

**School of Computer Science**

**Faculty of Science**

**COMP-2650: Computer Architecture I: Digital Design**

**Fall 2020**

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| 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](https://www.timeanddate.com/time/zones/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](mailto: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 ↑ (Y ↑ X) ≠ (Z ↑ Y) ↑ 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.