Control signal table (handwritten):

Instruction	Opcode	Func	Zero	RegDst	Jal	ALUSrc	MemToReg	PCSrc	Jump	JR	RegWr	MemRd	MemWr	ALUop
R-Type														
add	000000	100000	1	1	0	0	0	0	0	0	1	0	0	+
sub	000000	100010	1	1	0	0	0	0	0	0	1	0	0	−
addi	001000	—	1	0	0	1	0	0	0	0	1	0	0	+
slt	000000	101010	1	1	0	0	0	0	0	0	1	0	0	slt
slti	001011	—	1	0	0	1	0	0	0	0	1	0	0	slt
Mem-Ref														
lw	100011	—	1	0	0	1	1	0	0	0	1	1	0	+
sw	101011	—	1	0	0	1	0	0	0	0	0	0	1	+
C-tol flow														
beq	000100	—	1	0	0	0	0	$z \cdot r$	0	0	0	0	0	−
bne	000101	—	1	0	0	0	0	$\bar{z} \cdot r$	0	0	0	0	0	−
J	000010	—	1	0	0	0	0	0	1	0	0	0	0	—
Jr	000000	001000	1	0	0	0	0	0	0	1	0	0	0	—
Jal	000011	—	1	0	1	0	0	0	1	0	0	0	0	—

target ← A→B

Block (control unit) legend:

Inputs:
- Opcode
- Func
- Zero
- clk
- rst

Outputs:
- RegDst
- Jal
- ALUSrc
- MemToReg
- PCSrc
- Jump
- JR
- RegWrite
- MemRead
- MemWrite
- ALUop
- clk
- rst

R1, 1000(R0) ———— lw ———— 0

R20, R0, 1 ———— addi ———— 4

R10, R20, 10 ———— slti ———— loop: → 8

R10, R0, Endloop ———— beq ———— 12

R2, 1000(R20) ———— lw ———— 16

R1, R2, R1 ———— add ———— 16

R20, R20, 1 ———— addi ———— 20

loop ———— J ———— 24

———— 28

R1, 2000(R0) ———— sw : Endloop → 32

Endloop = 32

loop = 8