



Course Name:	Microprocessors and Peripherals (2UXC404)	Semester:	IV
Date of Performance:	24-2-2021	Batch No:	B2
Faculty Name:	KCS	Roll No:	1912052
Faculty Sign & Date:		Grade/Marks:	___/25

Experiment No: 2

Title: Block Transfer

Aim and Objective of the Experiment:

Aim: Write an 8085 based ALP to

1. Move a block of 6 data bytes from ML F100H onwards to F200H.
2. Exchange a block of 16 data bytes in ML F500H onwards with a block in ML F600H onwards

Objectives:

To study basic instructions and addressing modes of 8085.

This experiment covers following instructions groups.

- a) Data transfer
- b) Logical (Rotate and compare instructions)
- c) Branch

COs to be achieved:

CO 1. Describe basic operation of 8085 microprocessor system and explain its timing diagrams.

Useful links

Virtual Lab:

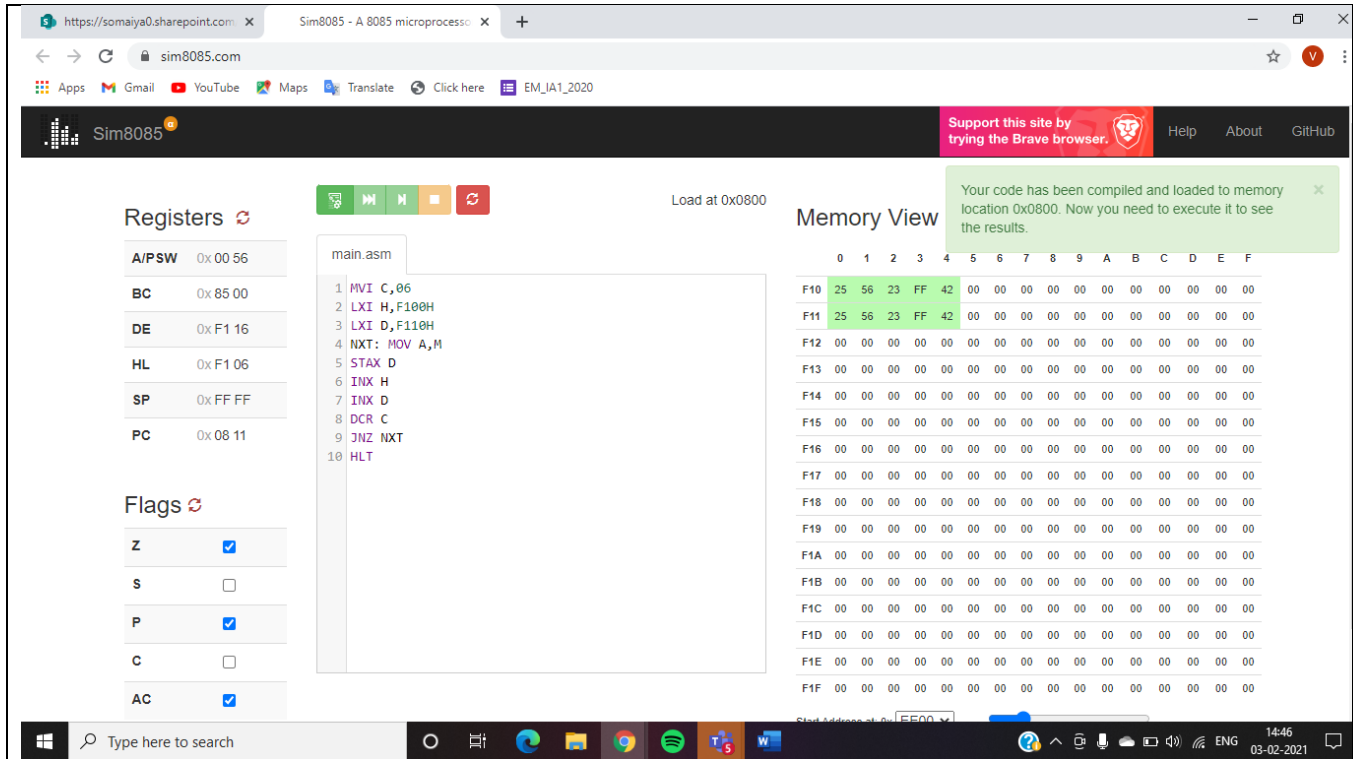
http://vlabs.iitb.ac.in/vlabs-dev/labs_local/microprocessor/labs/explist.php

Simulator:

<https://www.sim8085.com/>

Work to be done

1. Upload codes and screenshots of virtual lab implementation.
2. Upload scanned image of handwritten algorithm/flowchart and code and results for post lab questions.



