Course No.	Nama
Section No.	
DEDO	T FOLDED
REPOR	RT FOLDER
New York Ci	ty College of
	10000
Techi	rology
OF THE CITY LINE	IVERSITY OF NEW YORK
OF THE CITY UNI	IVERSITY OF NEW YORK
	165
Department of	
	**
Experiment No	<u> </u>
10	
Title	· · · · · · · · · · · · · · · · · · ·
- 2	
- jemenista	
FACULTY ONLY	STUDENTS ONLY
Returned for corrections	Date experiment completed
Corrections due	Date due
Comments	Squad No
	List Members
	, members
€	
Grade Approved by	

LABORATORY FORMAL / pprocessor theory (INTEL 8085)

1. Folder (name, Title, course, SEction, doles)

2. INDEX (label all pages)

3. Objectives

4. Theory needed

5. CAlculated Values / Single stepping

6. Program, flowchart, Mnemonics, O.C.

7. Questions / Answers.

8. Conclusion/ Discussion

9. Applications (Optional).

10. Attach LAB. MANUAL INSTEUCTIONS.

LATE penALTIES: 1 week = -5pts

2 weeks = -10pts

3 weeks = -20pts

4 or more weeks = not accepted

# COURSE TEXT

MOHAMED RAFIGUIZZMAN,
"Microcomputer Theory and Applications
WITH the (INTER 8085) SDK-85", WILEY

M.K.

# **Objective**

- Get a handle for manipulating data using the SDK-85 (Student Development Kit)
- Use Appendix F (8085 Instruction Set), specifically the Arithmetic Group, to perform operations on the registers and memory locations of the SDK-85.

### **Theory**

- The SDK-85 (Student Development Kit) is a single board microcomputer system kit using the 8085 processor. It is made by Intel and is now used to teach students about the concepts of microprocessors. Contains the following
  - o Microprocessor
  - Memory Element This describes both ROM (Read Only Memory) and RAM (Random Access Memory)
    - ROM (Read Only Memory) Contains system boot up instructions
    - RAM (Random Access Memory) Has Read/Write capabilities
  - o I/O Unit Handles input from user and provides output
- Microprocessors are computer processors that incorporate the functions of a central processing unit on a single integrated circuit (IC) or at most a few integrated circuits. They contain the following:
  - O Combinational logic Unit are logic circuits implemented by Boolean (logic gates) circuits, where the output is a pure function of the present input only. Think Half-Adders, Full-Adders, Encoders, and Decoders.
  - Sequential logic Unit this is a type of logic circuit whose output depends on previous inputs as well as on the present inputs.
    - Contains Memory
    - Contains a clock

This lab focuses on **Appendix F** (the 8085 Instruction Set), specifically Up and Down Counters. This is the set of assembly instructions that performs preset programs that's stored in ROM

## LAB 8 PART A (Part a)

2000	31	SP ←20C2	LXI SP, 20C2
1	C2		
2	20		
3	3E	A ←00	MV1 A, 00
4	00		
5	F5	PUSH PSW	PUSH PSW
6	CD	DISPLAY A	CD 036E
7	6E		
8	03		
9	11	DE ←F699	LXI D, F699
Α	99		
В	F6		
С	1B	DE ← DE - 1	DCX D
D	7A	A ←D	MOV A,D
E	В3	[A] ←[A] V [E]	ORA E
F	CA	JUMP 2013 A=00	JZ 2013
10	13		
11	20		
12	F1	POP PSW	POP PSW
13	3C	[A] ←[A] +1	INR A
14	FE	COMPARE A IS 09	CPI 09
15	0A		
16	C2	JUMP 2005 A≠ 00	JNZ 2005
17	05		
18	20		
19	CF	STOP	RST 1

