Cairo University

Faculty of Engineering

Computer Engineering

Computer Architecture

Lab 2

Following on Requirement1, you are required to implement part A in the ALU according to the following:

	S3	S2	S1	S0	Cin =0	Cin =1
Part A	0	0	0	0	F=A	F=A+1
	0	0	0	1	F=A+B	F=A+B+1
	0	0	1	0	F=A-B-1	F=A-B
	0	0	1	1	F=A-1	F=B

Requirement:

1- Take a screenshot of the RTL design of PartA
2- Implement part A using full-adder not (+) or (-) in a separate file.
3- Compile your code without any errors or warnings.
4- Integrate PartA with Requirement1 (rest of the parts).
5- Add the following cases to your dofile. Note: Borrow is the opposite of carry, you report carry.

Operation	A	B	Cin	F	Cout
F=A	F0	B0	0	F0	0
F=A+B	F0	B0	0	A0	1
F=A-B-1	F0	B0	0	3F	1
F=A-1	F0	B0	0	EF	1
F=A+1	F0	B0	1	F1	0
F=A+B+1	F0	B0	1	A1	1
F=A-B	F0	B0	1	40	1
F=B	F0	B0	1	B0	0

5- Modify ALU to be generic N-bit ALU.
6- Construct a similar dofile assuming a different value for n to validate your work.