The screenshot shows the Sim8085 web application interface. The browser address bar displays 'https://somaiya0.sharepoint.com' and 'Sim8085 - A 8085 microprocesso'. The page title is 'sim8085.com'. The interface includes a navigation bar with links to Apps, Gmail, YouTube, Maps, Translate, Click here, and EM_IA1_2020. A banner at the top right encourages supporting the site by using the Brave browser. The main content area is divided into three sections: Registers, Flags, and Memory View. The Registers section shows the A/PSW register at 0x0056, BC at 0x8500, DE at 0xF116, HL at 0xF106, SP at 0xFFFF, and PC at 0x0811. The Flags section shows Z (checked), S (unchecked), P (checked), C (unchecked), and AC (checked). The Memory View section displays a table of memory locations from F10 to F1F, with columns 0 through F. The code in the main.asm window is as follows:

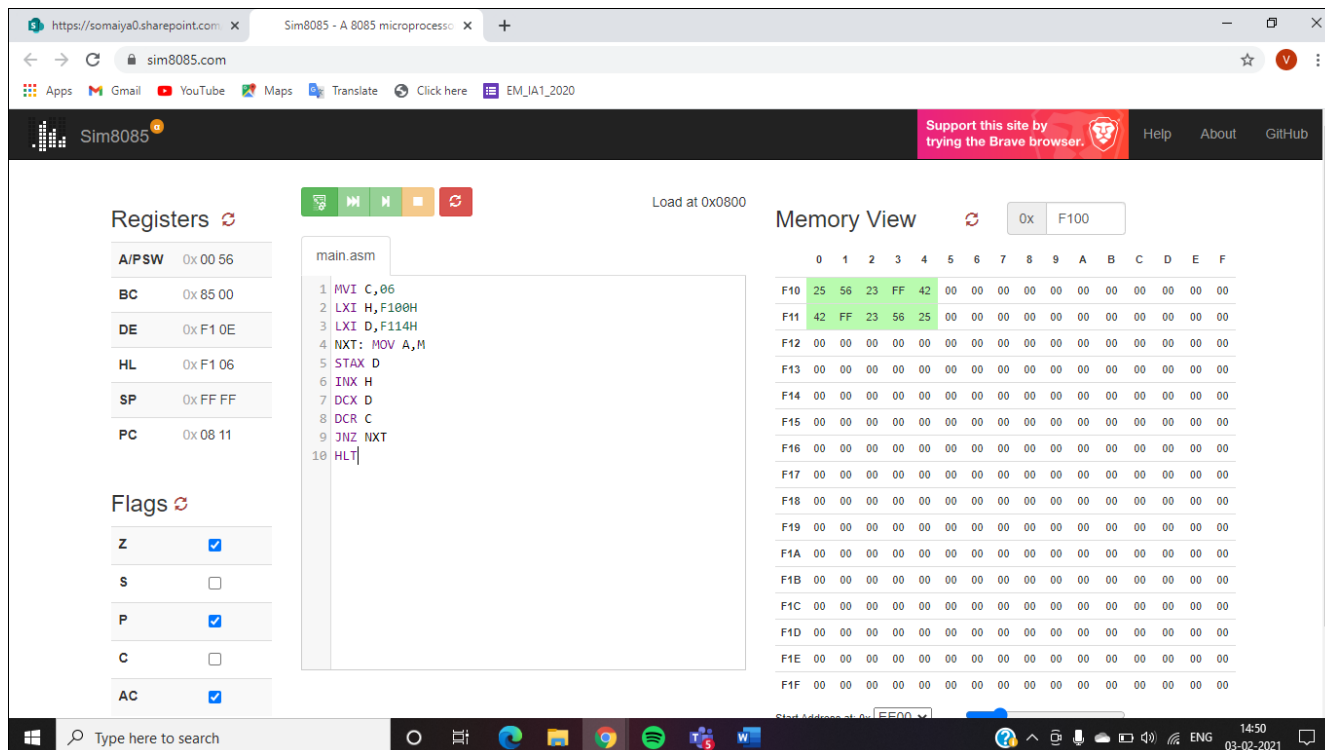
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1 MVI C,06
2 LXI H,F100H
3 LXI D,F110H
4 NXT: MOV A,M
5 STAX D
6 INX H
7 INX D
8 DCR C
9 JNZ NXT
10 HLT
  
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A green notification box at the top right states: 'Your code has been compiled and loaded to memory location 0x0800. Now you need to execute it to see the results.'

Post Lab Subjective/Objective type Questions:

Q1. Write an 8085 based ALP to reverse a block of data at ML F500H and store the reverse block at ML F600H onwards



