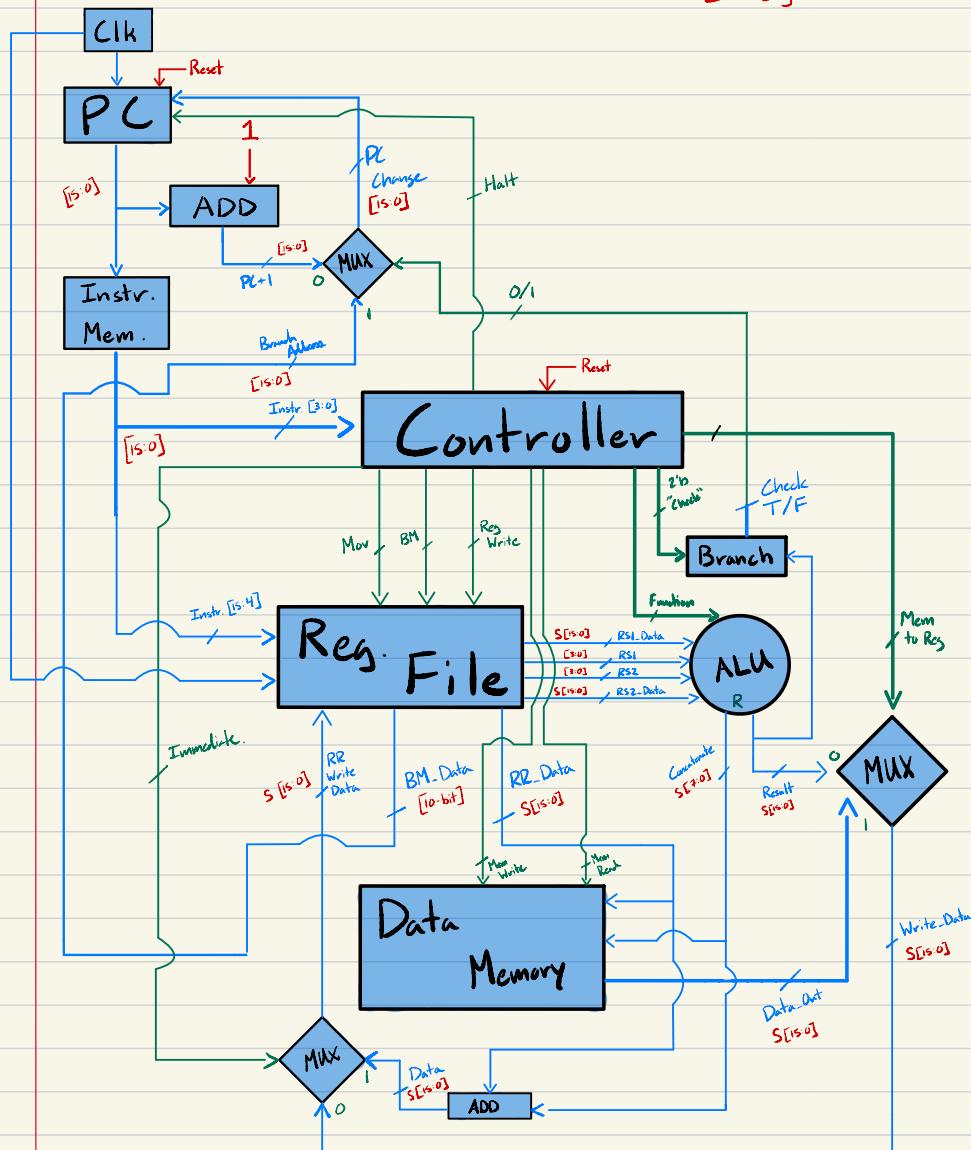


# Final Datapath:

S = signed



OPCODE	Instr.	1'b	1'b	1'b	1'b	1'b	1'b	1'b	3'b	3'b	1'b
		Immediate	Mov	BM	Reg Write	Halt	Mem Write	Mem Read	Branch Check	All Function	Mem - Reg
0000	HALT	X	X	X	X	1	X	X	XXX	XXX	X
0001	STOR	0	0	0	0	0	1	0	000	100	0
0010	LOAD	0	0	0	1	0	0	1	000	100	1
0011	ADD	0	0	0	1	0	0	1	000	000	0
0100	AND	0	0	0	1	0	0	1	000	010	0
0101	LT	0	0	0	0	0	0	1	001	001	0
0110	GT	0	0	0	0	0	0	1	100	001	0
0111	BM	0	0	1	0	0	0	1	000	XXX	0
1000	MOV	0	1	0	0	0	0	1	000	XXX	0
1001	NE	0	0	0	0	0	0	1	101	001	0
1010	ADDI	1	0	0	1	0	0	1	000	100	0
1011	SUB	0	0	0	1	0	0	1	000	001	0
1100	OR	0	0	0	1	0	0	1	000	011	0
1101	LTE	0	0	0	0	0	0	1	011	001	0
1110	GTE	0	0	0	0	0	0	1	110	001	0
1111	EE	0	0	0	0	0	0	1	010	001	0

# Test Program:

$x_4 = 7$	ADDI	$x_4, 7$	000000111	0100	1010
$x_5 = 8$	ADDI	$x_5, 8$	000010000	0101	1010
$x_9 = 15$	ADD	$x_9, x_5, x_4$	0100	0101	1001 0011
$x_4 = 8$	AND	$x_4, x_9, x_5$	0101	1001	0100 0100
$x_5 = 15$	MOV	$x_5, x_9, x_9$	1001	1001	0101 1000
$x_6 = 7$	SUB	$x_6, x_5, x_4$	0100	0101	0110 1011
$x_7 = 15$	OR	$x_7, x_9, x_6$	0110	1001	0111 1100
$x_6 = 8$	ADDI	$x_6, 1$	0000	0001	0110 1010
