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**LAB 1 – Report**

**June 29, 2015**

1. **Objectives –** The purpose of this lab was to get acquainted to Quartus II design software, Altera DE2 board and the ModelSim simulation software.

Quartus II software is used for design entry using the schematic capture tool, the ModelSim software for simulation the design, and the Altera DE2 board for verifying the designs eliminating the need to physical wires and integrated circuits etc.

1. **Summary –** This lab consisted of three parts.
2. First part introduced the schematic capture tool of the Quartus design software. Here we got familiar to the layout and the part of the Quartus II software, such as the location of frequently used button and more. After the schematic was drawn on the windows and it run without errors, it was uploaded to the Altera DE2 board for verification. The design was a counter that +1 at the press of a button from 0 to 9 and roll over to 0 again.
3. Second part of the lab expanded the design drawn in part a. Here a clock source was added of 27 Hz but the counter was enabled for every 10th clock cycle, giving an effective frequency of 2.7 MHz. The design was again built on Quartus II and verified on the Alter DE2 board.
4. The last part of the lab required to view the input/output waveforms on ModelSim to ensure correct behavior.
5. **Result –**

In section a, we got accustomed to the working of the design software and got information on how to use it. Also, we learnt the procedure to use the Altera DE2 board to test designs. For section b, we got educated on the use of counters and the frequencies used by the board. Section c introduced us to the ModelSim software to test the design and see the waveforms. This section gave insight to the procedure involved in using the software.

1. **Question –**

Q. Does each waveform match the behavior of the corresponding signal when the circuit operates on the DE2 board?

Ans. Since the board is using the output waveforms of the design, bot waveforms have to correspond to each other.

1. **Conclusion –**

In this lab we learnt the procedure to use and interpret the Quartus II design software, Altera DE2 board and the ModelSim simulation software.