```
-- NAME: Owen Bailey
        -- COURSE AND SECTION: CE 1901 031
        -- FILE: CONTROLLER.vhd
        -- DESCRIPTION: Implements a motion controller for the Digibot using muxes
        -- include ieee standard logic signal library
 6
        library ieee;
        use ieee.std_logic_1164.all;
10
        -- describe the functional block diagram symbol
11
        entity SEG7DECODE is
12
             port(
13
                  A: in std_logic_vector(5 downto 0);
14
                  SEG: out std_logic_vector (7 downto 0)
15
16
        end entity SEG7DECODE;
17
18
        -- describe signals and vectors using multiplexer with-select syntax
        architecture MULTIPLEXER of SEG7DECODE is
19
20
        begin
21
22
                  with A select
                                      8X"C0" when 6X"00", -- 0
8X"F9" when 6X"01", -- 1
8X"A4" when 6X"02", -- 2
23
                       SEG <=
24
25
                                      8X"B0" when 6X"03",
26
                                      8X"99" when 6X"04",
                                     8x"92" when 6x"04", -- 4
8x"92" when 6x"05", -- 5
8x"82" when 6x"06", -- 6
8x"D8" when 6x"07", -- 7
8x"80" when 6x"08", -- 8
8x"90" when 6x"02", -- 8
27
28
29
30
                                      8X"90" when 6X"08", --
31
                                      8X"88" when 6X"0A", -- A
32
                                      8X"83" when 6X"0A", -- A 8X"A7" when 6X"0B", -- B
33
                                      8X"A7" when 6X"0B", -- B
8X"A1" when 6X"0C", -- C
8X"A1" when 6X"0D", -- D
34
35
                                      8X"86" when 6X"0D", --
8X"8E" when 6X"0E", --
8X"8E" when 6X"0F", --
36
37
                                                                            Ε
                                      8X"C2" when 6X"10", -- G
38
                                      8X"8B" when 6X"11", -- H
39
                                     8X"FB" when 6X"11", -- H
8X"FB" when 6X"12", -- I
8X"E1" when 6X"13", -- J
8X"8A" when 6X"14", -- K
8X"C7" when 6X"15", -- L
8X"C8" when 6Y"16"
40
41
42
43
                                      8X"C8" when 6X"15", -- L
44
                                      8X"AB" when 6X"17", -- N
45
                                      8X"A3" when 6X"17", -- N
8X"8C" when 6X"18", -- O
46
                                     8X"8C" when 6X"18", -- 0
8X"98" when 6X"19", -- P
8X"98" when 6X"1A", -- Q
8X"AF" when 6X"1B", -- R
8X"93" when 6X"16"
47
48
49
50
                                      8X"93" when 6X"1C",
51
                                      8X"87" when 6X"1D",
52
                                                                      -- T
                                      8X"E3" when 6X"1E",
                                     8X"C1" when 6X"1E", -- U
8X"C1" when 6X"1F", -- V
8X"81" when 6X"20", -- W
8X"89" when 6X"21", -- X
8X"91" when 6X"22", -- Y
8X"E4" when 6X"22", -- Y
53
54
55
                                      8X"E4" when 6X"23", -- 7
                                      8X"BF" when 6X"24", -- d:
58
                                      8X"F7" when 6X"24", -- dash 8X"7F" when 6X"25", -- under
59
                                      8X"F7" when 6X"25", -- underscore
8X"7F" when 6X"26", -- decimal
8X"FF" when others; -- blank
60
61
62
63
64
        end architecture MULTIPLEXER;
65
```