

Lab 7: Electronic Clock

Objective

- ✓ Implement the display function of the electronic clock.

Prerequisite

- ✓ Fundamentals of logic gates.
- ✓ Logic modeling in Verilog HDL.
- ✓ Simple logic development and FSM control

Experiments

- 1 Finish the time display function supporting 24-hour (00-23).
 - 1.1 Can display as hour:minute and second, and use a push button or DIP switch to switch the display.
 - 1.2 Support two modes: AM/PM and 24-hour.
- 2 For the date functions in clock (no leap year), we have the following functions:
 - Day (Jan/March/May/July/Aug/Oct/Dec: 1-31, Feb: 28, Apr/June/Sept/Nov: 30),
 - Month (1-12),
 - Year (00-99).

Implement the following functions:

- 2.1 Month-Day function display in the 4 7-segment displays.
 - 2.2 Combine the Year and 1.1 to finish a Year-Month-Day, and use one DIP switch to select the display of Year (2 Seven-Segment Displays, SSDs) or Month-Day (4 SSDs).
- 3 (Bonus) Add the time display support of both AM/PM and 24-hour, and the leap year support. (The year will start from 2000 to 2200 and use 4 SSDs to display.)