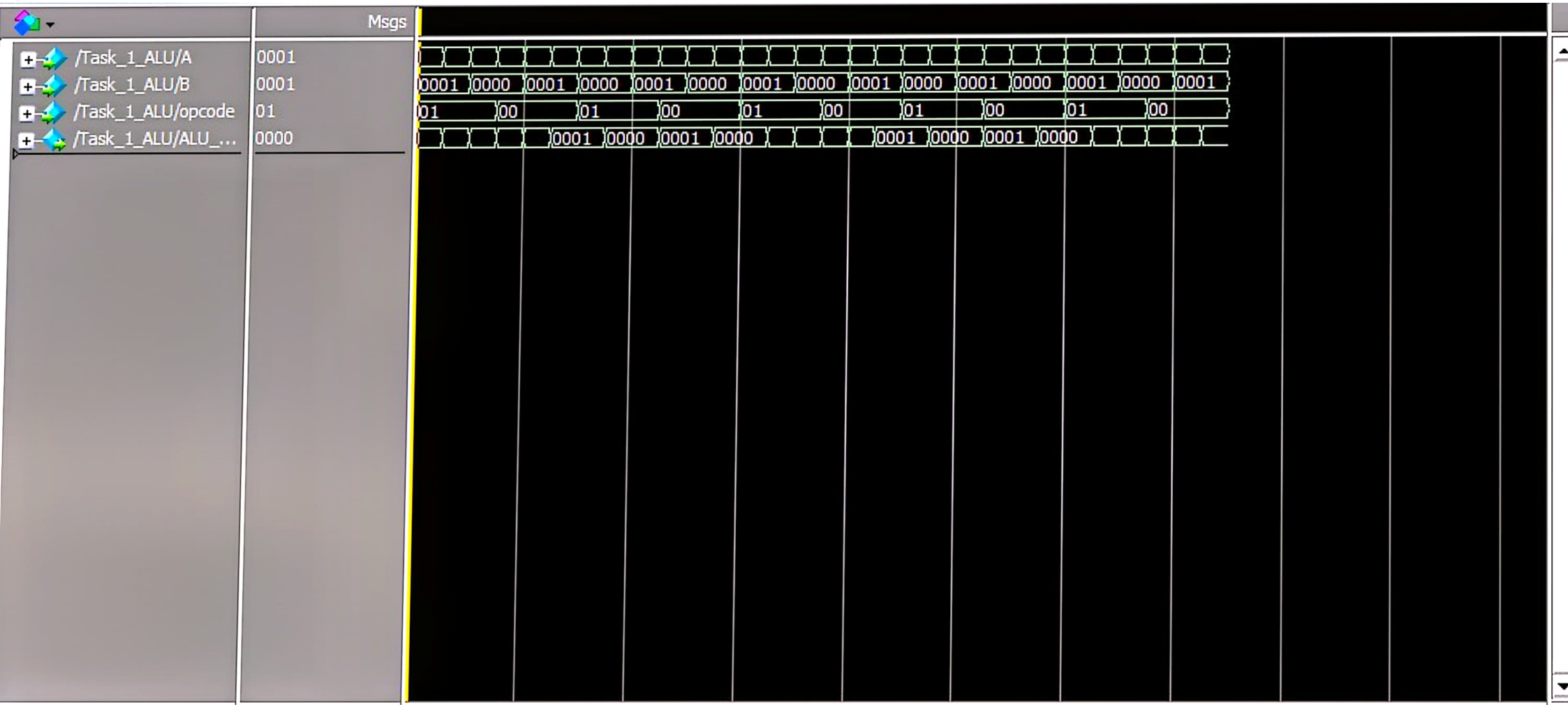
Task_1_ALU.v

```v
module Task_1_ALU (A, B, opcode, ALU_Out);
    input [3:0] A ;
    input [3:0] B;
    input [1:0] opcode;
    output reg [3:0] ALU_Out;


    always @(*) begin
        case (opcode)
            2'b00: ALU_Out = A + B;
            2'b01: ALU_Out = A - B;
            2'b10: ALU_Out = A | B;
            2'b11: ALU_Out = A ^ B;
            default: ALU_Out = 4'b0000;
        endcase
    end
endmodule //Task_1_ALU
```


Msgs
/Task_1_ALU/A
/Task_1_ALU/B
/Task_1_ALU/opcode
/Task_1_ALU/ALU_...
0001
0001
01
0000
0001 0000 0001 0000 0001 0000 0001 0000 0001 0000 0001 0000 0001 0000 0001
01 00 01 00 01 00 01 00 01 00
0000
0001 0000 0001 0000 0001 0000 0001 0000

