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| --- | --- | --- | --- | --- | --- | --- |
| Instruction | Description | Bits | | | | |
| 31:26 | 25:21 | 20:16 | 15:11 | 11:0 |
| NOP | No operation | 000000 | 00000 | 00000 | 00000 | 00000000000 |
| ADD | Signed addition | 000001 | dest | r1 | r2 | 00000000000 |
| SUB | Signed subtraction | 000010 | dest | r1 | r2 | 00000000000 |
| MUL | Signed multiplication | 000011 | dest | r1 | r2 | 00000000000 |
| SEL | Multiplexing | 000100 | dest | r1 | r2 | 00000000000 |
| AND | Bitwise AND | 000101 | dest | r1 | r2 | 00000000000 |
| OR | Bitwise OR | 000110 | dest | r1 | r2 | 00000000000 |
| XOR | Bitwise XOR | 000111 | dest | r1 | r2 | 00000000000 |
| SLA | Shift left arithmetic | 001000 | dest | r1 | r2 | 00000000000 |
| SLL | Shift left logical | 001001 | dest | r1 | r2 | 00000000000 |
| SRA | Shift right arithmetic | 001010 | dest | r1 | r2 | 00000000000 |
| SRL | Shift right logical | 001011 | dest | r1 | r2 | 00000000000 |
| ADDI | Signed addition immediate | 100000 | dest | r1 | Immediate | |
| SUBI | Signed subtraction immediate | 100001 | dest | r1 | Immediate | |
| LD | Load | 100100 | dest | r1 | Offset | |
| ST | Store | 100101 | dest | r1 | Offset | |
| BEZ | Branch not zero | 101000 | 00000 | r1 | Offset | |
| BNE | Branch not equal | 101001 | dest | r1 | Offset | |
| BEC | Branch if carry | 101010 | dest | r1 | Offset | |
| BEO | Branch if overflow | 101011 | dest | r1 | Offset | |
| BES | Branch if signed | 101100 | dest | r1 | Offset | |
| JMP | Jump | 101101 | 00000 | 00000 | Offset | |