## LAB 8 PART A (Part b) - 1 sec

2000	31	SP ←20C2	LXI SP, 20C2
1	C2		
2	20		
3	3E	A ←00	MV1 A, 00
4	00		
5	F5	PUSH PSW	PUSH PSW
6	CD	DISPLAY A	CD 036E
7	6E		
8	03		
9	3E	A ←02	MV1 A, 02
1A	02		
1B	F5	PUSH PSW	PUSH PSW
1C	11	DE ←F699	LXI D, F699
1D	99		
1E	F6		
1F	1B	DE ← DE - 1	DCX D
10	7A	A ←D	MOV A,D
11	В3	[A] ←[A] V [E]	ORA E
12	CA	JUMP 2016 A=00	JZ 2016
13	16		
14	20		
15	F1	POP PSW	POP PSW
16	3D	[A] ←[A]-1	DCR A
17	CA	JUMP 201B IF A=00	JZ 201B
18	1B		
19	20		
1A	F1	POP PSW	POP PSW
1B	3C	[A] ←[A] +1	INR A
1E	FE	COMPARE A IS 09	CPI 09
1D	0A		
1E	C2	JUMP 2005 A≠ 00	JNZ 2005
1F	05		
20	20		
21	CF	STOP	RST 1

# LAB 8 PART A (Part b) - 10 sec

2000	31	SP ←20C2	LXI SP, 20C2
1	C2		
2	20		
3	3E	A ←00	MV1 A, 00
4	00		
5	F5	PUSH PSW	PUSH PSW
6	CD	DISPLAY A	CD 036E
7	6E		
8	03		
9	3E	A ←0A	MV1 A, 0A
1A	02		
1B	F5	PUSH PSW	PUSH PSW
1C	11	DE ←F699	LXI D, F699
1D	99		
1E	F6		
1F	1B	DE ← DE <b>–</b> 1	DCX D
10	7A	A ←D	MOV A,D
11	В3	[A] ←[A] V [E]	ORA E
12	CA	JUMP 2016 A=00	JZ 2016
13	16		
14	20		
15	F1	POP PSW	POP PSW
16	3D	[A] ←[A]-1	DCR A
17	CA	JUMP 201B IF A=00	JZ 201B
18	1B		
19	20		
1A	F1	POP PSW	POP PSW
1B	3C	[A] ←[A] +1	INR A
1E	FE	COMPARE A IS 09	CPI 09
1D	0A		
1E	C2	JUMP 2005 A≠ 00	JNZ 2005
1F	05		
20	20		
21	CF	STOP	RST 1

#### LAB 8 PART B - 1 sec

2000	31	SP ←20C2	LXI SP, 20C2
1	C2		
2	20		
3	3E	A ←09	MV1 A, 09
4	09	DUCU DOM	DI ICII DCIA
5	F5	PUSH PSW	PUSH PSW
6	CD	DISPLAY A	CD 036E
7	6E		
8	03	. 00	N 41 /4 A 22
9	3E	A ←02	MV1 A, 02
1A	02	DUCU DOM	DI ICII DCIA
1B	F5	PUSH PSW	PUSH PSW
1C	11	DE ←F699	LXI D, F699
1D	99		
1E	F6	DE 4	
1F	1B	DE ← DE - 1	DCX D
10	7A	A ←D	MOV A,D
11	В3	[A] ←[A] V [E]	ORA E
12	CA	JUMP 2016 A=00	JZ 2016
13	16		
14	20		
15	F1	POP PSW	POP PSW
16	3D	[A] ←[A]-1	DCR A
17	CA	JUMP 201B IF A=00	JZ 201B
18	1B		
19	20		
1A	F1	POP PSW	POP PSW
1B	3D	[A] ←[A] -1	DCR A
1E	FE	COMPARE A IS 00	CPI 00
1D	00		
1E	C2	JUMP 2005 A≠ 00	JNZ 2005
1F	05		
20	20		
21	CF	STOP	RST 1