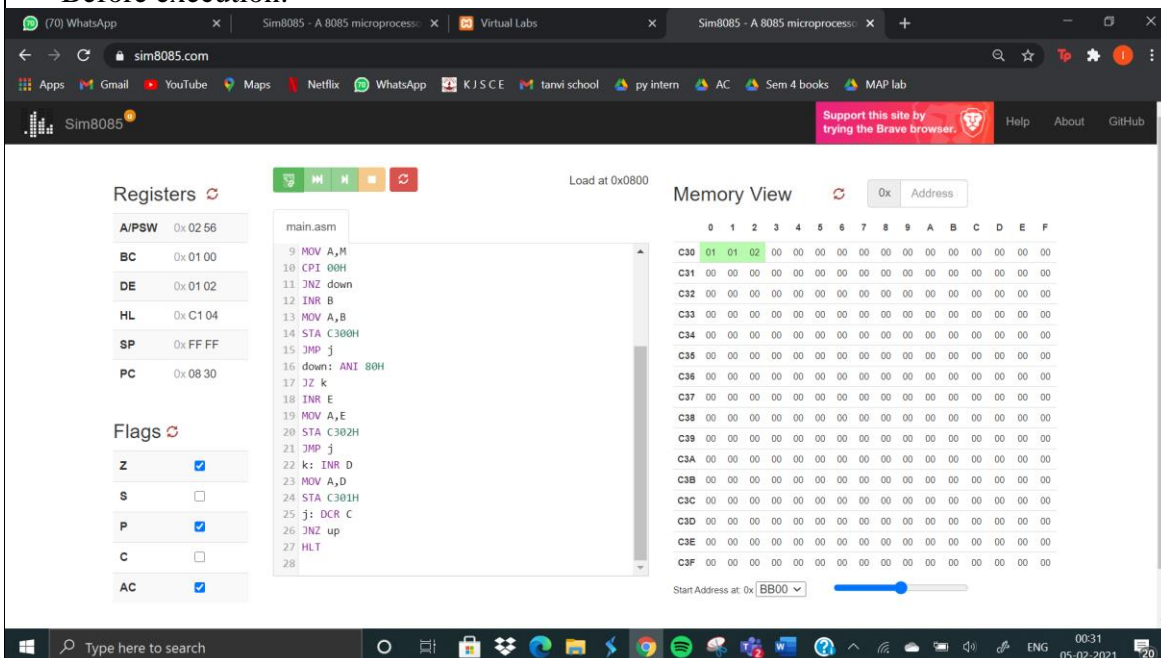
Q2. Write on 8085 based ALP to count the number of zeros, positive numbers and negative numbers in an array. The length of the array is at memory C100H and the array starts at memory location C101H. Store the no. of zeros at Location C300H, no. of positive nos at memory C301H and no. of negative numbers at memory C302H.

Address	Opcode	Label	Mnemonics	Comments
3000	C3 3 0		jmp start	
3002	21 0 193	start	LXI H,C100H	Contents are assigned to H
3006	4E		MOV C,M	Content is moved from memory to C
3007	6 0		MVI B,00H	B is initialized at 0
3009	1E 0		MVI E,00H	E is initialized at 0
3011	16 0		MVI D,00H	D is initialized at 0
3013	23	up	INX H	Increment in H location
301A	7E		MOV A,M	Content is moved from memory to accumulator
3015	FE 0		CPI 00H	Compare 0 with A
300B	C2 28 0		JNZ down	If not zero then jump to down
3018	4		INR B	Increment in B
3019	78		MOVA,B	Content is moved from B to accumulator
3020	32 0 195		STA C300H	Content in A is stored at C300H
3023	C3 46 0		JMP j	Jump to j
3026	E6 128	down	ANI 80H	AND with A
3029	CA 41 0		JZ k	If zero jump to k

3030	1C		INR E	Increment in E
300C	7B		MOV A,E	Content is moved from E to accumulator
3031	32 2 195		STA C302H	Content in A is stored at C302H
3034	C3 46 0		JMP j	Jump to j
3037	14	k	INR D	Increment in D
300D	7A		MOV A,D	Content is moved from D to accumulator
3038	32 1 195		STA C301H	Content in A is stored at C301H
3041	D	j	DCR C	Decrement in C
300E	C2 13 0		JNZ up	Jump to up if C not zero
3044	76		HLT	Stop

Memory Location	Contents	Memory Location	Contents
Before execution		After execution	
C100	04	C300	01
C101	12	C301	01
C102	00	C302	02
C103	8A		
C104	DD		

Before execution:



The screenshot shows the Sim8085 virtual lab interface. On the left, the 'Registers' section displays the status of various registers: A/PSW (0x0256), BC (0x0100), DE (0x0102), HL (0x0104), SP (0xFF FF), and PC (0x0830). Below this, the 'Flags' section shows the status of Z (checked), S (unchecked), P (checked), C (unchecked), and AC (checked). The central 'main.asm' window displays the assembly code being executed, including instructions like MOV A,M, CPI 09H, JNZ down, INR B, MOV A,B, STA C302H, JMP j, ANI 80H, JZ k, INR E, MOV A,E, STA C302H, JMP j, INR D, MOV A,D, STA C301H, J: DCR C, JNZ up, and HLT. On the right, the 'Memory View' section shows a hexadecimal dump of memory locations from C300 to C3FF, with the current address set to 0x0800. The bottom status bar indicates the start address at 0x0800 and the current address at 0x0830.

Q3. Explain various branch instructions of 8085.

There are main 3 types of branch instructions:



JUMP: The jump instruction transfers the program sequence to the memory address given in the operand based on the specified flag

CALL: The call instruction transfers the program sequence to the memory address given in the operand. Before transferring, the address of the next instruction after CALL is pushed onto the stack.

Return: The return instruction transfers the program sequence from the subroutine to the calling program.

Conclusion:

Wrote 8085 programs to move a block of 6 data bytes from ML F100H onwards to F200H. and exchange a block of 16 data bytes in ML F500H onwards with a block in ML F600H onwards

**Signature of faculty in-charge with
Date:**