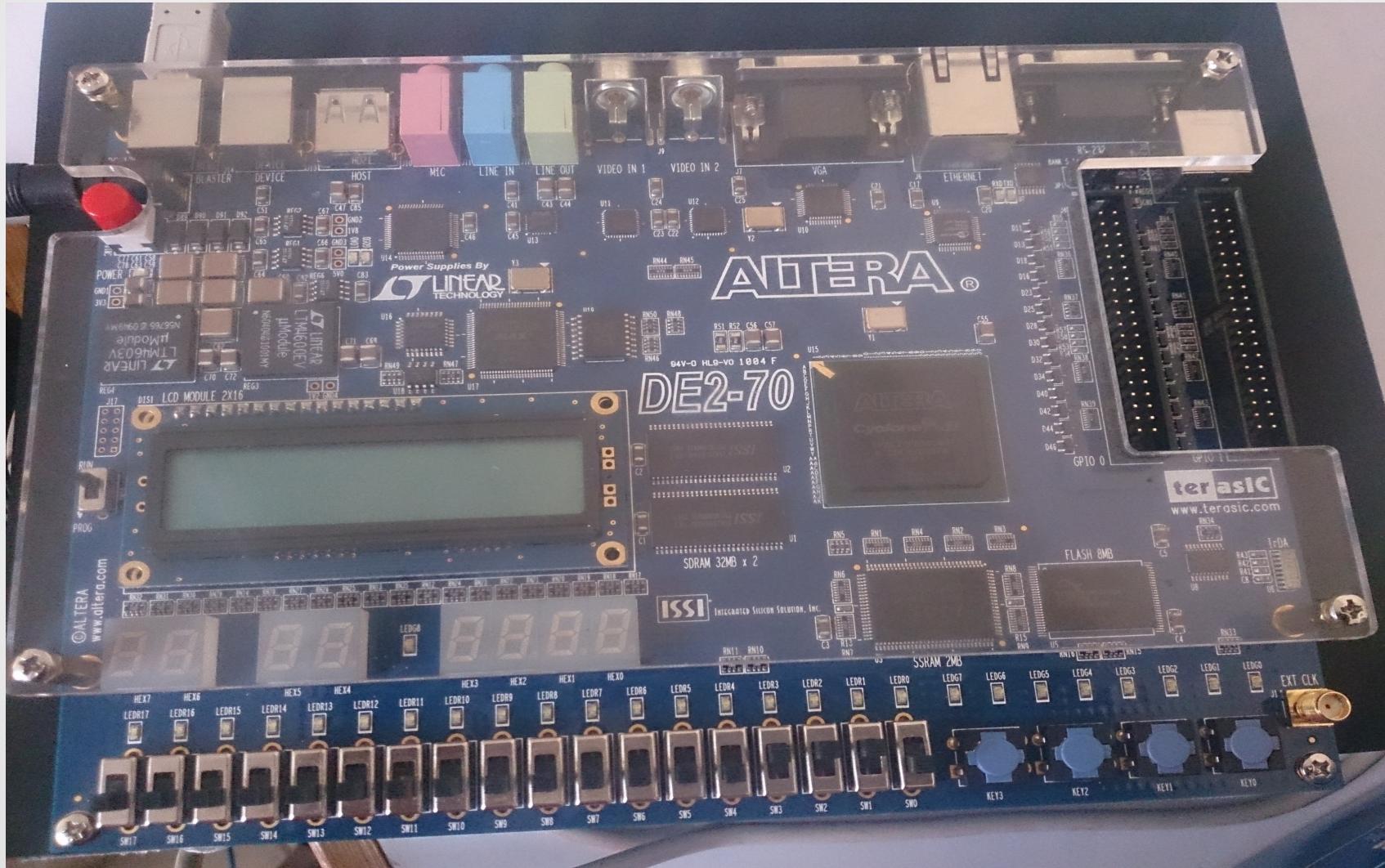
As Finite State Machine



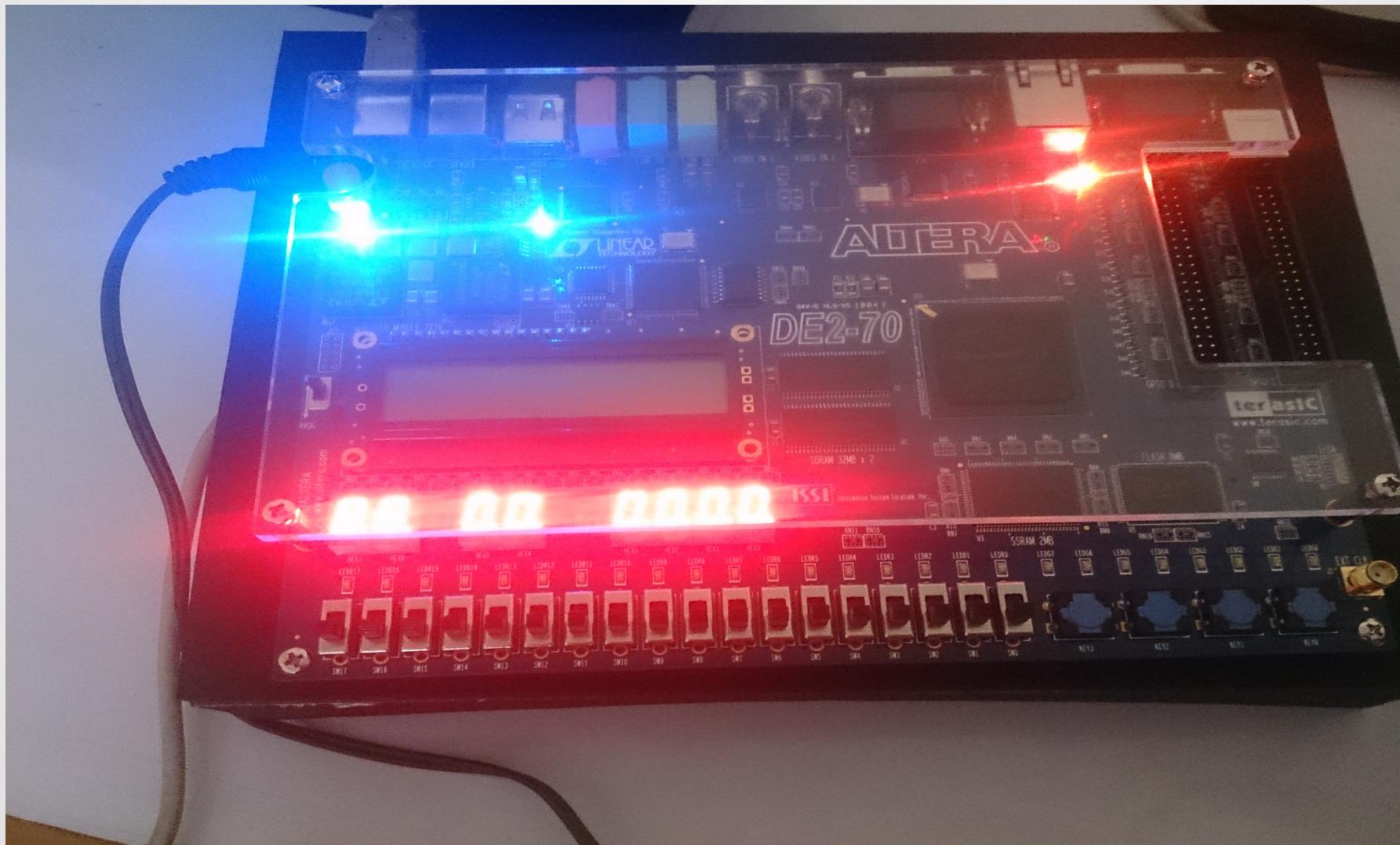
As Finite State Machine