#### LAB 8 PART B - 10 sec

2000 1	31 C2	SP ←20C2	LXI SP, 20C2
2	20		
3	3E	A ←09	MV1 A, 09
4	09		
5	F5	PUSH PSW	PUSH PSW
6	CD	DISPLAY A	CD 036E
7	6E		
8	03		
9	3E	A ←0A	MV1 A, 0A
1A	02		
1B	F5	PUSH PSW	PUSH PSW
1C	11	DE <b>←</b> F699	LXI D, F699
1D	99		
1E	F6		
1F	1B	DE ← DE – 1	DCX D
10	7A	A ←D	MOV A,D
11	В3	[A] ←[A] V [E]	ORA E
12	CA	JUMP 2016 A=00	JZ 2016
13	16		
14	20		
15	F1	POP PSW	POP PSW
16	3D	[A] ←[A]-1	DCR A
17	CA	JUMP 201B IF A=00	JZ 201B
18	1B		
19	20		
1A	F1	POP PSW	POP PSW
1B	3D	[A] ←[A] -1	DCR A
1E	FE	COMPARE A IS 00	CPI 00
1D	00		
1E	C2	JUMP 2005 A≠ 00	JNZ 2005
1F	05		
20	20		
21	CF	STOP	RST 1

#### LAB 8 PART C

2000 1 2	31 C2 20	SP <b>←</b> 20C2	LXI SP, 20C2
3 4	3E 00	A ←00	MV1 A, 00
5	F5	PUSH PSW	PUSH PSW
6	CD	DISPLAY A	CD 036E
7	6E		
8	03		
9 A	3E 02	A ←02	MV1 A, 02
В	F5	PUSH PSW	PUSH PSW
С	11	DE ←F699	LXI D, F699
D	99		
E	F6		
F	1B	DE ← DE - 1	DCX D
10	7A	A ←D	MOV A,D
11	В3	[A] ←[A] V [E]	ORA E
12	CA	JUMP 2016 A=00	JZ 2016
13	0F		
14	20		
15	F1	POP PSW	POP PSW
16	3D	[A] ←[A]-1	DCR A
17	CA	JUMP 201B IF	JZ 201B
18	1B	A=00	
19	20		
1A	F1	POP PSW	POP PSW
1B	3C	[A] ←[A] +1	INR A
1C	27	DAA	DAA
1D	FE	COMPARE A IS 99	CPI 99
1E	99		
1F	CA	JUMP 2005 $\neq 00$	JNZ 2005
20	05		
21	20		
22	CF	STOP	RST 1

#### LAB 8 PART D

2000	31	SP ←20C2	LXI SP, 20C2
1	C2		
2	20		
3	3E	A ←00	MV1 A, 00
4	00		
5	21	HL ←2050	LXI H, 2050
6 7	50		
8	20	HL ←01	
	ГГ	·	DLICH DCM/
9	F5	PUSH PSW	PUSH PSW
Α	E5	PUSH H	PUSH H
В	CD	DISPLAY A	CD 036E
C	6E		
D	03	DOD A	DOD DCW/
E	F1	POP A	POP PSW
F	7E	A ←[HL]	MOV A,M
10	F5	PUSH PSW	PUSH PSW
11	11	DE ←F699	LXI D, F699
12	99		
13	F6		
14	1B	DE ← DE - 1	DCX D
15	7A	A ←D	MOV A,D
16	В3	[A] ←[A] V [E]	ORA E
17	CA	JUMP 201B IF A=00	JZ 201B
18	1B		
19	20		
1A	F1	POP PSW	POP PSW
1B	3D	[A] ←A-1	DCR A
1C	7E	A ←[HL]	MOV A,M
1D	87	$A \leftarrow [A] + [A]$	ADD A
1E	77	[HL] ←[A]	MOV M,A
1F	F1	POP PSW	POP PSW
20	3C	[A] ←[A]+1	INR A
21	FE	COMPARE A is 09	CPI 09
22	CF	STOP	RST 1

