CS230: Digital Logic Design and Computer Architecture
Tutorial 04 [Mon 09 Sep, Tue 10 Sep]

Concepts tested: Single Cycle Implementation, Extension

1. Draw the hardware diagram for the single cycle implementation of the MIPS instruction subset add, sub, and, or, slt, lw, sw, beq.
2. Identify the control lines in the above implementation and draw the truth table for the (main) control unit.
3. Extend the above datapath to support {lb, lbu}; that is, the signed and unsigned versions of the load-byte instruction. Show *only the changes* to the original datapath.
4. Show the modified truth table to generate the controls; mention just the changes/additions from the earlier table.
5. Extend the original datapath to support a new instruction ldpc, which loads the value of PC+4 onto a given register (no need to include support for lb, lbu here).
6. Show the modified truth table to generate the controls; mention just the changes/additions from the earlier table.