USER'S MANUAL
FOR
ET-TLC

TRAFFIC LIGHT CONTROLLER INTERFACING MODULE

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TRAFFIC LIGHT CONTROLLER INTERFACING MODULE (ET-TLC)

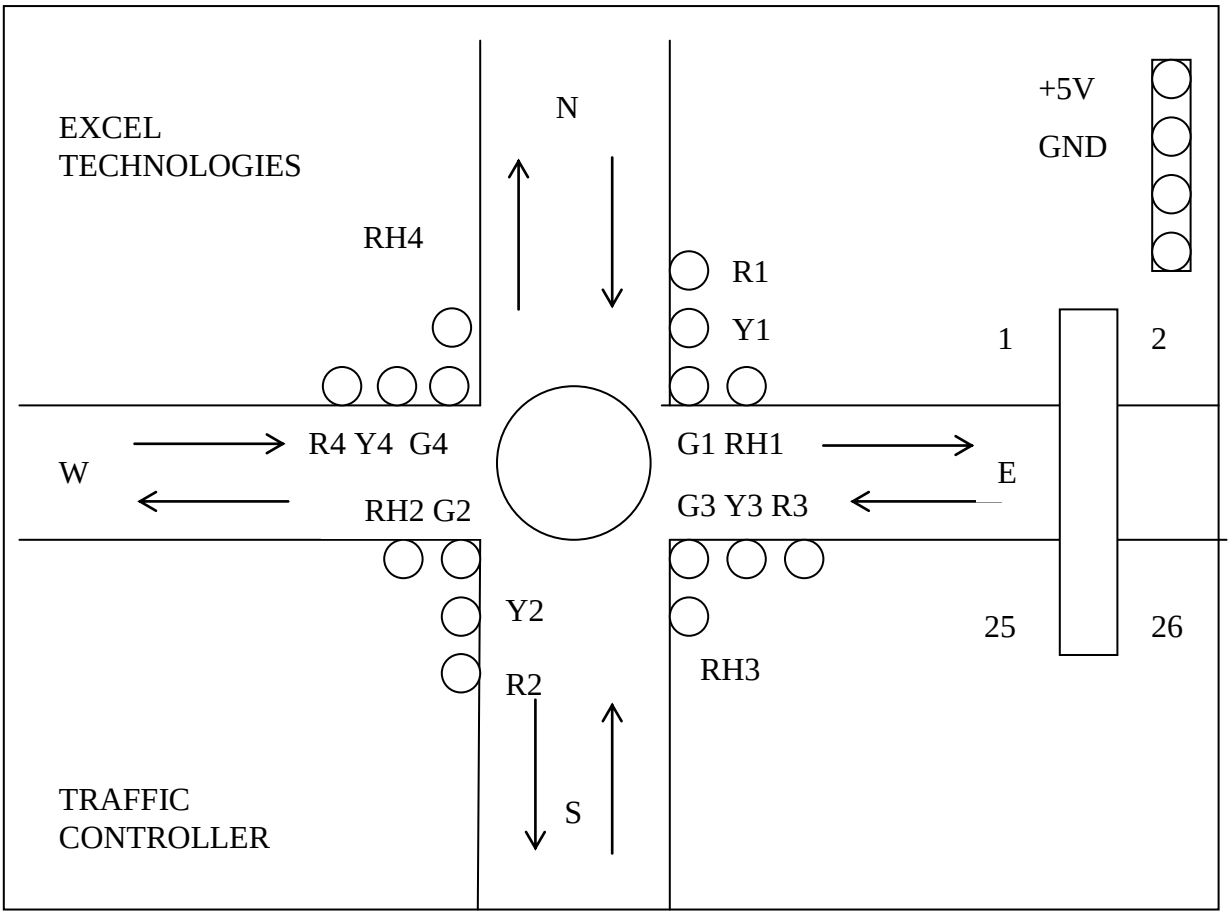
This module will demonstrate to the student as to how the traffic light signal can be controlled and simulated using Microprocessor and I/O lines. This in a way gives them the feel of microprocessor application.

GENERAL

The traffic light controller simulates the operation of traffic light in a busy crossing. The Red, Yellow and Green colour LED's are used for indication stop, Get Ready and Go signal. The card has been designed in such a way that students can write different programs to simulate different patterns of traffic control followed in different cities. The duration of the traffic movement is controlled by delay routines which are called by the main program.

