

Team ExceptionNull Reference Data

Core Instruction Set

NAME	MNEMONIC	FORMAT	OPERATION	OPCODE
Move	mv	R	$R[rs] = R[rt]$	0000
Add	add	R	$R[rd] = R[rs] + R[rt]$	0001
And	and	R	$R[rd] = R[rs] \& R[rt]$	0010
Not	not	R	$R[rs] = \sim R[rt]$	0011
Nor	nor	R	$R[rd] = \sim (R[rs] \mid R[rt])$	0100
Set Less Than	slt	R	$R[rd] = (R[rs] < R[rt]) ? 1 : 0$	0101
Shift Left Logical	sll	R	$R[rs] = R[rt] \ll 2$	0110
Shift Right Logical	srl	R	$R[rs] = R[rt] \gg 2$	0111
Jump	j	J	$PC = \text{JumpAddr}$	1000
Jump and Link	jal	J	$R[7] = PC + 1; PC = \text{JumpAddr}$	1001
Load Word	lw	I	$R[rd] = M[R[rs] + \text{Imm}]$	1010
Store Word	sw	I	$M[R[rs] + \text{Imm}] = R[rd]$	1011
Branch On Equal	beq	I	$\text{if}(R[rs] \neq R[rd]); PC = PC + 1 + \text{BranchAddr}$	1100
Branch On Not Equal	bne	I	$\text{if}(R[rs] \neq R[rd]); PC = PC + 1 + \text{BranchAddr}$	1101
Add Immediate	addi	I	$R[rd] = R[rs] + \text{Imm}$	1110
Load Immediate	li	I	$R[rd] = \text{Imm}$	1111

Basic Instruction Formats

R	opcode (4 bits)	rs (2 bits)	rt (2 bits)
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I	opcode (4 bits)	rs (2 bits)	immediate (2 bits)
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J	opcode (4 bits)	address (4 bits)
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Pseudo Instruction Set

NAME	MNEMONIC	OPERATION
\$ADD 50	add50	$R[rd] = R[rs] + 50$
\$a0	1	Argument
\$t0	2	Temporary
\$t1	3	Temporary

Register Name, Number, Use, Call Convention

NAME	NUMBER	BINARY	USE	PRESERVED ACROSS A CALL?
\$r0	0	00	General	No
\$r1	1	01	General	No
\$r2	2	10	General	No
\$r3	3	11	General	No

Memory Allocation

Stack
Data
Text & Reserved

Opcodes, Base Conversion, ASCII Symbols

OPCODE	Binary	Decimal	Hexadecimal	ASCII Character
Move	0000	0	0	NUL
Add	0001	1	1	SOH
And	0010	2	2	STX
Not	0011	3	3	ETX
Nor	0100	4	4	EOT
Set Less Than	0101	5	5	ENQ
Shift Left Logical	0110	6	6	ACK
Shift Right Logical	0111	7	7	BEL
Jump	1000	8	8	BS
Jump and Link	1001	9	9	HT
Load Word	1010	10	a	LF
Store Word	1011	11	b	VT
Branch On Equal	1100	12	c	FF
Branch On Not Equal	1101	13	d	CR
Add Immediate	1101	14	e	SO
Load Immediate	1111	15	f	SI