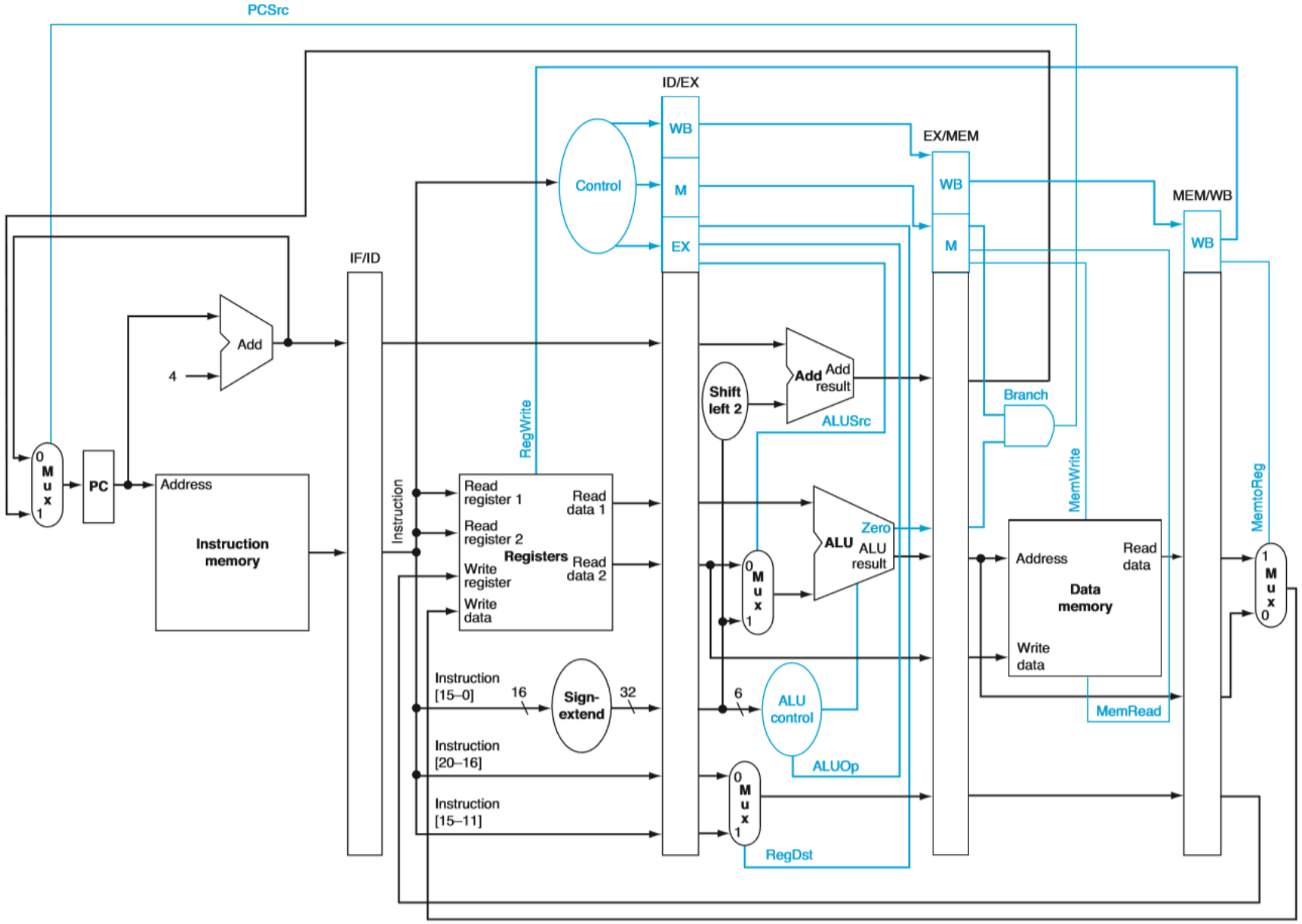
IN THE NAME OF GOD

Architecture Lab Description, Session #3

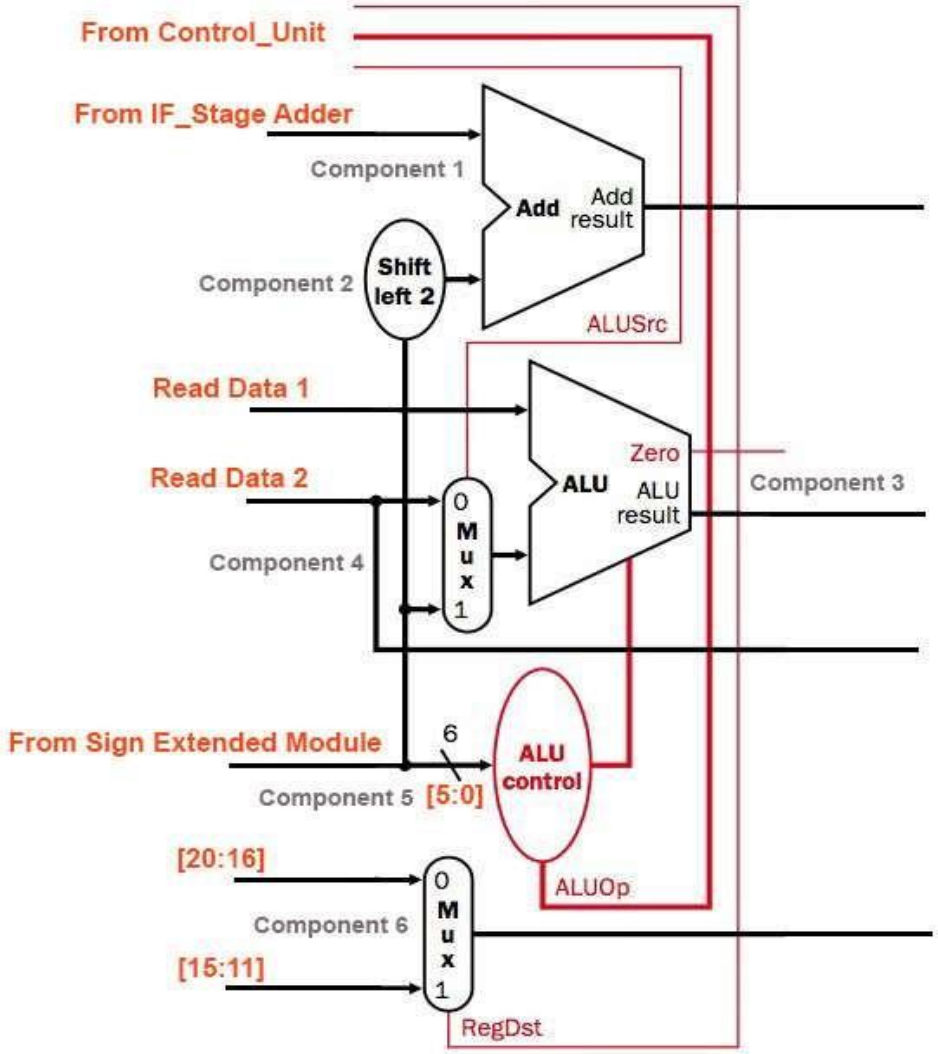
Session Abstract

- Implementing Execute Pipe Stage
- Creating test bench and testing it
- *Completing previous modules and code