CIRCUIT DESCRIPTION:

The hardware design for this module is very simple as only the Buffers are used to drive an LED's through the I/O lines of 8255. The LED to be ON is to be fed with logic 1 through 8255 port. The light arrangement in the crossing are used as given below:



The Port A and Port B of 8255 are used as given below:

PA0	PA1	PA2	PA3	PA4	PA5	PA6	PA7
For R1	For G2	For Y1	For Y2	For G1	For R2	For RH1	For RH2

PB0	PB1	PB2	PB3	PB4	PB5	PB6	PB7
For R3	For R4	For Y3	For Y4	For G3	For G4	For RH3	For RH4

EXERCISES:

1. Write a program to control the traffic using following scheme of traffic movement as per the priority given in a, b, c, etc.

a) North to South and South to North Traffic
b) South to North and South to East Traffic
c) North to South and North to West Traffic
d) East to West and West to East Traffic
e) East to North and East to West Traffic
f) West to South and West to East Traffic
g) Repeat from (a)

2. Writ a program to control the traffic using following scheme of traffic movement as per the priority given in a, b, c, etc.

a) North to South and North to West Traffic
b) South to North and South to East Traffic
c) North to South and South to North Traffic
d) East to West and West to East Traffic
e) East to West and East to North Traffic
f) West to East and West to South Traffic
g) Repeat from (a)

3. Write a program to control the traffic using following scheme of traffic movement as per the priority given in a, b, c, etc.

a) South to North and South to East Traffic
b) Flashing Warning on RH1 for South to East Traffic before Stopping South to East Traffic
c) North to South and South to North Traffic
d) North to South and North to West Traffic
e) East to West and East to North Traffic
f) Flash Warning on RH3 for East to North Traffic before stopping

g) East to West and West to East Traffic
h) West to East and West to South Traffic
i) Repeat from (a)

NOTE; The delay for duration of the ;movement and stop of traffic as well as the duration of flash etc. or duration of Yellow between Red and Green can be selected suitably by changing the value of counters used in delay routines.

The user can imagine new ways of controlling Traffic and give the students such exercise to perform.

EXERCISE:-1

The exercise number one is solved here for the students to understand the way the program can be written.

SETUP FOR THE EXPERIMENT

This explanation as well as the explanation of the Program under the heading " Description of the Program" is for 8085 LED Kit. However if you are interfacing the Traffic Light Controller Module to other Kits, then also refer to the specific instruction before the program listing for that particular Kit also

1) Connect the ET-TLC interfacing module to the 8255-1 port connector of the kit using 26-pin flat FRC cable. The pin No.1 of the connector on the module as well as the kit is marked. Please ensure that the pin no. 1 of the connector is connected to pin no. 1 of the module.

2) Connect the +5V, GND to the Module either through the Kit or Externally.

3) Enter the program given below from the memory location mentioned in the program.

4) Execute the program.

SEQUENCE OF SWITCHING:-

The sequence of switching i.e. outputting of data for example-1 is given here. The students once understands this, can then write programs for other exercises.

Sl. No.	LED's to be Switched ON	Binary Data to be outputted	Word /Data to be outputted
1	PortA-R2, R1 Port B- G4, G3	0 0 1 0 0 0 0 1 0 0 1 1 0 0 0 0	21 30
2	PortA-R2, R1 Port B-Y4, Y3	0 0 1 0 0 0 0 1 0 0 0 0 1 1 0 0	21 0C
3	Port A-R2, R1	0 0 1 0 0 0 0 1	21

	Port B- RH4, RH3, R4, R3	1 1 0 0 0 0 1 1	C3
4	Port A- Y2, Y1 Port B-Y4, Y3	0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0	0C 0C
5	Port A-G1, G2 Port B-R4, R3	0 0 0 1 0 0 1 0 0 0 0 0 0 0 1 1	12 03
6	Port A- Y2, Y1 Port B- R4, R3	0 0 0 0 1 1 0 0 0 0 0 0 0 0 1 1	0C 03
7	Port A-RH2, RH1, R2, R1 Port B- R4, R3	1 1 1 0 0 0 0 1 0 0 0 0 0 0 1 1	E1 03
8	Port A- Y2, Y1	0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0	0C 0C

DESCRIPTION OF THE PROGRAM:-

The 8255 is first initialized as all the ports as output port. After this the sequence of data as per the scheme to be implemented is outputted one by one. The delay between the sequence can be selected by changing the counter value loaded in the A register in the delay routine. After the sequence is over, the program is looped back.

