The University of Western Australia
School of Engineering
Prof. Thomas Bräunl

Embedded Systems
ELEC3020

Lab Assignment 3 – Digital Electronics Adder	Points: 10

NO TEAMS: This lab is an individual assignment.

EQUIPMENT: Breadboard
Power supply with cable
Gates, flip-flops, counter
Wires, resistors, LEDs, pushbuttons
Bring your controller + cable as a power supply

Test your setup before using hardware with Retro or TinkerCAD
Circuits: https://www.tinkercad.com/learn/circuits/learning

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
- ZC4013 D-Flip-Flop
- 74HC283 Adder
- as well as LEDs, resistors, wires

- ZC4011 NAND
- ZC4076 4bit-Latch

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