```
1  /*-------------------------------------------------------------------------------
2  Name Lamin Jammeh
3  CLass: EE417 Summer 2024
4  Lesson 06 HW Question 2
5  Group: Ron Kalin/ Lamin Jammeh
6  Project Description: This is the test-bench for the comma symbol 4b'1101 detector
7  -------------------------------------------------------------------------------*/
8  module comma_1101_search_tb ();
9
10 //set the parameters wires and registers
11 parameter                  word_size   = 32;
12 parameter                  index_size  = 4 ;
13 wire       [index_size:0]   index_out;
14 reg         [word_size  - 1:0]   word_in;
15 reg                         trigger;
16
17 //define the unit under test UUT
18 comma_1101_search UUT (index_out, word_in, trigger);
19
20 //instantiate the trigger signal
21 initial begin
22       trigger     = 1'b0;
23       forever
24          #10      trigger  = ~trigger;
25       end
26
27 //define the word inut and observe the outputs
28 initial fork
29         word_in = 32'b_0000_0000_0000_0000_0000_0000_0000_1101;
30    #40  word_in = 32'b_0000_1010_1010_0000_1101_0000_0000_0000;
31    #80  word_in = 32'B_1110_0000_0000_1101_1010_1010_0000_1001;
32    #120 word_in = 32'b_0000_0000_0000_0000_1111_1111_1101_0000;
33    #160 word_in = 32'b_1101_0101_0000_1111_0000_1010_1010_0000;
34    #200 word_in = 32'b_1111_1111_1111_1111_1111_1111_1101_0000;
35    #240 word_in = 32'b_0000_1010_1011_0111_1101_0101_0000_1111;
36    #280 word_in = 32'b_0000_1101_0000_1111_0000_1101_0000_1010;
37         join
38
39 ////monitor and display the output
40 initial
41       $monitor ($time,, "word_in = %b: index_out = %d", word_in, index_out);
42 endmodule
```