Introduction to Digital Logic

EECS/CSE 31L

**Assignment 1 Design Report Sample**

**Designing Combinational Circuits**

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1 BLOCK Description

This 32-bit ALU is designed to accept two 32-bits and depending on the mode and the opsel selected, it will perform a series of operations to the two 32-bit numbers. The operations include arithmetic operations such as addition, subtraction, increment, decrement, etc. It can also perform logical operations such as AND, OR, XOR, shifts, etc.

2 Input/Output Port Description

|  |  |  |  |
| --- | --- | --- | --- |
| Port Name | Port Size | Port Type | Description |
| A | 32 | IN | 1st 32-Bit Number |
| B | 32 | IN | 2nd 32-Bit Number |
| opsel | 3 | IN | Operation Selection |
| mode | 1 | IN | Mode Selection (0=Arithmetic, 1=Logical) |
| output | 32 | OUT | Output of the operation |
| cout | 1 | OUT | Carry out bit |

3 Design Schematic

