



Report on ..... Assignment - 1 .....

Q1) Write an assembly language program to fill 20 bytes of memory starting from  $F250/3050_H$  with natural numbers in increasing order. (i.e.  $(00)_H$  in  $F250/3050_H$ ,  $(01)_H$  in  $F251/3051_H$ )

Memory Address	Mnemonic	Value	Comments
8000	LXI H	21	
8001	—	50	To load data from memory location using memory address.
8002	—	F2	
8003	MVI B	06	
8004	—	15	It means "move Immediate". Load value of B with an 8-bit or 1-Byte value.
8005	MVI A	3E	
8006	—	00	Load value of A with 8-bit
8007	MOV M,A	7F	8-bit data value in A will be move to the memory location as pointer by HL.
8008	INR A	3C	Add 1 with A
8009	INX H	23	Add 1 to the present address of A value stored in HL register pair.
800A	DCR B	05	Subtract 1 from B
800B	JNZ	C2	It is used for jump from one address to other given address.
800C	—	07	
800D	—	80	
800E	RST 01	C7	Used to repeat and end the program.

Date ..... 11.08.22 .....

Signature .. \$ .....



## Indian Institute of Engineering Science and Technology, Shibpur

Department of Information Technology

Report on ..... Assignment - ! .....

Output:-

Registers :       $A \rightarrow (15)_H$        $H - L$   
                       $B \rightarrow (00)_H$        $(f2)_H \quad (65)_H$

<u>Memory location</u>	<u>values</u>
F250	(00) <sub>H</sub>
F251	(01) <sub>H</sub>
F252	(02) <sub>H</sub>
F253	(03) <sub>H</sub>
F254	(04) <sub>H</sub>
F255	(05) <sub>H</sub>
:	:
F264	(14) <sub>H</sub>

Date ..... 11.08.22 .....

Signature ..... S. Patra ..... 25/07/22



Report on.....Assignment - I.....

Department of Information Technology

Q2) Write an assembly language program to generate a AP series of 8 terms with common difference 2 and store the Series in the memory location starting from FA00H/3000H.

Memory Address	Mnemonics	Value	Comments
8000	LXI H	21	
8001	—	00	To load data from memory
8002	—	FA	location using memory address
8003	MVI B	06	
8004	—	00	It means "Move Immediate". Load value of B with an 8-bit or.
8005	MVI A	3F	
8006	—	00	load value of A with 8-bit
8007	MOV M,A	77	Move to the memory location as pointer by HL.
8008	ADI	C6	used to add 8-bit immediate
8009	—	02	data to the Accumulator.
800A	INX H	23	Add 1 to the <del>value stored</del> Address of A in <del>exam</del> register.
800B	DCR B	05	Subtract 1 from B
800C	JNZ	C2	
800D	—	07	It is used for jump from one address to other given address. If previous value is not zero.
800E	—	80	
800F	RST 01	CF	Used to <del>present</del> reset and end the program.

Date ..11.08.22..

Signature .....



Report on Assignment-1

Department of Information Technology

Output:

<u>Memory location</u>	<u>values</u>
FA 00	(00) <sub>H</sub>
FA 01	(02) <sub>H</sub>
FA 02	(04) <sub>H</sub>
FA 03	(06) <sub>H</sub>
FA 04	(08) <sub>H</sub>
FA 05	( <del>0A</del> ) <sub>H</sub> , (0A) <sub>H</sub>
FA 06	(0C) <sub>H</sub>
FA 07	(0E) <sub>H</sub>
FA 08	(10) <sub>H</sub>

Registers values :-

$$A \rightarrow (12)_H$$

$$B \rightarrow (00)_H$$

$$H-L \rightarrow (FA09)_H$$

Date 11.08.22

Signature .....



Report on.....Assignment -2.....

Department of Information Technology

Q1) write an assembly language program to generate a GP series of 8 terms with common factor 2 and store the series in the memory location starting from f800H.

