

LED DISPLAY

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LED DISPLAY

OBJECTIVE

Interfacing LED display with the 8085 Microprocessor to perform Alternate Display, Rolling Display and Blinking Display.

APPARATUS REQUIRED

- 8085 Microprocessor Trainer kit
- LED
- Resistor
- Power supply (+5v)

ALTERNATE DISPLAY

ALGORITHM

1. Write the control word for initializing ports.
2. Move 55H to accumulator .
3. Out it to some port and call delay.
4. Rotate the accumulator and repeat the above steps.

ASSEMBLY LANGUAGE PROGRAM

ADDRESS	LABEL	MNEMONICS	OPCODE/OPERAND	COMMENT
C100		MVI A,80_H	3E 80	Initialize all the ports as o/p ports
C102		OUT CWR	D3 DB	Write contol word in CWR
C104	XX	MVI A,55_H	3E 55	Move alternate 0's & 1's
C106		OUT PORTA	D3 D8	Output through portA
C108		CALL DELAY	CD 14 C1	Call delay subprogram
C10B		RRC	0F	Rotate right without carry
C10C		OUT PORTA	D3 D8	Output through portA
C10E		CALL DELAY	CD 14 C1	Call delay subprogram
C111		JMP XX	C3 04 C1	Repeat the process
C114	DELAY	MVI D,FF_H	16 FF	Move FF _H immediatly to D register
C116	LP2	MVI C,FF_H	0E FF	Move FF _H immediatly to C register
C118	LP1	DCR C	0D	Decrement the C register by 1
C119		JNZ LP1	C2 18 C1	Jump if no zero to loop LP1
C11C		DCR D	15	Decrement the D register by 1
C11D		JNZ LP2	C2 16 C1	Jump if no zero to loop LP2
C120		RET	C9	Return to main program

ROLLING DISPLAY

ALGORITHM

1. Write the control word for initializing ports.
2. Move 01H to accumulator and call delay.

3. Rotate the accumulator and call delay for successive LEDs to glow.
4. Repeat the above steps.

ASSEMBLY LANGUAGE PROGRAM

ADDRESS	LABEL	MNEMONICS	OPCODE/OPERAND	COMMENT
C200		MVI A,80 _H	3E 80	Initialize all the ports as o/p ports
C202		OUT CWR	D3 DB	Write contol word in CWR
C204		MVI A,01 _H	3E 01	Immediately move 01 _H to accumulator
C206		OUT PORTA	D3 D8	Output through portA
C208		CALL DELAY	CD 14 C2	Call delay subprogram
C20B	LP	RAL	17	Rotate accumulator left
C20C		OUT PORTA	D3 D8	Output through portA
C20E		CALL DELAY	CD 14 C2	Call delay for successive LED's to glow
C211		JMP LP	C3 0B C2	Repeat the process
C214	DELAY	MVI B,FF _H	06 FF	Move FF _H immediately to B register
C216	LP2	MVI C,FF _H	0E FF	Move FF _H immediately to C register
C218	LP1	DCR C	0D	Decrement the C register by 1
C219		JNZ LP1	C2 18 C2	Jump if no zero to loop LP1
C21C		DCR B	05	Decrement the B register by 1
C21D		JNZ LP2	C2 16 C2	Jump if no zero to loop LP2
C220		RET	C9	Return to main program

BLINKING DISPLAY

ALGORITHM

1. Write the control word for initializing ports.
2. Move the high status and out it through port.
3. Call the delay subprogram, for the existence of that state.
4. Move the low status and repeat the process.

ASSEMBLY LANGUAGE PROGRAM

ADDRESS	LABEL	MNEMONICS	OPCODE/OPERAND	COMMENT
C300		MVI A,80 _H	3E 80	Initialize all the ports as o/p ports
C302		OUT CWR	D3 DB	Write contol word in CWR
C304	LP1	MVI A,FF _H	3E FF	Move high status to accumulator
C306		OUT PORTA	D3 D8	Output it through port
C308		CALL DELAY	CD 15 C3	Call delay program for the existence of that state
C30B		MVI A,00 _H	3E 00	Move low status to accumulator

C30D		OUT PORTA	D3 D8	Output it through port
C30F		CALL DELAY	CD 15 C3	Call delay program for the existence of that state
C312		JMP LP1	C3 04 C3	Repeat the process
C315	DELAY	MVI D,FF_H	16 FF	Move FF _H immediately to D register
C317	YY	MVI C,FF_H	0E FF	Move FF _H immediately to C register
C319	XX	DCR C	0D	Decrement the C register by 1
C31A		JNZ XX	C2 19 C3	Jump if no zero to loop XX
C31D		DCR D	15	Decrement the D register by 1
C31E		JNZ YY	C2 17 C3	Jump if no zero to loop YY
C321		RET	C9	Return to main program

REFERENCE

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2. S.Subathra, "Programming in 8085 Microprocessor and its applications – An Innovative Analysis", Technical Report, Adhiparashakthi Engineering College, Melmaruvathur, March 2003