**Worksheet 1.3**

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**Branch:** BE-CSE (LEET) **Section/Group:** ON20BCS-809/A

**Semester:** 4th Sem **Date of Performance:** 20/02/2022

**Subject Name:** MPI Lab **Subject Code:** 22E-20CSP-253

**1. Aim/Overview of the practical:**

1. Subtraction of two 8bit numbers along with considering borrow.
2. Subtraction of two 16bit numbers along with considering borrow.

**2. Task to be done:**

Write the 8085 Micro Processor program to calculate the subtraction of two 8bit as well as 16bit numbers.

**3. Apparatus/Simulator used (For applied/experimental sciences/materials-based labs):**

1. 8085 Jubin simulator version 2 (Microprocessor Simulator)
2. Java (jdk/ jre1.8.0\_321)

**4. Algorithm/Flowchart (For programming-based labs):**

**a) Subtraction of two 8bit number:**

1. Load the first number from memory location 3000 to Memory.
2. Move the content of memory to accumulator,
3. Increase the memory location of HL pair.
4. Load the second number from memory location 3001 to Memory.
5. Move the content of memory to B,
6. Then subtract the B from the Accumulator and store in Accumulator.
7. Move the content of Accumulator to memory M,
8. Exit the program.

**b) Subtraction of two 16bit number**

1. Load the 1st pair number from memory location 3000,3001 to HL pair.
2. Exchange it with the DE pairs.
3. Load the 2nd pair number from memory location 3002,3003 to HL pair.
4. Move the content from E to accumulator.
5. Subtract the L from accumulator.
6. Move the content from accumulator to L register.
7. Move the content from D to accumulator.
8. Subtract the H from accumulator with the borrow.
9. Move Accumulator to H register.
10. Move the content of HL pair Register to memory location 1004,1005,
11. Exit the program.

