HARAMAYA UNIVERSITY

HARAMAYA INSTITUTE OF TECHNOLOGY

SCHOOL OF ELECTRICAL AND COMPUTER ENGINEERING

Computer Focus

Embedded System Project I.

Title: Automatic Four way Traffic Light

Abdi Geremu 0281/12

Ababiya Tujuma 029712

Abraham Adamu 0223/12

Dunamo Tadese 1781/12

Submitted to Ms. Hana Mokenen

Submission Date 4th June 2023

Contents

1. AUTOMATIC FOUR WAY TRAFFIC LIGHT

1.1 Problem statement:

The system have four way traffic light, namely NORTH, SOUTH,EAST,AND WEST. Each traffic light has its own counter which is displayed using two digit seven segment. Each of these ways have its own state which are green, yellow, and green. They can have only one state at a time with a delay of 10 second for green and yellow and 20 second for red state for next state.

1.2 Tables and Figures

Table 1: Required materials.

	Device used	Quantity
1	8051 family micro controller	1
2	Traffic light	4
3	Two digit seven segment	4
4	Resistor pack(pull up resistor)-8	1
5	Proteuse software 8.3	-
6	Keil micro vision software 5	-

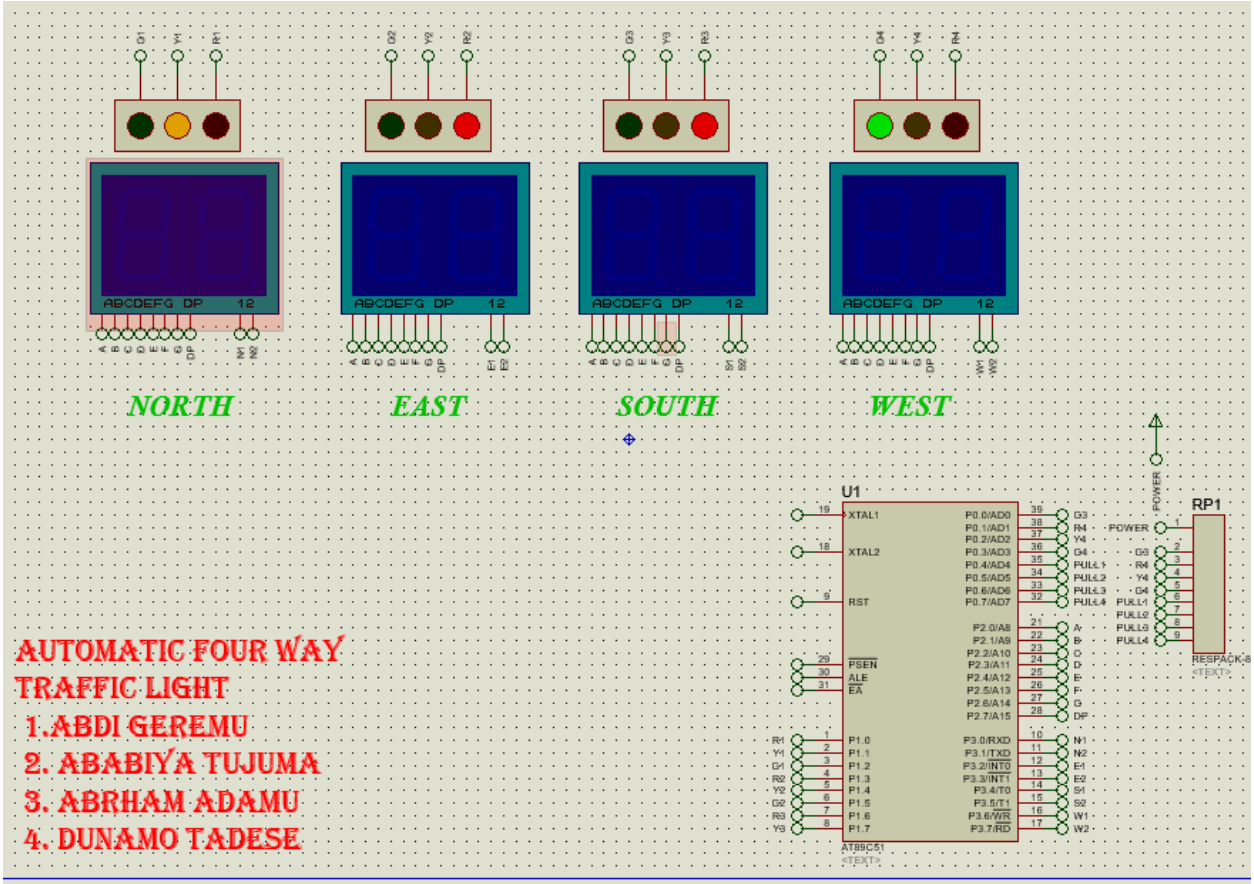
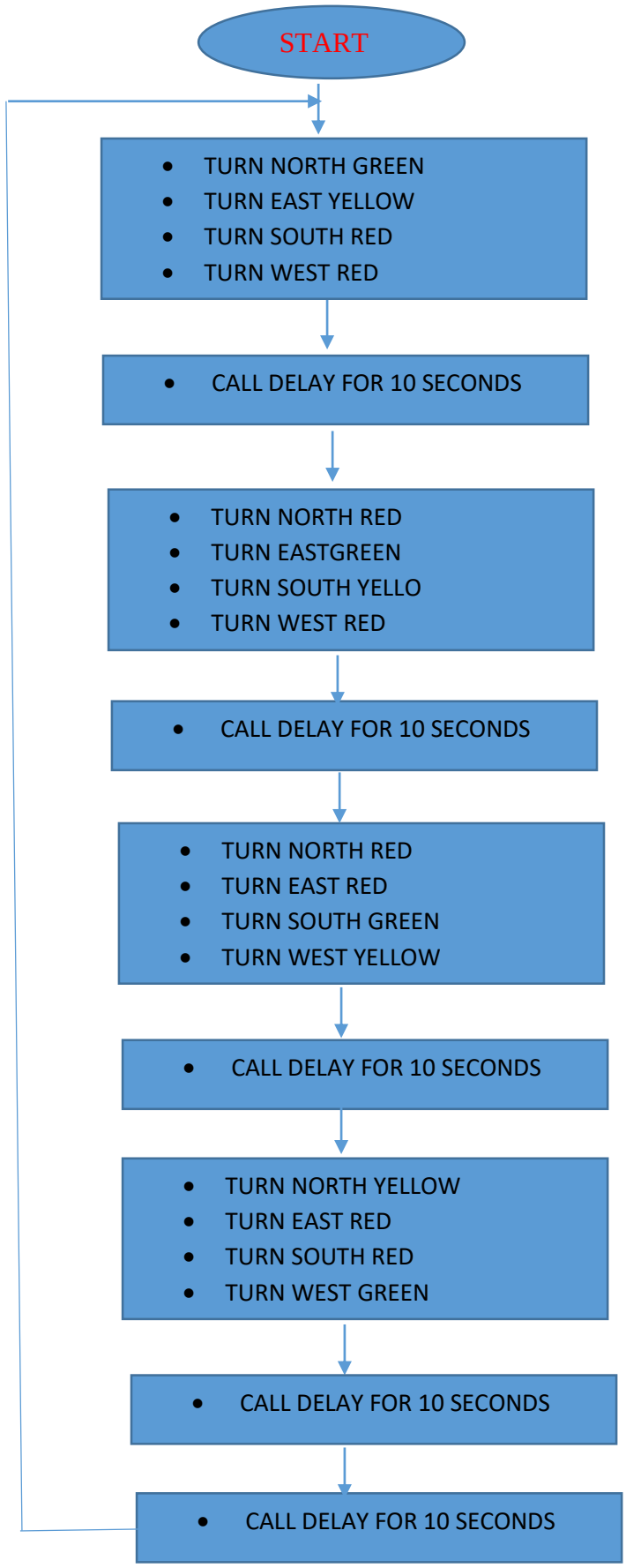
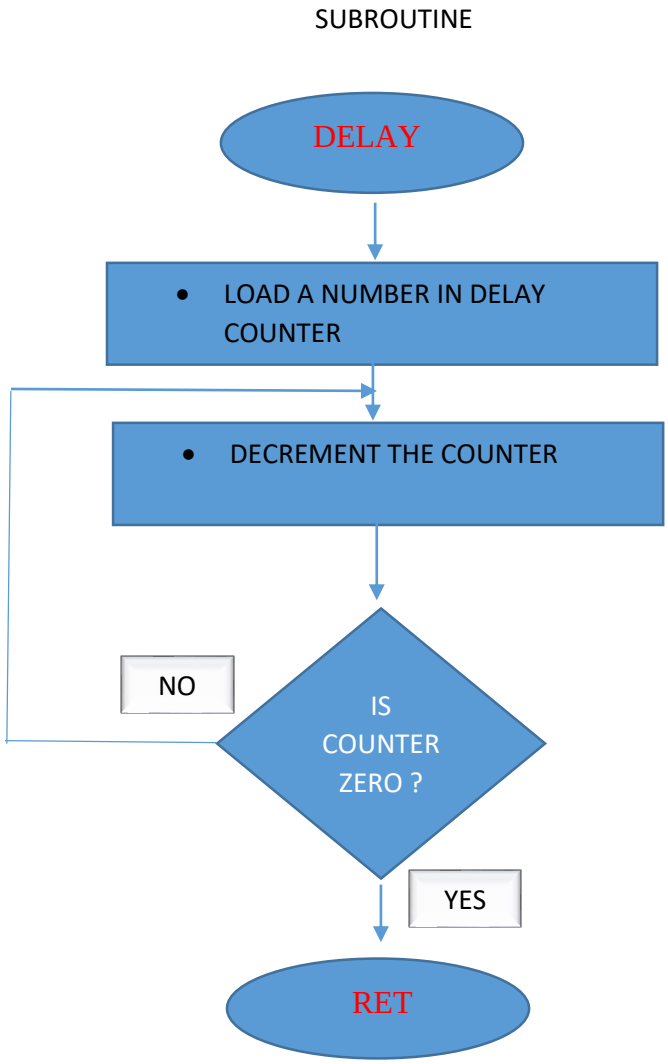


