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Practica 8

```
 1 library ieee;
 2 use ieee.std_logic_1164.all;
 3
 4 entity marquesina is
 5 port(
 6     clk,clr : in std_logic;
 7     e : in std_logic_vector(2 downto 0);
 8     control : out std_logic_vector (2 downto 0);
 9     deco : out std_logic_vector(6 downto 0)
10     );
11 end marquesina;
12
13 architecture marq of marquesina is
14
15 constant D0 :std_logic_vector(2 downto 0) := "001";
16 constant D1 :std_logic_vector(2 downto 0) := "010";
17 constant D2 :std_logic_vector(2 downto 0) := "100";
18 constant ND :std_logic_vector(2 downto 0) := "000";
19
20 constant H :std_logic_vector(6 downto 0) := "1001000";
21 constant O :std_logic_vector(6 downto 0) := "0000001";
22 constant L :std_logic_vector(6 downto 0) := "1110001";
23 constant A :std_logic_vector(6 downto 0) := "0001000";
24 constant SL :std_logic_vector(6 downto 0) := "0000000";
25
26 constant q0 :std_logic_vector(9 downto 0) := ND&SL;
27 constant q1 :std_logic_vector(9 downto 0) := D0&H;
28 constant q2 :std_logic_vector(9 downto 0) := D1&H;
29 constant q3 :std_logic_vector(9 downto 0) := D0&O;
30 constant q4 :std_logic_vector(9 downto 0) := D2&H;
31 constant q5 :std_logic_vector(9 downto 0) := D1&O;
32 constant q6 :std_logic_vector(9 downto 0) := D0&L;
33 constant q7 :std_logic_vector(9 downto 0) := D2&O;
34 constant q8 :std_logic_vector(9 downto 0) := D1&L;
35 constant q9 :std_logic_vector(9 downto 0) := D0&A;
36 constant q10 :std_logic_vector(9 downto 0) := D2&L;
37 constant q11 :std_logic_vector(9 downto 0) := D1&A;
38 constant q12 :std_logic_vector(9 downto 0) := D2&A;
39 constant NI : std_logic_vector(9 downto 0) := "----------";
40
```

```
41 signal aux : std_logic_vector(9 downto 0);
42 begin
43     process(clk,clr)
44     begin
45         if(clr ='1') then
46             aux <= q0;
47         elsif(clk'event and clk ='1') then
48             case aux is
49
50                 when q0 =>
51                     if(e = "000" or e = "001") then
52                         aux <= q0;
53                     elsif (e ="010") then
54                         aux <=q1;
55                     else
56                         aux <=NI;
57                     end if;
58
59
60                 when q1 =>
61                          if(e = "010")then
62                                 aux <=q1;
63                          elsif(e ="011") then
64                                 aux<=q2;
65                          else
66                                 aux<=NI;
67                         end if;
68                 when q2 =>
69                          if(e = "100")then
70                                 aux <=q4;
71                          elsif(e ="011") then
72                                 aux<=q3;
73                          else
74                                 aux<=NI;
75                         end if;
```

