

Course No. \_\_\_\_\_

Name \_\_\_\_\_

Section No. \_\_\_\_\_

## REPORT FOLDER

# New York City College of Technology

OF THE CITY UNIVERSITY OF NEW YORK

Department of \_\_\_\_\_

Experiment No. \_\_\_\_\_

Title \_\_\_\_\_

### FACULTY ONLY

Returned for corrections \_\_\_\_\_

Corrections due \_\_\_\_\_

Corrections handed in \_\_\_\_\_

Comments \_\_\_\_\_

Grade \_\_\_\_\_ Approved by \_\_\_\_\_

### STUDENTS ONLY

Date experiment completed \_\_\_\_\_

Date due \_\_\_\_\_

Date handed in \_\_\_\_\_

Squad No. \_\_\_\_\_

List  
Members

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## LABORATORY Format / Processor theory (INTEL 8085)

1. Folder (name, title, course, section, dates)
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 INSTRUCTIONS.

### LATE penalties:

1 week = -5pts

2 weeks = -10pts

3 weeks = -20pts

4 or more weeks = Not Accepted

### COURSE TEXT

MOHAMED RAFIQUZZAMAN,

"microcomputer Theory and Applications  
with the (INTEL 8085) SDK-85", WILEY

mk.

# 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
  - **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
  - **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:
  - **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<br>1<br>2 | 31<br>C2<br>20 | SP ← 20C2       | LXI SP, 20C2 |
| 3<br>4         | 3E<br>00       | A ← 00          | MV1 A, 00    |
| 5              | F5             | PUSH PSW        | PUSH PSW     |
| 6<br>7<br>8    | CD<br>6E<br>03 | DISPLAY A       | CD 036E      |
| 9<br>A<br>B    | 11<br>99<br>F6 | DE ← F699       | LXI D, F699  |
| C              | 1B             | DE ← DE - 1     | DCX D        |
| D              | 7A             | A ← D           | MOV A,D      |
| E              | B3             | [A] ← [A] V [E] | ORA E        |
| F<br>10<br>11  | CA<br>13<br>20 | JUMP 2013 A=00  | JZ 2013      |
| 12             | F1             | POP PSW         | POP PSW      |
| 13             | 3C             | [A] ← [A] +1    | INR A        |
| 14<br>15       | FE<br>0A       | COMPARE A IS 09 | CPI 09       |
| 16<br>17<br>18 | C2<br>05<br>20 | JUMP 2005 A≠ 00 | JNZ 2005     |
| 19             | CF             | STOP            | RST 1        |

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

|                |                |                   |              |
|----------------|----------------|-------------------|--------------|
| 2000<br>1<br>2 | 31<br>C2<br>20 | SP ← 20C2         | LXI SP, 20C2 |
| 3<br>4         | 3E<br>00       | A ← 00            | MV1 A, 00    |
| 5              | F5             | PUSH PSW          | PUSH PSW     |
| 6<br>7<br>8    | CD<br>6E<br>03 | DISPLAY A         | CD 036E      |
| 9<br>1A        | 3E<br>02       | A ← 02            | MV1 A, 02    |
| 1B             | F5             | PUSH PSW          | PUSH PSW     |
| 1C<br>1D<br>1E | 11<br>99<br>F6 | DE ← F699         | LXI D, F699  |
| 1F             | 1B             | DE ← DE - 1       | DCX D        |
| 10             | 7A             | A ← D             | MOV A,D      |
| 11             | B3             | [A] ← [A] V [E]   | ORA E        |
| 12<br>13<br>14 | CA<br>16<br>20 | JUMP 2016 A=00    | JZ 2016      |
| 15             | F1             | POP PSW           | POP PSW      |
| 16             | 3D             | [A] ← [A]-1       | DCR A        |
| 17<br>18<br>19 | CA<br>1B<br>20 | JUMP 201B IF A=00 | JZ 201B      |
| 1A             | F1             | POP PSW           | POP PSW      |
| 1B             | 3C             | [A] ← [A] +1      | INR A        |
| 1E<br>1D       | FE<br>0A       | COMPARE A IS 09   | CPI 09       |
| 1E<br>1F<br>20 | C2<br>05<br>20 | JUMP 2005 A≠ 00   | JNZ 2005     |
| 21             | CF             | STOP              | RST 1        |