#### LAB 8 PART E

2022	00		
2000	02		
2001	02		
2002	04		
2003	06		
2004	0A		
2005	10_16		
2006	1A_16		
2007	2A_16		
2008	44_16		
2009	31	SP <- 20C2	LXI SP, 20C2
200A	C2		
200B	20		
200C	21	HL <- 2000	LXI H, 2000
200D	00		
200E	20		
200F	3E	A<- 00	MVI A, 00
2010	00		
2011	E5	PUSH H	PUSH H
2012	F5	PUSH PSW	PUSH PSW
2013	CD	DISPLAY A	CD 036E
2014	6E		
2015	03		
2016	7E	A <- [[HL]]	MOV A, M
2017	F5	PUSH PSW	PUSH PSW
2018	11	DE<-F699	LXI D, F699
2019	99		
201A	F6		
201B	1B	DE<- DE - 1	DCX D
201C	7B	A<- D	MOV A,D
201D	B2	A<- A V E	ORA E

201E         CA         IS Z=1         JZ 201B           201F         1B         ————————————————————————————————————		1		1
2020         20         F1         POP PSW         POP PSW           2021         F1         POP PSW         POP PSW           2022         3D         A <- A - 1	201E	CA	IS Z=1	JZ 201B
2021         F1         POP PSW         POP PSW           2022         3D         A <- A - 1	201F	1B		
2022       3D       A <- A - 1	2020	20		
2023         CA         IS Z=1         JZ 2017           2024         17         IS Z=1         JZ 2017           2025         20         IS Z=1         IS Z=1           2026         E1         POP H         POP H           2027         23         HL <- HL + 1	2021	F1	POP PSW	POP PSW
2024       17       Image: Control of the contr	2022	3D	A <- A -1	DCR A
2025       20       POP H       POP H         2027       23       HL <- HL + 1	2023	CA	IS Z=1	JZ 2017
2026       E1       POP H       POP H         2027       23       HL <- HL + 1	2024	17		
2027 23 HL <- HL + 1 INX H  2028 7D A<- L MOV A, L  2029 FE CPI 01 CPI 01  202A 01  202B CA IS A=01 JUMP 2043 (YES) JZ 2043  202C 43  202D 20  202E CA IS A=02 JUMP 20B4 (YES) JZ 20B4  203D 20  2031 CA IS A=03 JUMP 2053 (YES) JZ 2053  2032 53  2033 20  2034 CA IS A=04 JUMP 205B (YES) JZ 205B  2035 5B  2036 20  2037 CA IS A=05 JUMP 2063 (YES) JZ 2063  2038 63  2039 20  2030 CA IS A=06 JUMP 206B (YES) JZ 206B  2031 CA IS A=06 JUMP 206B (YES) JZ 206B	2025	20		
2028       7D       A<- L	2026	E1	POP H	POP H
2029 FE CPI 01 CPI 01 202A 01 202B CA IS A=01 JUMP 2043 (YES) JZ 2043 202C 43 202D 20 202E CA IS A=02 JUMP 20B4 (YES) JZ 20B4 203D 20 2031 CA IS A=03 JUMP 2053 (YES) JZ 2053 2032 53 2033 20 2034 CA IS A=04 JUMP 2058 (YES) JZ 205B 2035 5B 2036 20 2037 CA IS A=05 JUMP 2063 (YES) JZ 2063 2038 63 2039 20 203A CA IS A=06 JUMP 206B (YES) JZ 206B 203B 6B 203C 20	2027	23	HL <- HL + 1	INX H
202A 01	2028	7D	A<- L	MOV A, L
202B CA IS A=01 JUMP 2043 (YES) JZ 2043 202C 43 202D 20 202E CA IS A=02 JUMP 20B4 (YES) JZ 20B4 202F B4 2030 20 2031 CA IS A=03 JUMP 2053 (YES) JZ 2053 2032 53 2033 20 2034 CA IS A=04 JUMP 205B (YES) JZ 205B 2035 5B 2036 20 2037 CA IS A=05 JUMP 2063 (YES) JZ 2063 2038 63 2039 20 203A CA IS A=06 JUMP 206B (YES) JZ 206B 203B 6B 203C 20	2029	FE	CPI 01	CPI 01