Mem address	Mnemonic	Value	Comments
8000	LXI H		
8001	—	21 00	Load data into H-L register pair (f800) <sub>H</sub>
8002	—	FB	
8003	MVI B	06	
8004	—	08	Move value (08) <sub>H</sub> into register B.
8005	MVI A	3E	
8006	—	01	Move value (01) <sub>H</sub> into register A.
8007	MOV M, A	7F	8-bit data will be copied from A to H-L by pair.
8008	ADD A	87	Add value at A into A.
8009	INX H	23	Add 1 to value stored in H-L pair.
800A	DCR B	05	Decrement value by 1
800B	JNZ	C2	
800C	—	07	
800D	—	80	Jump to address (8007) <sub>H</sub> if previous value is not zero.
800E	RST 01	CF	used to stop execution.

report on..... Assignment - 2

OUTPUT :

value at register A:  $(00)H$

Value at register C:  $(00)H$ .

value at H-L pair:  $(FB08)H$

value at register F =  $(55)H$

Memory location

	<u>value</u>
$(FB00)H$	$(01)H$
$(FB01)H$	$(02)H$
$(FB02)H$	$(04)H$
$(FB03)H$	$(08)H$
$(FB04)H$	$(10)H$
$(FB05)H$	$(20)H$
$(FB06)H$	$(40)H$
$(FB07)H$	$(80)H$

$$P \rightarrow (55)H$$

0101 0101  
S Z X AC X P X C Y

here CY = 1

so, final value of A is  $(100)H$ .



report on.....

## Assignment - 2

b2) find the 2's complement of a number stored in the memory location F100H and observe the result in the accumulator.

Mem Address	Mnemonic	Value	Comments
8000	LDA	3A	load value from 16-bit address to accumulators,
8001	—	00	
8002	—	F1	
8003	CMA	2F	perform 1's complement on value stored at A and again store at A.
8004	INR A	3C	Increment value at A
8005	RST 01	C0	Stop the execution.

Output:

Value at (F100)<sub>H</sub> is (01)<sub>H</sub>

$$\begin{array}{r}
 0000\ 0001 \\
 1111\ 1110 \\
 \hline
 + 1 \\
 \hline
 \underbrace{1111}_{F} \underbrace{1111}_{F}
 \end{array}
 \rightarrow \text{1's complement}$$

Value at A register is (FF)<sub>H</sub>



REPORT ON ..... Assignment -2

(Q3) Store two different 8-bit data in two different memory locations F200H and F204H respectively write an assembly language program to swap them.

Mm. address	Mnemonic	Value	Comments
8000			
8001	MVI A	3E	
8002		05	Move value (05) <sub>H</sub> into register A. (Move immediate)
8003		32	
8004		00	Store value from A into memory address.
8005		F2	
8006	MVI A	3E	
		0A	Move value (0A) <sub>H</sub> into register A.
8007	STA		
8008		32	
8009		04	Store value from A into another memory location.
		F2	
800A	LDA	3A	
800B		00	The contents of (F200) <sub>H</sub> are copied to the accumulator(A).
800C		F2	
800D	MOV B,A	47	Move value of accumulator A to B register.
800E	LDA	3A	
800F		04	The contents of (F204) <sub>H</sub> are copied to the accumulator(A).
8010		F2	
8011	STA	32	
8012		00	The content of accumulator A are copied to (F200) <sub>H</sub> .
8013		F2	
8014	MOV A,B	78	Move value of register B to accumulator A.
8015	STA	32	
8016		04	The content of Accumulator A are copied to (F204) <sub>H</sub> .
8017		F2	
8018	RET 01	C0	To stop the programme



REPORT ON .....

④ Input:-

<u>Memory address</u>	<u>value</u>
$(F200)_H$	$(05)_H$
$(F204)_H$	$(0A)_H$

Output:-

In memory location  $(F200)_H$  value is  $(0A)_H$

In memory location  $(F204)_H$  value is  $(05)_H$ .

Value of Register B is  $(0A)_H$

Value of Register A is  $(05)_H$ .



REPORT ON .....

Q4) find the number of 1's in an 8-bit number.

