

Document for Comp1036 – ALU Assignment

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1. HDL files

cALU.hdl	Main ALU chip
Addo16.hdl	A chip which can add two 16bit number and check overflow
Mulo16.hdl	A chip which can multiply two 16bit number and check overflow
Or16Way.hdl	A chip which receive 16bit number and do and or the every bit and output a 1bit number
ShiftRight.hdl	A chip which can shift 1bit right to right for every bit in a 16bit number

2. cALU implementation

The cALU chip receives two main numbers and other seven arguments, the detailed instruction for functions is in the form following:

Functions\Arguments	x	y	nx	zy	ny	no	cx	re	op
1) Negate the value of x	x	NULL	0	1	1	1	0	0	0
2) Increment the value of x	x	NULL	1	1	1	1	0	0	0
3) Decrement the value of x	x	NULL	0	1	1	0	0	0	0
4) Add x to y	x	y	0	0	0	0	0	0	0
5) Subtract y from x	x	y	1	0	0	1	0	0	0
6) Subtract x from y	x	y	0	0	1	1	0	0	0
7) Multiply x and y	x	y	0	0	0	0	0	0	1

3. Gate diagram for optional 7th bit (Multiply)

