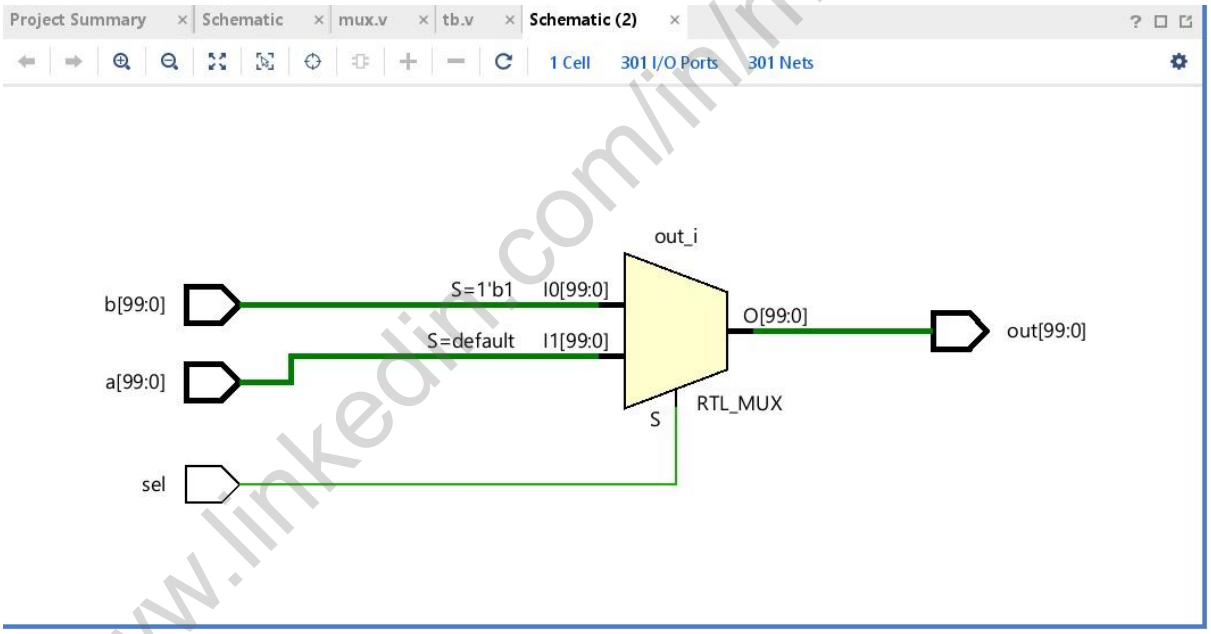
Problem

Create a 100-bit wide, 2-to-l multiplexer. When sel=0, choose a. When sel=1, choose b.

Design

```
module mux #(parameter Bitwidth=100)( input [Bitwidth-1:0] a,b,input
sel,
            output [Bitwidth-1:0] out);
assign out=sel?b:a;
endmodule
```

Circuit



Testbench

```
module tb();
   reg [99:0] a;reg[99:0]b;reg sel;
   wire [99:0] out;

    mux a1(a,b,sel,out);
initial begin
repeat(10) begin
a=$random;
b=$random;
sel={$random}%2;
#50;
end
end
endmodule
```

Waveform