Memory Address	Mnemonic	Value	Comments
8000	MVI B	06	
8001	—	00	Move value (00) <sub>H</sub> into register B.
8002	MVI C	0E	
8003	—	08	Move value (08) <sub>H</sub> into register C.
8004	MVI A	3E	
8005	—	05	Move value (05) <sub>H</sub> into register A.
8006	RAR	1F	Each binary bit of accumulator is rotated by one position through the carry flag. Do $\rightarrow CY \rightarrow D_7$ .
8007	JNC	D2	
8008	—	0B	Jump to (800B) <sub>H</sub> if carry flag is 0.
8009	—	80	
800A	INR B	04	Increase value of B by 1.
800B	DCR C	0D	Decrease value of C by 1.
800C	JNZ	C2	
800D	—	06	Jump to (8006) <sub>H</sub> if C is not equal to zero.
800E	—	80	
800F	RST 01	CF	Stop the programme.

Output:-

Value of Register A is (05)<sub>H</sub> 00000101

Value of Register B is (02)<sub>H</sub>

Value of Register C is (00)<sub>H</sub>.



REPORT ON .....

(Q5) Generate the Fibonacci series in decimal format upto 10 terms and store them in the memory location storing from F300H.

Memory Address	Mnemonic	Values	Comments
8000	LXI H	21	loads $(2000)_H$ value in register pair (HL).
8001	—	00	
8002	—	F3	
8003	MVI B	06	Store $(00)_H$ value in register B.
8004	—	00	
8005	MOV M,B	70	Copies the contents of <del>(HL)</del> B to location value <del>of</del> (HL) memory location. $(F300)_H$ .
8006	INX H	23	the content of the specified register pair (HL) increment by 1.
8007	MVI A	3E	
8008	—	01	Store $(01)_H$ value in register A.
8009	MOV M,A	77	Copies the content of A to (HL) pair location $(F301)_H$ .
800A	INX H	23	Increase register pair (HL) by 1.
800B	<del>MOV M,B</del>	—	
800B	MVI C	0E	Store $(08)_H$ value in register C.
800C	—	0E	
800D	MOV M,B	70	Copies the content of B to HL pair location $(F302)_H$ .
800E	MOV B,A	47	Copies value of A to register B.
800F	ADD M	86	Content of HL pair location added to accumulator A and store in Accumulator A.
8010	MOV M,A	77	Copies the content of A to (HL) pair location.
8011	INX H	23	Increase register pair (HL) by 1.
8012	<del>DEC C</del>	0D	Decrease value of C by 1.

Date .....

Page No. ....

Signature.....

Date .....

Page No. ....



REPORT ON .....

8013	JNZ	C2	Jump to (800D)H <del>value</del> memory location if C not equal to zero.
8014	—	0D	
8015	—	80	
8016	RST 01	CF	Stop the programm.

Output:

Memory Location	Values .
F300	(00)H
F301	(01)H
F302	(01)H
F303	(02)H
F304	(03)H
F305	(05)H
F306	(08)H
F307	(0D)H
F308	(15)H
F309	(22)H .

Value of Register A is (87)H

Value of Register B is (22)H

Value of Register C is (00)H

Value of Register pair (HL) is (F310)H .



REPORT ON .....

Q) Data bytes (22)H, (A5)H, (B2)H, (39)H and (7F)H stored in the memory location F260H to F264H. To insert an additional two bytes of data 37H and A2H it is necessary to shift the data string by two memory locations. WAP to store the data bytes in the following order.

Memory Location	Content
F260 H	22 H
F261 H	A5 H
F262 H	B2 H
F263 H	37 H
F264 H	A2 H
F265 H	39 H
F266 H	7F H.

