Microprocessors 8085 Kit

Program inserting Example:

Connect the main unit with microprocessor kit. Switch power 'ON'.
>> Now press the following keys in the order shown.
>>
>> R ESET
>> EXMEM
>> 2000
>> NEXT
>> 3E
>> NEXT
>> 82
>> NEXT
>> D3
>> NEXT
>> 03
>> NEXT
>> 3E
>> NEXT
>> 01   ------- "A"
>> NEXT
>> D3
>> NEXT
>> 00
>> NEXT
>> 76
>> NEXT
>> NEXT
>> RESET
>> GO 2000
>> FILL/.

The rightmost LED should glow continuously.
>> Start again and change the content at "A" to 02 and
>> observe the second LED glow.

DELAY SUBROUTINE (2300 - 2311)
Press the following keys in the order shown.
RESET
EXMEM
2300
NEXT
D5
Then follow the code below:-

Memory Location	Label	Machine code	Mnemonics	Comment
2300		D5	PUSH D	; delay
2301		F5	PUSH PSW	; second
2302	SECOND:	11	LXI D,COUNT	;load delay count in DE Pair
2303		00	LO	
2304		01	HI	
2305	LOOP	1B	DCX D	; loop start
2306		7A	MOV A,D	
2307		B3	ORA E	
2308		C2	JNZ LOOP	; return to loop
2309		05		
230A		23		;memory location
230B		05	DCR B	
230C		C2	JNZ SECOND	; jump to second
230D		02		
230E		23		
230F		F1	POP PSW	
2310		D1	POP D	
2311		C9	RET	; return to main program

Experiment No: 1

Aim of the Experiment: To Study the Binary counting on the LED to 00h

Objective of the Experiment: To study the function call delay of LED light approximately 1 sec.

Logic:
1. Set accumulator contents to 00h
2. Send the accumulator content to Port-A
3. Increment accumulator by unity
4. Call delay of approximately 1 sec
5. Go to (ii) and continue

Procedure:
1. Switch on the microprocessor device controller.
2. Selector Switch to LED
3. Now press the following keys in the order shown.

RESET
EXMEM
2000
NEXT
3E

Then follow the code below:

Memory Location	Label	Machine Code	Mnemonics	Comment
2000		3E	MVI A, 82$^\#$	;load control word
2001		82		
2002		D3	OUT CONTROL WORD	;send out control word to control register
2003		03		
2004		3E	MVI A,00h	;set accumulator content to ooh
2005		00		
2006	NXTCNT:	D3	OUT PORT A	;output at port A
2007		00		
2008		0E	MVI C,01h	;load C
2009		01		
200A		CD	CALL DELAY*	;call delay subroutine at memory location 2300h
200B		00		
200C		23		
200D		3C	INR A	; increment accumulator by unity
200E		C3	JMP NXTCNT	;jump at label NXTCNT

200F		06	
2010		20	
NEXT			
NEXT			
RESET			
GO 2000			
FILL E			;Execute the program

*subroutine of delay id given in the page:2

RESULT:

Discussion:

Experiment No: 2

Aim of the Experiment: To study the Sequential operation of LED display

Objective of the Experiment: to study the sequential operation of LED approximately 1 sec call delay.

Logic:
1. Set accumulator contents to 01h
2. Send the accumulator content to Port-A
3. Rotate left accumulator content
4. Call delay of approximately 1 sec
5. Go to (ii) and continue

Procedure:
1. Switch on the microprocessor device controller.
2. Selector Switch to LED
3. Now press the following keys in the order shown.

RESET
EXMEM
2000
NEXT
3E

Then follow the code below:

Memory Location	Label	Machine Code	Mnemonics	Comment
2000		3E	MVI A, 82#	;load control word
2001		82		
2002		D3	OUT CONTROL WORD	;send out control word to control register
2003		03		
2004		3E	MVI A,00h	;set accumulator content to ooh
2005		01		
2006	NXTCNT:	D3	OUT PORT A	;output at port A
2007		00		
2008		0E	MVI C,01h	;load C
2009		01		
200A		CD	CALL DELAY*	;call delay subroutine at memory location 2300h
200B		00		
200C		23		
200D		07	RLC	; rotate left accumulator content

200E		C3	JMP NXTCNT	;jump at label NXTCNT
200F		06		
2010		20		
NEXT				
NEXT				
RESET				
GO 2000				
FILL E				;Execute the program

*subroutine of delay id given in the page:2

RESULT:

Discussion:

Experiment No: 3

Aim of the Experiment: Relay operation- alternate ON/OFF

Objective: ON and OFF of relay operated lamps with a delay of 1 sec.