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

|                |                |                   |              |
|----------------|----------------|-------------------|--------------|
| 2000<br>1<br>2 | 31<br>C2<br>20 | SP ← 20C2         | LXI SP, 20C2 |
| 3<br>4         | 3E<br>00       | A ← 00            | MV1 A, 00    |
| 5              | F5             | PUSH PSW          | PUSH PSW     |
| 6<br>7<br>8    | CD<br>6E<br>03 | DISPLAY A         | CD 036E      |
| 9<br>1A        | 3E<br>02       | A ← 0A            | MV1 A, 0A    |
| 1B             | F5             | PUSH PSW          | PUSH PSW     |
| 1C<br>1D<br>1E | 11<br>99<br>F6 | DE ← F699         | LXI D, F699  |
| 1F             | 1B             | DE ← DE – 1       | DCX D        |
| 10             | 7A             | A ← D             | MOV A,D      |
| 11             | B3             | [A] ← [A] V [E]   | ORA E        |
| 12<br>13<br>14 | CA<br>16<br>20 | JUMP 2016 A=00    | JZ 2016      |
| 15             | F1             | POP PSW           | POP PSW      |
| 16             | 3D             | [A] ← [A]-1       | DCR A        |
| 17<br>18<br>19 | CA<br>1B<br>20 | JUMP 201B IF A=00 | JZ 201B      |
| 1A             | F1             | POP PSW           | POP PSW      |
| 1B             | 3C             | [A] ← [A] +1      | INR A        |
| 1E<br>1D       | FE<br>0A       | COMPARE A IS 09   | CPI 09       |
| 1E<br>1F<br>20 | C2<br>05<br>20 | JUMP 2005 A≠ 00   | JNZ 2005     |
| 21             | CF             | STOP              | RST 1        |

## LAB 8 PART B - 1 sec

|                |                |                   |              |
|----------------|----------------|-------------------|--------------|
| 2000<br>1<br>2 | 31<br>C2<br>20 | SP ← 20C2         | LXI SP, 20C2 |
| 3<br>4         | 3E<br>09       | A ← 09            | MV1 A, 09    |
| 5              | F5             | PUSH PSW          | PUSH PSW     |
| 6<br>7<br>8    | CD<br>6E<br>03 | DISPLAY A         | CD 036E      |
| 9<br>1A        | 3E<br>02       | A ← 02            | MV1 A, 02    |
| 1B             | F5             | PUSH PSW          | PUSH PSW     |
| 1C<br>1D<br>1E | 11<br>99<br>F6 | DE ← F699         | LXI D, F699  |
| 1F             | 1B             | DE ← DE - 1       | DCX D        |
| 10             | 7A             | A ← D             | MOV A,D      |
| 11             | B3             | [A] ← [A] V [E]   | ORA E        |
| 12<br>13<br>14 | CA<br>16<br>20 | JUMP 2016 A=00    | JZ 2016      |
| 15             | F1             | POP PSW           | POP PSW      |
| 16             | 3D             | [A] ← [A]-1       | DCR A        |
| 17<br>18<br>19 | CA<br>1B<br>20 | JUMP 201B IF A=00 | JZ 201B      |
| 1A             | F1             | POP PSW           | POP PSW      |
| 1B             | 3D             | [A] ← [A] -1      | DCR A        |
| 1E<br>1D       | FE<br>00       | COMPARE A IS 00   | CPI 00       |
| 1E<br>1F<br>20 | C2<br>05<br>20 | JUMP 2005 A≠ 00   | JNZ 2005     |
| 21             | CF             | STOP              | RST 1        |