Memory Address	Mnemonic	Values	Comments
8000	LXI D	11	Store (F260)H unto the DE register pair.
8001	—	60	
8002	—	F2	
8003	MVI C	0E	Store (06)H value in register C.
8004	—	06	
8005	INX D	13	Increase DE register pair by 1.
8006	DCR C	0D	Decrease value of C by 1
8007	JNZ	C2	Jump to (8005) if C is not equal to zero.
8008	—	05	
8009	—	80	
800A	LXI H	21	Store (F264)H unto the HL register pair.
800B	—	64	
800C	—	F2	



REPORT ON .....			
Memory Address	Mnemonic	Values	Comments.
800D	MVI C	0E	Store (02) <sub>H</sub> value in register C.
800E	—	02	
800F	MOV A,M	7E	Copies the value of HL register pair in register A. (F264) <sub>H</sub> .
8010	XCHG .	EB	Content of register HL exchanged with the content of register DE.
8011	MOV M,A	77	Copies value of A in register (HL) Location.
8012	XCHG	EB.	Content of register HL exchanged with the content of register DE.
8013	DCX H	2B	Content of HL register pair are decremented by 1.
8014	DCX D	1B	Content of DE register pair are decremented by 1.
8015	DCR C	0D	Decrease value of C by 1.
8016	JNZ	C2	
8017	—	0F	Jump to (800F) <sub>H</sub> if C is
8018	—	80	not equal to zero.
8019	XCHG	EB	Content of register HL exchanged with the content of register DE.
801A	MVI M	36	Store (A2) <sub>H</sub> in HL register.
801B	—	A2	
801C	DCX H	2B	Content of DE register pair are decremented by 1.
801D	MVI M	36	
801E	—	37	Store (C7) <sub>H</sub> in HL register
801F	RST 01	3F	Stop the program.



REPORT ON .....

Input:-

Memory Address	values.
(F260) <sub>H</sub>	(22) <sub>H</sub>
(F261) <sub>H</sub>	(A5) <sub>H</sub>
(F262) <sub>H</sub>	(B2) <sub>H</sub>
(F263) <sub>H</sub>	(99) <sub>H</sub>
(F264) <sub>H</sub>	(FF) <sub>H</sub>

Output:-

Memory Address	Value.
(F260) <sub>H</sub>	(22) <sub>H</sub>
(F261) <sub>H</sub>	(A5) <sub>H</sub>
(F262) <sub>H</sub>	(B2) <sub>H</sub>
(F263) <sub>H</sub>	(99) <sub>H</sub>
(F264) <sub>H</sub>	(A2) <sub>H</sub>
(F265) <sub>H</sub>	(09) <sub>H</sub>
(F266) <sub>H</sub>	(FF) <sub>H</sub>

Value of register pair (HL) is (F263)<sub>H</sub>

Value of register pair (DF) is (F262)<sub>H</sub>

Value of register C is (00)<sub>H</sub>

Value of register A is (99)<sub>H</sub>.



REPORT ON .....

Q2) Store data bytes  $(A2)H$ ,  $(FA)H$ ,  $(DF)H$ ,  $(E5)H$ ,  $(F9)H$  and  $(98)H$  in the memory location starting from  $(F200)H$ . Add all data bytes, use register B to save any carry generated. Write the 16-bit memory location  $F291H$  and  $F292H$ .

Memory Address	Mnemonic	Values	Comments
8000	LXI H	21	
8001	—	00	
8002	—	F2	Load $(F200)H$ in HL register pair.
8003	MVI C	0E	
8004	—	06	Store $(06)H$ in register C.
8005	MVI B	06	
8006	—	00	Store $(00)H$ in register B.
8007	MVI A	3E	
8008	—	00	Store $(00)H$ in registers A.
8009	ADD M	86	Add content of HL register with accumulator A & store in A.
800A	JNX H	23	Increase value of HL register by 1.
800B	JNC	D2	
800C	—	0F	
800D	—	80	Jump if carry flag is zero. to $(800F)H$ address.
800E	INR B	04	Increase value of B by 1.
800F	DCR C	0D	Decrease value of C by 1.
8010	JNZ	C2	
8011	—	09	
8012	—	80	Jump to $(8009)H$ address if C not equal to 0.
8013	LXI H	21	
8014	—	91	Load $(F291)H$ in HL register pair.
8015	—	F2	
8016	MOV M,B	70	copies value of B register to HL pair.



REPORT ON .....