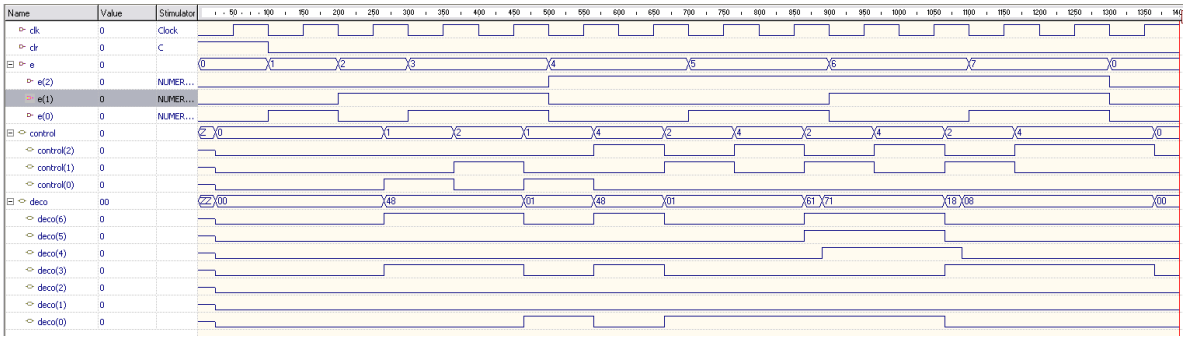
```
76                  when q3 =>
77                           if(e = "011")then
78                                  aux <=q2;
79                           elsif(e ="100") then
80                                  aux<=q4;
81                           else
82                                  aux<=NI;
83                           end if;
84                  when q4 =>
85                           if(e = "100")then
86                                  aux <=q5;
87                           elsif(e ="101") then
88                                  aux<=q7;
89                           else
90                                  aux<=NI;
91                           end if;
92                  when q5 =>
93                           if(e = "100")then
94                                  aux <=q6;
95                           elsif(e ="101") then
96                                  aux<=q7;
97                           else
98                                  aux<=NI;
99                           end if;
100                 when q6 =>
101                          if(e = "100")then
102                                 aux <=q4;
103                          elsif(e ="101") then
104                                 aux<=q7;
105                          else
106                                 aux<=NI;
107                          end if;
108                 when q7 =>
109                          if(e = "110")then
110                                 aux <=q10;
111                          elsif(e ="101") then
112                                 aux<=q8;
113                          else
114                                 aux<=NI;
115                          end if;
```

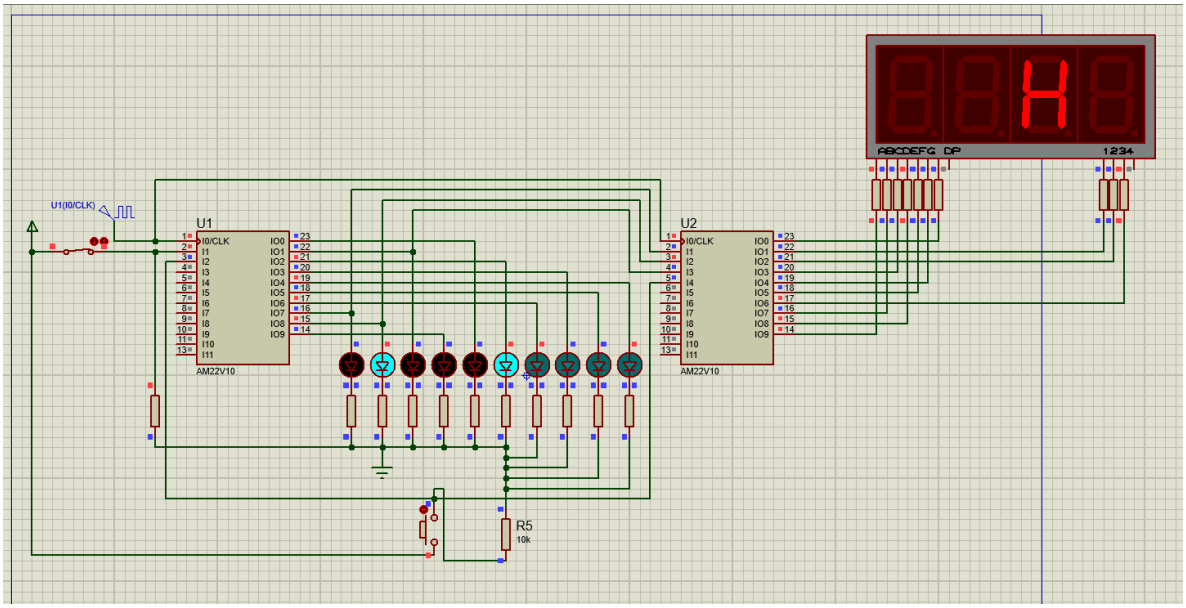
```
            when q8 =>
                    if(e = "110")then
                            aux <=q10;
                    elsif(e ="101") then
                            aux<=q9;
                    else
                            aux<=NI;
                   end if;
            when q9 =>
                    if(e = "110")then
                            aux <=q10;
                    elsif(e ="101") then
                            aux<=q7;
                    else
                            aux<=NI;
                   end if;
```

