

EECS 140/141 Introduction to Digital Logic Design
Spring Semester 2020
Assignment #1 Due 28 January 2020

Reading: Sections 1.1 - 1.5, 2.1 - 2.5 in Brown/Vranesic

All logic networks on this (and every other assignment) *must* be drawn using the half-sized logic template specified in the course syllabus. Points will be deducted for failure to do this!

The first few questions are intended to ensure that you have read and understood the information in the course information sheet (syllabus) that was handed out on Tuesday 21 January 2020 (which is also posted on the course web page).

1. Send an email message to me with "140 your_last_name" in the subject line. You may include any questions that you might have, but do *not* include your answers to any of the other questions/problems of this assignment or Assignment 0; those answers must be turned in on paper on the due date.
2. Where is my office and what are my office hours?
3. On the course web site is a "First Assignment Code Phrase" -- what is it?
4. Suppose you have the following scores.

Homework Average: 85%

Quiz Average: 65%

Lab Average: 88%

Exam 1: 65 out of 75 possible points

Exam 2: 85 out of 100 possible points

Final Exam: 88 out of 120 possible points

 - a. What will your course average be in Course Points to one decimal place?
 - b. Using the *first approximation* grade thresholds given in the syllabus, what would your course grade likely be?
5. If you have a course average of 90.3 Course Points (out of the 102 possible), will you get an A- for the course?
6. If you have a course score of 70.1 Course Points (out of the 102 possible), what special rule might cause you to receive a failing grade for the course?
7. What material are you allowed to bring to exams? What material will be provided to you?
8. What must you do if you will not be able to attend one of the exams?
9. How will you get solutions for the weekly homework assignments?
10. What is the name of the Supplemental Instructor for this course?
11. What are the planned dates for Exam 1, Exam 2, and Final Exam? It would be a good idea to put them on your calendar/planner/phone *now*.

The remainder of the problems are about the material to be covered in the first week of lectures.

12. This problem is a simple example of the first step in the design process for one type of digital system. A (very small) house has 1 window, 1 door that is always locked when closed and is opened with a physical key, and a security system that can be enabled or disabled. The security system sounds an alarm if the security system is enabled and either the window is open or the door is open and does not have the key inserted. Translate this situation into a 4-input, 1-output truth table. *Define* each binary variable that you use and give the meaning of a 0 or 1 value for each variable.
13. In the last problem, you found a truth table describing the function of a simple security alarm system. For *this* problem, you are to draw a combinational logic network that describes that same security system. Your network should mimic the way the problem was stated in words in the last problem. In particular, you should have one AND gate for each "and" in the problem statement, one OR gate for each "or", and one NOT gate for each "not".