8017	INX H	23	Increase value of HL register pair by 1.
8018	MOV H,A	77	Move value of A to content of HL register pair.
8019	RST 01	C0	Stop the program.

Display: IT

Input:

Memory Address

(F200)<sub>H</sub>

(F201)<sub>H</sub>

(F202)<sub>H</sub>

(F203)<sub>H</sub>

(F204)<sub>H</sub>

(F205)<sub>H</sub>

Values

(A2)<sub>H</sub>

(FA)<sub>H</sub>

(DF)<sub>H</sub>

(E5)<sub>H</sub>

(F9)<sub>H</sub>

(98)<sub>H</sub>

Output:

Value in register pair (HL) is (F292)<sub>H</sub>

Value of register A is (F1)<sub>H</sub>

Value of register B is (04)<sub>H</sub>.

Value of register C is (00)<sub>H</sub>.

Memory Address

(F291)<sub>H</sub>

(F292)<sub>H</sub>

values

(04)<sub>H</sub>

(F1)<sub>H</sub>



## REPORT ON .....

Q1) Multiply two four bit numbers  $(04)_H$  stored in register B and  $(06)_H$  stored in register C) in successive method. Store the result in register D.

Memory Address	Mnemonic	Values	Comments.
8000	<u>MVI B</u>	06	Store $(04)_H$ in register B.
8001		04	
8002	<u>MVI C</u>	0E	Store $(06)_H$ in register C.
8003		0B	
8004	<u>MVI A</u>	3E	Store $(00)_H$ in register A.
8005		00	
8006	ADD C	81	Add value of C with accumulator.
8007	DCR B	05	Decrease value of B by 1
8008	JNZ	C2	
8009	—	06	Jump to $(8006)_H$ if B not
800A	—	80	equal to zero.
800B	MOV D,A	5F	* copies value of register A to D.
800C	RST 01	CF	stop the program.

Output:-

Value of register B is  $(00)_H$ .

Value of register C is  $(06)_H$ .

Value of register A is  $(18)_{H1}$ .

Value of register D is  $(18)_H$ .



**Indian Institute of Engineering Science And Technology, Shibpur**  
**Department of Information Technology**

REPORT ON .....

Q/ Multiply two eight bit numbers  $(80)_H$  and  $(81)_H$  and store the result in the memory location  $(F290)_H$  and  $(F291)_H$ . Store  $(80)_H$  and  $(81)_H$  in register B and register F respectively.

Memory Address	Mnemonic	Values	Comments .
8000	MVI B	06	Store $(80)_H$ value in register B.
8001	—	80	
8002	MVI E	1E	Store $(81)_H$ value in register E.
8003	—	81	
8004	MVI A	3E	Store $(00)_H$ value in register A.
8005	—	00	
8006	MVI C	0E	Store $(00)_H$ value in register C.
8007	—	00	
8008	ADD E	83	Add value of E with accumulator A & store in A.
8009	JNC	D2	
80 DA	—	0D	Jump to $(800D)_H$ if result is no carry.
800B	—	80	
800C	JNR C	0C	Increase value of C by 1.
800D	DCR B	05	Decrease value of D by 1.
800E	JNZ	C2	
800F	—	08	Jump to $(8008)_H$ location if B is not equal to zero.
8010	—	80	
8011	LXI H	21	
8012	—	90	Load $(F290)_H$ in HL register pair.
8013	—	F2	
8014	MOV M,C	71	copies value of C in HL register pair contents .
8015	JNX H	23	Increase value of (HL) pair by 1 .
8016	MOV M,A	77	Copies value of A in HL register pair contain .
8017	RST 01	CF	Stop the programmm .

Date .....

Page No. ....

Signature.....



REPORT ON .....

Input:-

Value of register B is  $(80)_{16}$

Value of register E is  $(81)_{16}$ .

Output

Value of register B is  $(00)_{16}$ .

Value of register E is  $(81)_{16}$

Value of register A is  $(80)_{16}$

Value of register C is  $(40)_{16}$ .

Memory Address

$(F290)_{16}$

$(F291)_{16}$

Value

$(40)_{16}$

$(80)_{16}$ .