```
// m2x1.v, 2x1 multiplexor, arrays and composite modules
//
// how to compile: ~changw/ivl/bin/iverilog m2x1.v
// how to run: ./a.out

module DecoderMod(s, o); // module definition
   input s;
   output [0:1] o;

   not(o[0], s);
   assign o[1] = s;
endmodule

module MuxMod(s, d, o);
   input s;
   input [0:1] d;
   output o;

   wire [0:1] s_decoded, and_out;

   DecoderMod my_decoder(s, s_decoded); // create instance

   and(and_out[0], d[0], s_decoded[0]);
   and(and_out[1], d[1], s_decoded[1]);
   or(o, and_out[0], and_out[1]);
endmodule

module TestMod;
   reg s;
   reg [0:1] d;
   wire o;

   MuxMod my_mux(s, d, o);

   initial begin
      $display("Time  s  d   o");
      $display("--------------");
      $monitor("%04d  %b  %b  %b", $time, s, d, o);
   end

   initial begin
      s = 0; d = 2'b00; #1;
      s = 0; d = 2'b01; #1;
      s = 0; d = 2'b10; #1;
      s = 0; d = 2'b11; #1;
      s = 1; d = 2'b00; #1;
      s = 1; d = 2'b01; #1;
      s = 1; d = 2'b10; #1;
      s = 1; d = 2'b11;
   end
endmodule
```