CECS 341

Fair Nuri Aboshehwa

LAB 4C

Section 1: Module Source Code

```
module ALUwithControl (ALUOp, FuncCode, A, B, ALUOut, Zero);
  input         [1:0]   ALUOp;
  input  [5:0]  FuncCode;
  input         [31:0]  A;
  input         [31:0]  B;
  output        [31:0]  ALUOut;
  output        [31:0]  Zero;
  wire          [3:0]   ALUctl;

  ALUControl Lab2b (ALUOp, FuncCode, ALUctl);
  ALU       Lab2a (ALUctl, A, B, ALUOut, Zero);
Endmodule
```

Section 2: Test Fixture

```
`timescale 1ns / 1ps

module ALUwithControlTester;

 reg  [1:0]      ALUOp;
 reg  [5:0]      FuncCode;
 reg  [31:0]     A;
 reg  [31:0]     B;
 wire [31:0]     ALUOut;
 wire [31:0]     Zero;

        ALUwithControl uut (
    .ALUOp(ALUOp),
    .FuncCode(FuncCode),
    .A(A),
    .B(B),
    .ALUOut(ALUOut),
    .Zero(Zero)
        );


  initial begin
    $dumpfile("dump.vcd");
    $dumpvars(5);
  end

        initial begin
                ALUOp = 2'b00;
        A = 32'h55555555;
        B = 32'haaaaaaab;
        FuncCode = 6'b000000;
                #10;

    ALUOp = 2'b00;
        A = 32'h55555555;
        B = 32'haaaaaaab;
        FuncCode = 6'b100000;
                #10;

        ALUOp = 2'b10;
        A = 32'h55555555;
        B = 32'haaaaaaab;
```

```
        FuncCode = 6'b100010;
                #10;

        ALUOp = 2'b10;
        A = 32'h55555555;
        B = 32'haaaaaaab;
        FuncCode = 6'b100101;
                #10;

        ALUOp = 2'b10;
        A = 32'h55555555;
        B = 32'haaaaaaab;
        FuncCode = 6'b101010;
                #10;

                $stop;
        end
endmodule
```

Section 3: Wave Form Screenshot