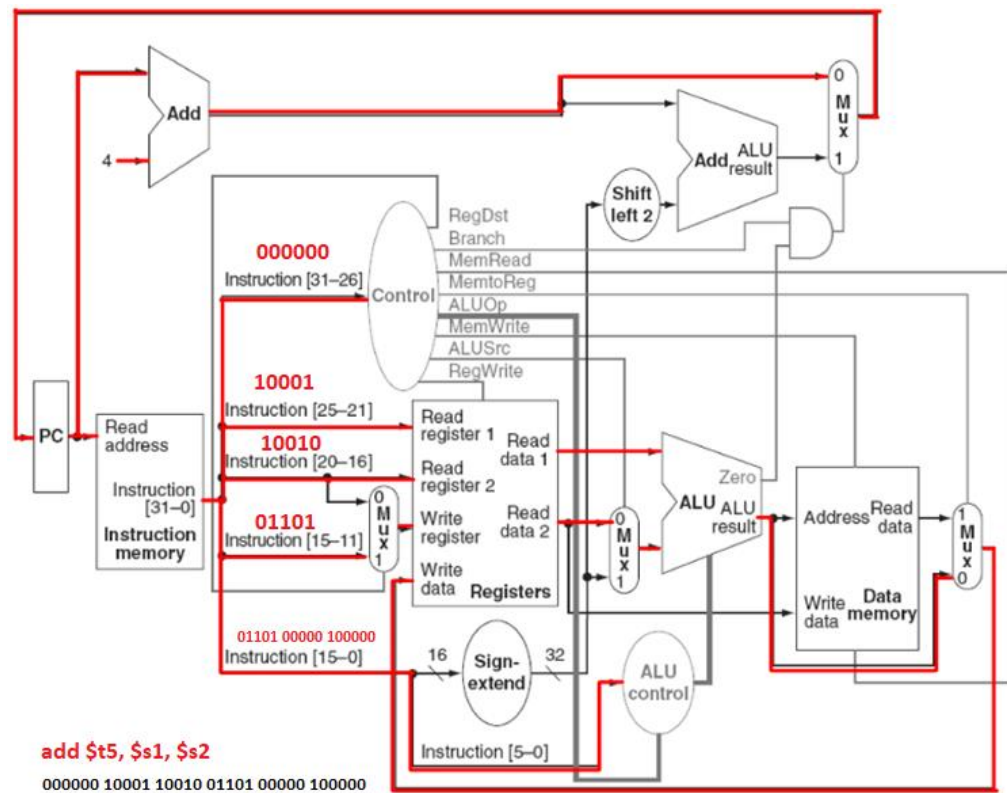


1. Use the data path diagram to trace the execution path of the following MIPS instructions (one instruction per diagram):
 - a. `add $t5, $s1, $s2`



Value of Bit Segments (R-Type Instruction) - `add $t5, $s1, $s2`

Segment	Value (binary)	Value (hex)	Description
Instruction[31-26] Opcode (6 bits)	000000	0x00	Opcode
Instruction[25-21] rs (5 bits)	10001	0x11	Source register 1 (\$s1)
Instruction[20-16] rt (5 bits)	10010	0x12	Source register 2 (\$s2)
Instruction[15-11] rd (5 bits)	01101	0x0D	Destination register (\$t5)
Instruction[10-6] shamt (5 bits)	00000	0x00	Shift – Not used here
Instruction[5-0] funct (6 bits)	100000	0x20	Function code

Instruction: 000000 10001 10010 01101 00000 100000

Control signal value table

Control signal	Value
RegDst	1
Branch	0
MemRead	0
MemtoReg	0
ALUOp	010
MemWrite	0
ALUSrc	0
RegWrite	1
Alu Zero	0