## Design of the ALU

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| --- | --- | --- |
| **opcode name** | **opcode** | **opext** |
| ADD | 0000 | 0101 |
| ADDI | 0101 | XXXX |
| ADDU | 0000 | 0110 |
| ADDUI | 0110 | XXXX |
| ADDC | 0000 | 0111 |
| ADDCU | 1010 | 0101 |
| ADDCUI | 1010 | 0110 |
| ADDCI | 0111 | xxxx |
| SUB | 0000 | 1001 |
| SUBI | 1001 | xxxx |
| CMP | 0000 | 1011 |
| CMPI | 1011 | xxxx |
| CMPU/I | 1010 | 0010 |
| AND | 0000 | 0001 |
| OR | 0000 | 0010 |
| XOR | 0000 | 0011 |
| NOT | 1010 | 0011 |
| LSH | 1000 | 0100 |
| LSHI | 1000 | xxxx |
| RSH | 0000 | 1110 |
| RSHI | 1110 | xxxx |
| ALSH | 1010 | 0001 |
| ARSH | 1010 | 0100 |
| nop | 0000 | 0000 |
| MOV | 0000 | 1101 |
| MOVI | 1101 | xxxx |

The operations implemented in the ALU are a combination of the operations required by the lab 1 handout and the ISA document posted on the class website. The opcodes were taken from the ISA handout. Some operations which were requested by the lab 1 handout were not listed in the ISA document. The opcode for these were picked from a list of unused op codes.