Logic:
       1. Set accumulator contents to 01h
       2. Send the accumulator content to Port-A
       3. Call delay of approximately 1 sec
       4. Set accumulator contents to 02h
       5. Send accumulator content to port-A
       6. Go to (i) and continue

Procedure:
       1. Switch on the microprocessor device controller.
       2. Selector Switch to RELAY
       3. Now press the following keys in the order shown.

       RESET
       EXMEM
       2000
       NEXT
       3E

Then follow the code below:-

Memory Location	Label	Machine Code	Mnemonics	Comment
2000		3E	MVI A, 82$^{\#}$	;load control word
2001		82		
2002		D3	OUT CONTROL WORD	;send out control word to control register
2003		03		
2004	NXTCNT:	3E	MVI A,00h	;set accumulator content to o1h
2005		01		
2006		D3	OUT PORT A	;output at port A
2007		00		
2008		CD		
2009		00		
200A		23		
200B		3E	MVI A, 02h	;set accumulator content to 2h
200C		02		
200D		D3	OUT PORT A	
200E		00		

200F		CD	CALL DELAY*	;call delay subroutine at memory location 2300h
2010		00		
2011		23		
2012		C3	JMP NXT	;jump to 2004h
2013		04		
2014		20		
NEXT				
NEXT				
RESET				
GO 2000				
FILL E				;Execute the program

RESULT:

Discussion:

Experiment No: 4

Aim of the Experiment: To study Decimal/Hexadecimal count on 7-segment display

Objective: To display of 0 to 9 on the seven Segments display with delay of 1 sec between each count. After counting 9 the count will again start from 0.

Logic:
       1. Access the code from memory using the H-L pair for addressing
       2. Send the code to Port-A
       3. Call delay of approximately 1 sec
       4. Increment H-L pair content by unity
       5. Go to (i) and continue till the last number(9 or F depending on the decimal or hexadecimal counting)

Procedure:
       1. Switch on the microprocessor device controller.
       2. Selector Switch to 7 –segment.
       3. Now press the following keys in the order shown.

       RESET
       EXMEM
       2050
       NEXT
       0
       Then follow the code below:-Hex code

Initial Steps:
As a first step code for 0 to F are stored at a memory location 2050h.This is easily done from the segment description shown in fig.4.

Memory location	Display	Binary Code								Hex Code
		h	g	f	e	d	c	b	a	
2050	0	0	0	1	1	1	1	1	1	3F
2051	1	0	0	0	0	0	1	1	0	06
2052	2	0	1	0	1	1	0	1	1	5B
2053	3	0	1	0	0	1	1	1	1	4F
2054	4	0	1	1	0	0	1	1	0	66
2055	5	0	1	1	0	1	1	0	1	6D
2056	6	0	1	1	1	1	1	0	1	7D
2057	7	0	0	0	0	0	1	1	1	07
2058	8	0	1	1	1	1	1	1	1	7F
2059	9	0	1	1	0	1	1	1	1	6F
205A	A	0	1	0	1	1	1	1	1	5F
205B	B	0	1	1	1	1	1	0	0	7C
205C	C	0	0	1	1	1	0	0	1	39
205D	D	0	1	0	1	1	1	1	0	5E

| 205E | E | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 7B |
| 205F | F | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 71 |

Then press the following keys in the order shown.

RESET
EXMEM
2000
NEXT
21
Then follow the code below:-

Memory Location	Label	Machine Code	Mnemonics	Comment
2000		21	LXI H,2050h	;load first address of code to HL pair
2001		50		
2002		20		
2003	NEXT:	7E	MOVE A,M	;move data of memory to accumulator
2004		D3	OUT PORT A	;output at port A
2005		00		
2006		0E	MVI C,6F	;load register C with data of last location
2007		6F		
2008		CD	CALL DELAY*	;call delay subroutine to memory location 2300h
2009		00		
200A		23		
200B		B9	CMP C	; compare C with A
200C		CA	JZ	;jump on zero falg to RST
200D		13	RLC	; rotate left accumulator content
200E		20		
200F		23	INX H	;increment HL pair
2010		C3	JMP NXT	;jump to NEXT
2011		03		
2012		20		
2013	RST	C3	JMP 2000h	; jump to start
2014		00		
2015		20		
NEXT				
NEXT				
RESET				

GO 2000				
FILL E		E		;Execute the program

RESULT:

Discussion: