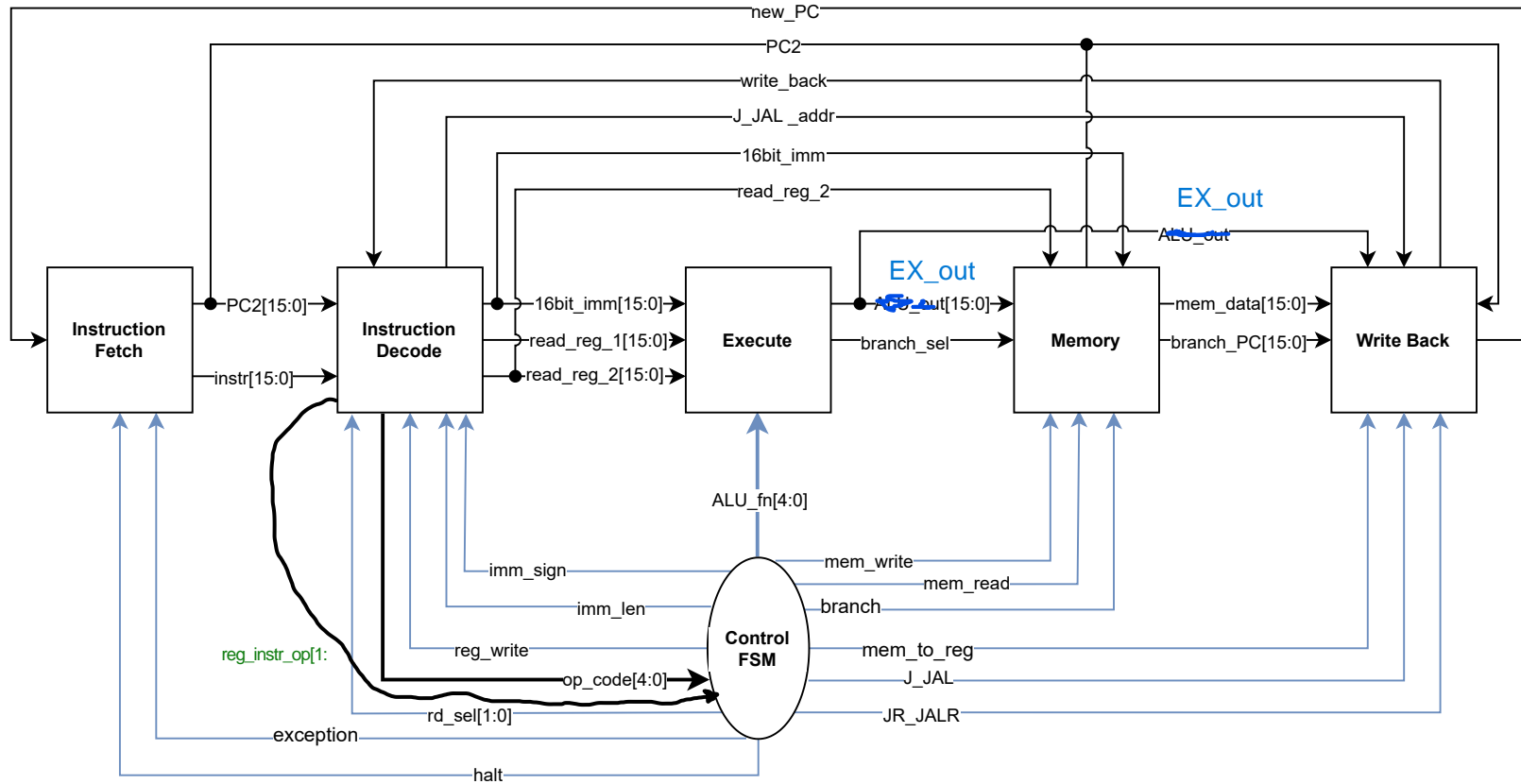
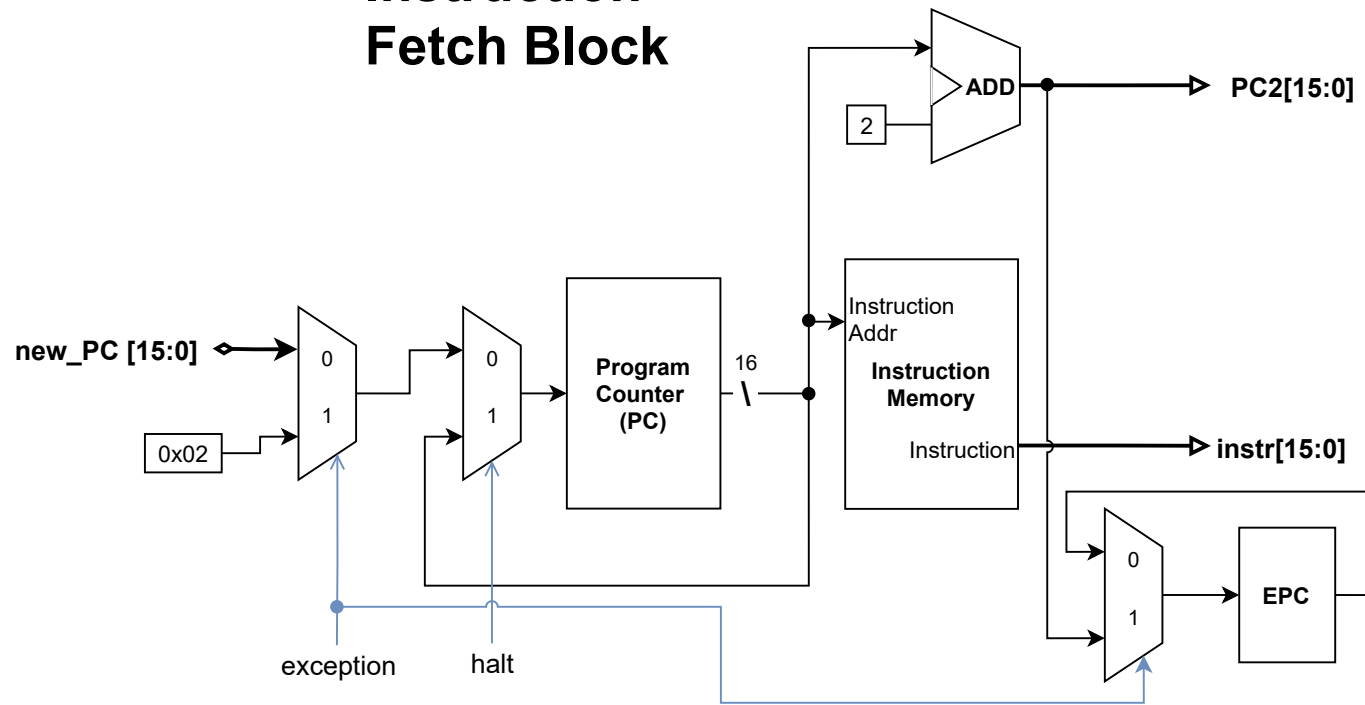


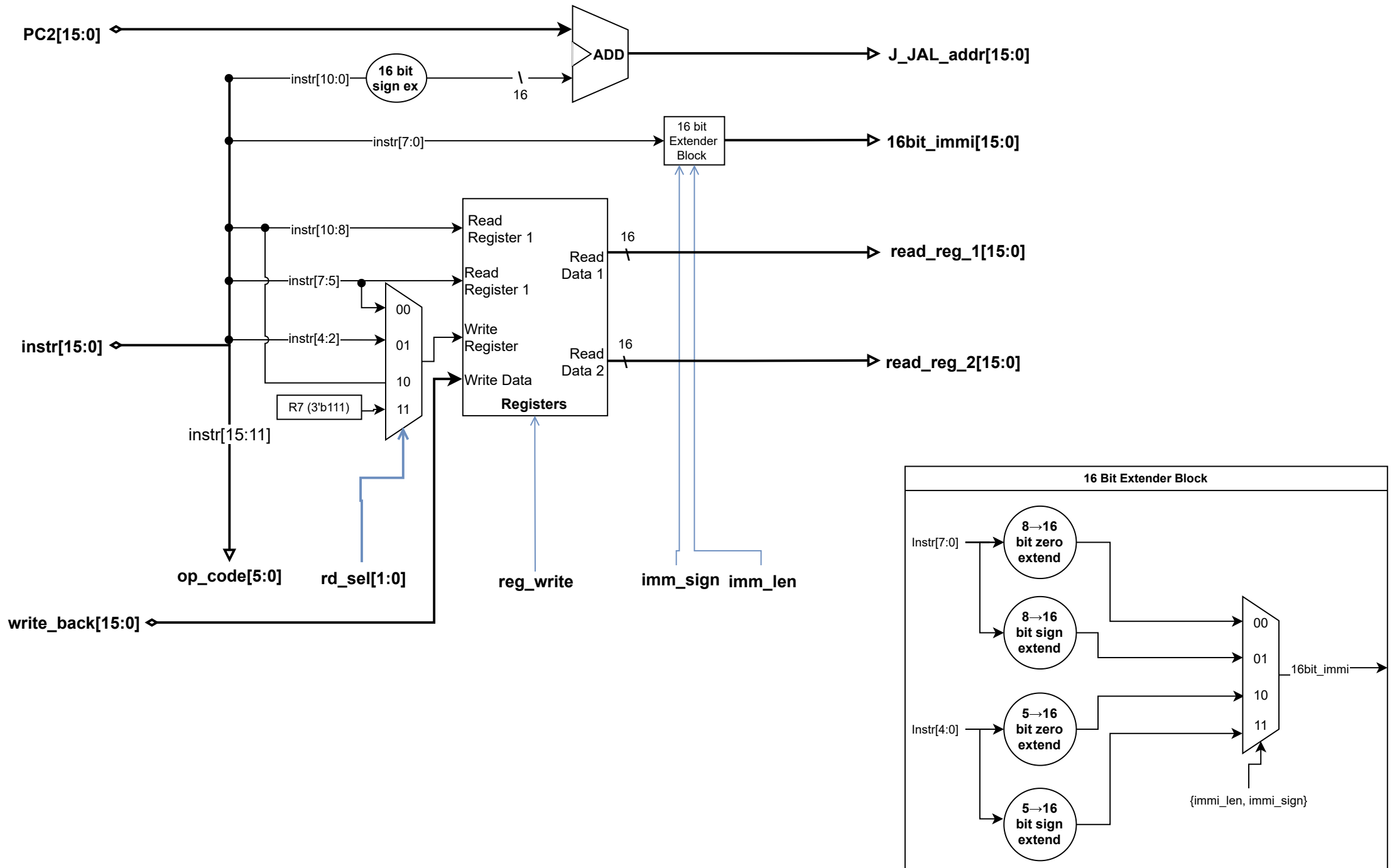
# WiscSP13



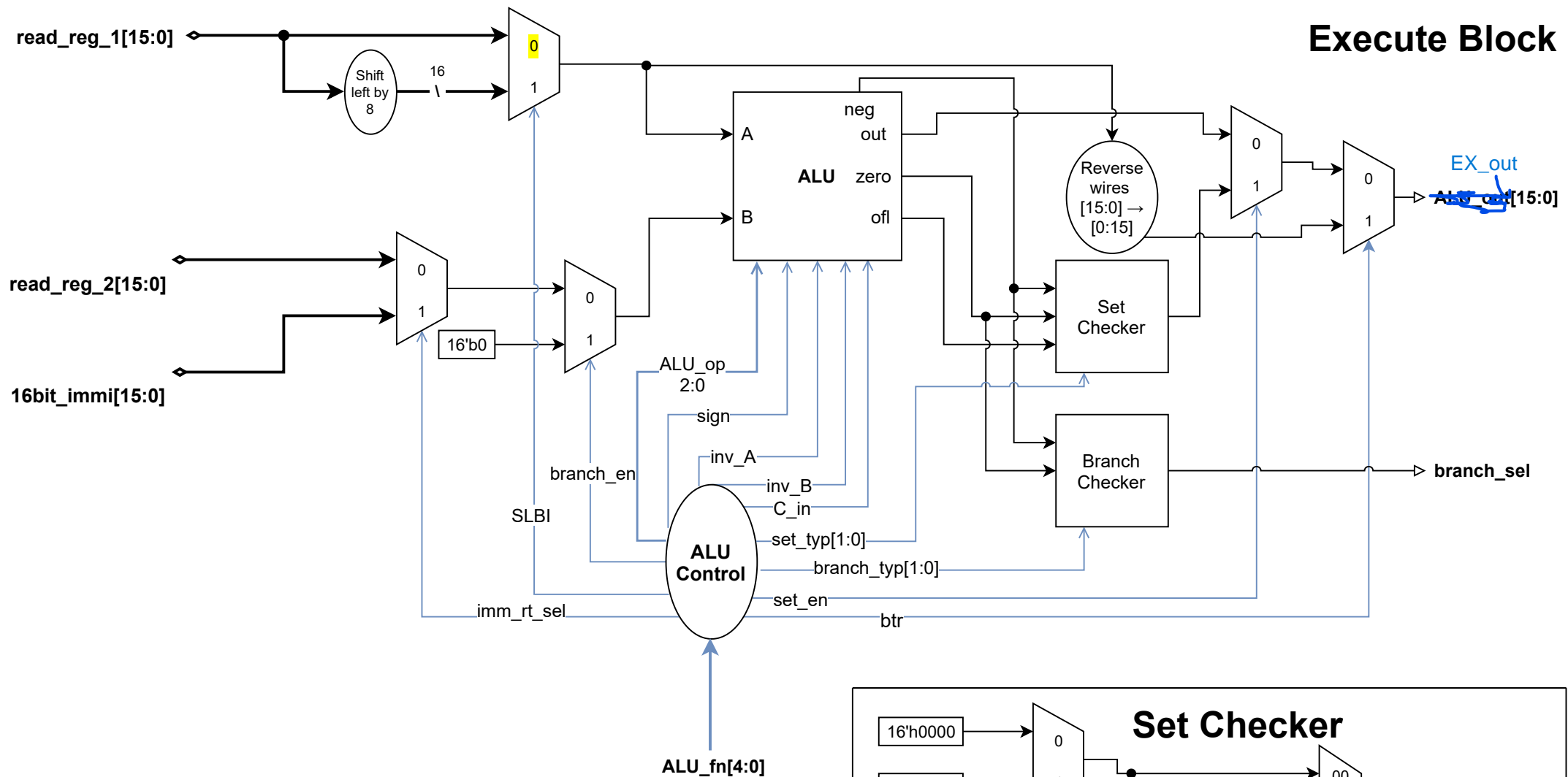
# Instruction Fetch Block



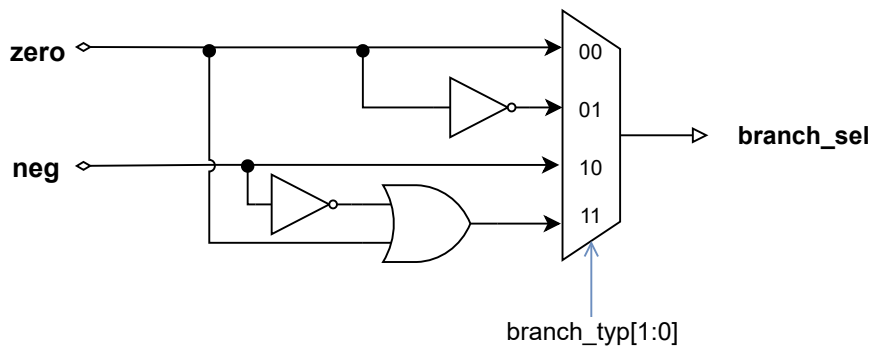
# Instruction Decode Block



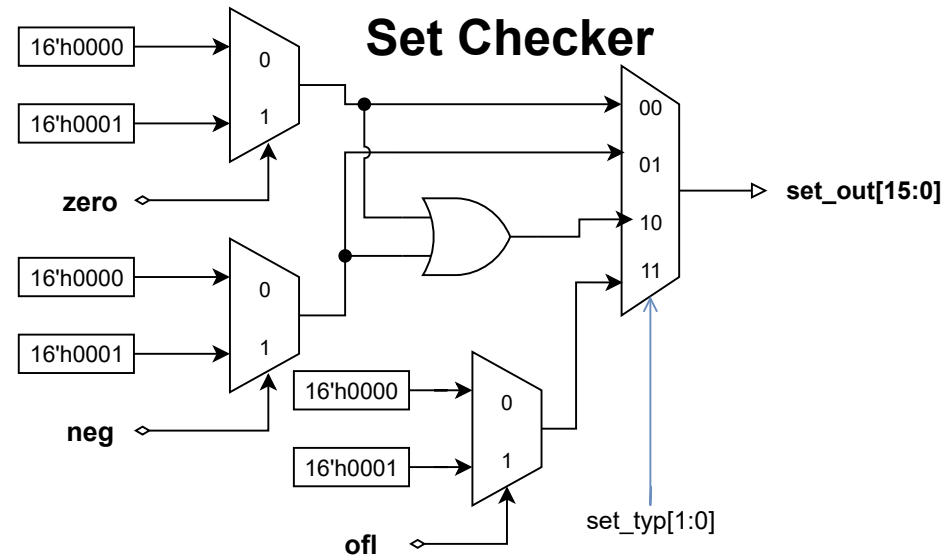
# Execute Block

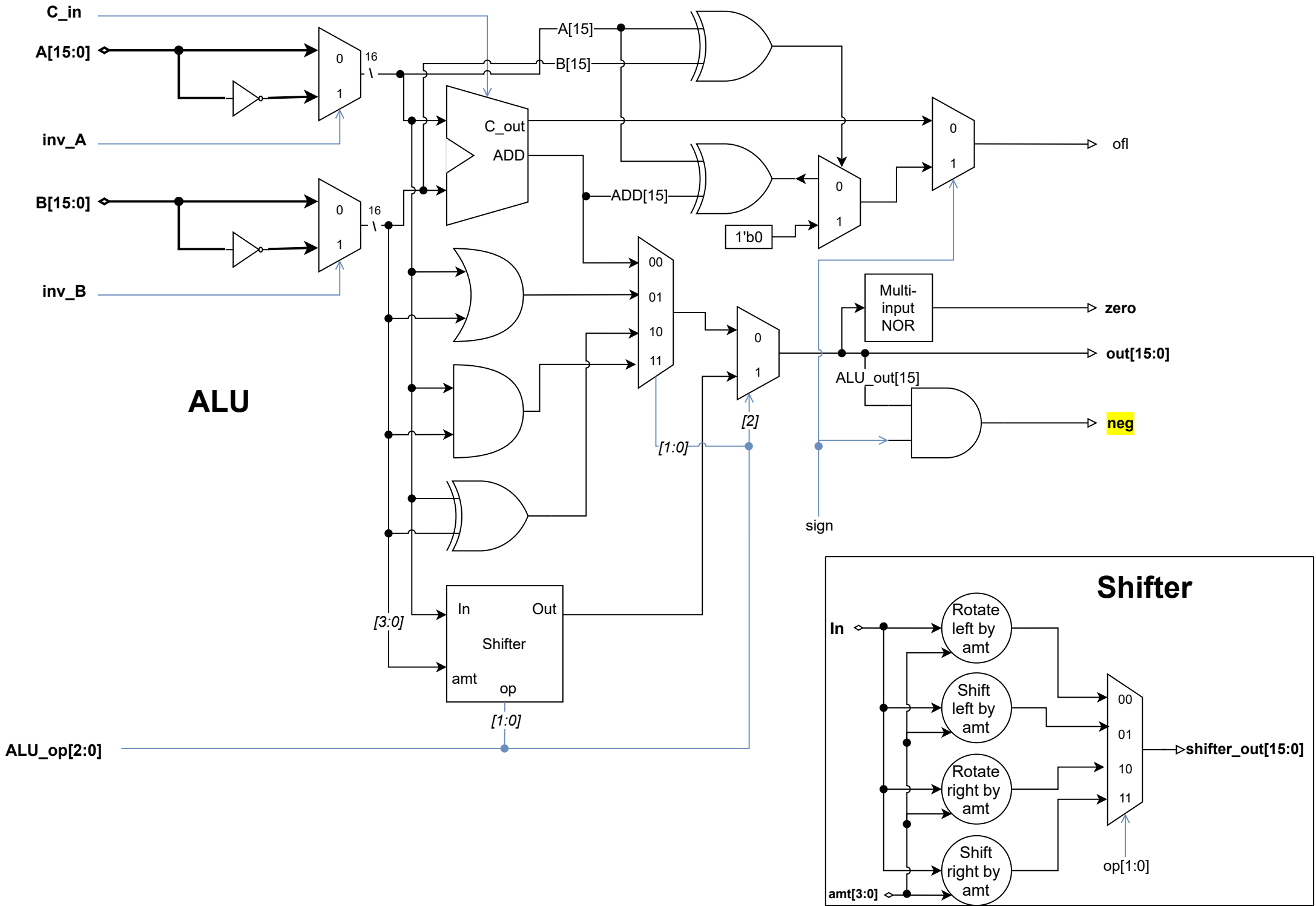


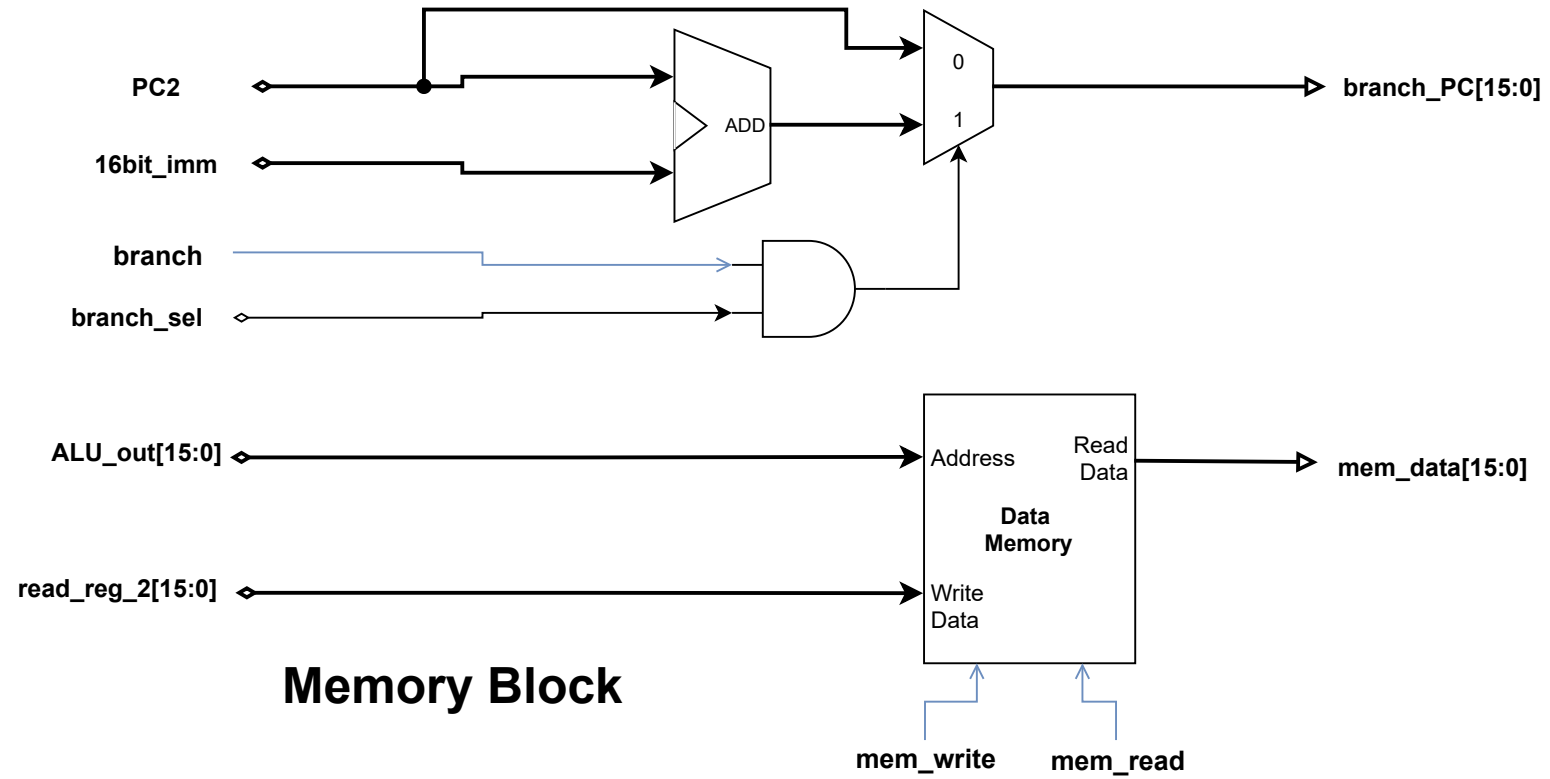
## Branch Checker



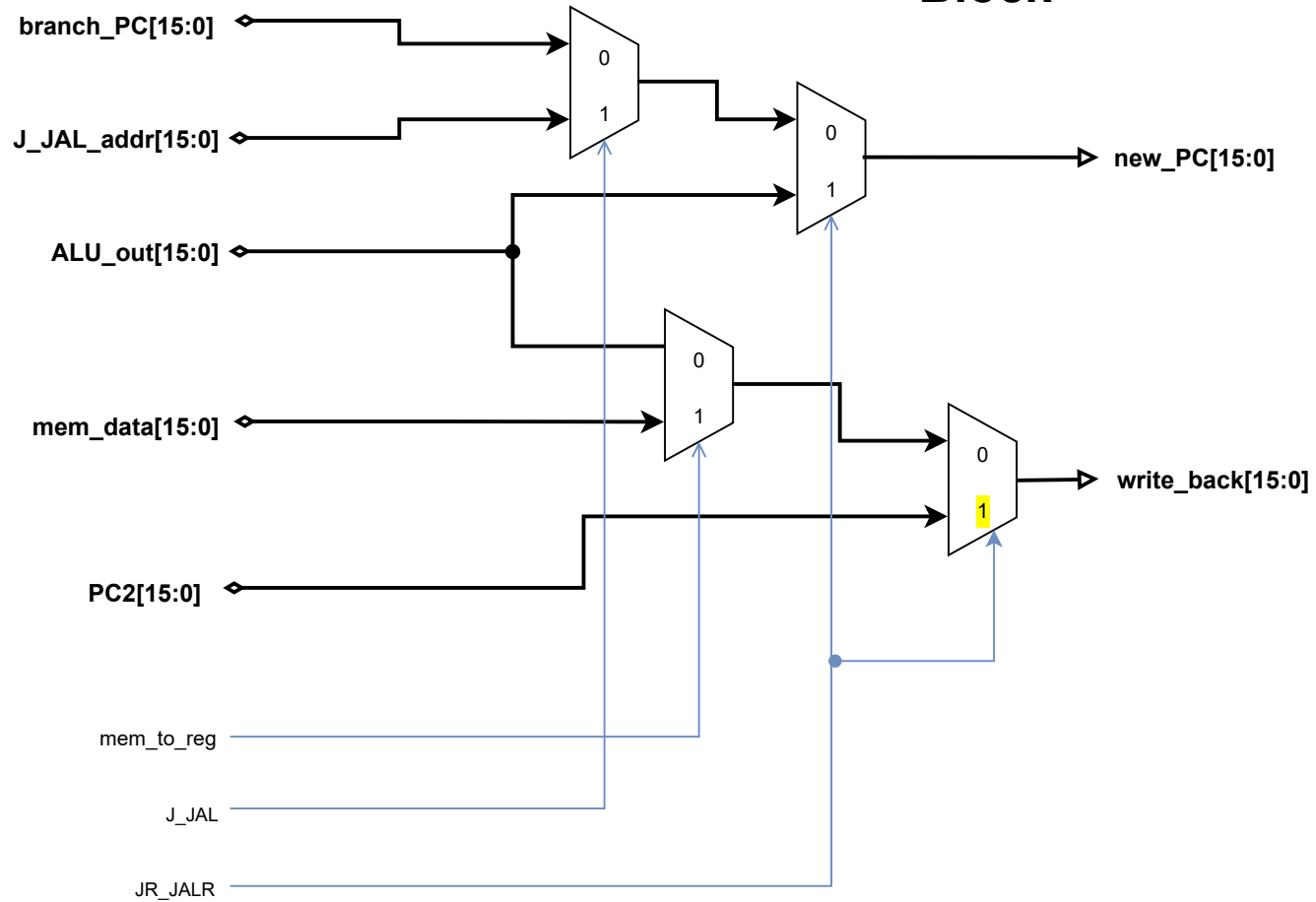