202C 43	202A	01		
202D       20         202E       CA       IS A=02 JUMP 20B4 (YES)       JZ 20B4         202F       B4	202B	CA	IS A=01 JUMP 2043 (YES)	JZ 2043
202E CA IS A=02 JUMP 20B4 (YES) JZ 20B4  203F B4  2030 20  2031 CA IS A=03 JUMP 2053 (YES) JZ 2053  2032 53  2033 20  2034 CA IS A=04 JUMP 205B (YES) JZ 205B  2035 5B  2036 20  2037 CA IS A=05 JUMP 2063 (YES) JZ 2063  2038 63  2039 20  2030 CA IS A=06 JUMP 206B (YES) JZ 206B  2031 CA IS A=06 JUMP 206B (YES) JZ 206B	202C	43		
202F       B4         2030       20         2031       CA       IS A=03 JUMP 2053 (YES)       JZ 2053         2032       53          2033       20          2034       CA       IS A=04 JUMP 205B (YES)       JZ 205B         2035       5B          2036       20          2037       CA       IS A=05 JUMP 2063 (YES)       JZ 2063         2038       63          2039       20          203A       CA       IS A=06 JUMP 206B (YES)       JZ 206B         203B       6B          203C       20	202D	20		
2030       20         2031       CA       IS A=03 JUMP 2053 (YES)       JZ 2053         2032       53	202E	CA	IS A=02 JUMP 20B4 (YES)	JZ 20B4
2031 CA IS A=03 JUMP 2053 (YES) JZ 2053 2032 53 2033 20 2034 CA IS A=04 JUMP 205B (YES) JZ 205B 2035 5B 2036 20 2037 CA IS A=05 JUMP 2063 (YES) JZ 2063 2038 63 2039 20 203A CA IS A=06 JUMP 206B (YES) JZ 206B 203B 6B 203C 20	202F	B4		
2032 53	2030	20		
2033 20	2031	CA	IS A=03 JUMP 2053 (YES)	JZ 2053
2034 CA IS A=04 JUMP 205B (YES) JZ 205B  2035 5B  2036 20  2037 CA IS A=05 JUMP 2063 (YES) JZ 2063  2038 63  2039 20  203A CA IS A=06 JUMP 206B (YES) JZ 206B  203B 6B  203C 20	2032	53		
2035 5B	2033	20		
2036       20         2037       CA       IS A=05 JUMP 2063 (YES)       JZ 2063         2038       63          2039       20          203A       CA       IS A=06 JUMP 206B (YES)       JZ 206B         203B       6B          203C       20	2034	CA	IS A=04 JUMP 205B (YES)	JZ 205B
2037       CA       IS A=05 JUMP 2063 (YES)       JZ 2063         2038       63          2039       20          203A       CA       IS A=06 JUMP 206B (YES)       JZ 206B         203B       6B          203C       20	2035	5B		
2038       63         2039       20         203A       CA         IS A=06 JUMP 206B (YES)       JZ 206B         203B       6B         203C       20	2036	20		
2039       20         203A       CA         IS A=06 JUMP 206B (YES)       JZ 206B         203B       6B         203C       20	2037	CA	IS A=05 JUMP 2063 (YES)	JZ 2063
203A       CA       IS A=06 JUMP 206B (YES)       JZ 206B         203B       6B	2038	63		
203B 6B 203C 20	2039	20		
203C 20	203A	CA	IS A=06 JUMP 206B (YES)	JZ 206B
	203B	6B		
203D CA IS A=07 JUMP 2074 (YES) JZ 2074	203C	20		
	203D	CA	IS A=07 JUMP 2074 (YES)	JZ 2074

