In-Class Activity 12-2

1 Activity 1 - Data Forwarding Logic

Suppose that you can read the following control fields:

- \text{id\_ex\_rs} - The rs register # (not value) of the instruction currently running the EX phase.
- \text{ex\_mem.regWrite} - The \text{regWrite} control bit of the instruction currently running the MEM phase.
- \text{ex\_mem.writeReg} - The register that will be written to, by the instruction currently running the MEM phase.
- \text{mem\_wb.regWrite} - The \text{regWrite} control bit of the instruction currently running the WB phase.
- \text{mem\_wb.writeReg} - The register that will be written to, by the instruction currently running the WB phase.
- \text{mem\_wb.memToReg} - The \text{memToReg} control bit of the instruction currently running the WB phase.

(You may assume that the instruction in MEM is \text{not} a LW instruction. But note that the instruction in WB might have been LW.)

Write pseudocode to determine what value should be given to input 1 of the ALU. There are three options:

- \text{id\_ex\_rsVal} - the rs register value that was read back in the ID phase.
- \text{ex\_mem.aluResult} - the result of the ALU, for the instruction currently running the MEM phase.
- \text{mem\_wb.aluResult} - the result of the ALU, for the instruction currently running the WB phase.
- \text{mem\_wb.memResult} - the result of the memory read, for the instruction currently running the WB phase.