## Set Checker







## Write Back Block



Syntax	Instruction Format																Control FSM										ALU Control															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	halt	exception	rd_sel	reg_write	imm_len	imm_sign	mem_write	mem_read	branch	mem_to_reg	J_JAL	JR_JALR	ALU_fn	imm_rt_sel	SLBI	branch_en	ALU_op	sign	inv_A	inv_B	C_in	set_typ	branch_typ	set_en	btr	
HALT	0	0	0	0	0	0	X	X	X	X	X	X	X	X	X	X	1	11111	0	00	0	0	0	0	0	0	0	0	0	0	0	0	000	0	0	0	0	00	00	0	0	
NOP	0	0	0	0	1	X	X	X	X	X	X	X	X	X	X	X	0	0	00	0	0	0	0	0	0	0	0	0	0	11111	0	0	0	000	0	0	0	0	00	00	0	0
ADDI	0	1	0	0	0	S	S	S	D	D	D	I	I	I	I	I	0	0	00	1	1	1	0	0	0	0	0	0	0000	1	0	0	000	1	0	0	0	00	00	0	0	
SUBI	0	1	0	0	1	S	S	S	D	D	D	I	I	I	I	I	0	0	00	1	1	1	0	0	0	0	0	0	00001	1	0	0	000	1	1	0	1	00	00	0	0	
XORI	0	1	0	1	0	S	S	S	D	D	D	I	I	I	I	I	0	0	00	1	1	0	0	0	0	0	0	0	00010	1	0	0	010	0	0	0	0	00	00	0	0	
ANDNI	0	1	0	1	1	S	S	S	D	D	D	I	I	I	I	I	0	0	00	1	1	0	0	0	0	0	0	0	00011	1	0	0	011	0	0	0	0	00	00	0	0	
ROLI	1	0	1	0	0	S	S	S	D	D	D	I	I	I	I	I	0	0	00	1	1	0	0	0	0	0	0	0	00100	1	0	0	100	0	0	0	0	00	00	0	0	
SLLI	1	0	1	0	1	S	S	S	D	D	D	I	I	I	I	I	0	0	00	1	1	0	0	0	0	0	0	0	00101	1	0	0	101	0	0	0	0	00	00	0	0	
RORI	1	0	1	1	0	S	S	S	D	D	D	I	I	I	I	I	0	0	00	1	1	0	0	0	0	0	0	0	00110	1	0	0	110	0	0	0	0	00	00	0	0	