			<u>,                                      </u>
203E	74		
203F	20		
2040	CA	IS A=08 JUMP 2074 (YES)	JMP 2074
2041	7D		
2042	20		
2043	3E	A<- 01	MVI A, 01
2044	01		
2045	21	HL <- 2001	LXI H, 2001
2046	01		
2047	20		
2048	C3	JUMP 2011	JMP 2011
2049	11		
204A	20		
204B	3E	A<- 02	MVI A, 02
204C	02		
204D	21	HL <- 2002	LXI H, 2002
204E	02		
204F	20		
2050	C3	JUMP 2011	JMP 2011
2051	11		
2052	20		
2053	3E	A<- 03	MVI A, 03
2054	03		
2055	21	HL <- 2003	LXI H, 2003
2056	03		
2057	20		
2058	C3	JUMP 2011	JMP 2011
2059	11		
205A	20		
205B	3E	A<- 04	MVI A, 04
205C	04		
205D	21	HL <- 2004	LXI H, 2004

205E         04   <th></th> <th></th> <th></th> <th></th>				
2060 C3 JUMP 2011 JMP 2011 2061 11 2062 20 2063 3E A<-05 MVI A, 05 2064 05 2065 21 HL <- 2005 LXI H, 2005 2066 05 2067 20 2068 C3 JUMP 2011 JMP 2011 2069 11 2069 11 2068 3E A<- 06 MVI A, 06 2060 06 2060 06 2060 06 2070 20 2071 C3 JUMP 2011 JMP 2011 2072 11 2073 20 2074 3E A<- 07 MVI A, 07 2075 07 2076 C3 JUMP 2011 JMP 2011 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 2070 11 2071 JMP 2011 2072 11 2073 20 2074 3E A<- 07 MVI A, 07 2075 07 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 2070 11 2070 11 2070 11 2070 11 2070 11 2070 11 2070 20 2071 2071 2071 JMP 2011 2070 2071 2071 2072 LXI H, 2007 2071 2072 2073 20 2073 20 2074 3E A<- 07 2075 2076 21 HL <- 2007 LXI H, 2007 2077 2078 20 2079 C3 JUMP 2011 JMP 2011 2070 3E A<- 08	205E	04		
2061 11	205F	20		
2062 20 2063 3E	2060	C3	JUMP 2011	JMP 2011
2063 3E	2061	11		
2064 05 2065 21 HL <- 2005 LXI H, 2005 2066 05 2067 20 2068 C3 JUMP 2011 JMP 2011 2069 11 2064 20 2068 3E A<- 06 MVI A, 06 206C 06 206D 21 HL <- 2006 LXI H, 2006 206E 06 2070 20 2071 C3 JUMP 2011 JMP 2011 2072 11 2073 20 2074 3E A<- 07 MVI A, 07 2075 07 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 2074 11 2075 17 2076 21 JUMP 2011 JMP 2011 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 2078 20 2070 3E	2062	20		
2065 21 HL <- 2005 LXI H, 2005 2066 05 2067 20 2068 C3 JUMP 2011 JMP 2011 2069 11 206A 20 206B 3E A<- 06 MVI A, 06 206C 06 206D 21 HL <- 2006 LXI H, 2006 206E 06 2070 20 2071 C3 JUMP 2011 JMP 2011 2072 11 2073 20 2074 3E A<- 07 MVI A, 07 2075 07 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 2078 1 2079 C3 JUMP 2011 JMP 2011 2078 20 2070 3E 2070	2063	3E	A<- 05	MVI A, 05
2066 05 2067 20 2068 C3 JUMP 2011 JMP 2011 2069 11 2068 3E A<- 06 MVI A, 06 206C 06 206D 21 HL <- 2006 LXI H, 2006 2070 20 2071 C3 JUMP 2011 JMP 2011 2073 20 2074 3E A<- 07 MVI A, 07 2075 07 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 2074 11 2075 C3 JUMP 2011 JMP 2011 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 2078 20 2070 3E A<- 08	2064	05		
2067 20 2068 C3 JUMP 2011 JMP 2011 2069 11 206A 20 206B 3E A<- 06 MVI A, 06 206C 06 206D 21 HL <- 2006 LXI H, 2006 206E 06 2070 20 2071 C3 JUMP 2011 JMP 2011 2073 20 2074 3E A<- 07 MVI A, 07 2075 07 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 2079 C3 JUMP 2011 2079 C3 JUMP 2011 2079 C3 JUMP 2011 2079 C3 JUMP 2011 2078 20 2070 C3 JUMP 2011	2065	21	HL <- 2005	LXI H, 2005
