University
of Windsor

School of Computer Science
Faculty of Science

COMP-2650: Computer Architecture I: Digital Design
Fall 2020

Assignment#	Date	Title	Due Date	Grade Release Date
Lec 03	Oct 05-07, 2020	**W04: Boolean Algebra & Logic Gates**	Oct. 21, 2020 Wednesday Midnight AoE	Oct. 28, 2020

The objectives of the lecture (weekly) assignments are to practice on topics covered in the lectures as well as improving the student's critical thinking and problem-solving skills in ad hoc topics that are closely related but not covered in the lectures. Lecture assignments also help students with research skills, including the ability to access, retrieve, and evaluate information (information literacy).

Lecture Assignments Deliverables

You should answer the below assignments using an editor like MS Word, Notepad, and the likes or pen in papers. You have to write and scan the papers clearly and merge them into a single file in the latter case. In the end, you have to submit all your answers in one single pdf file `COMP2650_Lec03_{UWinID}.pdf` containing the following items:

1. Your name, UWinID, and student number
2. The question Id for each answer. Preferably, the questions should be answered in order of increasing Ids. *Please note that if your answers cannot be read, you will lose marks.*
3. Including the questions in your submission pdf file is optional.

Please follow the naming convention as you lose marks otherwise. Instead of {UWinID}, use your own UWindsor account name, e.g., mine is hfani@uwindsor.ca, so, my submission would be: `COMP2650_Lec01_hfani.pdf`

Lecture Assignments

1. Using the truth table, show that the NAND logic gate is not associative. That is $Z \uparrow (Y \uparrow X) \neq (Z \uparrow Y) \uparrow X$.
2. Design the logic circuit that output 1 (equivalently unlock the door/turn the light on/unlock the safebox, etc) when there is an even number of zeros in the inputs. Assume there are 3 binary variables in the inputs A, B, and C.