Cairo University
Faculty of Engineering
Credit Hours System
CMP N101

Logic Lab
Experiment #4
Simple Circuits Design

Fall 2017

Objectives

By the end of this lab, the student should be able to:
- Design Simple logic circuits and implement them.
- Integrate simple circuits to create a more complex one.
- Use seven-segment display to view circuit output.

Requirements

1. Simple Circuit Design (Half Adder)

Design and **implement** a one-bit adder (a half adder) circuit as shown in the next figure. The circuit has two inputs A and B and two outputs: S (sum) and C (carry). Then connect the circuit outputs to the seven-segment display on the digital kit to display the adder's output.
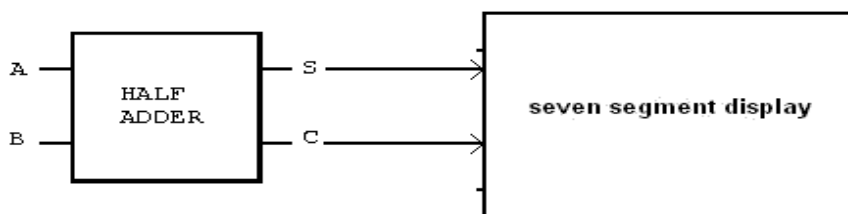
2. Circuits Integration (Full Adder)

Each two groups in the lab should connect their half adders implemented in part one to construct a full adder circuit as shown in the next figure. (**Note**: both circuits must have one common ground). Construct the truth table of the full adder circuit and use it to verify your circuit operation.
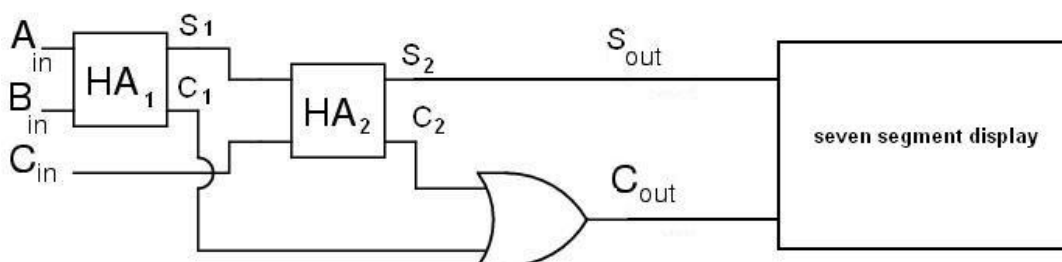
Material Checklist
- The section should be divided into groups of **2 students**.
- Each group should have:
    1. One 7408 Quad 2-input AND IC.
    2. One 7432 Quad 2-input OR IC.
    3. One 7486 Quad 2-input XOR IC.
    4. One Digital Kit and wires for connections.