NOTE: - Listing of program for various models of Microprocessor and Micro controller kits is given below. Please select the model of kit being used before entering the program into the kit.

LISTING OF THE PROGRAM FOR TRAFFIC LIGHT CONTROLLERMODULE (ET-TLC) TO INTERFACE **WITH 8085 KIT HAVING LED DISPLAY**

Connect the J1 of the Kit to the Module through 26 Pin FRC Cable. Ensure that the pin-1 of the J1 at the Kit end is connected to the pin-1 of the Module connector. Enter the program from address 2000. Execute the program from address 2000

ADDRESS	OPCODE	LABEL	MNEMONICS	REMARKS
2000	3E 80		MVIA, 80	Initialize All Port A, B & C as output port.
2002	D3 03	START	OUT 03	
2004	3E 70		MVI A, 70	Out data 70 at port A.
2006	D3 00		OUT 00	
2008	3E 03		MVI A,03	Out data 03 at port B
200A	D3 01		OUT 01	
200C	CD 60 20		CALL DELAY1	Call delay
200F	3E 24		MVI A,24	Out data 24 at port A.
2011	D3 00		OUT 00	
2013	3E 03		MVI A,03	Out data 03 at port B.
2015	D3 01		OUT 01	

2017	CD 70 20		CALL DELAY2	Call delay
201A	3E 21		MVI A, 21	Out data 21 at port A.
201C	D3 00		OUT 00	
201E	3E 52		MVI A, 52	Out data 52 at port B.
2020	D3 01		OUT 01	
2022	CD 60 20		CALL DELAY1	Call Delay
2025	3E 21		MVI A, 21	Out data 21 at port A
2027	D3 00		OUT 00	
2029	3E 06		MVI A, 06	Out data 06 at port B.
202B	D3 01		OUT 01	
202D	CD 70 20		CALL DELAY 2	Call delay.
2030	3E 83		MVI A,83	Out data 83 at port A.
2032	D3 00		OUT 00	
2034	3E 03		MVI A,03	Out data 03 at port B.
2036	D3 01		OUT 01	
2038	CD 60 20		CALL DELAY1	Call delay.
203B	3E 09		MVI A, 09	Out data 09 at port A.
203D	D3 00		OUT 00	
203F	3E 03		MVI A, 03	
2041	D3 01		OUT 01	Out data 03 at port B
2043	CD 70 20		CALL DELAY-2	Call delay.
2046	3E 21		MVI A,21	. Out data 21 at port A
2048	D3 00		OUT 00	
204A	3E A1		MVI A, A1	Out data A1 at port B.
204C	D3 01		OUT 01	
204E	CD 60 20		CALL DELAY 1	Call delay.
2051	3E 21		MVI 21	Out data21 at port A.
2053	D3 00		OUT 00	
2055	3E 09		MVI A,09	Out data 09 at port B.
2057	D3 01		OUT 01	
2059	CD 70 20		CALL DELAY 2	Call delay.
205C	C3 04 20		JMP START	Repeat the process.
205F	00		NOP	

DELAY SUBROUTINE-1				
2060	06 0C	KNT1	MVI B,0C	Generate Delay multiple of 0.5 sec.
2062	11 00 00		LXI B, 0000	
2065	CD BC 03		CALL DELAY	
2068	05 78		DCR B	
206A	C2 62 20		JNZ KNT-1	
206D	C9		RET	Return to main program.

DELAY SUBROUTINE –2				
2070	06 03	KNT2	MVI B,03	Generate Delay multiple of

2072	11 00 00		LXI B,0000	0.5 sec.
2075	CD BC 03		CALL DELAY	
2078	05 78		DCR B	
207A	C2 72 20		JNZ KNT-2	
207D	C9		RET	

LISTING OF THE PROGRAM FOR TRAFFIC LIGHT CONTROLLER MODULE (ET-TLC) TO INTERFACE **WITH 8085 KITS HAVING LCD DISPLAY**

Connect the J1 of the Kit to the Module through 26 Pin FRC Cable. Ensure that the pin-1 of the J1 at the Kit end is connected to the pin-1 of the Module connector. Enter the program from address 2000. Execute the program from address 2000.

