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1  -- NAME: Owen Bailey
2  -- COURSE AND SECTION: CE 1901 031
3  -- FILE: ORBPE8TO1.vhd
4  -- DESCRIPTION: Implements an eight-to-one priority encoder using a when/else statement
5
6  -- include IEEE standard logic signal library
7  library ieee;
8  use ieee.std_logic_1164.all;
9
10 -- describe priority encoder symbol
11 entity ORBPE8TO1 is
12     port(
13         A: in std_logic_vector(7 downto 0); -- input bits
14         Y: out std_logic_vector(2 downto 0); -- sum
15         NONE: out std_logic -- none flag
16     );
17 end entity ORBPE8TO1;
18
19 -- describe signal path using with/select mux
20 architecture ENCODER of ORBPE8TO1 is
21     begin
22         -- configure priority encoder outputs
23         Y <= B"111" when (A(7) = '1') else
24             B"110" when (A(6) = '1') else
25             B"101" when (A(5) = '1') else
26             B"100" when (A(4) = '1') else
27             B"011" when (A(3) = '1') else
28             B"010" when (A(2) = '1') else
29             B"001" when (A(1) = '1') else
30             B"000" when (A(0) = '1');
31
32         -- configure none flag to activate when all inputs inactive
33         NONE <= '1' when (A = B"0000000") else
34             '0';
35     end architecture ENCODER;
```