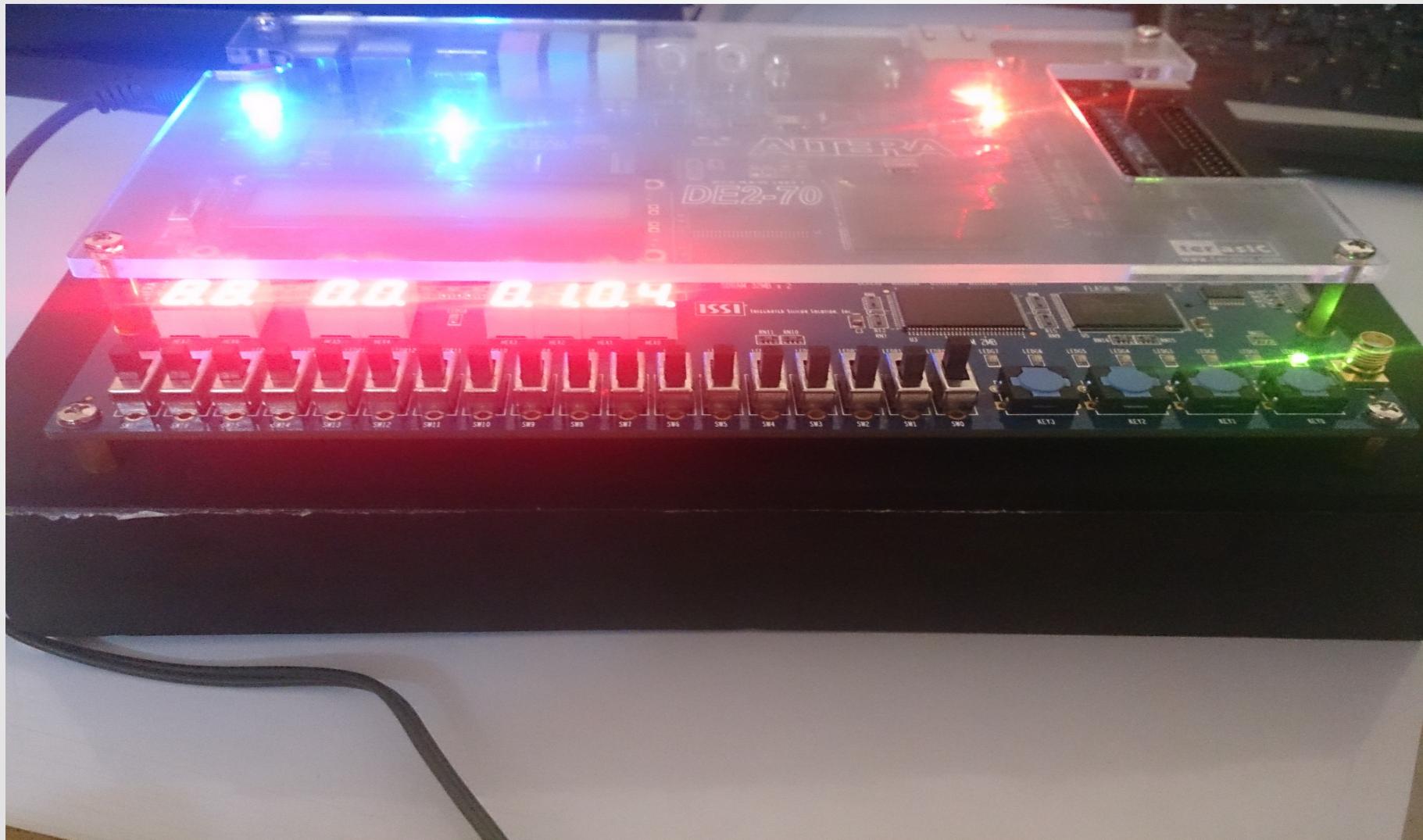
Implementation



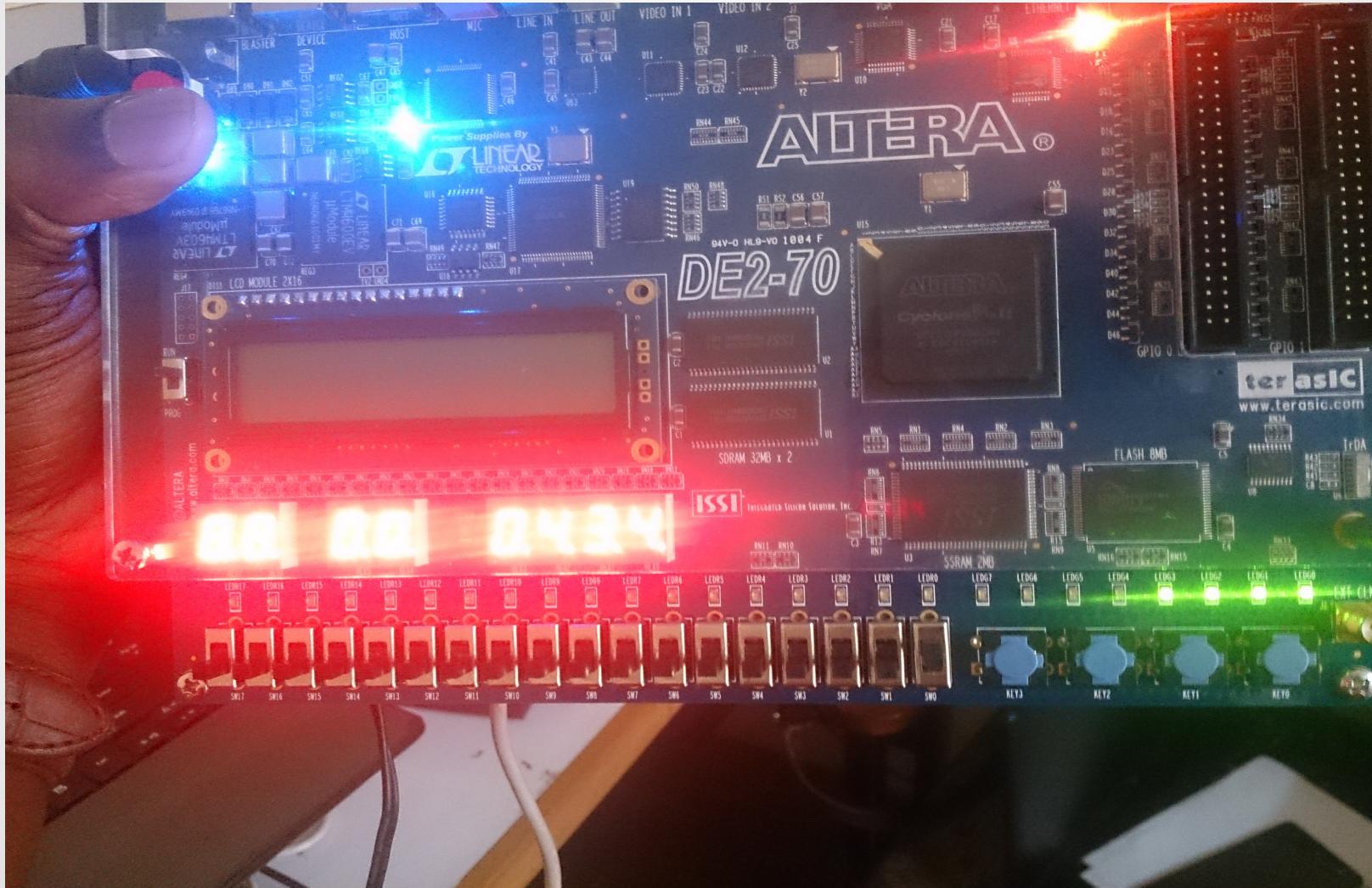
Implementation