ADDRESS	OPCODE	LABEL	MNEMONICS	REMARKS
2000	3E 80		MVIA, 80	Initialize All Port A, B & C as output port.
2002	D3 03	START	OUT 03	
2004	3E 70		MVI A, 70	Out data 70 at port A.
2006	D3 00		OUT 00	
2008	3E 03		MVI A,03	Out data 03 at port B
200A	D3 01		OUT 01	
200C	CD 60 20		CALL DELAY1	Call delay
200F	3E 24		MVI A,24	Out data 24 at port A.
2011	D3 00		OUT 00	
2013	3E 03		MVI A,03	Out data 03 at port B.
2015	D3 01		OUT 01	
2017	CD 70 20		CALL DELAY2	Call delay
201A	3E 21		MVI A, 21	Out data 21 at port A.
201C	D3 00		OUT 00	
201E	3E 52		MVI A, 52	Out data 52 at port B.
2020	D3 01		OUT 01	
2022	CD 60 20		CALL DELAY1	Call Delay
2025	3E 21		MVI A, 21	Out data 21 at port A
2027	D3 00		OUT 00	
2029	3E 06		MVI A, 06	Out data 06 at port B.
202B	D3 01		OUT 01	
202D	CD 70 20		CALL DELAY 2	Call delay.
2030	3E 83		MVI A,83	Out data 83 at port A.
2032	D3 00		OUT 00	
2034	3E 03		MVI A,03	Out data 03 at port B.
2036	D3 01		OUT 01	
2038	CD 60 20		CALL DELAY1	Call delay.

203B	3E 09		MVI A, 09	Out data 09 at port A.
203D	D3 00		OUT 00	
203F	3E 03		MVI A, 03	
2041	D3 01		OUT 01	Out data 03 at port B
2043	CD 70 20		CALL DELAY-2	Call delay.
2046	3E 21		MVI A,21	. Out data 21 at port A
2048	D3 00		OUT 00	
204A	3E A1		MVI A, A1	Out data A1 at port B.
204C	D3 01		OUT 01	
204E	CD 60 20		CALL DELAY 1	Call delay.
2051	3E 21		MVI 21	Out data21 at port A.
2053	D3 00		OUT 00	
2055	3E 09		MVI A,09	Out data 09 at port B.
2057	D3 01		OUT 01	
2059	CD 70 20		CALL DELAY 2	Call delay.
205C	C3 04 20		JMP START	Repeat the process.
205F	00		NOP	

DELAY SUBROUTINE-1				
2060	06 0C	KNT1	MVI B,0C	Generate Delay multiple of 0.5 sec.
2062	11 00 00		LXI B, 0000	
2065	CD A6 03		CALL DELAY	
2068	05 78		DCR B	
206A	C2 62 20		JNZ KNT-1	
206D	C9		RET	Return to main program.

DELAY SUBROUTINE –2				
2070	06 03	KNT2	MVI B,03	Generate Delay multiple of 0.5 sec.
2072	11 00 00		LXI B,0000	
2075	CD A6 03		CALL DELAY	
2078	05 78		DCR B	
207A	C2 72 20		JNZ KNT-2	
207D	C9		RET	

LISTING OF THE PROGRAM FOR TRAFFIC LIGHT CONTROLLER MODULE (ET-TLC) TO INTERFACE **WITH 8086 KIT HAVING LED DISPLAY**

FOR ET-8086:

Connect the J3 of the Kit to the Module through 26 Pin FRC Cable. Ensure that the pin-1 of the J3 at the Kit end is connected to the pin-1 of the Module connector. Enter the program from address 0000:0200.

FOR ET-8086AD:

Connect the J1 of the Kit to the Module through 26 Pin FRC Cable. Ensure that the pin-1 of the J1 at the Kit end is connected to the pin-1 of the Module connector. Enter the program from address 0000:0200.