SRLI	1	0	1	1	1	S	S	S	D	D	D	I	I	I	I	I	0	0	00	1	1	0	0	0	0	0	0	0	00111	1	0	0	111	0	0	0	0	00	00	0	0	
ST	1	0	0	0	0	S	S	S	D	D	D	I	I	I	I	I	0	0	00	0	1	1	1	0	0	0	0	0	01000	1	0	0	000	1	0	0	0	00	00	0	0	
LD	1	0	0	0	1	S	S	S	D	D	D	I	I	I	I	I	0	0	00	1	1	1	0	1	0	1	0	0	01000	1	0	0	000	1	0	0	0	00	00	0	0	
STU	1	0	0	1	1	S	S	S	D	D	D	I	I	I	I	I	0	0	10	1	1	1	1	0	0	0	0	0	01000	1	0	0	000	1	0	0	0	00	00	0	0	
BTR	1	1	0	0	1	S	S	S	X	X	X	D	D	D	X	X	0	0	01	1	0	0	0	0	0	0	0	0	01001	0	0	0	000	0	0	0	0	00	00	0	1	
ADD	1	1	0	1	1	S	S	S	T	T	T	D	D	D	0	0	0	0	01	1	0	0	0	0	0	0	0	0	01010	0	0	0	000	1	0	0	0	00	00	0	0	
SUB	1	1	0	1	1	S	S	S	T	T	T	D	D	D	0	1	0	0	01	1	0	0	0	0	0	0	0	0	01011	0	0	0	000	1	1	0	1	00	00	0	0	
XOR	1	1	0	1	1	S	S	S	T	T	T	D	D	D	1	0	0	0	01	1	0	0	0	0	0	0	0	0	01100	0	0	0	010	0	0	0	0	00	00	0	0	
ANDN	1	1	0	1	1	S	S	S	T	T	T	D	D	D	1	1	0	0	01	1	0	0	0	0	0	0	0	0	01101	0	0	0	011	0	0	1	0	00	00	0	0	
ROL	1	1	0	1	0	S	S	S	T	T	T	D	D	D	0	0	0	0	01	1	0	0	0	0	0	0	0	0	01110	0	0	0	100	0	0	0	0	00	00	0	0	
SLL	1	1	0	1	0	S	S	S	T	T	T	D	D	D	0	1	0	0	01	1	0	0	0	0	0	0	0	0	01111	0	0	0	101	0	0	0	0	00	00	0	0	
