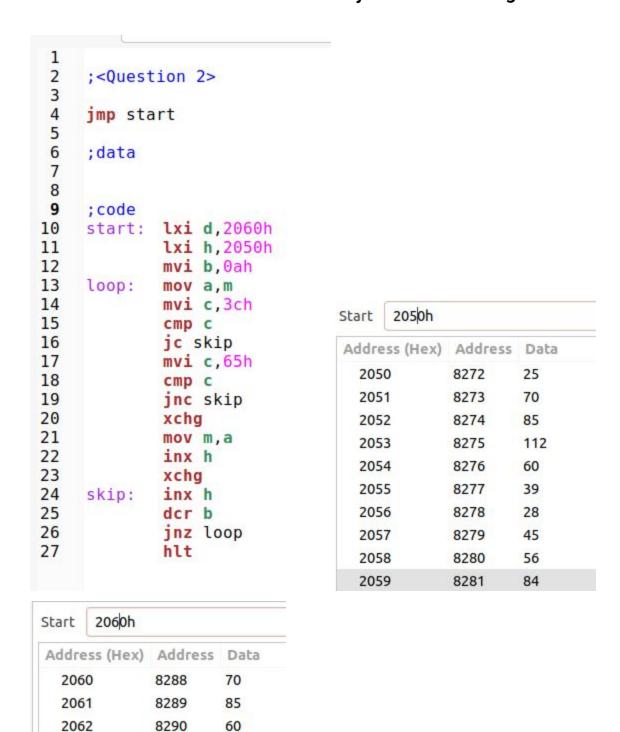# MIT Practicals
Assignment 5
Krunal Rank (U18CO081)

Question 1: A string of readings is stored in memory, locations starting at 2070H, and the end of the string is indicated by the byte 0DH.Write a program to check each byte in the string, and the save the bytes in the range of 30H to 39H (both inclusive) in memory locations starting from 2090H.
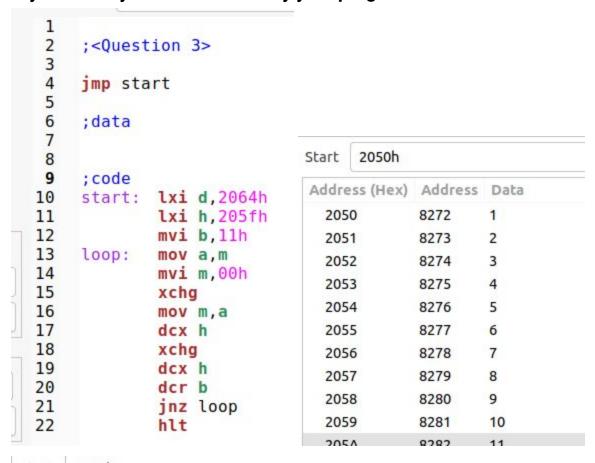
```
1
2    ;<Question 1>
3
4    jmp start
5
6    ;data
7
8
9    ;code
10   start:  lxi d,2090h
11           lxi h, 2070h
12           mvi b,30h
13           mvi c,40h
14   loop:   mov a,m
15           sbi 0dh
16           jz exit|
17           adi 0dh
18           cmp b
19           jc skip
20           cmp c
21           jnc skip
22           xchg
23           mov m,a
24           inx h
25           xchg
26   skip:   inx h
27           jmp loop
28   exit:   hlt
```

Start | 2070h

Address (Hex)	Address	Data
2070	8304	75
2071	8305	49
2072	8306	85
2073	8307	52
2074	8308	65
2075	8309	76
2076	8310	13
2077	8311	0

Start | 2090h

Address (Hex)	Address	Data
2090	8336	49
2091	8337	52
2092	8338	0

Question 2: A set of ten bytes is stored in memory starting with the address 2050H.Write a program to check each byte , and save the bytes that are higher than 60 10 and lower than 100 10 in memory locations starting from 2060H.

```
1
2    ;<Question 2>
3
4    jmp start
5
6    ;data
7
8
9    ;code
10   start:   lxi d,2060h
11            lxi h,2050h
12            mvi b,0ah
13   loop:    mov a,m
14            mvi c,3ch
15            cmp c
16            jc skip
17            mvi c,65h
18            cmp c
19            jnc skip
20            xchg
21            mov m,a
22            inx h
23            xchg
24   skip:    inx h
25            dcr b
26            jnz loop
27            hlt
```

Start | 2050h

Address (Hex)	Address	Data
2050	8272	25
2051	8273	70
2052	8274	85
2053	8275	112
2054	8276	60
2055	8277	39
2056	8278	28
2057	8279	45
2058	8280	56
2059	8281	84

Start | 2060h

Address (Hex)	Address	Data
2060	8288	70
2061	8289	85
2062	8290	60
2063	8291	84

Question 3: Data bytes are stored in memory locations from 2050H to 205FH.To insert an additional five bytes of data, It is necessary to shift the data string by five memory locations. Write a program to store the data string from 2055H to 2064H.Use any sixteen bytes of data to verify your program.

```
1
2    ;<Question 3>
3
4    jmp start
5
6    ;data
7
8
9    ;code
10   start:  lxi d,2064h
11           lxi h,205fh
12           mvi b,11h
13   loop:   mov a,m
14           mvi m,00h
15           xchg
16           mov m,a
17           dcx h
18           xchg
19           dcx h
20           dcr b
21           jnz loop
22           hlt
```