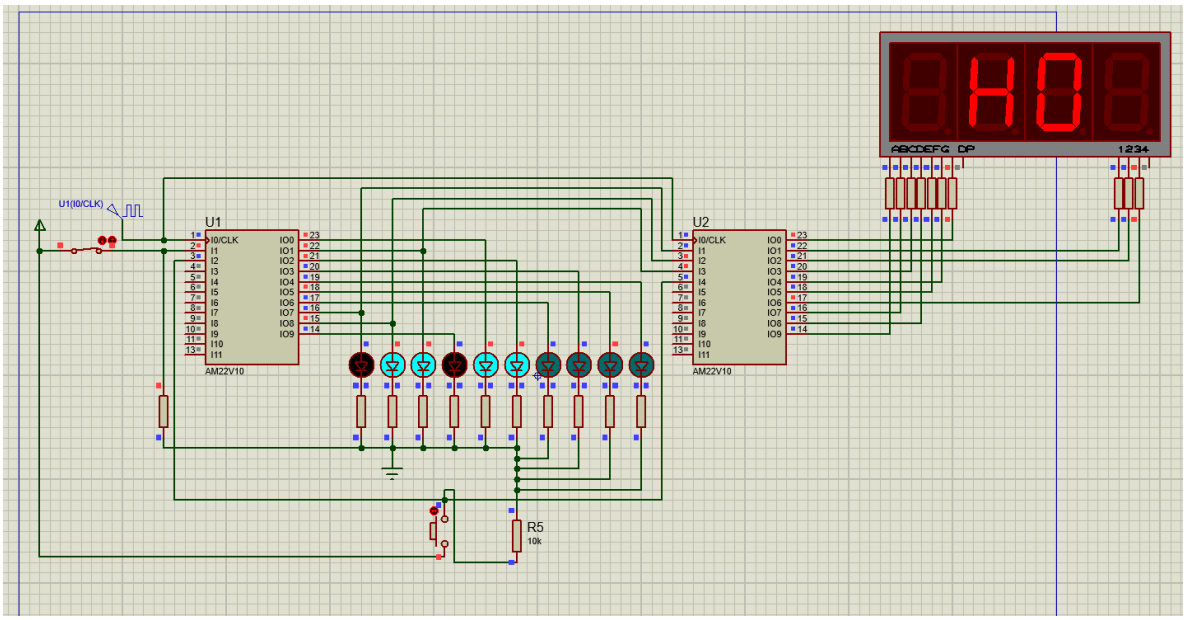
```
132                 when q10 =>
133                         if(e = "110")then
134                                 aux <=q11;
135                         elsif(e ="111") then
136                                 aux<=q12;
137                         else
138                                 aux<=NI;
139                        end if;
140                 when q11 =>
141                         if(e = "111")then
142                                 aux <=q12;
143                         elsif(e ="110") then
144                                 aux<=q10;
145                         else
146                                 aux<=NI;
147                        end if;
148                 when q12 =>
149                         if(e = "111")then
150                                 aux <=q12;
151                         elsif(e ="000") then
152                                 aux<=q0;
153                         else
154                                 aux<=NI;
155                        end if;
156                     when others => aux <= q0;
157                 end case;
158                 end if;
159         end process;
160                 control <= aux(9 downto 7);
161                 deco <= aux(6 downto 0);
162 end marq;
```