2068 C3 JUMP 2011 JMP 2011 2069 11 206A 20 206B 3E A<- 06 MVI A, 06 206C 06 206D 21 HL <- 2006 LXI H, 2006 206E 06 2070 20 2071 C3 JUMP 2011 JMP 2011 2072 11 2073 20 2074 3E A<- 07 MVI A, 07 2075 07 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 2079 C3 JUMP 2011 2079 C3 JUMP 2011 2078 20 2070 C3 JUMP 2011	2066	05		
2069 11 206A 20 206B 3E A<- 06 MVI A, 06 206C 06 206D 21 HL <- 2006 LXI H, 2006 206E 06 2070 20 2071 C3 JUMP 2011 JMP 2011 2073 20 2074 3E A<- 07 MVI A, 07 2075 07 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 2078 20 2079 C3 JUMP 2011 JMP 2011 2078 20 2079 C3 JUMP 2011 JMP 2011 2078 20 2070 3E 2070 3E 2070 3E 2070 3E 2070 3E 2070 MVI A, 08	2067	20		
206A 20 206B 3E A<- 06 MVI A, 06 206C 06 206D 21 HL <- 2006 LXI H, 2006 207D 20 207D 20 2071 C3 JUMP 2011 JMP 2011 2072 11 2073 20 2074 3E A<- 07 MVI A, 07 2075 07 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 2078 1 2078 20 2079 C3 JUMP 2011 JMP 2011 2078 20 2070 3E 2070 3E 2070 3E 2070 3E 2070 3E 2070 MVI A, 08	2068	C3	JUMP 2011	JMP 2011
206B 3E A<- 06 MVI A, 06  206C 06  206D 21 HL <- 2006 LXI H, 2006  206E 06  2070 20  2071 C3 JUMP 2011 JMP 2011  2072 11  2073 20  2074 3E A<- 07 MVI A, 07  2075 07  2076 21 HL <- 2007 LXI H, 2007  2077 07  2078 20  2079 C3 JUMP 2011 JMP 2011  2078 11  2078 20  2070 3E  2070 3E  A<- 08 MVI A, 08	2069	11		
206C 06  206D 21	206A	20		
206D 21 HL <- 2006 LXI H, 2006 206E 06 2070 20 2071 C3 JUMP 2011 JMP 2011 2072 11 2073 20 2074 3E A<- 07 MVI A, 07 2075 07 2076 21 HL <- 2007 LXI H, 2007 2078 20 2079 C3 JUMP 2011 JMP 2011 207A 11 207B 20 207C 3E 207D 3E A<- 08 MVI A, 08	206B	3E	A<- 06	MVI A, 06
206E 06	206C	06		
2070 20 2071 C3 JUMP 2011 JMP 2011 2072 11 2073 20 2074 3E A<- 07 MVI A, 07 2075 07 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 2078 11 2078 20 2070 3E A<- 08 MVI A, 08	206D	21	HL <- 2006	LXI H, 2006
2071 C3 JUMP 2011 JMP 2011 2072 11 2073 20 2074 3E A<- 07 MVI A, 07 2075 07 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 207A 11 207B 20 207C 3E 207D 3E A<- 08 MVI A, 08	206E	06		
2072 11	2070	20		
2073 20	2071	C3	JUMP 2011	JMP 2011
2074 3E A<- 07 MVI A, 07 2075 07 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 207A 11 207B 20 207C 3E 207D 3E A<- 08 MVI A, 08	2072	11		
2075 07 2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 207A 11 207B 20 207C 3E 207D 3E A<- 08 MVI A, 08	2073	20		
2076 21 HL <- 2007 LXI H, 2007 2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 207A 11 207B 20 207C 3E 207D 3E A<- 08 MVI A, 08	2074	3E	A<- 07	MVI A, 07
2077 07 2078 20 2079 C3 JUMP 2011 JMP 2011 207A 11 207B 20 207C 3E 207D 3E A<- 08 MVI A, 08	2075	07		
2078       20         2079       C3       JUMP 2011         207A       11         207B       20         207C       3E         207D       3E         A<- 08	2076	21	HL <- 2007	LXI H, 2007
2079       C3       JUMP 2011       JMP 2011         207A       11          207B       20          207C       3E          207D       3E       A<- 08	2077	07		
207A       11         207B       20         207C       3E         207D       3E         A<- 08	2078	20		
207B       20         207C       3E         207D       3E         A<- 08	2079	С3	JUMP 2011	JMP 2011
207C 3E	207A	11		
207D 3E A<- 08 MVI A, 08	207B	20		
	207C	3E		
207E 08	207D	3E	A<- 08	MVI A, 08
	207E	08		

