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/*
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   2/1/24
   EE 371
   Lab 3, Task 1

   This module is solely for the demo for Lab 3, task 1.
   It takes in two inputs to show four cases of displaying
   the linedrawer module. A horizontal line, a vertical line,
   a line with slope=1, and a shallow sloped line. It then has
   four outputs of bits 9 and 10 to write in the x0,x1,y0, and y1
   inputs.

*/

module lab3_task1_inputter (
         input logic [1:0] in, //input
         output logic [9:0] x0, //start x
         output logic [8:0] y0, //start y
         output logic [9:0] x1, //end x
         output logic [8:0] y1 //end y
);

   //for assigning outputs
   always_comb begin
      case(in)

         //slope of 1
         2'b00: begin
                  x0 <= 0;
                  y0 <= 0;
                  x1 <= 255;
                  y1 <= 255;
                end

         //horizontal line
         2'b01: begin
                  x0 <= 50;
                  y0 <= 255;
                  x1 <= 450;
                  y1 <= 255;
                end

         //vertical line
         2'b10: begin
                  x0 <= 300;
                  y0 <= 0;
                  x1 <= 300;
                  y1 <= 511;
                end

         //shallow slope
         2'b11: begin
                  x0 <= 0;
                  y0 <= 255;
                  x1 <= 100;
                  y1 <= 275;
                end

         default: begin
                     x0 <= 0;
                     y0 <= 0;
                     x1 <= 0;
                     y1 <= 0;
                  end
      endcase
   end

endmodule
//testbench start
module lab3_task1_inputter_testbench();

      //repeat logic variables
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74          logic [1:0] in;
75          logic [9:0] x0;
76          logic [8:0] y0;
77          logic [9:0] x1;
78          logic [8:0] y1;
79
80          //reinstantiate module
81          lab3_task1_inputter dut (.in, .x0, .y0, .x1, .y1);
82
83          //tests instance of all four different inputs
84          initial begin
85             in <= 00;
86             in <= 01; #5;
87             in <= 10; #5;
88             in <= 11; #5;
89
90             $stop;
91          end
92    endmodule //testbench
```