ENG-2410 Assignment #8

School of Engineering, University of Guelph
Fall 2025

Start Date: Week#9, Due Date: Week #10 (Friday, 5:00 PM) in Dropbox

1. Show the diagram of the hardware that implements the register transfer statement
   $C_3 : R2 \leftarrow R1, R1 \leftarrow R2$

2. Draw the block diagram for the hardware that implements the statement
   $C_1 + C_2 : R_1 \leftarrow R_1 + R_2$
   where R_1 and R_2 are n-bit registers with LOAD inputs and C_1 and C_2 are control variables. Include the logic gates for the control function. (Remember that the symbol + designates an OR operation in a control or Boolean Function, but it represents an arithmetic plus in a micro-operation.)

3. Design an arithmetic circuit with one selection variable S and two n-bit data inputs A and B as shown in Table 1. The circuit generates the following four arithmetic operations in conjunction with carry C_{in}:

S	$C_{in} = 0$	$C_{in} = 1$
0	$F = A + B$ (add)	$F = A + 1$(increment)
1	$F = A - 1$ (decrement)	$F = A + \bar{B} + 1$ (subtract)

Table 1: Selection Table

Deliverable

- **Name your file** as follows: ENG2410_F25_Assignment8_LastNameFirstName.pdf

- **Write** your name, the course # and Term # on the first page of your submission (i.e solution).

- **Submit** a single PDF file of your solutions.

- **Upload** your PDF file in the Course Link dropbox.

- **Late** submissions are not accepted.

- Your solution of the assignment will **not be accepted** via email.

- To **receive 100% of the mark** you should attempt all questions.

- Solutions to the assignment will be posted at 5:30 PM on Fridays.

- If you have any questions related to the assignment, please **contact your Teaching Assistant** responsible for your Tutorial Section.

- Failing to follow the instructions above will lead to a ZERO grade!!