$x_0 = M(13)$	BM	$x_0, M(13)$	00000001101	00	0111
$x_1 = M(8)$	BM	$x_1, M(8)$	0000001000	01	0111
IF false, jumps	LTE	$x_0, x_6, x_4$	0100	0110	0000 1101
$x_6 = 13$	ADDI	$x_6, 5$	01000000	0111	1010
IF false, jumps	GT	$x_1, x_6, x_7$	0111	0110	0001 0110
$M(61) \rightarrow x_5$	LW	$x_5, M(61)$	0011	1101	0101 0010
$x_9 \rightarrow M(8)$	SW	$x_9, M(8)$	0000	1000	1001 0001
$x_0 \rightarrow M(28)$	BM	$x_0, M(28)$	0001	1100	0000 0111
$x_{15} = x_{15}$	EE	$x_0, x_{15}, x_{15}$	1111	1111	0000 1111
$M(128) \rightarrow x_{12}$	LW	$x_{12}, M(128)$	1000	0000	1100 0010
$x_{12} \rightarrow M(224)$	SW	$x_{12}, M(224)$	1110	0000	1100 0001
$x_{15} \neq x_{12}$	NE	$x_0, x_{15}, x_{12}$	1100	1111	0000 1001
$x_3 = 6108$	ADD	$x_3, x_4, x_5$	0101	0100	1000 0011
$x_9 \geq x_{15}$	GTE	$x_0, x_9, x_{15}$	1111	1001	0000 1110
$M(9) \rightarrow x_5$	LW	$x_5, M(9)$	0000	1001	0101 0010
$x_{15} < x_5$	LT	$x_0, x_{15}, x_5$	0101	1111	0000 0101
$M(10) \rightarrow x_6$	LW	$x_6, M(10)$	0000	1010	0110 0010
$x_7 = 1900$	ADD	$x_7, x_5, x_6$	0110	0101	0111 0011
$x_7 = 2027$	ADDI	$x_7, 127$	0111	1111	0111 1010
END	HALT		X	X	X 0000