Project: LED Digital Clock

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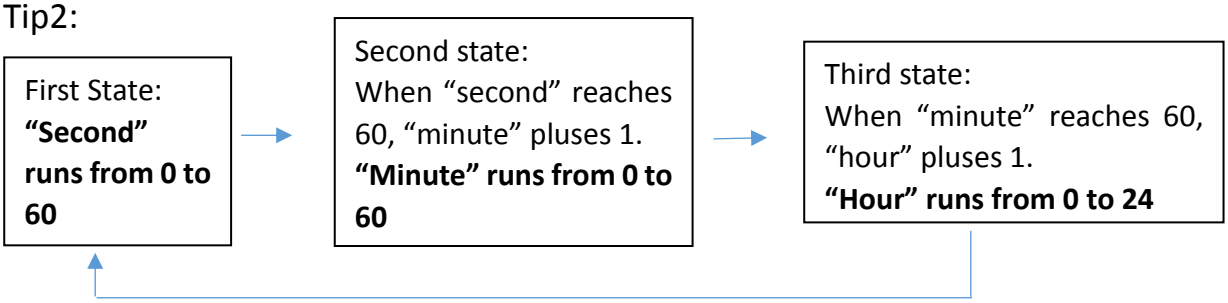
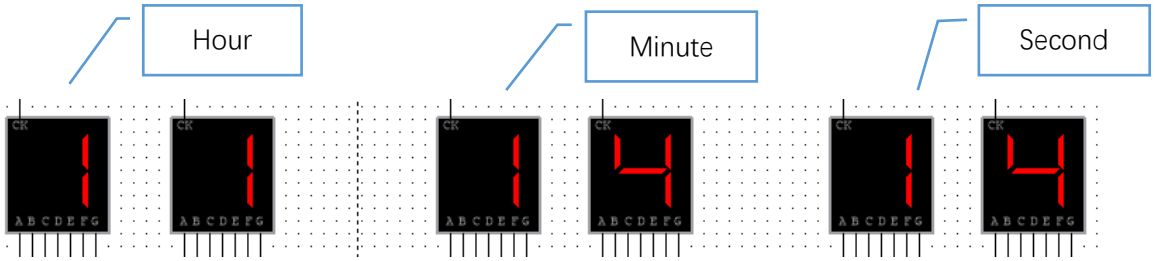
Tasks:

1. A LED digital clock consists of second, minute and hour. So first you need to find a way to reveal the “second”, “minute” and “hour”. (Using “SEVEN_SEG_COM_K” in Multisim)
2. You can only use DC power as the source to supply the clock.
3. Actually, it is hard to wait for your clock from 0 to 24, so you can speed it up. (i.e. you can make your clock run from 0AM to 24PM just in 5 minute in real time)
4. Tip1: Use 555 timer to convert DC power to square wave signal and adjust the frequency, then, count the number of square wave.
5. Tip2:



6. Components: The most elements you need are MOSFET and flip-flop. (So you need to self-study the knowledge about this part and I will also provide some necessary materials) Also you must use 555 timer as tip1 showing. You can add more functions by using other elements. Don’t use counter chip and 8051.

The simulation sample result:



Bonus:

You can add some other functions to your LED digital clock, not just revealing the time. Like you can make your clock twinkle by using LEDS or ring at some specific time (the class bell). All in all, the more extra functions your clock has, the more bonus you will get.

Steps & Grades:

1. Run simulation in Multisim. (40%).
2. Buy the elements you need.
3. Apply your design on the multi-holes board. You need to solder the elements on the multi-holes board finally. You can use breadboard to achieve your design firstly, but we will only check your multi-holes board at last. (40%)
4. Finish the midterm-report and final-report (one for a team). In your report, write clearly the work done by each team member and attach your simulation results. (20%).

If you have any questions about your project, please feel free to ask me!