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EXPERIMENT NO 11

Title of experiment : WAP for arranging numbers in ascending and descending order.

Equipment required : GNU Simulator.

Theory:

For ascending order:

- 1) Initialize HL pair as memory pointer.
- 2) Get the count at 4200 in to C register.
- 3)Copy it in D register.
- 4)Get the first vale in Accumulator.
- 5)Compare it with the value at next location.
- 6) If they are out of order, exchange the contents of accumulator and memory.
- 7)Decrement D register's content by 1.
- 8) Repeat steps 5 and 7 till the value in D register become zero.
- 9)Decrement C register's content by 1.
- 10)Repeat steps 3 to 9 till the value in C register becomes zero.
- 11)Terminate the program.

For descending:

- 1)Initialize HL pair as memory pointer.
- 2)Get the count at 4200 in to C register.
- 3)Copy it in D register.
- 4)Get the first vale in Accumulator.
- 5)Compare it with the value at next location.
- 6)If they are out of order, exchange the contents of accumulator and memory.
- 7) Decrement D register's content by 1.
- 8) Repeat steps 5 and 7 till the value in D register become zero.
- 9) Decrement C register's content by 1.
- 10) Repeat steps 3 to 9 till the value in C register becomes zero.
- 11)Terminate the program.

Program code:

;Arrange in ascending order

LDA 1100

MOV B,A

DCR B

LOOP3: LXI H,1100

MOV C,M

DCR C

INX H

LOOP2: MOV A,M

INX H

CMP M

JC LOOP1

MOV D,M

MOV M,A

DCX H

MOV M,D

INX H

LOOP1: DCR C

JNZ LOOP2

DCR B

JNZ LOOP3

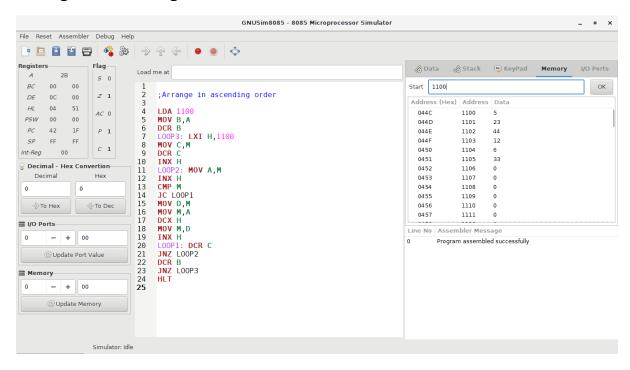
HLT

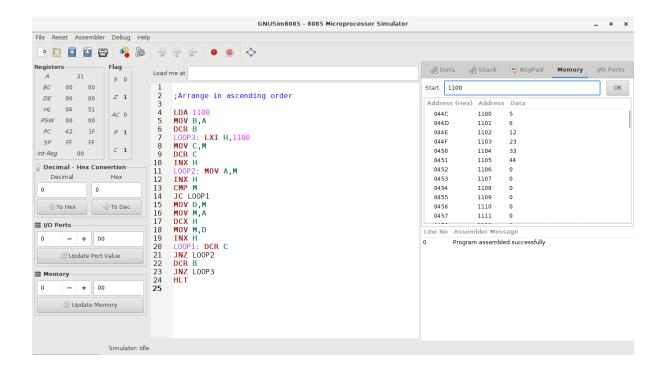
;Arrange in descending order

| LDA 1100 |
|-------------------|
| MOV B,A |
| DCR B |
| LOOP3: LXI H,1100 |
| MOV C,M |
| DCR C |
| INX H |
| LOOP2: MOV A,M |
| INX H |
| СМР М |
| JNC LOOP1 |
| MOV D,M |
| MOV M,A |
| DCX H |
| MOV M,D |
| INX H |
| LOOP1: DCR C |
| JNZ LOOP2 |
| DCR B |
| JNZ LOOP3 |
| HLT |
| |
| |

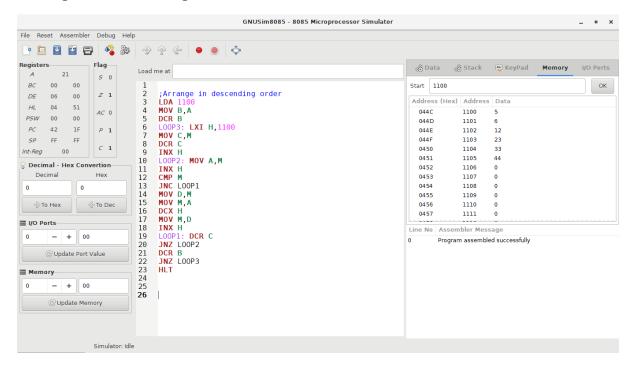
Snap shots:

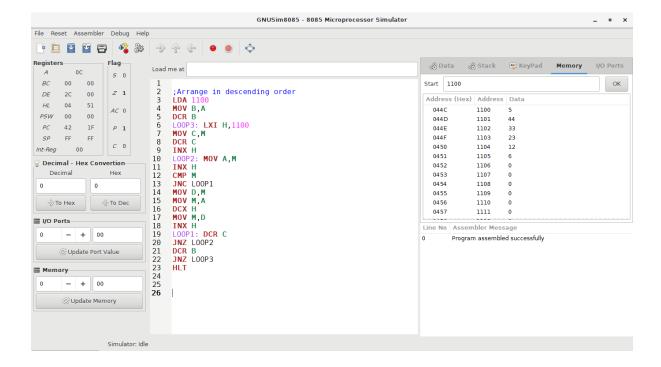
Arrange in ascending order:





Arrange in descending order:





Conclusion: These are ways to perform ascending and descending order