**5. Description/ Code:**

**a) Subtraction of two 8bit number:**

# ORG 2000H

LXI H,3000

MOV A,M

INX H

MOV B,M

SBB B

INX H

MOV M,A

HLT

# ORG 3000H

# DB 42, 34

1. **Subtraction of two 16bit number**

# ORG 2000H

LHLD 3000

XCHG

LHLD 3002

MOV A,E

SUB L

MOV L,A

MOV A,D

SBB H

MOV H,A

SHLD 1004

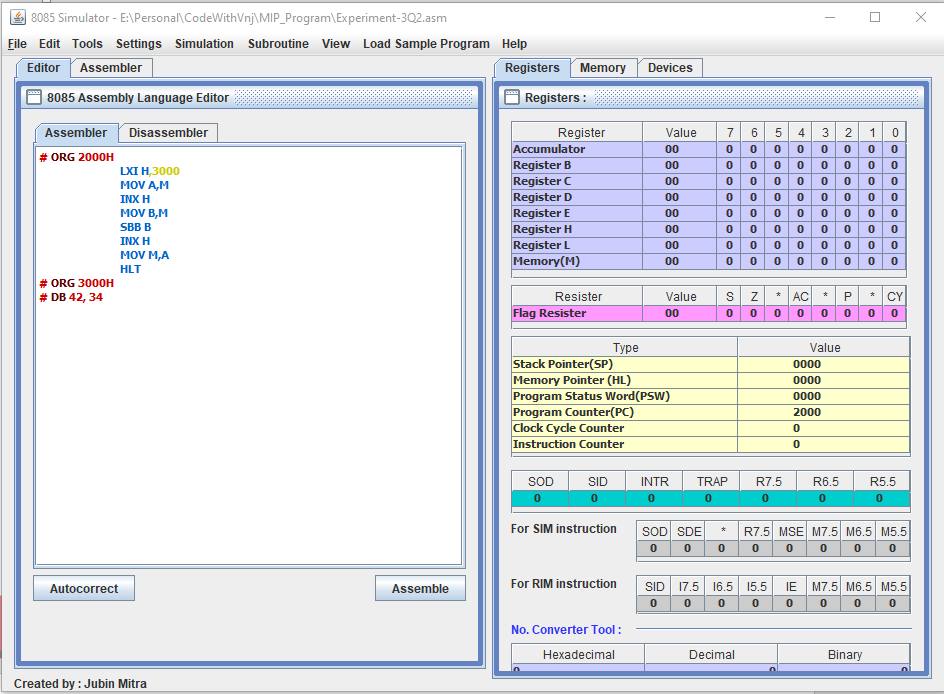