ROR	1	1	0	1	0	S	S	S	T	T	T	D	D	D	1	0	0	0	01	1	0	0	0	0	0	0	0	0	10000	0	0	0	110	0	0	0	0	00	00	0	0	
SRL	1	1	0	1	0	S	S	S	T	T	T	D	D	D	1	1	0	0	01	1	0	0	0	0	0	0	0	0	10001	0	0	0	111	0	0	0	0	00	00	0	0	
SEQ	1	1	1	0	0	S	S	S	T	T	T	D	D	D	X	X	0	0	01	1	0	0	0	0	0	0	0	0	10010	0	0	0	000	1	0	1	1	00	00	1	0	
SLT	1	1	1	0	1	S	S	S	T	T	T	D	D	D	X	X	0	0	01	1	0	0	0	0	0	0	0	0	10011	0	0	0	000	1	0	1	1	01	00	1	0	
SLE	1	1	1	1	0	S	S	S	T	T	T	D	D	D	X	X	0	0	01	1	0	0	0	0	0	0	0	0	10100	0	0	0	000	1	0	1	1	10	00	1	0	
SCO	1	1	1	1	1	S	S	S	T	T	T	D	D	D	X	X	0	0	01	1	0	0	0	0	0	0	0	0	10101	0	0	0	000	█	0	0	0	11	00	1	0	