Start   2050h

Address (Hex)	Address	Data
2050	8272	1
2051	8273	2
2052	8274	3
2053	8275	4
2054	8276	5
2055	8277	6
2056	8278	7
2057	8279	8
2058	8280	9
2059	8281	10
205A	8282	11

Start   2050h

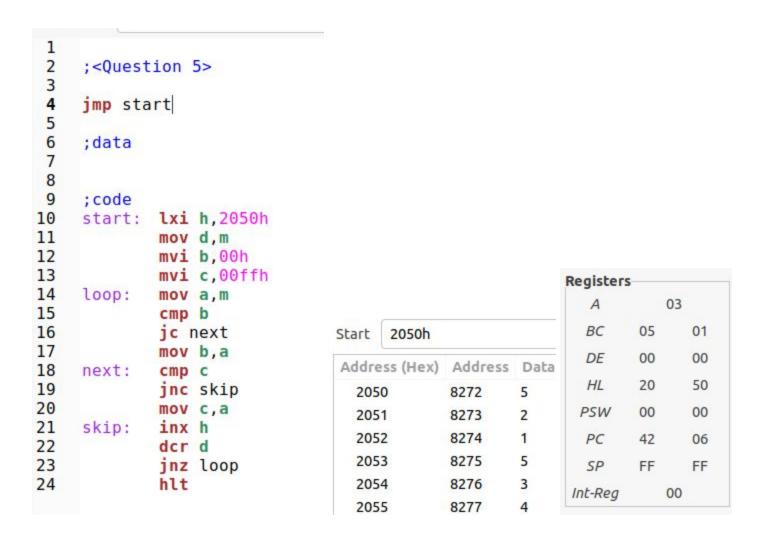| Address (Hex)	Address	Data
2055	8277	1
2056	8278	2
2057	8279	3
2058	8280	4
2059	8281	5
205A	8282	6
205B	8283	7
205C	8284	8
205D	8285	9
205E	8286	10
205F	8287	11

Question 4: Write a Program to Sort the array in ascending order/descending order.

```
1
2    ;<Question 4>
3
4    jmp start
5
6    ;data
7
8    |
9    ;code
10   start:  lxi h,2050h
11           mov c,m
12           mov d,m
13   loop1:  lxi h,2051h
14           mov b,d
15           dcr b
16   loop2:  mov a,m
17           inx h
18           cmp m
19           jc skip
20           mov e,m
21           mov m,a
22           dcx h
23           mov m,e
24           inx h
25   skip:   dcr b
26           jnz loop2
27           dcr c
28           jnz loop1
29           hlt
```

Start   2050h

Address (Hex)	Address	Data
2050	8272	5
2051	8273	4
2052	8274	2
2053	8275	1
2054	8276	5
2055	8277	3

Start   2050h

Address (Hex)	Address	Data
2050	8272	5
2051	8273	1
2052	8274	2
2053	8275	3
2054	8276	4
2055	8277	5

```
1
2    ;<Question 4>
3
4    jmp start
5
6    ;data
7
8
9    ;code
10   start:  lxi h,2050h
11           mov c,m
12           mov d,m
13   loop1:  lxi h,2051h
14           mov b,d
15           dcr b
16   loop2:  mov a,m
17           inx h
18           cmp m
19           jnc skip
20           mov e,m
21           mov m,a
22           dcx h
23           mov m,e
24           inx h
25   skip:   dcr b
26           jnz loop2
27           dcr c
28           jnz loop1
29           hlt
```

Start | 2050h

Address (Hex)	Address	Data
2050	8272	5
2051	8273	5
2052	8274	4
2053	8275	3
2054	8276	2
2055	8277	1

Question 5: Write a Program to find Largest number / Smallest number in a given data array.

```
1
2    ;<Question 5>
3
4    jmp start
5
6    ;data
7
8
9    ;code
10   start:   lxi h,2050h
11            mov d,m
12            mvi b,00h
13            mvi c,00ffh
14   loop:    mov a,m
15            cmp b
16            jc next
17            mov b,a
18   next:    cmp c
19            jnc skip
20            mov c,a
21   skip:    inx h
22            dcr d
23            jnz loop
24            hlt
```

Start   2050h

Address (Hex)	Address	Data
2050	8272	5
2051	8273	2
2052	8274	1
2053	8275	5
2054	8276	3
2055	8277	4

Registers

A	03	
BC	05	01
DE	00	00
HL	20	50
PSW	00	00
PC	42	06
SP	FF	FF
Int-Reg	00	

Question 6: Write a Program to move a block starting at location 2000H To location 3000H with overlap/without overlap.

```
1
2   ;<Question 6>
3
4   jmp start
5
6   ;data
7
8
9   ;code
10  start:  lxi d,3000h
11          lxi h,2000h
12  loop:   mov a,m
13          xchg
14          mov m,a
15          xchg
16          inx d
17          inx h
18          mvi a,30h
19          cmp h
20          jnz loop
21          mvi a,00h
22          cmp l
23          jnz loop
24          hlt
```

Start 2050h

Address (Hex)	Address	Data
2050	8272	5
2051	8273	2
2052	8274	1
2053	8275	5
2054	8276	3
2055	8277	4
2056	8278	0

Start 3050h

Address (Hex)	Address	Data
3050	12368	5
3051	12369	2
3052	12370	1
3053	12371	5
3054	12372	3
3055	12373	4