LISTING OF THE PROGRAM FOR TRAFFIC LIGHT CONTROLLER MODULE (ET-TLC) TO INTERFACE **WITH 8086 KIT HAVING LCD DISPLAY**

FOR - ET-8086LCD

Connect the J2 of the Kit to the Module through 26 Pin FRC Cable. Ensure that the pin-1 of the J2 at the Kit end is connected to the pin-1 of the Module connector. Enter the program from address 1000:0100. Execute the Program from address 1000:0100

FOR - ET-8086 -AD-LCD

Connect the J1 of the Kit to the Module through 26 Pin FRC Cable. Ensure that the pin-1 of the J1 at the Kit end is connected to the pin-1 of the Module connector. Enter the program from address 1000:0100. Execute the Program from address 1000:0100

ADDRESS	M/C CODES	MNEMONICS	COMMENTS
1000:0100	B0 80	MOV AL, 80	; Configure all ports of 8255
	UPPER as output		
1000:0102	BA 07 88	MOV DX, 8807	; ports
1000:0105	EE	OUT DX, AL	
1000:0106	B0 21	MOV AL, 21	;Display and Delay for 1ST
condition			
1000:0108	BA 01 88	MOV DX, 8801	
1000:010B	EE	OUT DX, AL	
1000:010C	B0 30	MOV AL, 30	
1000:010E	BA 03 88	MOV DX, 8003	
1000:0111	EE	OUT DX, AL	
1000:0112	BB 04 00	MOV BX, 0004	
1000:0115	E8 E8 00	CALL 0200	
1000:0118	B0 21	MOV AL, 21	;Display and Delay for 2ND
condition			
1000:011A	BA 01 88	MOV DX, 8801	

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1000:011D    EE          OUT DX, AL
1000:011E    B0  0C      MOV  AL, 0C
1000:0120    BA  02  80  MOV  DX, 8803
1000:0123    EE          OUT DX, AL
1000:0124    BB  01  00  MOV  BX, 0001
1000:0127    E8  D6  00  CALL  0200

1000:012A    B0  21      MOV  AL, 21 ;Display and Delay for 3RD condition
1000:012C    BA  01 88   MOV  DX, 8801
1000:012F    EE          OUT  DX, AL
1000:0130    B0  C3      MOV  AL, C3
1000:0132    BA  03 88   MOV  DX, 8803
1000:0135    EE          OUT  DX, AL
1000:0136    BB  04  00  MOV  BX, 0004
1000:0139    E8  C4  00  CALL  0200

1000:013C    B0  0C      MOV  AL, 0C ;Display and Delay for 4TH  condition
1000:013E    BA  01 88   MOV  DX, 8801
1000:0141    EE          OUT  DX, AL
1000:0142    B0  0C      MOV  AL, 0C
1000:0144    BA  03 88   MOV  DX, 8803
1000:0147    EE          OUT  DX, AL
1000:0148    BB  01  00  MOV  BX, 0001
1000:014B    E8  B2  00  CALL  0200

1000:014E    B0  12      MOV  AL, 12 ;Display and Delay for 5TH condition
1000:0150    BA  01 88   MOV  DX, 8801
1000:0153    EE          OUT  DX, AL
1000:0154    B0  03      MOV  AL, 03
1000:0156    BA  03 88   MOV  DX, 8803
1000:0159    EE          OUT  DX, AL
1000:015A    BB  04  00  MOV  BX, 0004
1000:015D    E8  A0  00  CALL  0200

1000:0160    B0  0C      MOV  AL, 0C ;Display and Delay for 6TH condition
1000:0162    BA  01  88  MOV  DX, 8801
1000:0165    EE          OUT  DX, AL
1000:0166    B0  03      MOV  AL, 03
1000:0168    BA  03  88  MOV  DX, 8803
1000:016B    EE          OUT  DX, AL
1000:016C    BB  01  00  MOV  BX, 0001
1000:016F    E8  8E  00  CALL  0200

1000:0172    B0  E1      MOV  AL, E1 ;Display and Delay for 7TH  condition
1000:0174    BA  01  88  MOV  DX, 8801
1000:0177    EE          OUT  DX, AL
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1000:0178    B0  03        MOV  AL, 03
1000:017A    BA  03  88    MOV  DX, 8803
1000:017D    EE            OUT  DX, AL
1000:017E    BB  04  00    MOV  BX, 0004
1000:0181    E8  7C  00    CALL  0200

1000:0184    B0  0C        MOV  AL, 0C ;Display and Delay for 8TH condition
1000:0186    BA  01  88    MOV  DX, 8801
1000:0189    EE            OUT  DX, AL
1000:018A    B0  0C        MOV  AL, 0C
1000:018C    BA  03  88    MOV  DX, 8803
1000:018F    EE            OUT  DX, AL
1000:0190    BB  01  00    MOV  BX, 0001
1000:0193    E8  6A  00    CALL  0200

