

EE 231L Lab 2

Pre-Lab 1

Three engineers work in a lab, and constantly fight over whether the radio should be on or off. They decide to build a circuit which will turn the radio on if a majority of the three want it on. Design a circuit to accomplish this - i.e., design a three-input, one-output circuit for which the output will be high if a majority of the three inputs are high.

To implement your design, you may use only [74HC00](#), [74HC02](#), [74HC04](#), [74HC08](#), [74HC32](#) and [74HC86](#) chips. Determine the functions of these chips from their data sheets. You can download the data sheets by clicking on the hyperlinks in the PDF file, or you can download them from a manufacturer's web site (such as <http://www.ti.com> or www.national.com).

[74HC00](#) _____

[74HC02](#) _____

[74HC04](#) _____

[74HC08](#) _____

[74HC32](#) _____

[74HC86](#) _____

Draw three representations for this design:

1. A three-input, one-output Truth table.
2. An input and output waveform sketch.
3. A schematic using gate symbols (see example schematic). Be sure the schematic is complete — include pin numbers. (Use the DIP package from the data sheets for pin numbers.)