

File: g:\vss_projects\work\sjensen\dpa\hdl_project\src\Response.v

```
1  *****
2  ****//
3  // file : C:\projects\nmc\DPA\hdl\step2\src\Response.v
4  // created Thu Nov 15 06:29:55 2001
5  // by ITF2V generator version 1.0
6  *****
7  ****//
8
9  //{{ Section below this comment is automatically maintained
10 // and may be overwritten
11 //{module {Response}}
12 module Response ( DAVE ,adc_data ,ch1_control ,ch2_control ,
13 cmnd_valid ,command ,hold_DAVE ,ints ,miso ,mosi ,mosi_data ,
14 relay_ch1 ,relay_ch2 ,reset ,spi_clk ,spi_cs );
15
16 input DAVE ;
17 wire DAVE ;
18 input [11:0] adc_data ;
19 wire [11:0] adc_data ;
20 input [7:0] ch1_control ;
21 wire [7:0] ch1_control ;
22 input [7:0] ch2_control ;
23 wire [7:0] ch2_control ;
24 input cmnd_valid ;
25 wire cmnd_valid ;
26 input [3:0] command ;
27 wire [3:0] command ;
28 input hold_DAVE ;
29 wire hold_DAVE ;
30 input [5:0] ints ;
31 wire [5:0] ints ;
32 input mosi ;
33 wire mosi ;
34 input mosi_data ;
35 wire mosi_data ;
36 input [2:0] relay_ch1 ;
37 wire [2:0] relay_ch1 ;
38 input [2:0] relay_ch2 ;
39 wire [2:0] relay_ch2 ;
40 input reset ;
41 wire reset ;
42 input spi_clk ;
43 wire spi_clk ;
44 input spi_cs ;
45 wire spi_cs ;
46
47 output miso ;
48 wire miso ;
49
50 //}} End of automatically maintained section
51
52 // -- Enter your statements here -- //
53
54 `define DAVE {hold_DAVE,hold_DAVE,hold_DAVE,hold_DAVE,hold_DAVE,
55 hold_DAVE,hold_DAVE,hold_DAVE,hold_DAVE,hold_DAVE,hold_DAVE,
56 hold_DAVE}
```

```
53
54 reg [11:0] miso_reg;
55 reg miso_pin_reg;
56
57 assign miso = (spi_cs) ? 1'bz : miso_pin_reg;
58
59 always @ (posedge reset or negedge spi_clk) //grab the state of
DAVE!
60     begin
61         if (reset) miso_pin_reg <= 1'b0;
62         else if (mosi_data) miso_pin_reg <= miso_reg[11];
63         else miso_pin_reg <= hold_DAVE;
64     end
65
66 always @ ( posedge reset or posedge spi_clk) //the shift out happens
on negative edges
67     begin
68         if (reset) miso_reg <= 12'b111111111111; //fill the reg with
1's this is the DAVE busy state
69         else if (cmdnd_valid)
70             case ({hold_DAVE, command[2:0], mosi})
71                 5'd0: miso_reg <= 11'b0;
72                 5'd1: miso_reg <= 11'b0;
73                 5'd2: miso_reg <= {9'b0, relay_ch1};
74                 5'd3: miso_reg <= {9'b0, relay_ch2};
75                 5'd4: miso_reg <= 11'b0;
76                 5'd5: miso_reg <= {3'b0, ints};
77                 5'd6: miso_reg <= {6'b0, ch1_control};
78                 5'd7: miso_reg <= {6'b0, ch2_control};
79                 5'd8: miso_reg <= `DAVE;
80
81                 5'd9: miso_reg <= {9'b0, relay_ch1};
82                 5'd10: miso_reg <= {9'b0, relay_ch2};
83                 5'd11: miso_reg <= adc_data;
84                 5'd12: miso_reg <= {6'b0, ints};
85                 5'd13: miso_reg <= {4'b0, ch1_control};
86                 5'd14: miso_reg <= {4'b0, ch2_control};
87                 5'd15: miso_reg <= `DAVE;
88                 default: miso_reg <= 12'b111111111111;
89
90 //interface busy send all 1's
91             endcase
92         else
93             begin
94                 miso_reg[11:1] <= miso_reg[10:0];
95                 miso_reg[0] <= 1'b1;
96             end
97     end
98 endmodule
```