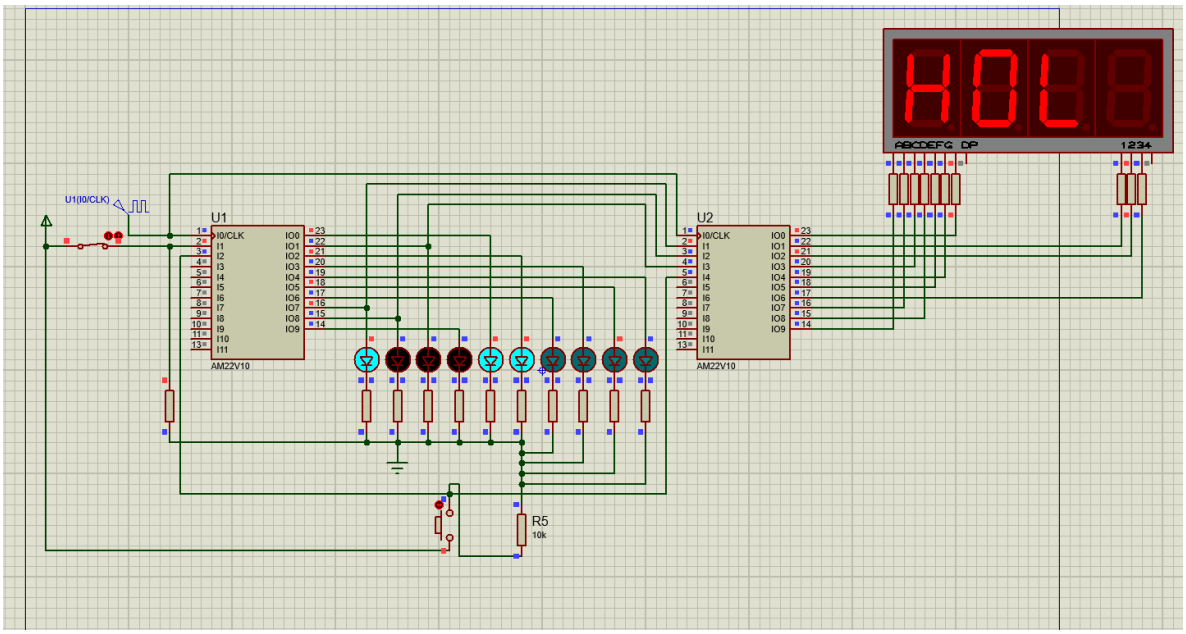
c22v10

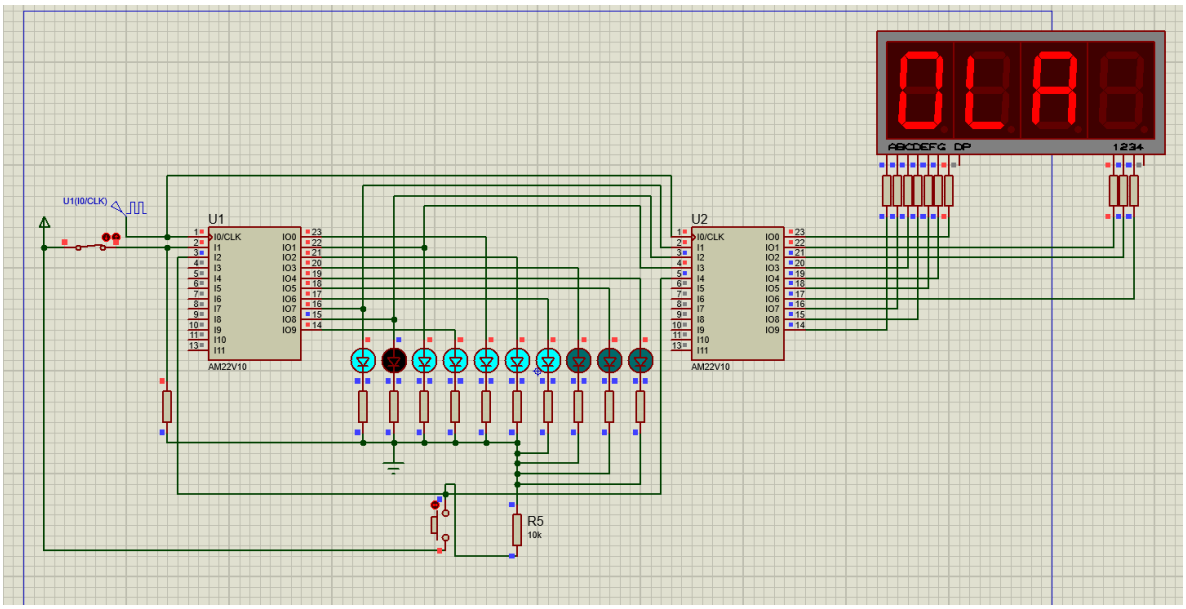
	clk	=	1	24	* not used
	e(2)	=	2	23	= display(0)
	e(1)	=	3	22	= control(2)
	e(0)	=	4	21	= control(1)
	clr	=	5	20	= display(4)
not	used	*	6	19	= display(1)
not	used	*	7	18	= display(2)
not	used	*	8	17	= control(0)
not	used	*	9	16	= display(5)
not	used	*	10	15	= display(3)
not	used	*	11	14	= display(6)
not	used	*	12	13	* not used

