Instruction	Opcode (Binary)	Funct3	Funct7
addi	0010011	000	XXXXXXX
add	0110011	000	0000000
and	0110011	111	0000000
andi	0010011	111	XXXXXXX
lui	0110111	XXX	XXXXXXX
lw	0000011	010	XXXXXXX
xor	0110011	100	0000000
xori	0010011	100	XXXXXXX
or	0110011	110	0000000
ori	0010011	110	XXXXXXX
slt	0110011	010	0000000
slti	0010011	010	XXXXXXX
sltiu	0010011	011	XXXXXXX
sll	0110011	001	0000000
srl	0110011	101	0000000
sra	0110011	101	0100000
sw	0100011	010	XXXXXXX
sub	0110011	000	0100000
beq	1100011	000	XXXXXXX
bne	1100011	001	XXXXXXX
blt	1100011	100	XXXXXXX
bge	1100011	101	XXXXXXX
bltu	1100011	100	XXXXXXX
bgeu	1100011	111	XXXXXXX
jal	1101111	XXX	XXXXXXX
jalr	1100111	000	XXXXXXX
lb	0000011	000	XXXXXXX
lh	0000011	001	XXXXXXX
lbu	0000011	100	XXXXXXX
lhu	0000011	101	XXXXXXX
slli	0010011	001	0000000
srli	0010011	101	0000000
srai	0010011	101	0100000
auipc	0010111	XXX	XXXXXXX
wfi	1110011	XXX	XXXXXXX

ALUSrc (1 bit)

1
0
0
1
1
1
1
1
1
1
0
1
1
0
0
0
1
0
0
0
0
0
0
0
X
1
1
1
1
1
1
1
1
X
0

ALUControl (4 bit)
0011
0011
0000
0000
1000
0011
0010
0010
0001
0001
0100
0100
0100
0111
0101
0110
0011
0100
0100
0100
0100
0100
0100
0100
XXXX
0011
0011
0011
0011
0011
0111
0101
0110
XXXX
0000

ImmType (2 bit)
01
XX
XX
01
11
01
XX
01
XX
01
XX
01
00
XX
XX
XX
01
XX
01
01
01
01
00
00
11
01
01
01
01
01
00
00
00
11
00

| Control Signals | |
AndLink (2 bit)	MemWrite (1 bit)
00	0
00	0
00	0
00	0
00	0
XX	0
00	0
00	0
00	0
00	0
10	0
10	0
10	0
00	0
00	0
00	0
XX	1
00	0
XX	0
XX	0
XX	0
XX	0
XX	0
XX	0
01	0
01	0
XX	0
XX	0
XX	0
XX	0
00	0
00	0
00	0
XX	0
00	0

RegWrite (1 bit)	MemToReg (1 bit)	Branch (1 bit)	Jump (1 bit)
1	0	0	0
1	0	0	0
1	0	0	0
1	0	0	0
1	1	0	0
1	1	0	0
1	0	0	0
1	0	0	0
1	0	0	0
1	0	0	0
1	0	0	0
1	0	0	0
1	0	0	0
1	0	0	0
1	0	0	0
1	0	0	0
0	0	0	0
1	0	0	0
0	0	1	0
0	0	1	0
0	X	1	0
0	X	1	0
0	X	1	0
0	X	1	0
1	0	0	1
1	0	0	1
1	1	0	0
1	1	0	0
1	1	0	0
1	1	0	0
1	0	0	0
1	0	0	0
1	0	0	0
1	0	0	0
0	0	0	0

ALU_Or_Imm_Jump (1 bit)	Flag_Mux (2 bits)	Flag_Or_Nflag
0	XX	X
0	XX	X
0	XX	X
0	XX	X
0	XX	X
0	XX	X
0	XX	X
0	XX	X
0	XX	X
0	XX	X
0	00	X
0	00	X
0	10	X
0	XX	X
0	XX	X
0	XX	X
0	XX	X
0	XX	X
1	11	0
1	11	1
1	00	0
1	00	1
1	00	0
1	00	1
1	XX	X
0	XX	X
0	XX	X
0	XX	X
0	XX	X
0	XX	X
X	XX	X
X	XX	X
X	XX	X
1	XX	X
0	00	0

Jump_With_Register

0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
1
0
0
0
0
0
0
0
0
0