HLT

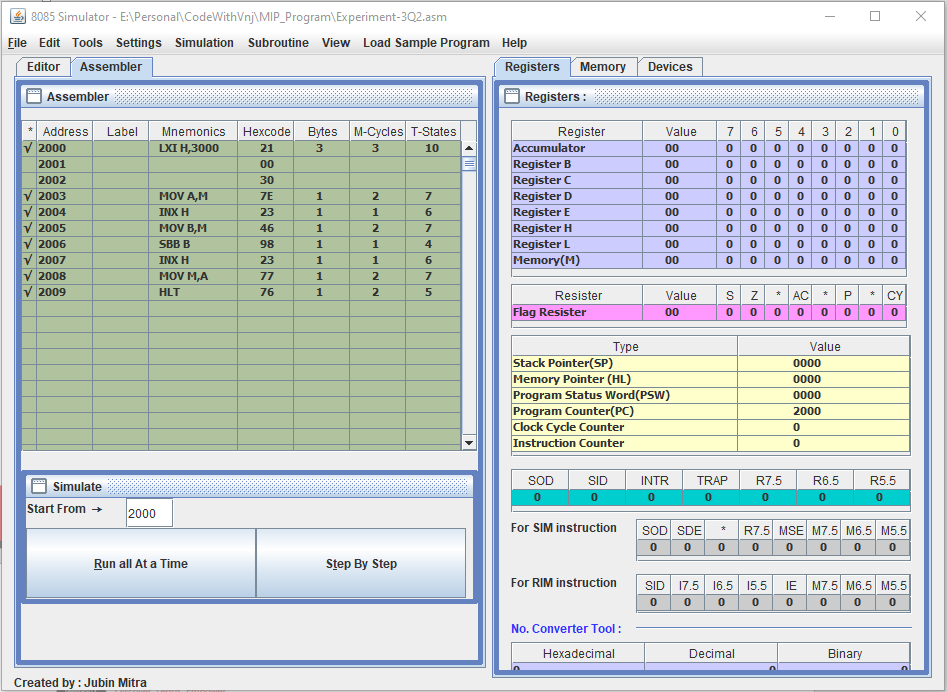
# ORG 3000H

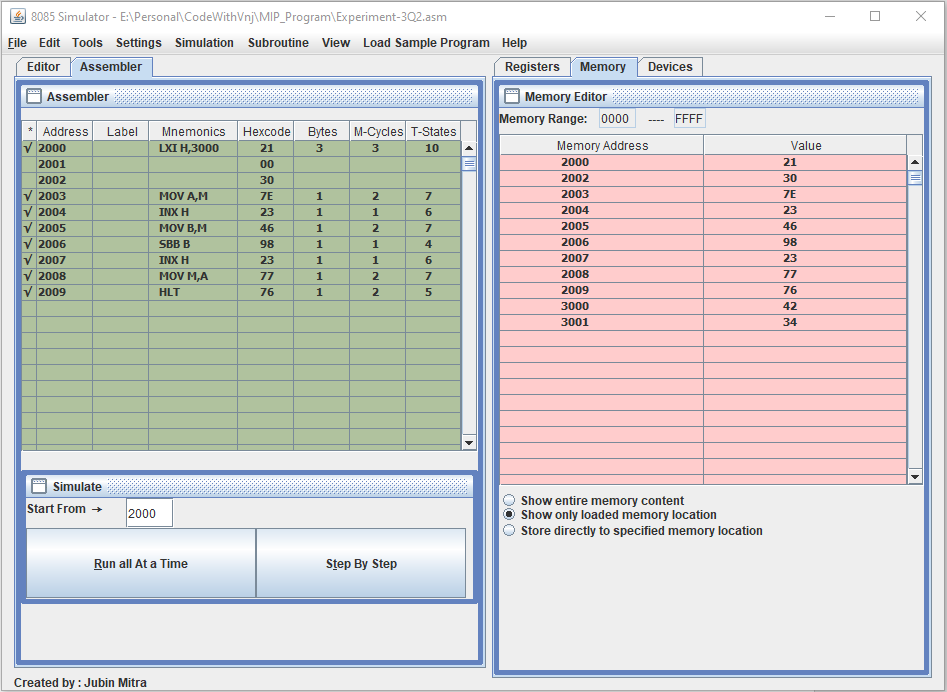
# DB 42, 35,34,21

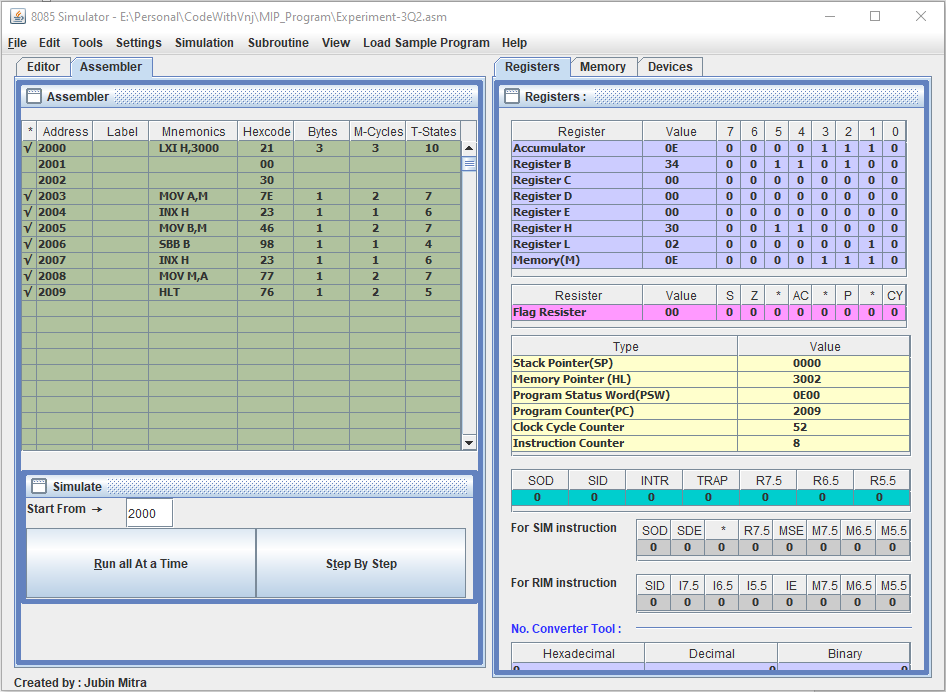
**6. Result/Output/Writing Summary:**

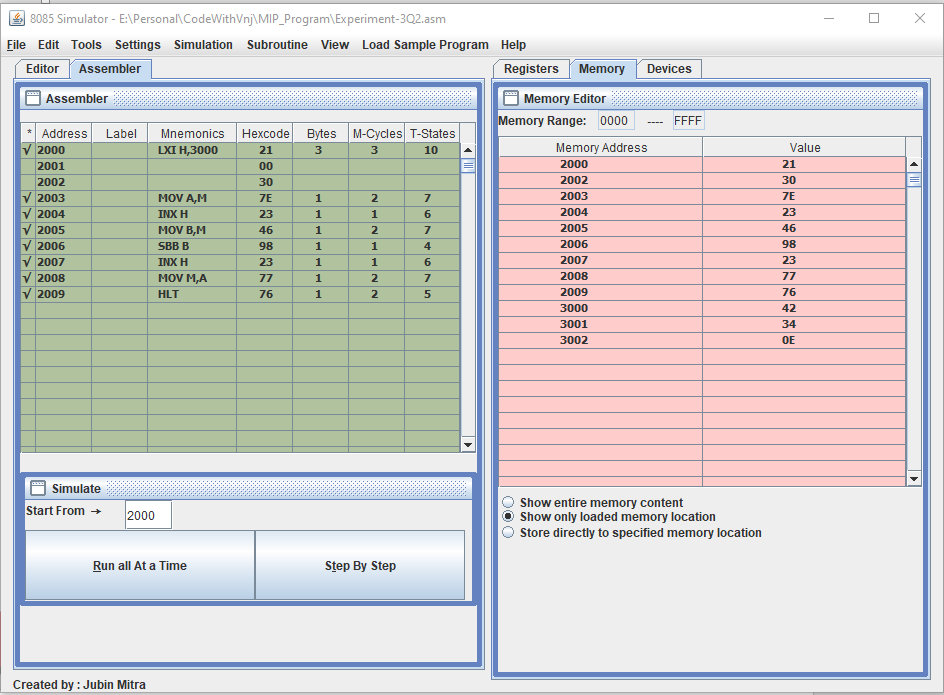
**a) Subtraction of two 8bit number:**

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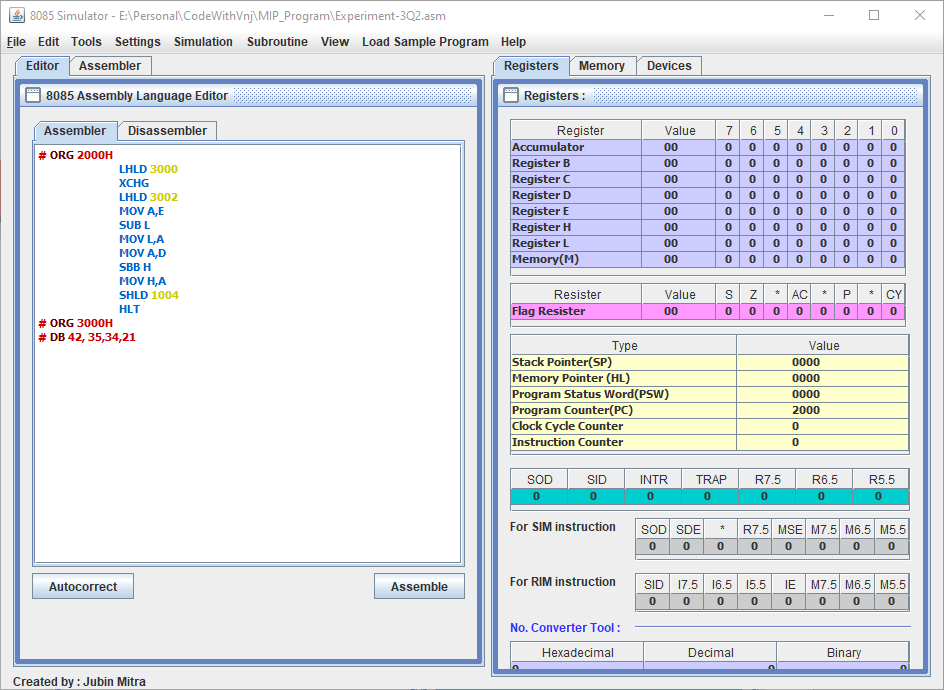