BEQZ	0	1	1	0	0	S	S	S	I	I	I	I	I	I	I	I	0	0	00	0	0	1	0	0	1	0	0	0	10110	0	0	1	000	1	0	0	0	00	00	0	0	
BNEZ	0	1	1	0	1	S	S	S	I	I	I	I	I	I	I	I	0	0	00	0	0	1	0	0	1	0	0	0	10111	0	0	1	000	1	0	0	0	00	01	0	0	
BLTZ	0	1	1	1	0	S	S	S	I	I	I	I	I	I	I	I	0	0	00	0	0	1	0	0	1	0	0	0	11000	0	0	1	000	1	0	0	0	00	10	0	0	
BGEZ	0	1	1	1	1	S	S	S	I	I	I	I	I	I	I	I	0	0	00	0	0	1	0	0	1	0	0	0	11001	0	0	1	000	1	0	0	0	00	11	0	0	
LBI	1	1	0	0	0	S	S	S	I	I	I	I	I	I	I	I	0	0	10	1	0	1	0	0	0	0	0	0	11010	1	█	0	000	1	0	0	0	00	00	0	0	
SLBI	1	0	0	1	0	S	S	S	I	I	I	I	I	I	I	I	0	0	10	1	0	0	0	0	0	0	0	0	11011	1	1	0	001	0	0	0	0	00	00	0	0	
