

CMPEN331 – Quiz 2

Section:

Major:

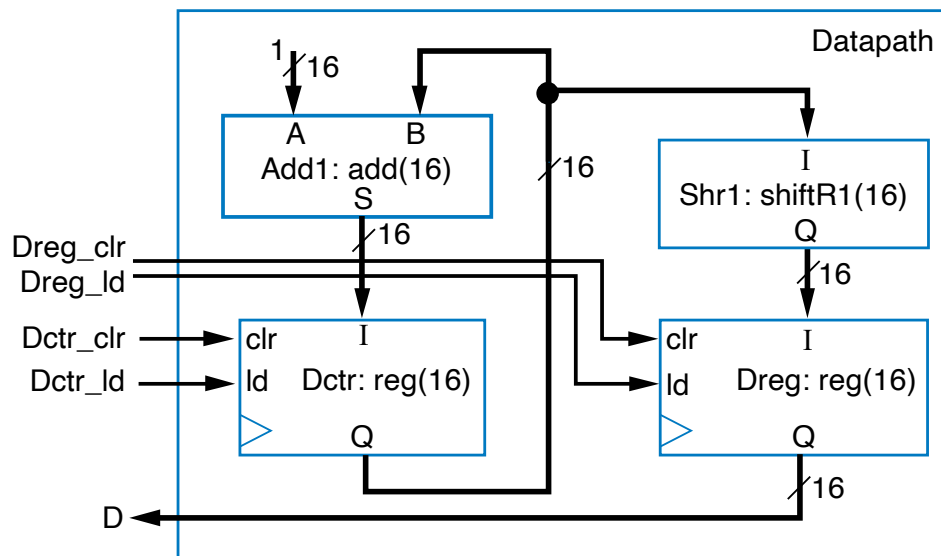
Name:

Email:

1. Create

```
module mux_8 ( sel, a0, a1, a2, a3, a4, a5, a6, a7, out);  
input [2:0] sel;  
input [7:0] a0;  
input [7:0] a1;  
input [7:0] a2;  
input [7:0] a3;  
input [7:0] a4;  
input [7:0] a5;  
input [7:0] a6;  
input [7:0] a7;  
output reg [7:0] out;  
always @(*)  
case (sel)  
    3'b000 : out= a0;  
    3'b001 : out= a1;  
    3'b010 : out= a2;  
    3'b011 : out= a3;  
    3'b100 : out= a4;  
    3'b101 : out= a5;  
    3'b110 : out= a6;  
    3'b111 : out= a7;  
endcase  
endmodule
```

1. Draw



A. First,

```
1  `timescale 1ns / 1ps
2  module FSM(
3      input X,
4      input Clk,
5      output reg Z
6  );
7
8  reg [2:0] CState=0, NxState;
9  parameter Reset=0, S0=1, S1=1, S2=2, S3=3, S4=4, S5=5;
10
11 always @(posedge Clk)
12     CState<=NxState;
13
14 always @(*)begin
15     case(CState)
16     Reset:begin
17         if(X)begin
18             NxState=S3;Z=0;
19         end
20         else begin
21             NxState=S0;Z=0;
22         end
23     end
24     S0:begin
25         if(X)begin
26             NxState=S1;Z=0;
27         end
28         else begin
29             NxState=S0;Z=0;
30         end
31     end
32     S1:begin
33         if(X)begin
34             NxState=S2;Z=1;
35         end
36         else begin
37             NxState=S4;Z=0;
38         end
39     end
40     S2:begin
41         if(X)begin
42             NxState=S3;Z=0;
43         end
44         else begin
45             NxState=S4;Z=0;
46         end
47     end
48     S3:begin
49         if(X)begin
50             NxState=S3;Z=0;
51         end
52         else begin
53             NxState=S4;Z=0;
54         end
55     end
56     S4:begin
57         if(X)begin
58             NxState=S5;Z=1;
59         end
60         else begin
61             NxState=S0;Z=0;
62         end
63     end
64     S5:begin
65         if(X)begin
66             NxState=S2;Z=1;
67         end
68         else begin
69             NxState=S1;Z=0;
```

```
70         end
71     end
72 endcase
73 end
74 endmodule
75
```