

SI100EEE – Introduction to Information Science and Technology

Homework #1 (Due: Feb. 22nd)

Prepare for Lab 1

- Order the electronics design kit online. Each team needs to buy one.
- Read the first chapter of 《面包板制作 130/68 例》

Design Problem 1:

As part of an aircraft's functional monitoring system, a circuit is required to indicate the status of the landing gears prior to landing. A green LED display turns on if all three gears are properly extended when the "gear down" switch has been activated in preparation for landing. A red LED display turns on if any of the gears fail to extend properly prior to landing. When a landing gear is extended, its sensor produces a LOW voltage. When a landing gear is retracted, its sensor produces a HIGH voltage. Implement a circuit to meet this requirement.

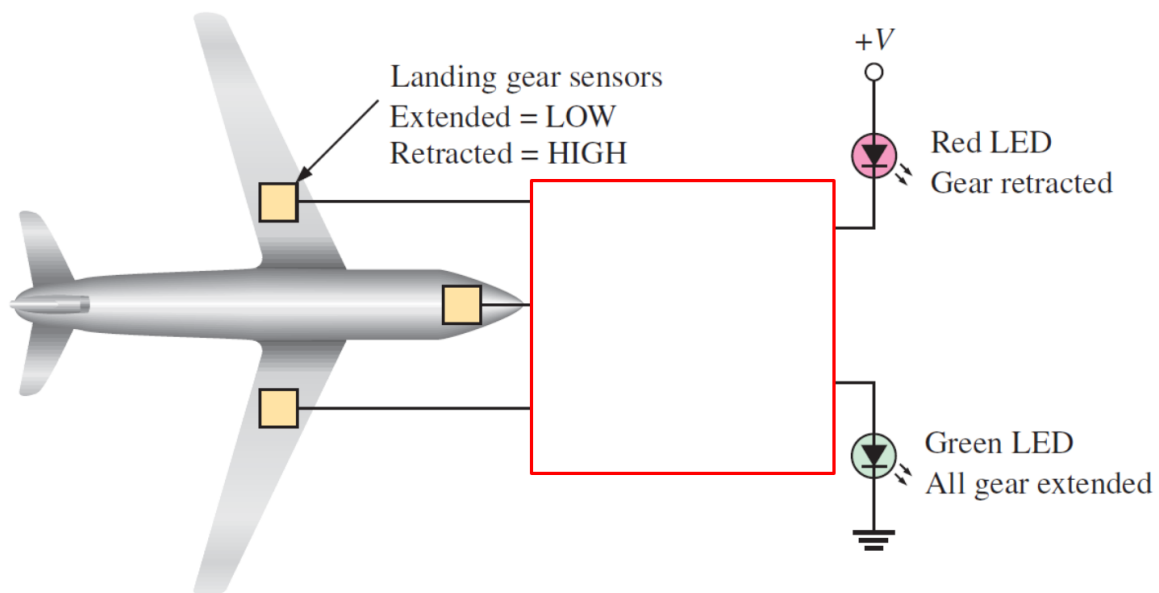


Figure 1

Design Problem 2:

Design a circuit to fit in the beige block of Figure 2 that will cause the headlights of an automobile to be turned off automatically 15 s after the ignition switch is turned off, if the light switch is left on. Assume that a LOW is required to turn the lights off.

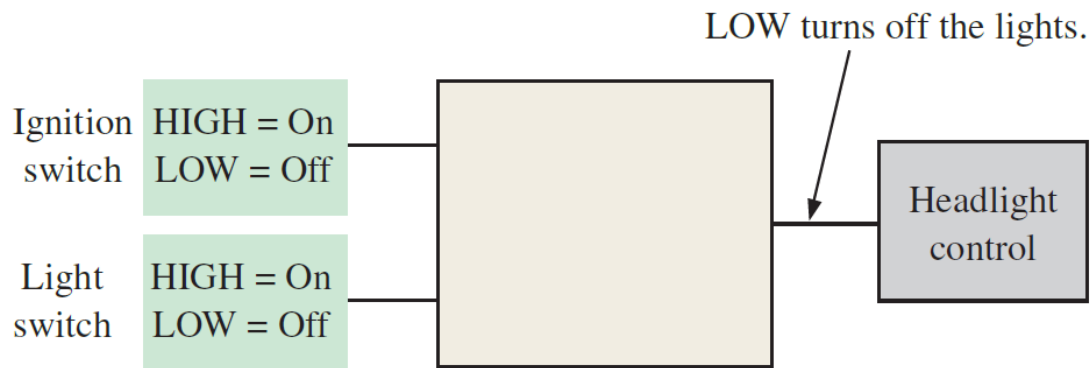


Figure 2

Design Problem 3:

Design a logic circuit so that it will generate the output waveform shown in Figure 3.

