

OPCODE	opr1	opr2	opr3	Exection
LUI	rd	imm		$rd \leftarrow \{imm[31:12], 12'b0\}$
AUIPC	rd	imm		$rd \leftarrow pc + imm[31:12], 12'b0\}$
LW	rd	rs1	imm	$rd \leftarrow M[rs1 + imm]$
SW	rs1	rs2	imm	$M[rs2 + imm] \leftarrow rs1$
JAL	rd	imm		$pc \leftarrow pc + imm, rd \leftarrow pc + 4 * insns$
JALR	rd	rs1	imm	$pc \leftarrow rs1, rd \leftarrow pc + 4 * insns$
BEQ	rs1	rs2	imm	if $rs1 == rs2$ then $pc \leftarrow pc + imm$
BNE	rs1	rs2	imm	
BLT	rs1	rs2	imm	
BGE	rs1	rs2	imm	
BLTU	rs1	rs2	imm	
BGEU	rs1	rs2	imm	
ADDI	rd	rs1	imm	$rd \leftarrow rs1 + imm$
SLTI	rd	rs1	imm	$rd \leftarrow (rs1 < imm)$
SLTIU	rd	rs1	imm	unsigned SLTI
XORI	rd	rs1	imm	$rd \leftarrow rs1 \wedge imm$
ORI	rd	rs1	imm	
ANDI	rd	rs1	imm	
SLLI	rd	rs1	imm	
SRLI	rd	rs1	imm	
SRAI	rd	rs1	imm	
ADD	rd	rs1	rs2	$rd \leftarrow rs1 + rs2$
SUB	rd	rs1	rs2	
SLL	rd	rs1	rs2	
SLT	rd	rs1	rs2	
SLTU	rd	rs1	rs2	
XOR	rd	rs1	rs2	
SRL	rd	rs1	rs2	
SRA	rd	rs1	rs2	
OR	rd	rs1	rs2	
AND	rd	rs1	rs2	
MUL	rd	rs1	rs2	$rd \leftarrow (rs1 * rs2)[31:0]$
MULH	rd	rs1	rs2	$rd \leftarrow (rs1 * rs2)[63:32]$
MULHSU	rd	rs1	rs2	$rd \leftarrow (rs1 * (uint)rs2)[63:32]$
MULHU	rd	rs1	rs2	$rd \leftarrow ((uint)rs1 * (uint)rs2)[63:32]$