1000:0196    E9 6D FF      JMP  0106      ; Jump back to first condition
```

DELAY SUBROUTINE

```
1000:0200    B9  FF  FF    MOV  CX, FFFF      ; Delay subroutine
1000:0203    CD  AA        INT  AA
1000:0205    4B            DEC  BX
1000:0206    75  F8  C3    JNZ  0200
1000:0208    6B            RET
```

LISTING OF THE PROGRAM FOR TRAFFIC LIGHT CONTROLLER MODULE (ET-TLC) TO INTERFACE **WITH 8031/51 KITS HAVING LED DISPLAY**

Connect the J4 of the Kit to the Module through 26 Pin FRC Cable. Ensure that the pin-1 of the J4 at the Kit end is connected to the pin-1 of the Module connector. Enter the program from address 2000.

ADDRESS	CODES	LABEL	MNEMONICS	COMMENTS
2000	74 80	START:	MOVA, #80H	; All ports as O/P
2002	90 FF 03		MOV DPTR, #FF03H	
2005	F0		MOVX @DPTR, A	
2006	79 21	CONT:	MOV R1 #21H	
2008	7A 30		MOV R2, #30H	
200A	11 44		ACALL OUT	
200C	11 4D		ACALL DELAY.1	; Delay for 40 Sec.
200E	7A 0C		MOV R2, #0CH	
2010	11 44		ACALL OUT	
2012	11 54		ACALL DELAY.2	; Delay for 2 Sec.

2014	7A C3		MOV R2, #C3H	
2016	11 44		ACALL OUT	
2018	11 5B		ACALL DELAY.3	; Delay for 10 Sec.
201A	79 0C		MOV R1, #0CH	
201C	7A 0C		MOV R2, #0CH	
201E	11 44		ACALL OUT	
2020	11 54		ACALL DELAY.2	; Delay for 2 Sec.
2022	79 12		MOV R1, #12H	
2024	7A 03		MOV R2, #03H	
2026	11 44		ACALL OUT	
2028	11 4D		ACALL DELAY.1	; Delay for 40 Sec.
202A	74 0C		MOV A, #0CH	
202C	90 FF 00		MOV DPTR, #FF00H	
202F	F0		MOVX @DPTR, A	
2030	11 54		ACALL DELAY.2	; Delay for 2 Sec.
2032	79 E1		MOV R1, #E1H	
2034	7A 03		MOV R2, #03H	
2036	11 44		ACALL OUT	
2038	11 5B		ACALL DELAY.3	; Delay for 10 Sec.
203A	79 0C		MOV R1, #0CH	
203C	7A 0C		MOV R2, #0CH	
203E	11 44		ACALL OUT	
2040	11 54		ACALL DELAY.2	
2042	80 C2		SJMP CONT	
2044	90 FF 00	OUT:	MOV DPTR, #FE00H	
2047	E9		MOV A, R1	
2048	F0		MOVX @ DPTR, A	; Data out at port a
2049	A3		INC DPTR	
204A	EA		MOV A, R2	
204B	F0		MOVX @DPTR, A	; Data out at port b
204C	22		RET	
204D	7B 40	DELAY.1	MOV R3, #40H	; Delay for 40 Sec.
204F	11 62	KNT.1	ACALL DELAY	
2051	DB FC		DJNZ R3, KNT.1	
2053	22		RET	
2054	7B 03	DELAY.2	MOV R3, #03H	; Delay for 2 Sec.
2056	11 62	KNT.2	ACALL DELAY	
2058	DB FC		DJNZ R3, KNT.2	
205A	22		RET	
205B	7B 10	DELAY.3	MOV R3, #10H	; Delay for 10 Sec.
205D	11 62	KNT.3	ACALL DELAY	
205F	DB FC		DJNZ R3, KNT.3	
2061	22		RET	
2062	7C 04	DELAY:	MOV R4, #04H	; Delay for 0.28 sec.

2064	7D FF	REP.2:	MOV R5, #FFH	
2066	7E FF	REP.1:	MOV R2, #FFH	
2068	DE FE		DJNZ R2, $	
206A	DD FA		DJNZ RR, REP.1	
206C	DC F2		DJNZ R4, REP.2	
206E	22		RET	

TRAFFIC LIGHT CONTROLLER (OBSERVATION)

