

Course Project

Design and implementation of 4-bit Arithmetic Logic Unit (ALU)

Project Elements

Operation	Output / Description
Addition	Output C = A+B Status1 = Carry_out Status2 = Overflow
Subtraction	Output C = A-B Status1 = Carry_out Status2 = Overflow
2's Complement of A or B	Output C = 2's Complement of A or B Status = Don't Care
1's Complement of A or B	Output C = 1's Complement of A or B Status = Don't Care
Increment A or B	Output C = A + 1 or B + 1 Status1 = Carry_out Status2 = Overflow
Decrement A or B	Output C = A - 1 or B - 1 Status1 = Carry_out Status2 = Overflow
Bitwise OR	Output C = Bitwise OR of A, B Status = Don't Care
Bitwise AND	Output C = Bitwise AND of A, B Status = Don't Care
Bitwise XOR	Output C = Bitwise XOR of A, B Status = Don't Care
Load A	Load A into a 4 Bit Counter Output C = A Status = Don't Care
Count Up	Count Up from initial value of A Output C = Count Value Status = Don't Care
Comparison	Compare A and B Status1 = 1 if A and B are equal, else zero Status2 = 1 if A > B, else zero Output C = Don't Care