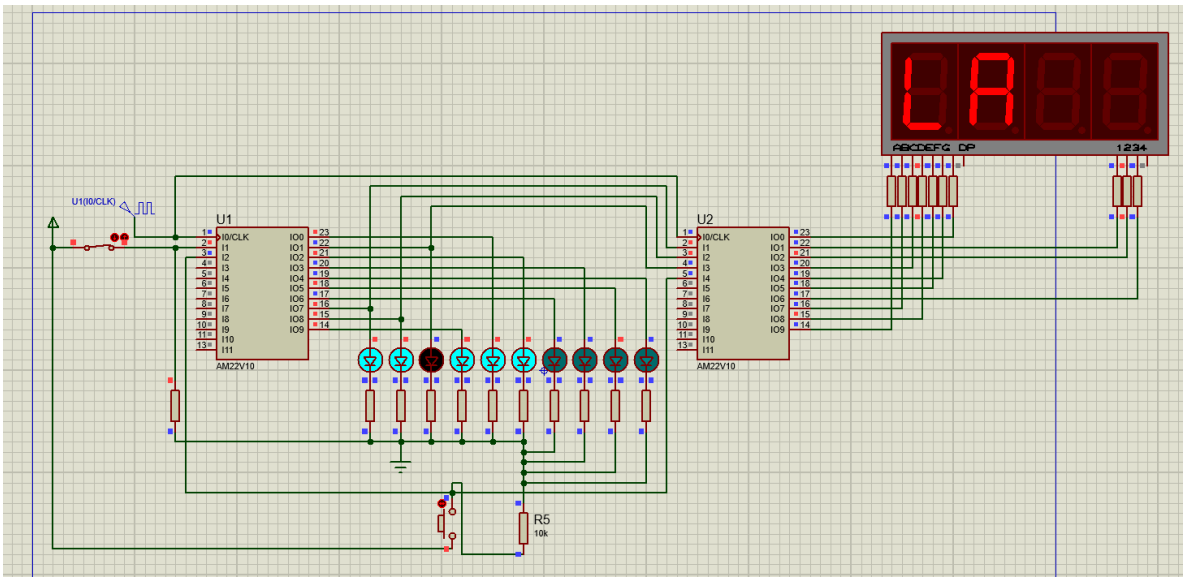


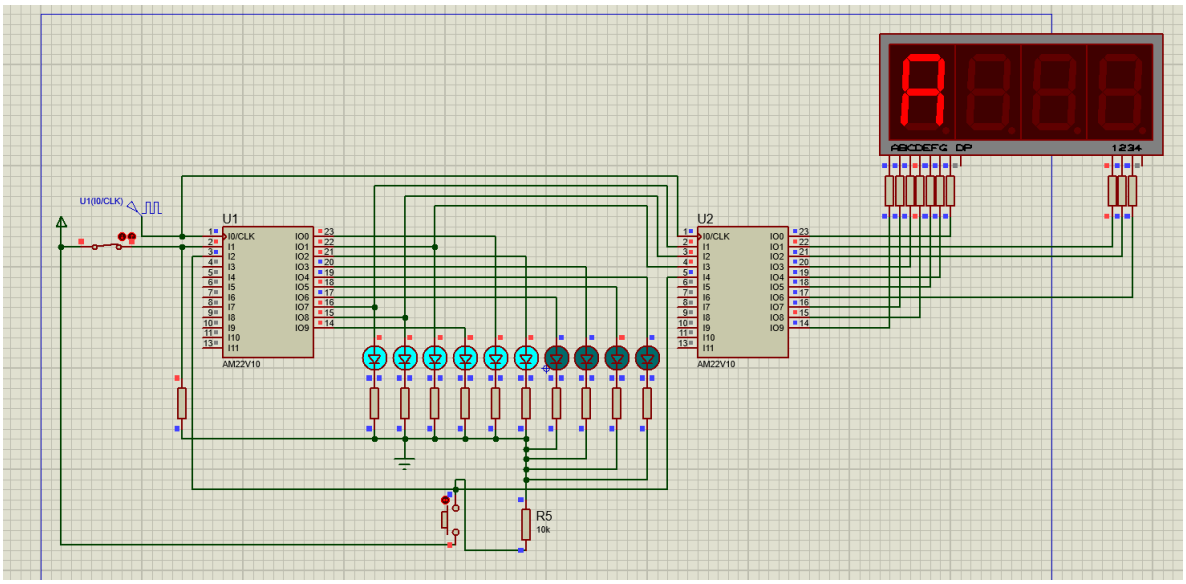


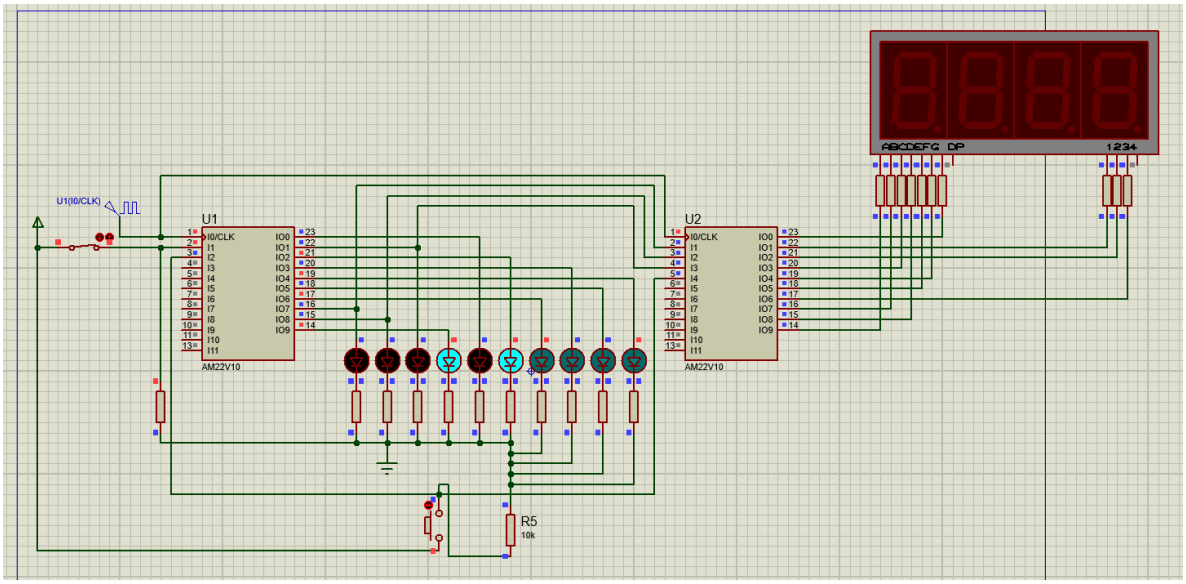

U1(I0/CLK)
U1
I0/CLK
I1
I2
I3
I4
I5
I6
I7
I8
I9
I10
I11
IO0
IO1
IO2
IO3
IO4
IO5
IO6
IO7
IO8
IO9
AM22V10
U2
R5
10k
ABCDEFG DP
1234


U1(I0/CLK)
U1
I0/CLK
I1
I2
I3
I4
I5
I6
I7
I8
I9
I10
I11
IO0
IO1
IO2
IO3
IO4
IO5
IO6
IO7
IO8
IO9
AM22V10
U2
R5
10k
ABCDEFG DP
1234


OLA
ABCDEFG DP
1234
U1(I0/CLK)
U1
U2
AM22V10
R5
10k


LA
ABCDEFG DP
1234
U1(I0/CLK)
U1
U2
AM22V10
R5
10k


U1(I0/CLK)
U1
I0/CLK
I1
I2
I3
I4
I5
I6
I7
I8
I9
I10
I11
IO0
IO1
IO2
IO3
IO4
IO5
IO6
IO7
IO8
IO9
AM22V10
U2
R5
10k
ABCDEFG DP
1234


U1(I0/CLK)
U1
I0/CLK
I1
I2
I3
I4
I5
I6
I7
I8
I9
I10
I11
IO0
IO1
IO2
IO3
IO4
IO5
IO6
IO7
IO8
IO9
AM22V10
U2
R5
10k
ABCDEFG DP
1234