ALU Operation	Function
0000	AND
0001	OR
0010	add
0110	subtract
0111	set on less than
1100	NOR
1101	NAND

Table 1: Alu Operations

0		rs		rt		rd		shamt		funct	
31	26	25	21	20	16	15	11	10	6	5	0

Table 2: R-type Instruction Format

8 or 35 or 43		rs		rt		address	
31	26	25	21	20	16	15	0

Table 3: I-type Instruction Format

Opcode (Decimal)	Operation
8	addi
35	lw
43	sw
0	R-Type

Table 4: Opcodes

Supported Instructions
lw
sw
add
sub
and
or
nor
slt
nand
addi

Table 5: Required Instructions

Future Instructions
beq
jal
jr
j

Table 6: Instructions To Be Added

Instr (Op code)	RegDst	ALUSrc	MemtoReg	RegWrite	MemRead	MemWrite	ALUOp
R-format (0)	1	0	0	1	0	0	10
lw (35)	0	1	1	1	1	0	00
sw (43)	X	1	X	0	0	1	00
addi (8)	0	1	0	1	0	0	00

Table 7: Control Unit Truth Table

Operation (Op code)	ALUOp	Funct Field	Desired ALU Action	ALU Control Input
lw (35)	00	XXXXXX	add	0010
sw (43)	00	XXXXXX	add	0010
addi (8)	00	XXXXXX	add	0010
add (0)	10	100000	add	0010
sub (0)	10	100010	sub	0110
and (0)	10	100100	and	0000
or (0)	10	100101	or	0001
nor (0)	10	100111	nor	1100
slt (0)	10	101010	slt	0111
nand (0)	10	100110	nand	1101

Table 8: ALU Control Unit Truth Table