MIPS DataPath



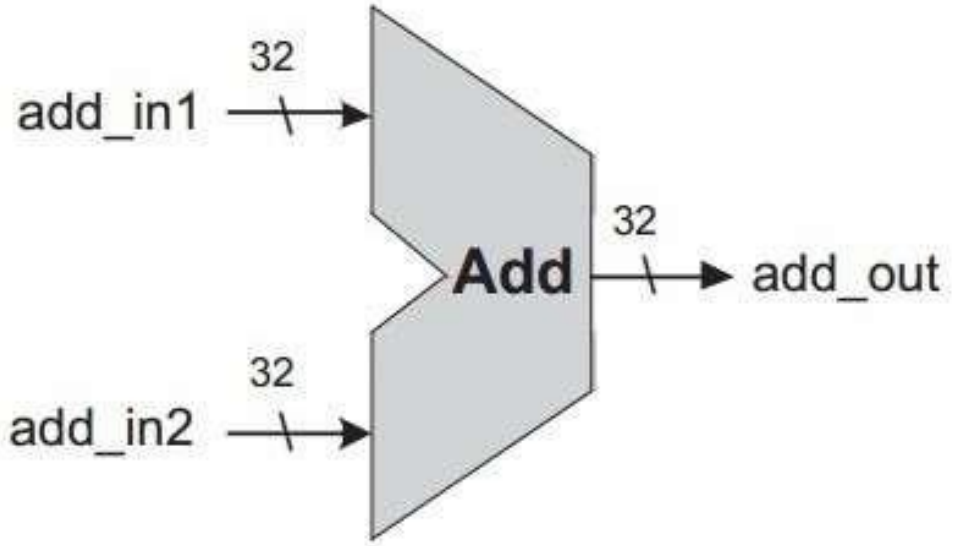
Instruction Execute Pipeline



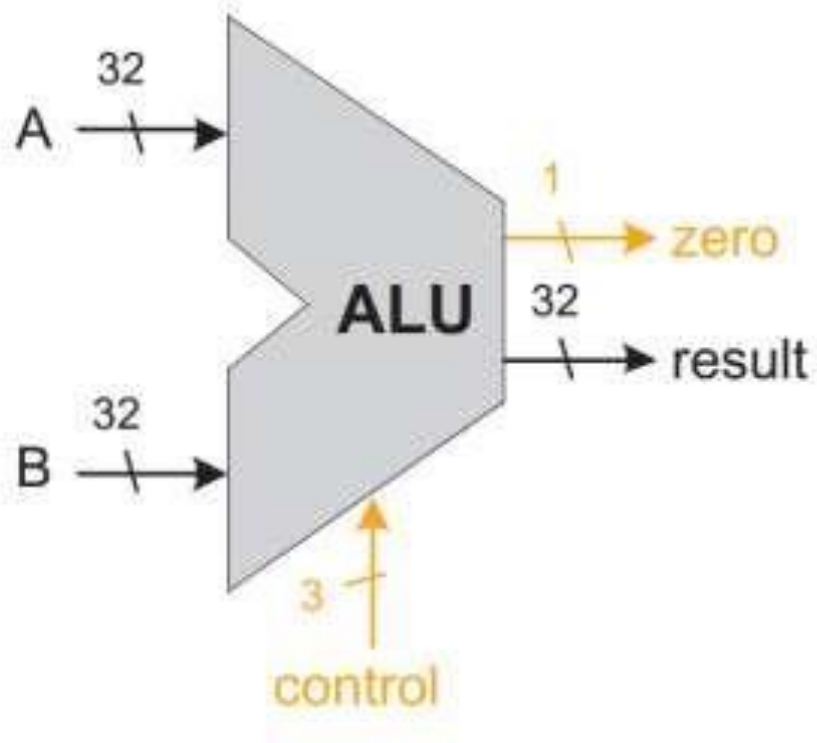
Execute Pipe I/O

- Inputs:
  - Register Destination(From CU)
  - ALU Source(From CU)
  - ALU Operation(From CU)
  - ReadData 1 & 2
  - Sign Extended Number
  - Instruction[20:16] & [15:11]
- Outputs
  - Add Result
  - ALU Result
  - ALU Zero
  - ReadData2(From Decode Module)
  - Instruction(From Mux. To Write Back)

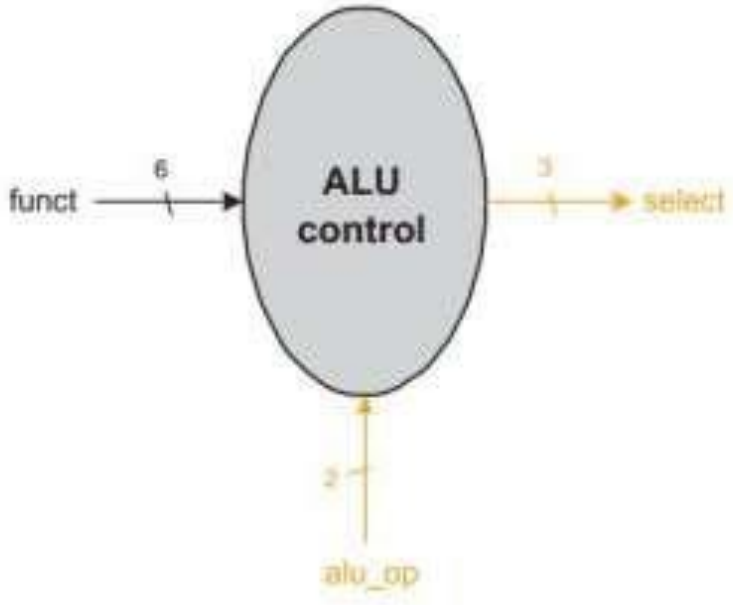
Module: Adder



Module: ALU



Module: ALU control



OpCode Table

Instruction opcode	ALUOp	Instruction operation	Funct field	Desired ALU action	ALU control input
LW	00	load word	XXXXXX	add	010
SW	00	store word	XXXXXX	add	010
Branch equal	01	branch equal	XXXXXX	subtract	110
R-type	10	add	100000	add	010
R-type	10	subtract	100010	subtract	110
R-type	10	AND	100100	and	000
R-type	10	OR	100101	or	001
R-type	10	set on less than	101010	set on less than	111

END!