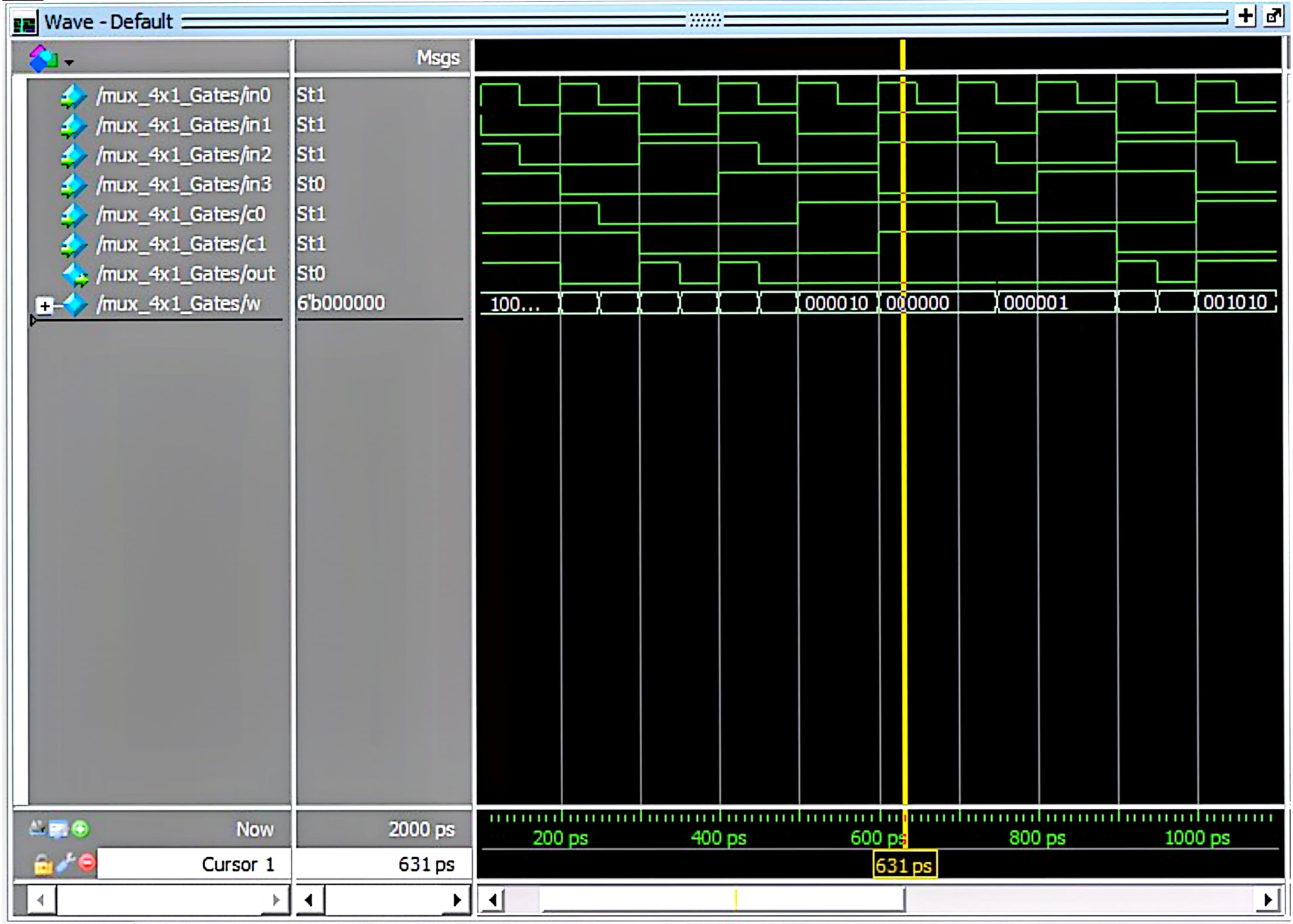
priority_encoder.v

```
1   module priority_encoder (
2       input [3:0] in,
3       output reg [1:0] out
4   );
5
6       always @(*) begin
7           casex (in)
8               4'b1xxx: out = 2'b11;
9               4'b01xx: out = 2'b10;
10              4'b001x: out = 2'b01;
11              4'b000x: out = 2'b00;
12              default: out = 2'b00;
13          endcase
14      end
15
16  endmodule //priority_encoder
```


Wave - Default
Msgs
/priority_encoder/in
/priority_encoder/out
-No Data-
-No Data-
1xxx
01xx
001x
000x
00xx
1010
11
10
01
00
01
11
Now
700 ps
200 ps
400 ps
600 ps
800 ps

mux_4x1_Gates.v

```v
module mux_4x1_Gates (in0,in1,in2,in3,c0,c1,out);

    input in0, in1, in2, in3,c0,c1;
    output out;
    wire [5:0] w;


not not0 (w[0],c0);
not not1 (w[1],c1);


and and0 (w[2],in0,w[0],w[1]);
and and1 (w[3],in1,c0,w[1]);
and and2 (w[4],in2,w[0],c1);
and and3 (w[5],in3,c0,c1);

|

or or0 (out,w[2],w[3],w[4],w[5]);

endmodule //mux_4x1_Gates
```


Wave - Default
Msgs
/mux_4x1_Gates/in0
/mux_4x1_Gates/in1
/mux_4x1_Gates/in2
/mux_4x1_Gates/in3
/mux_4x1_Gates/c0
/mux_4x1_Gates/c1
/mux_4x1_Gates/out
/mux_4x1_Gates/w
St1
St1
St1
St0
St1
St1
St0
6'b000000
100...
000010
000000
000001
001010
Now
2000 ps
Cursor 1
631 ps
200 ps
400 ps
600 ps
800 ps
1000 ps
631 ps
Wave
Wave1
Dataflow
mux_4x1_Gates.v
Task_1_ALU.v
priority_encoder.v