

Digital & Embedded Systems

ELEC4403

Lab Assignment 3 – Digital Electronics	Points: 10
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EQUIPMENT: Breadboard
Power supply with cable
Gates, flip-flops
Wires, resistors, LEDs, pushbuttons

Add two Numbers

Note: Verify your design with Fritzing before the lab: <http://fritzing.org>

EXPERIMENT 1 (5 points)

Adding-1

Design a system to add 2 x 1-bit numbers (input from push-buttons) to a 2-bit output (via LEDs), showing carry and sum.

Use simple combinatorial gates only for this task (no adder chip).

EXPERIMENT 2 (5 points)

Adding-4

Design a system with 2 x 4-bit input from DIP switches and 5-bits output via LEDs. The LEDs should display the sum of the two input numbers.

Use an adder chip to build this circuit.

The components available to use are:.

- ZC4001 NOR
- ZC4011 NAND
- ZC4013 D-Flip-Flop
- ZC4076 4bit-Latch
- 74HC283 Adder
- as well as LEDs, resistors, wires

Note: All datasheets can be found in a folder in the labs web page.
<http://robotics.ee.uwa.edu.au/courses/des/labs/datasheets/>