Figure 1 proteuse design

1.3 System flow Chart





1.4 Assembly Code

```
2
3            ORG 00H
4           LJMP MAIN
5           ORG 300H
6   TBL:    DB
    0C0H,0F9H,0A4H,0B0H,99H,92H,82H,
    0F8H,80H,90H    ;7seg
7           ORG 30H
8
9   MAIN:   MOV P2,#00H
10     MOV P3,#00H
11     ACALL FRONT
12     MOV DPTR,#TBL
13     CLR A
14     MOV 40H,#10
15     MOV 43H,#10
16     MOV 46H,#20
17     MOV 49H,#20
18     MOV R0,#35
19     MOV R6,#30
20     MOV R7,#40
21         X1:     MOV A,40H
22          MOV B,#10
23          DIV AB
24          MOV 41H,A
25          MOV 42H,B
26
27
28  A1:     SETB P3.0
29          CLR P3.1
30          MOV A,41H
31          MOVC A,@A+DPTR
32          MOV P2,A
33          ACALL DELAY
34          MOV P3,#00H
35          SETB P3.1
36          CLR P3.0
37          MOV A,42H
38          MOVC A,@A+DPTR
39          MOV P2,A
40         ACALL DELAY
41          MOV P3,#00H
42          SJMP X3
43  X2:     SJMP X1
44  X3:     MOV A,43H
45          MOV B,#10
46          DIV AB
47          MOV 44H,A
48          MOV 45H,B
49          SETB P3.2
50          CLR P3.3
51          MOV A,44H
52          MOVC A,@A+DPTR
53          MOV P2,A
54          ACALL DELAY
55          MOV P3,#00H
56          SETB P3.3
57          CLR P3.2
58          MOV A,45H
59          MOVC A,@A+DPTR
60          MOV P2,A
61          ACALL DELAY
62          MOV P3,#00H
63
64
65          MOV A,46H
66          MOV B,#10
67          DIV AB
68          MOV 47H,A
69          MOV 48H,B
70          SETB P3.4
71          CLR P3.5
72          MOV A,47H
73          MOVC A,@A+DPTR
74          MOV P2,A
75          ACALL DELAY
76          MOV P3,#00H
77          SETB P3.5
78          CLR P3.4
79          MOV A,48H
80          MOVC A,@A+DPTR
81          MOV P2,A
82          ACALL DELAY
83          MOV P3,#00H
84
85
86          MOV A,49H
87          MOV B,#10
88          DIV AB
89          MOV 50H,A
90          MOV 51H,B
91          SETB P3.6
92          CLR P3.7
93          MOV A,50H
94          MOVC A,@A+DPTR
95          MOV P2,A
96          ACALL DELAY
97          MOV P3,#00H
98          SETB P3.7
99          CLR P3.6
100         MOV A,51H
101         MOVC A,@A+DPTR
102         MOV P2,A
103         ACALL DELAY
104         MOV P3,#00H
105
106
107         DJNZ R0,X2
108         MOV R0,#35
109
110         DJNZ 40H,Q1
111         MOV 40H,#20
112
113Q1:      DJNZ 43H,Q2
```

```
114         MOV 43H,#10
115         ACALL RIGHT
116
117Q2:      DJNZ 46H,Q3
118         MOV 43H,#20
119         MOV 46H,#10
120
121Q3:      DJNZ 49H,Q4
122         MOV 49H,#10
123         ACALL BACK
124
125Q4:      DJNZ R6,X4
126         ACALL LEFT
127         MOV 40H,#10
128         MOV 43H,#10
129         MOV 46H,#30
130
131X4:      DJNZ R7,L1
132         LJMP MAIN
133L1:      LJMP X1
134
135DELAY:   MOV R4,#5
136H2:      MOV R5,#0FFH
137H1:      DJNZ R5,H1
138         DJNZ R4,H2
139         RET
140
141FRONT:   MOV P1,#54H
142         MOV P0,#02H
143         RET
144
145RIGHT:   MOV P1,#0A1H
146         MOV P0,#02H
147         RET
148
149BACK:   MOV P1,#09H
150        MOV P0,#05H
151        RET
152
153LEFT:   MOV P1,#4AH
154        MOV P0,#08H
155        RET
```

1.5 Help

1. Open circuit file from proteuse circuit folder with proteuse software.
2. Upload hex file in object folder for 8051 microcontroller
3. Run the simulation.