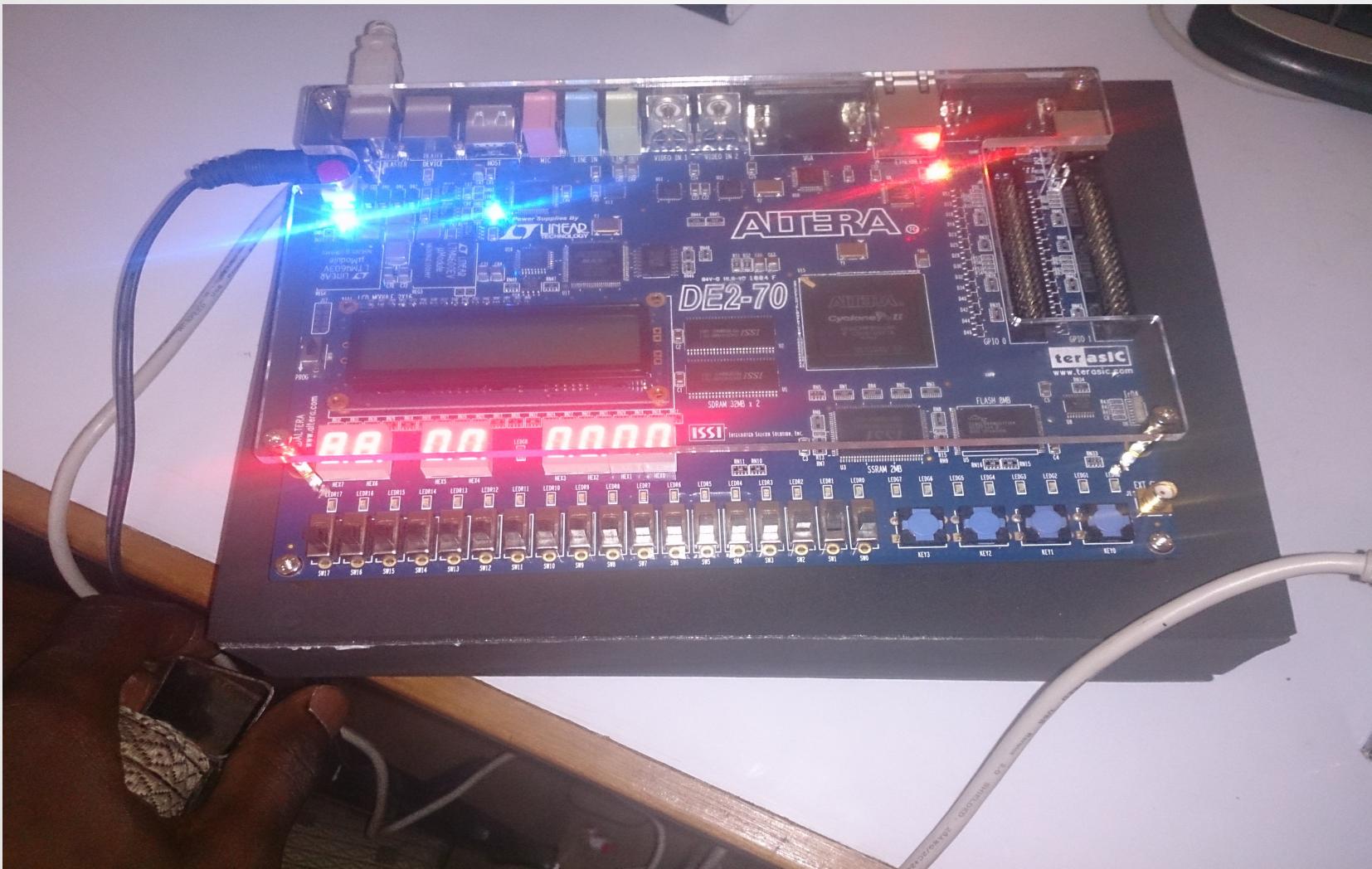
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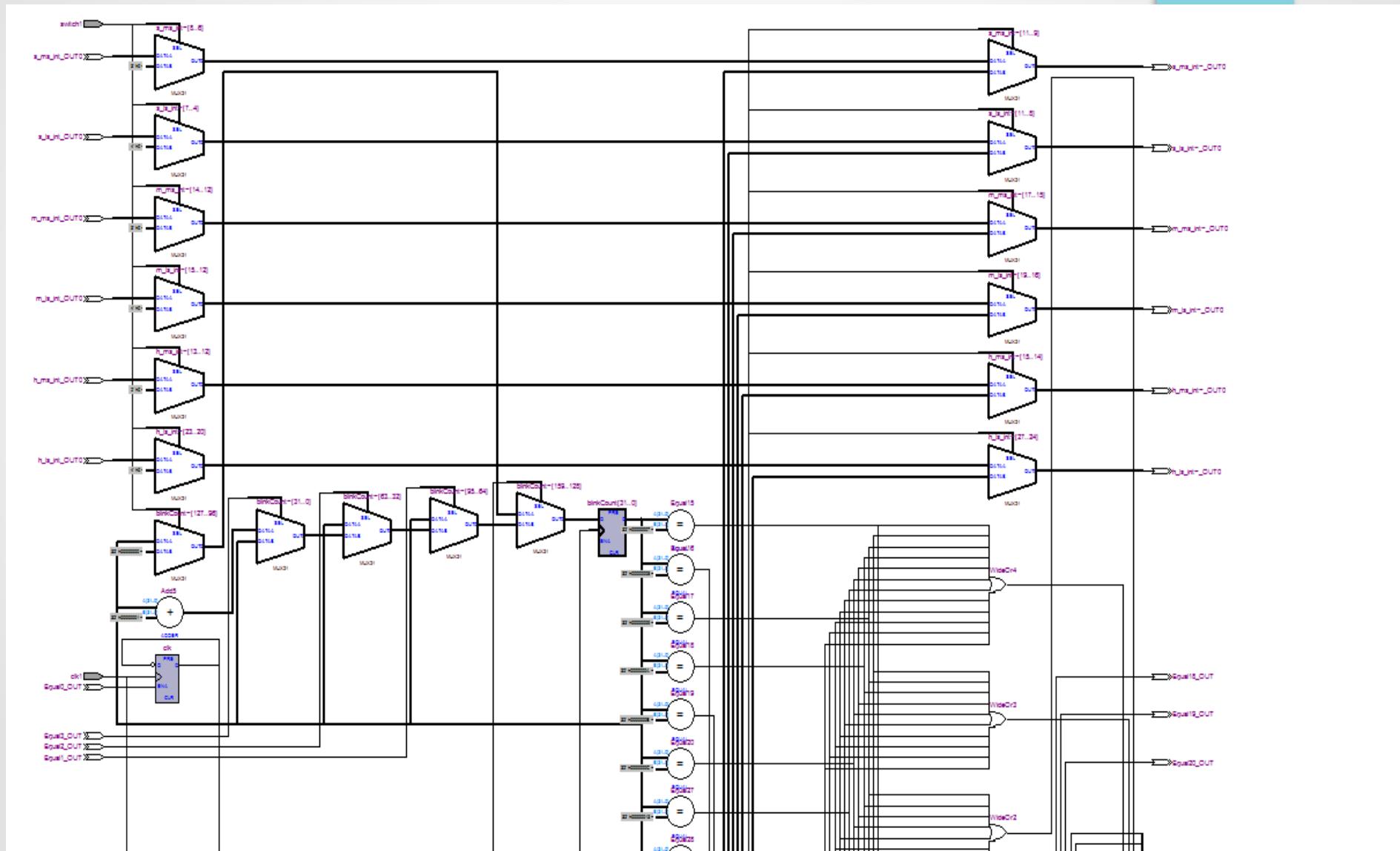
