

//Tyler Youk Lab6 / HW9 Source Code

module lab6 ();

function logic [7:0] decoder3to8 (logic en\_b, logic [2:0] in);

casex({en\_b, in})

4'b1xxx: return 8'b11111111;

4'b0000: return 8'b11111110;

4'b0001: return 8'b11111101;

4'b0010: return 8'b11111011;

4'b0011: return 8'b11110111;

4'b0100: return 8'b11101111;

4'b0101: return 8'b11011111;

4'b0110: return 8'b10111111;

4'b0111: return 8'b01111111;

endcase

endfunction

function logic [2:0] encoder8to3 (logic en\_b, logic [7:0] in\_b);

casex({en\_b, in\_b})

9'b1xxxxxxxx: return 3'b111;

9'b00xxxxxxxx: return 3'b000;

9'b010xxxxxxx: return 3'b001;

9'b0110xxxxxx: return 3'b010;

9'b01110xxxxx: return 3'b011;

9'b011110xxx: return 3'b100;

9'b0111110xx: return 3'b101;

9'b01111110x: return 3'b110;

9'b011111110: return 3'b111;

endcase

endfunction

logic [2:0] in, out;

logic clk;

assign out = encoder8to3(clk, decoder3to8(clk, in));

initial begin

clk = 1'b1;

in = 3'b111;

```
    forever #5 clk = ~clk;  
end
```

```
always @ (posedge clk)  
    in++;
```

```
initial  
    #80 $finish();
```

```
endmodule
```

// Waveform Screenshot (with Tyler Youk Tag)