TRAFFIC FOLLOWS THE SEQUENCE AS UNDER

- EAST TO WEST & WEST TO EAST
- EAST TO NORTH & WEST TO SOUTH
- NORTH TO SOUTH & SOUTH TO NORTH
- NORTH TO WEST & SOUTH TO EAST

LISTING OF THE PROGRAM FOR TRAFFIC LIGHT CONTROLLER MODULE **(ET-TLC) TO INTERFACE WITH 8031/51 KITS HAVING LCD DISPLAY**

Connect the J1 of the Kit to the Module through 26 Pin FRC Cable. Ensure that the pin-1 of the J1 at the Kit end is connected to the pin-1 of the Module connector. Enter the program from address 6000. Execute the Program from address 6000

ADDRESS	CODES	LABEL	MNEMONICS	COMMENTS
6000	74 80	START:	MOVA, #80H	All ports as O/P
6002	90 28 0B		MOV DPTR, #280FH	
6005	F0		MOVX @DPTR, A	
6006	79 21	CONT:	MOV R1 #21H	
6008	7A 30		MOV R2, #30H	
600A	11 44		ACALL OUT	
600C	11 4D		ACALL DELAY.1	Delay for 40 Sec.
600E	7A 0C		MOV R2, #0CH	
6010	11 44		ACALL OUT	
6012	11 54		ACALL DELAY.2	Delay for 2 Sec.
6014	7A C3		MOV R2, #C3H	
6016	11 44		ACALL OUT	

6018	11 5B		ACALL DELAY.3	Delay for 10 Sec.
601A	79 0C		MOV R1, #0CH	
601C	7A 0C		MOV R2, #0CH	
601E	11 44		ACALL OUT	
6020	11 54		ACALL DELAY.2	Delay for 2 Sec.
6022	79 12		MOV R1, #12H	
6024	7A 03		MOV R2, #03H	
6026	11 44		ACALL OUT	
6028	11 4D		ACALL DELAY.1	Delay for 40 Sec.
602A	74 0C		MOV A, #0CH	
602C	90 28 08		MOV DPTR, #280CH	
602F	F0		MOVX @DPTR, A	
6030	11 54		ACALL DELAY.2	Delay for 2 Sec.
6032	79 E1		MOV R1, #E1H	
6034	7A 03		MOV R2, #03H	
6036	11 44		ACALL OUT	
6038	11 5B		ACALL DELAY.3	Delay for 10 Sec.
603A	79 0C		MOV R1, #0CH	
603C	7A 0C		MOV R2, #0CH	
603E	11 44		ACALL OUT	
6040	11 54		ACALL DELAY.2	
6042	80 C2		SJMP CONT	
6044	90 28 08	OUT:	MOV DPTR, #280CH	
6047	E9		MOV A, R1	
6048	F0		MOVX @ DPTR, A	Data out at port A
6049	A3		INC DPTR	
604A	EA		MOV A, R2	
604B	F0		MOVX @DPTR, A	Data out at port B
604C	22		RET	
604D	7B 40	DELAY1	MOV R3, #40H	Delay for 40 Sec.
604F	1162	KNT1	ACALL DELAY	
6051	DB FC		DJNZ R3, KNT.1	
6053	22		RET	
6054	7B 03	DELAY2	MOV R3, #03H	Delay for 2 Sec.
6056	11 62	KNT2	ACALL DELAY	
6058	DB FC		DJNZ R3, KNT.2	
605A	22		RET	
605B	7B 10	DELAY3	MOV R3, #10H	Delay for 10 Sec.
605D	11 62	KNT3	ACALL DELAY	
605F	DB FC		DJNZ R3, KNT.3	
6061	22		RET	

6062	7C 04	DELAY:	MOV R4, #04H	Delay for 0.68 sec.
6064	7D FF	REP.2:	MOV R5, #FFH	
6066	7E FF	REP.1:	MOV R6, #FFH	
6068	DE FE		DJNZ R6, $	
606A	DD FA		DJNZ RR, REP.1	
606C	DC F6		DJNZ R4, REP.2	
606E	22		RET	

NOTE: - Students can observe Different Traffic Pattern by Writing Their Own Program and See the Desired Traffic Pattern.

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