Implementation



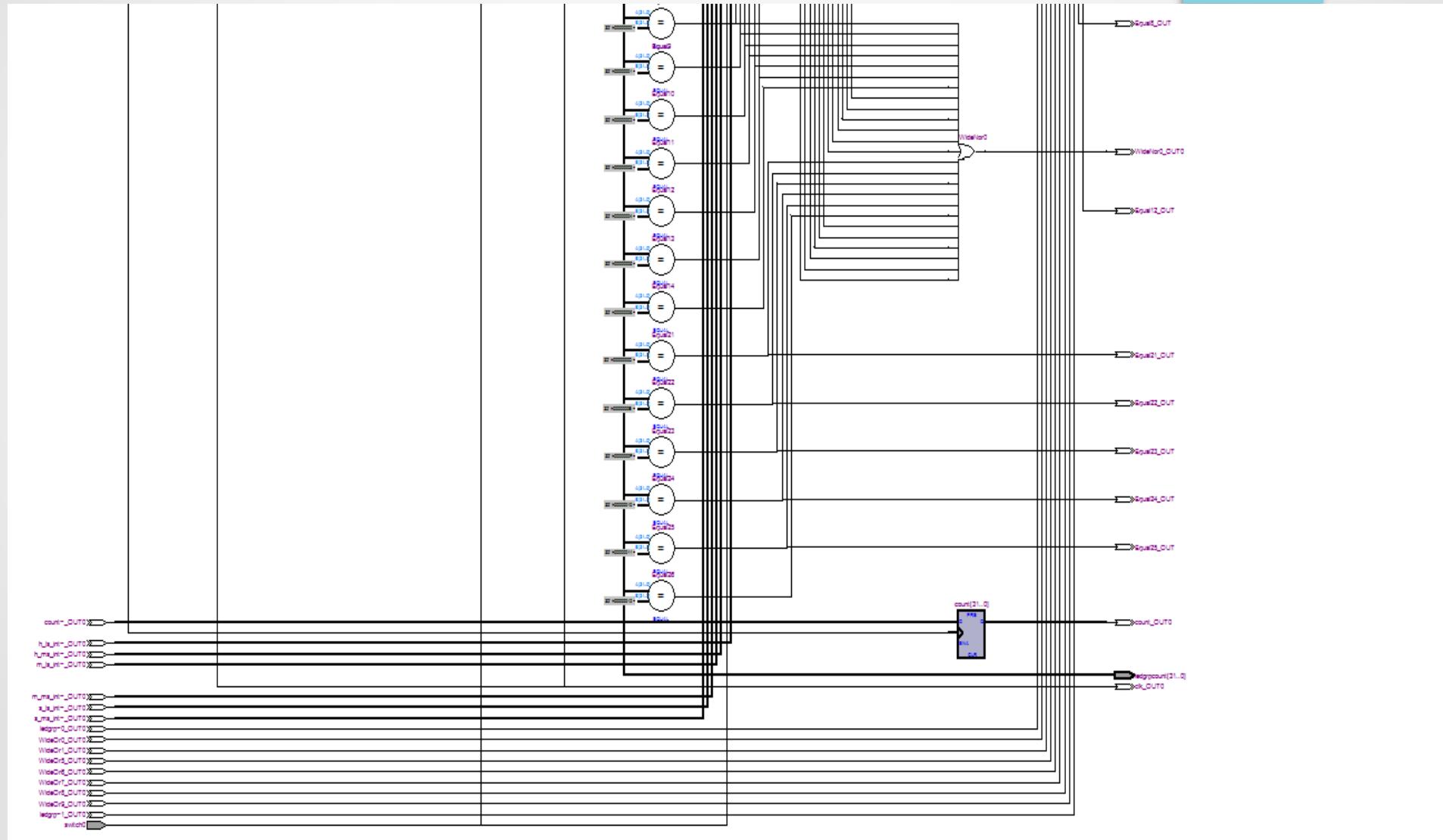
Implementation



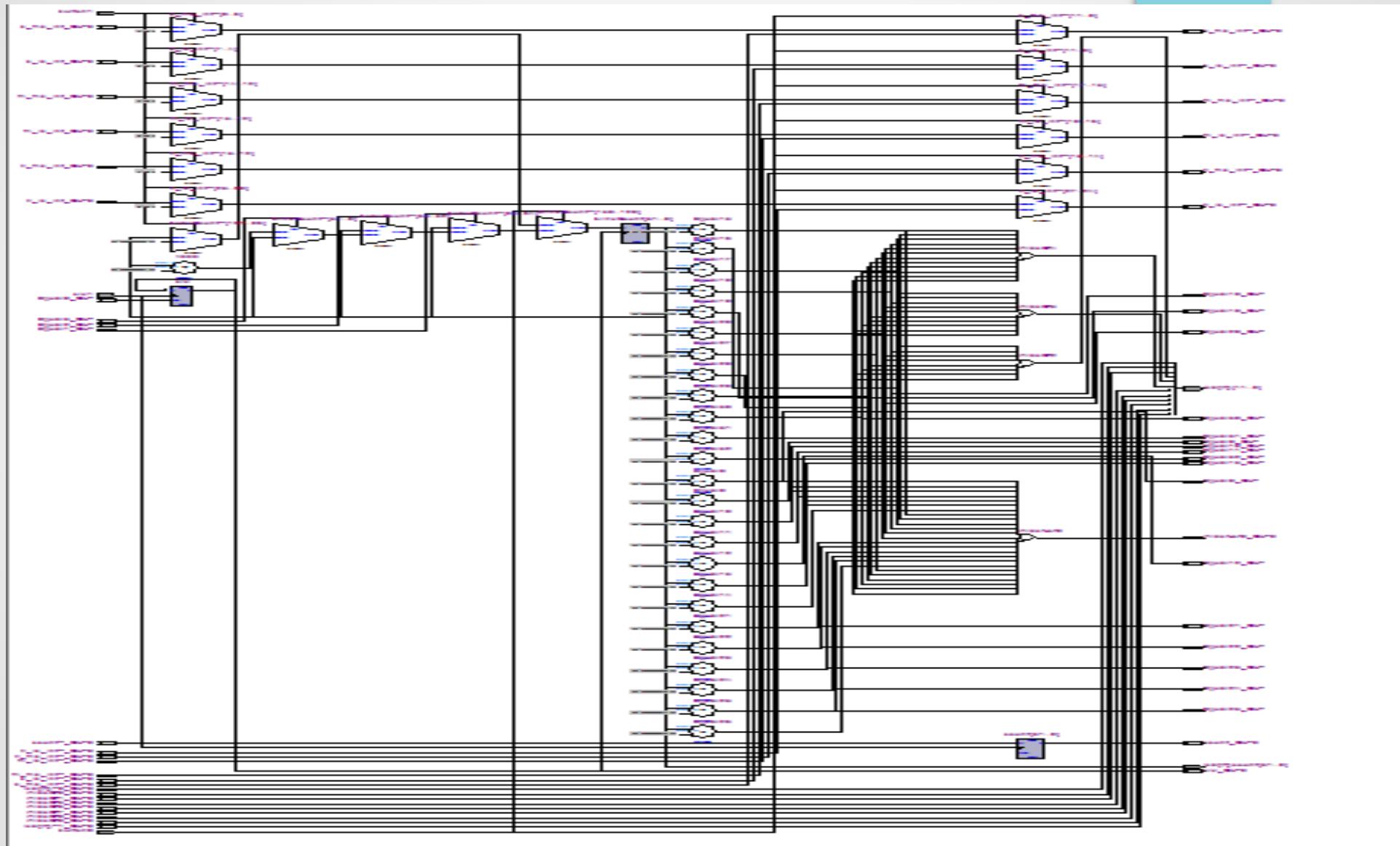
RTL Viewer Generation



RTL Viewer Generation



RTL Viewer Generation



Lessons Learnt

- Design implementation on hardware using VHDL code.
- Implementation of constraint file, input buffers, and output buffers.
- Using the development board's display by multiplexing the digit signal to the 7-segment decoder.
- How to divide down the board's internal clock so I could use it in my design.

What Next?

- Working with the Audio codec to give beep.
- Working with the LCD Display of the FPGA Board.



THANK YOU!