207F	21	HL <- 2008	LXI H, 2008
2080	08		
2081	20		
2082	C3	JUMP 2011	JMP 2011
2083	11		
2084	20		
2085			

#### LAB 8 PART F

20C0	02	02
20C1	02	02
20C2	04	04
20C3	06	06
20C4	0A	10
20C5	10	16
20C6	1A	26
20C7	2A	42
20C8	44	68
20C9	6E	110

2000	31	LXI SP, 20F2	SP ← 20F2
2001	F2		
2002	20		
2003	21		
2004	C0	LXI H, 20C0	H ← 20C0
2005	20		
2006	3E	MVI A, 00	A ← 00
2007	0A	WIVIA, 00	
2008	E5	PUSH H	PUSH H
2009	F5	PUSH PSW	PUSH PSW
200A	CD	CD 036E	Display A
200B	6E		
200C	03		
200D	E1	POP H	POP H
200E	E5	PUSH H	PUSH H
200F	7E	MOV A, M	$A \leftarrow M$
2010	F5	PUSH PSW	PUSH PSW
2011	11		
2012	97	LXI D, F699	DE ← F699
2013	F6		
2014	1B	DCX D	DE ← DE − 1
2015	7A	MOV A, D	$A \leftarrow D$
2016	В3	ORA E	$A \leftarrow A \cup E$
2017	C2		11 IN 4 D ± a
2018	14	JNZ 2014	JUMP to 2014 if Z = 0
2019	20		ZU14 II Z – U
201A	F1	POP PSW	POP PSW

201B	3D	DCR A	A ← A − 1
201C	C2	JNZ 2010	II IN 4D ±0
201D	10		JUMP to 2010 if Z = 0
201E	20		
201F	F1	POP PSW	POP PSW
2020	3C	INR A	A ← A + 1
2021	E1	POP H	POP H
2022	23	INX H	$HL \leftarrow HL + 1$
2023	7D	MOV A, L	$A \leftarrow L$
2024	FE	CPI CA	COMPARE A
2025	0C	CPICA	is CA
2026	C2		JUMP to 2008 if Z = 0
2027	10	JNZ 2008	
2028	20		
2029	CF	RST1	STOP

# **Conclusion**

We were able to complete the lab, but we were unable to run it due to the lack of time. However, our logic seems sound. Therefore, I will say that we were successful in completing this lab.