

MILITARY INSTITUTE OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
COURSE TITLE: MICROPROCESSOR AND MICROCONTROLLER SESSIONAL
COURSE CODE: CSE 306
LAB MANUAL 1

Basic Idea on MDA-8086 Trainer KIT

RES	system reset	STP	execute user's program, a single step
AD	set memory address	GO	go to user's program or execute monitor functions
DA	Update segment & Offset. and input data to memory	MON	Immediately break user's program and Non maskable interrupt.
:	Offset set.	REG	Register Display.
+	Segment & Offset + 1 increment. Register display increment.		
-	Segment & Offset - 1 increment. Register display decrement.		

FIG : Function of keys

Modes of Operation

1. KIT Mode (Takes machine language to process the operation)
2. PC Mode (Takes assembly or C programming language to process the operation)



HERE WE START

Check the contents of memory

KEY

AD

F

0

0

0

:

0

RES

LCD

Seg 0000	Offset 1000	Data FF
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Seg 000F	Offset 1000	Data FF
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Seg 00F0	Offset 1000	Data FF
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Seg 0F00	Offset 1000	Data FF
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Seg F000	Offset 1000	Data FF
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Seg F000	Offset 1000	Data FF
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Seg 00F0	Offset 0000	Data FF
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MDA-8086 KIT!! Midas 2109-5964		
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To INPUT DATA

RES

AD

DA

MDA-8086 KIT!! Midas 2109-5964		
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Seg 0000	Offset 1000	Data FF
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Seg 0000	Offset 1000	Data FF
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List of Machine Codes for the Instructions

Assembly code	Machine code
MOV AX,	B8
MOV BL	B3
MOV DX	BA
MOV BX	BB
MOV AL	B0
ADD AX,	05
ADD AL	04
MUL BL	F6 E3
DIV BL	F6 F3
DEC AL	FE C8
MOV CL	B1
MOV AL,CL	8A C1
AND AL	24
OR AL	0C
XOR AL	34
SHL AL,1	D0 E0
SHR AL,1	D0 E8
ROL AL,1	D0 C0
ROR AL,1	D0 C8
INC AL	FE C0
ADD AX,BX	03 C8
ADD AX,CX	03 C1
ADD AX,DX	03 C2
NEG AL	F6 D8
SUB BX,CX	2B D9
SUB BX,DX	2B DA
NOT AL	F6 D0

SINGLE LINE PROGRAM

MOV AX,0000 Machine Code: B8 0000

Steps to load it in MDA-8086:

1.RES 2.AD 3.DA 4.B8 5.+ 6.00 7.+ 8.00 9.STP 10.+
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AX=0000	BX=0000
CX=0000	DX=0000

Do it yourself:

1. MOV AX,00F0H	10. NEG AL
2. MOV BL,10H	11. SUB BX,CX
3. MOV DX,-1	12. SUB BX,DX
4. MOV AX,-1	13. MUL BL
5. MOV BX,1	14. DIV BL
6. MOV AL,FFH	15. DEC AL
7. ADD AX,4789	16. INC AL
8. ADD AL,88H	17. ADD AX,BX
9. ADD AX,DX	18. ADD AX,CX

MULTIPLE LINE PROGRAM

MOV AX,05

Machine Code: B8 05

ADD AX,03

05 03

Steps:

- | | |
|--------|---------|
| 1. RES | 9. + |
| 2. AD | 10.05 |
| 3. DA | 11.+ |
| 4. B8 | 12.03 |
| 5. + | 13.+ |
| 6. 05 | 14.00 |
| 7. + | 15.STP |
| 8. 00 | 16.STP+ |

TRY IT YOURSELF

Program 1:

**MOV BL,5
MOV CL,10
MOV AL,CL
MUL BL**

Program 2:

**MOV AX,104
MOV BL,4
DIV BL**

Program 3:

**MOV AL,00000001
NOT AL
AND AL,00001111
MOV AL,10101010
OR AL,00001111
XOR AL,11001100**

Program 4:

**MOV AL,11111111
SHL AL,1
SHR AL,1
MOV AL,10001000
ROL AL,1
ROR AL,1**