

31	25	24	20	19	15	14	12	11	7	6	0	
funct7		rs2		rs1		funct3		rd		opcode		R-type
imm[11:0]				rs1		funct3		rd		opcode		I-type
imm[11:5]		rs2		rs1		funct3		imm[4:0]		opcode		S-type
imm[12 10:5]		rs2		rs1		funct3		imm[4:1 11]		opcode		B-type
imm[31:12]								rd		opcode		U-type
imm[20 10:1 11 19:12]								rd		opcode		J-type

imm[31:12]				rd	0110111	LUI
imm[31:12]				rd	0010111	AUIPC
imm[20 10:1 11 19:12]				rd	1101111	JAL
imm[11:0]		rs1	000	rd	1100111	JALR
imm[12 10:5]	rs2	rs1	000	imm[4:1 11]	1100011	BEQ
imm[12 10:5]	rs2	rs1	001	imm[4:1 11]	1100011	BNE
imm[12 10:5]	rs2	rs1	100	imm[4:1 11]	1100011	BLT
imm[12 10:5]	rs2	rs1	101	imm[4:1 11]	1100011	BGE
imm[12 10:5]	rs2	rs1	110	imm[4:1 11]	1100011	BLTU
imm[12 10:5]	rs2	rs1	111	imm[4:1 11]	1100011	BGEU
imm[11:0]		rs1	000	rd	0000011	LB
imm[11:0]		rs1	001	rd	0000011	LH
imm[11:0]		rs1	010	rd	0000011	LW
imm[11:0]		rs1	100	rd	0000011	LBU
imm[11:0]		rs1	101	rd	0000011	LHU
imm[11:5]	rs2	rs1	000	imm[4:0]	0100011	SB
imm[11:5]	rs2	rs1	001	imm[4:0]	0100011	SH
imm[11:5]	rs2	rs1	010	imm[4:0]	0100011	SW
imm[11:0]		rs1	000	rd	0010011	ADDI
imm[11:0]		rs1	010	rd	0010011	SLTI
imm[11:0]		rs1	011	rd	0010011	SLTIU
imm[11:0]		rs1	100	rd	0010011	XORI
imm[11:0]		rs1	110	rd	0010011	ORI
imm[11:0]		rs1	111	rd	0010011	ANDI
0000000	shamt	rs1	001	rd	0010011	SLLI
0000000	shamt	rs1	101	rd	0010011	SRLI
0100000	shamt	rs1	101	rd	0010011	SRAI
0000000	rs2	rs1	000	rd	0110011	ADD
0100000	rs2	rs1	000	rd	0110011	SUB
0000000	rs2	rs1	001	rd	0110011	SLL
0000000	rs2	rs1	010	rd	0110011	SLT
0000000	rs2	rs1	011	rd	0110011	SLTU
0000000	rs2	rs1	100	rd	0110011	XOR
0000000	rs2	rs1	101	rd	0110011	SRL

0100000		rs2		rs1	101	rd	0110011	SRA
0000000		rs2		rs1	110	rd	0110011	OR
0000000		rs2		rs1	111	rd	0110011	AND
0000	pred	succ	00000	000	00000	0001111	FENCE	
0000	0000	0000	00000	001	00000	0001111	FENCE.I	
000000000000			00000	000	00000	1110011	ECALL	
0000000000001			00000	000	00000	1110011	EBREAK	
001100000010			00000	000	00000	1110011	MRET	
csr			rs1	001	rd	1110011	CSRRW	
csr			rs1	010	rd	1110011	CSRRS	
csr			rs1	011	rd	1110011	CSRRC	
csr			zimm	101	rd	1110011	CSRRWI	
csr			zimm	110	rd	1110011	CSRRSI	
csr			zimm	111	rd	1110011	CSRRCI	

0000001	rs2	rs1	000	rd	0110011	MUL
0000001	rs2	rs1	001	rd	0110011	MULH
0000001	rs2	rs1	010	rd	0110011	MULSU
0000001	rs2	rs1	011	rd	0110011	MULU
0000001	rs2	rs1	100	rd	0110011	DIV
0000001	rs2	rs1	101	rd	0110011	DIVU
0000001	rs2	rs1	110	rd	0110011	REM
0000001	rs2	rs1	111	rd	0110011	REMU