

Instruction	Opcode	RegWrite	AluSrc	Branch	MemRe	MemWr	Mem2Reg
R-Type	0110011	1	0	0	0	0	0
I-Type	0010011	1	1	0	0	0	0
l(w/b)	0000011	1	1	0	1	0	1
s(w/b)	0100011	0	1	0	0	1	0
beq	1100011	0	0	1	0	0	0
jal	1101111	1	0	1	0	0	0

ALUOps from the main controller

Instruction opcode	ALUOp
Load	00
Store	00
BEQ	01
Jump	11
R-Type	10
I-Type	10
U-Type	10

ALU Control Input

Funct7 field	Funct 3	ALU Action	ALU Control Input
XXXXXXXX	XXX	add	0010
XXXXXXXX	XXX	add	0010
XXXXXXXX	XXX	subtract	0110
0000000	000	add	0010
0100000	000	subtract	0110
0000000	111	AND	0000
0000000	110	OR	0001
0000000	100	XOR	0011
0100000	101	Shift Right	0100
XXXXXXXX	XXX	LUI	1000
XXXXXXXX	XXX	JAL	1111