```
1   module keypadEncoder (
2       input wire clk, reset,
3       input wire[2:0] Col,
4
5       output wire[3:0] Row,
6       output reg[3:0] d,
7       output reg dav
8
9   );
10
11      wire Freeze;
12      wire[1:0] RowOut, ColOut;
13      wire[3:0] dataConverted;
14
15      RingCounter inst01 (clk, reset, Freeze, Row);
16      RowEncoder inst02 (Row, RowOut);
17      ColEncoder inst03 (Col, ColOut);
18      RowColEncoder inst04 (RowOut, ColOut, dataConverted);
19
20      assign Freeze = ~(Col[0] & Col[1] & Col[2]);
21
22      always @(posedge clk or posedge reset) begin
23          if(reset) begin
24              d = 4'b0000;
25              dav = 1'b0;
26          end
27          else begin
28              d = dataConverted;
29              dav = Freeze;
30          end
31      end
32  endmodule
```