## LAB 8 PART B - 10 sec

|                |                |                   |              |
|----------------|----------------|-------------------|--------------|
| 2000<br>1<br>2 | 31<br>C2<br>20 | SP ← 20C2         | LXI SP, 20C2 |
| 3<br>4         | 3E<br>09       | A ← 09            | MV1 A, 09    |
| 5              | F5             | PUSH PSW          | PUSH PSW     |
| 6<br>7<br>8    | CD<br>6E<br>03 | DISPLAY A         | CD 036E      |
| 9<br>1A        | 3E<br>02       | A ← 0A            | MV1 A, 0A    |
| 1B             | F5             | PUSH PSW          | PUSH PSW     |
| 1C<br>1D<br>1E | 11<br>99<br>F6 | DE ← F699         | LXI D, F699  |
| 1F             | 1B             | DE ← DE – 1       | DCX D        |
| 10             | 7A             | A ← D             | MOV A,D      |
| 11             | B3             | [A] ← [A] V [E]   | ORA E        |
| 12<br>13<br>14 | CA<br>16<br>20 | JUMP 2016 A=00    | JZ 2016      |
| 15             | F1             | POP PSW           | POP PSW      |
| 16             | 3D             | [A] ← [A]-1       | DCR A        |
| 17<br>18<br>19 | CA<br>1B<br>20 | JUMP 201B IF A=00 | JZ 201B      |
| 1A             | F1             | POP PSW           | POP PSW      |
| 1B             | 3D             | [A] ← [A] -1      | DCR A        |
| 1E<br>1D       | FE<br>00       | COMPARE A IS 00   | CPI 00       |
| 1E<br>1F<br>20 | C2<br>05<br>20 | JUMP 2005 A≠ 00   | JNZ 2005     |
| 21             | CF             | STOP              | RST 1        |



## LAB 8 PART C

|                |                |                            |              |
|----------------|----------------|----------------------------|--------------|
| 2000<br>1<br>2 | 31<br>C2<br>20 | SP $\leftarrow$ 20C2       | LXI SP, 20C2 |
| 3<br>4         | 3E<br>00       | A $\leftarrow$ 00          | MV1 A, 00    |
| 5              | F5             | PUSH PSW                   | PUSH PSW     |
| 6<br>7<br>8    | CD<br>6E<br>03 | DISPLAY A                  | CD 036E      |
| 9<br>A         | 3E<br>02       | A $\leftarrow$ 02          | MV1 A, 02    |
| B              | F5             | PUSH PSW                   | PUSH PSW     |
| C<br>D<br>E    | 11<br>99<br>F6 | DE $\leftarrow$ F699       | LXI D, F699  |
| F              | 1B             | DE $\leftarrow$ DE - 1     | DCX D        |
| 10             | 7A             | A $\leftarrow$ D           | MOV A,D      |
| 11             | B3             | [A] $\leftarrow$ [A] V [E] | ORA E        |
| 12<br>13<br>14 | CA<br>0F<br>20 | JUMP 2016 A=00             | JZ 2016      |
| 15             | F1             | POP PSW                    | POP PSW      |
| 16             | 3D             | [A] $\leftarrow$ [A]-1     | DCR A        |
| 17<br>18<br>19 | CA<br>1B<br>20 | JUMP 201B IF A=00          | JZ 201B      |
| 1A             | F1             | POP PSW                    | POP PSW      |
| 1B             | 3C             | [A] $\leftarrow$ [A] +1    | INR A        |
| 1C             | 27             | DAA                        | DAA          |
| 1D<br>1E       | FE<br>99       | COMPARE A IS 99            | CPI 99       |
| 1F<br>20<br>21 | CA<br>05<br>20 | JUMP 2005 $\neq$ 00        | JNZ 2005     |
| 22             | CF             | STOP                       | RST 1        |

