MIPS INSTRUCTION DIAGRAM:

|  |  |  |
| --- | --- | --- |
| **Instruction** | **Type** | **Instruction Code(Bin)** |
| ADD | R-type | 00 0000 0001 0010 XXX 000 |
| SUB | R-type | 00 0011 0100 0101 XXX 001 |
| AND | R-type | 00 0100 0101 0110 XXX 010 |
| AND | R-type | 00 0111 1000 1001 XXX 011 |
| OR | R-type | 00 1010 1011 1100 XXX 100 |
| NOR | R-type | 00 0011 0100 0101 XXX 100 |
| SLL | R-type | 00 0100 0101 XXXX 010 101 |
| SRL | R-type | 00 0101 0110 XXXX 011 110 |
| SLT | R-type | 00 0011 0100 0101 XXX 111 |
| LW | I-Type | 01 1001 0001 0001 001 000 |
| SW | I-Type | 01 0001 0001 0001 001 001 |
| BEQ | I-Type | 01 0010 0011 0000101 010 |
| BNE | I-Type | 01 0011 0010 1000110 011 |
| J | J-Type | 10 XXXX XXXX XXXX XXX XXX |

OPCODE TABLE:

|  |  |
| --- | --- |
| **Instruction Type** | **Opcode** |
| R-type | 00 |
| I-type | 01 |
| J-type | 10 |

Control Unit Table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Instruction** | **Opcode** | **ALU Enable** | **Function Code** |
| ADD | 00 | 01 | XXX |
| SUB | 00 | 01 | XXX |
| AND | 00 | 01 | XXX |
| AND | 00 | 01 | XXX |
| OR | 00 | 01 | XXX |
| NOR | 00 | 01 | XXX |
| SLL | 00 | 01 | XXX |
| SRL | 00 | 01 | XXX |
| SLT | 00 | 01 | XXX |
| LW | 01 | XX | 000 |
| SW | 01 | XX | 001 |
| BEQ | 01 | XX | 010 |
| BNE | 01 | XX | 011 |
| J | 10 | XX | XXX |

ALU Table:

|  |  |
| --- | --- |
| **Instruction** | **ALU OPCode** |
| ADD | 000 |
| SUB | 001 |
| AND | 010 |
| OR | 011 |
| NOR | 100 |
| SLL | 101 |
| SRL | 110 |
| SLT | 111 |