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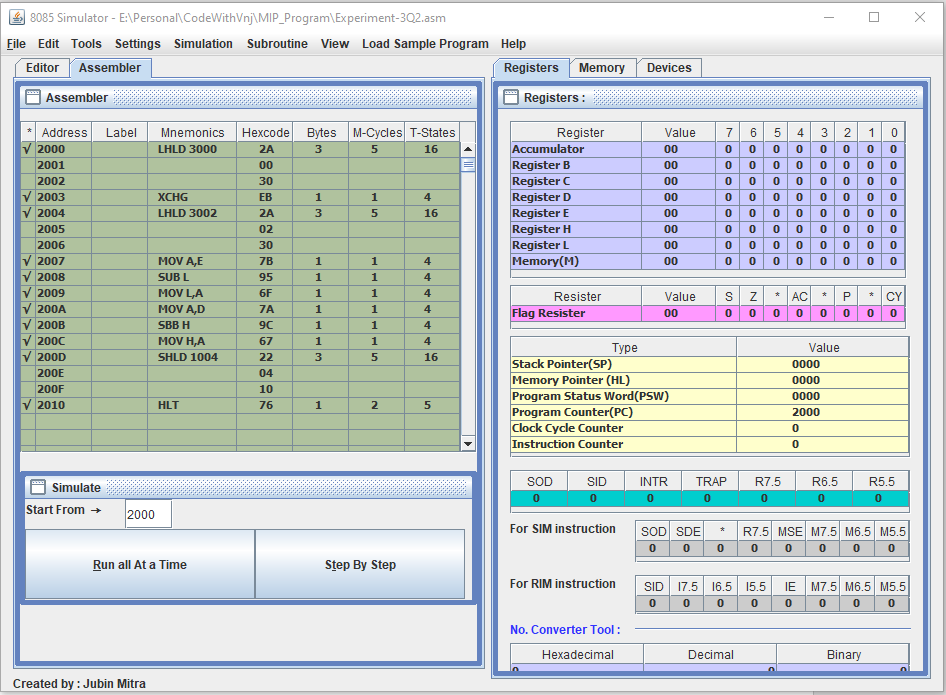
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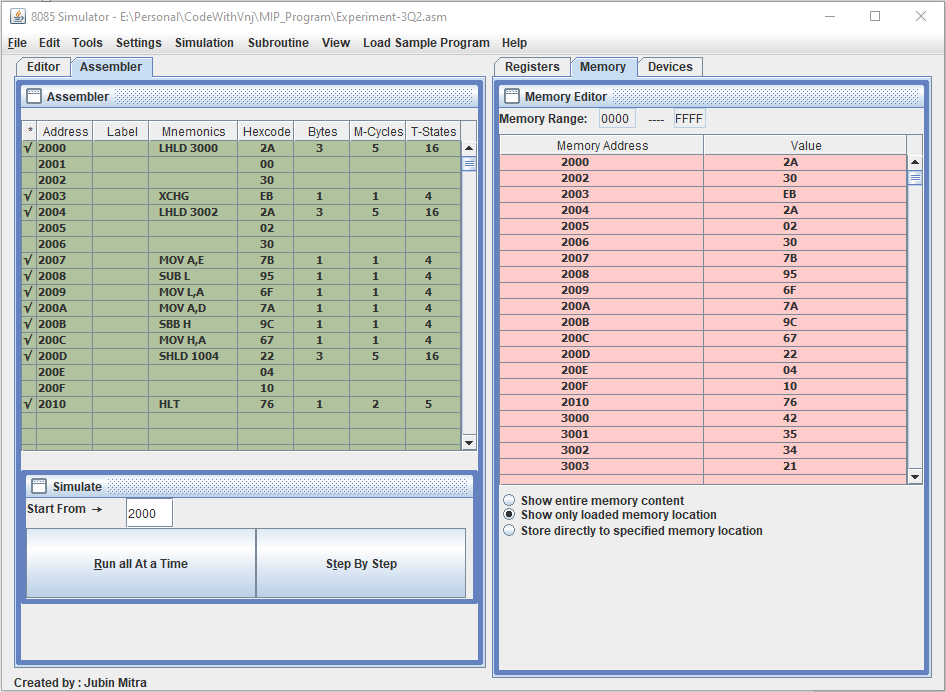
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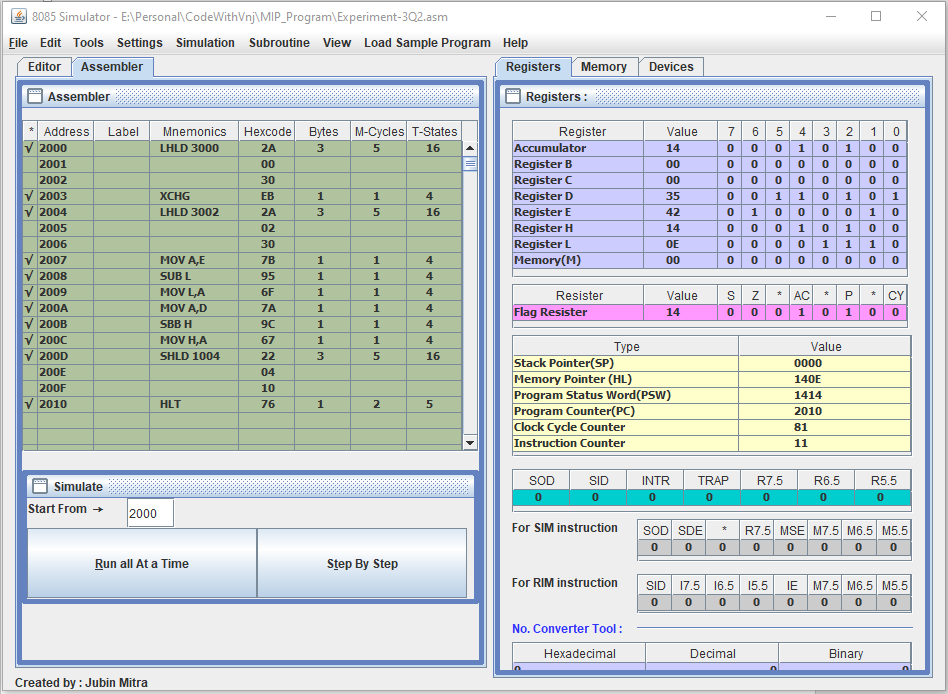