## LAB 8 PART D

|                |                |                            |              |
|----------------|----------------|----------------------------|--------------|
| 2000<br>1<br>2 | 31<br>C2<br>20 | SP $\leftarrow$ 20C2       | LXI SP, 20C2 |
| 3<br>4         | 3E<br>00       | A $\leftarrow$ 00          | MVI A, 00    |
| 5<br>6<br>7    | 21<br>50<br>20 | HL $\leftarrow$ 2050       | LXI H, 2050  |
| 8              |                | HL $\leftarrow$ 01         |              |
| 9              | F5             | PUSH PSW                   | PUSH PSW     |
| A              | E5             | PUSH H                     | PUSH H       |
| B<br>C<br>D    | CD<br>6E<br>03 | DISPLAY A                  | CD 036E      |
| E              | F1             | POP A                      | POP PSW      |
| F              | 7E             | A $\leftarrow$ [HL]        | MOV A,M      |
| 10             | F5             | PUSH PSW                   | PUSH PSW     |
| 11<br>12<br>13 | 11<br>99<br>F6 | DE $\leftarrow$ F699       | LXI D, F699  |
| 14             | 1B             | DE $\leftarrow$ DE - 1     | DCX D        |
| 15             | 7A             | A $\leftarrow$ D           | MOV A,D      |
| 16             | B3             | [A] $\leftarrow$ [A] V [E] | ORA E        |
| 17<br>18<br>19 | CA<br>1B<br>20 | JUMP 201B IF A=00          | JZ 201B      |
| 1A             | F1             | POP PSW                    | POP PSW      |
| 1B             | 3D             | [A] $\leftarrow$ A-1       | DCR A        |
| 1C             | 7E             | A $\leftarrow$ [HL]        | MOV A,M      |
| 1D             | 87             | A $\leftarrow$ [A]+[A]     | ADD A        |
| 1E             | 77             | [HL] $\leftarrow$ [A]      | MOV M,A      |
| 1F             | F1             | POP PSW                    | POP PSW      |
| 20             | 3C             | [A] $\leftarrow$ [A]+1     | INR A        |
| 21             | FE             | COMPARE A is 09            | CPI 09       |
| 22             | CF             | STOP                       | RST 1        |

## LAB 8 PART E

|      |       |             |              |
|------|-------|-------------|--------------|
| 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 |                         |          |
| 2020 | 20 |                         |          |
| 2021 | F1 | POP PSW                 | POP PSW  |
| 2022 | 3D | A <- A -1               | DCR A    |
| 2023 | CA | IS Z=1                  | JZ 2017  |
| 2024 | 17 |                         |          |
| 2025 | 20 |                         |          |
| 2026 | E1 | POP H                   | POP H    |
| 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  |
| 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 |                         |          |
| 203D | CA | IS A=07 JUMP 2074 (YES) | JZ 2074  |

|      |    |                         |             |
|------|----|-------------------------|-------------|
| 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 |            |             |
| 205F | 20 |            |             |
| 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 |            |             |
| 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    |
| 207A | 11 |            |             |
| 207B | 20 |            |             |
| 207C | 3E |            |             |
| 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 $\leftarrow$ 20F2      |
| 2001 | F2 |              |                           |
| 2002 | 20 |              |                           |
| 2003 | 21 | LXI H, 20C0  | H $\leftarrow$ 20C0       |
| 2004 | C0 |              |                           |
| 2005 | 20 |              |                           |
| 2006 | 3E | MVI A, 00    | A $\leftarrow$ 00         |
| 2007 | 0A |              |                           |
| 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 | LXI D, F699  | DE $\leftarrow$ F699      |
| 2012 | 97 |              |                           |
| 2013 | F6 |              |                           |
| 2014 | 1B | DCX D        | DE $\leftarrow$ DE - 1    |
| 2015 | 7A | MOV A, D     | A $\leftarrow$ D          |
| 2016 | B3 | ORA E        | A $\leftarrow$ A $\cup$ E |
| 2017 | C2 | JNZ 2014     | JUMP to<br>2014 if Z = 0  |
| 2018 | 14 |              |                           |
| 2019 | 20 |              |                           |
| 201A | F1 | POP PSW      | POP PSW                   |



|      |    |          |                          |
|------|----|----------|--------------------------|
| 201B | 3D | DCR A    | $A \leftarrow A - 1$     |
| 201C | C2 | JNZ 2010 | JUMP to<br>2010 if Z = 0 |
| 201D | 10 |          |                          |
| 201E | 20 |          |                          |
| 201F | F1 | POP PSW  | POP PSW                  |
| 2020 | 3C | INR A    | $A \leftarrow A + 1$     |
| 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<br>is CA       |
| 2025 | 0C |          |                          |
| 2026 | C2 | JNZ 2008 | JUMP to<br>2008 if Z = 0 |
| 2027 | 10 |          |                          |
| 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.