J	0	0	1	0	0	D	D	D	D	D	D	D	D	D	D	D	0	0	00	0	0	1	0	0	0	1	0	0	11100	0	0	0	000	1	0	0	0	00	00	0	0	
JAL	0	0	1	1	0	D	D	D	D	D	D	D	D	D	D	D	0	0	11	1	0	1	0	0	0	1	0	0	11100	0	0	0	000	1	0	0	0	00	00	0	0	
JR	0	0	1	0	1	S	S	S	I	I	I	I	I	I	I	I	0	0	00	0	0	1	0	0	0	0	1	0	11101	1	0	0	000	1	0	0	0	00	00	0	0	
JALR	0	0	1	1	1	S	S	S	I	I	I	I	I	I	I	I	0	0	11	1	0	1	0	0	0	0	1	0	11101	1	0	0	000	1	0	0	0	00	00	0	0	
SIIC	0	0	0	1	0	X	X	X	X	X	X	X	X	X	X	X	0	1	00	0	0	0	0	0	0	0	0	0	11111	0	0	0	000	0	0	0	0	00	00	0	0	
NOP/RTI	0	0	0	1	1	X	X	X	X	X	X	X	X	X	X	X	0	0	00	0	0	0	0	0	0	0	0	0	11111	0	0	0	000	0	0	0	0	00	00	0	0	