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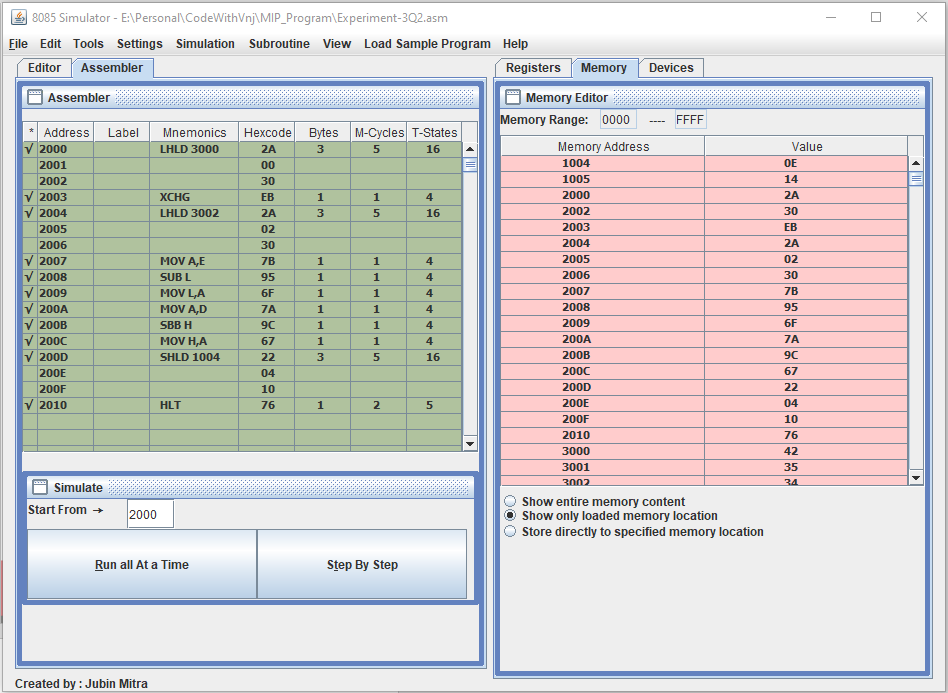
1. **Subtraction of two 16bit number:**

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**Learning outcomes (What I have learnt):**

**1.** Learnt how to do the 8085-microprocessor programming.

**2.** Learnt how to Subtract the two 8bit numbers with the carry.

**3.** Learnt how to Subtract the two 16bits numbers with the carry.

**Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):**

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| --- | --- | --- | --- |
| Sr. No. | Parameters | Marks Obtained | Maximum Marks |
| 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |
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