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Microprocessors and Interfacing

(CSE – 3002)

LAB EXPERIMENT– 1

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1. **Addition (16 bit) in emu8086:**

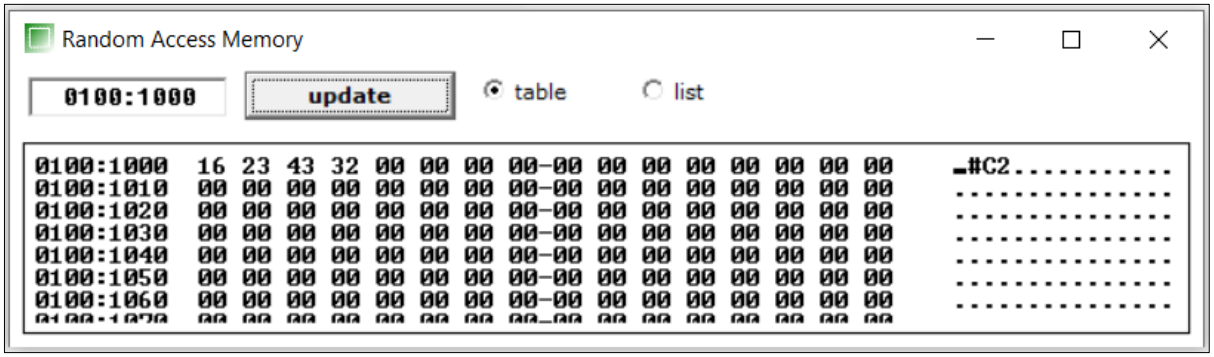
CODE:

```
(19BCE0215)
1.  MOV   AX, [1000h]
2.  MOV   BX, [1002h]
3.  MOV   CL, 00h
4.  SUB   AX, BX
5.  JNC   jump
6.  INC   CL
7.  NOT   AX
8.  ADD   AX, 0001h
9.  MOV   [1004h], AX
10. MOV   [1006h], CL
11. HLT
```

OUTPUT:

Initial Memory in RAM:

- [1000] = 16
- [1001] = 23
- [1002] = 43
- [1003] = 32



Expected Output:

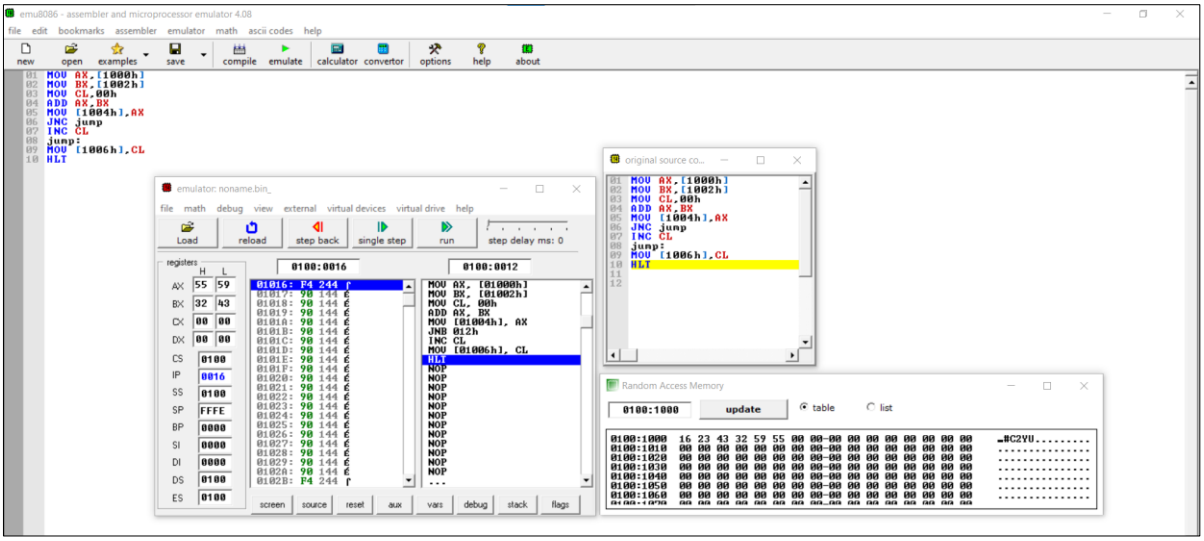
```
  2316
+3243
  5559
```

After Program Execution:

- AX = 5559
- BX = 3243

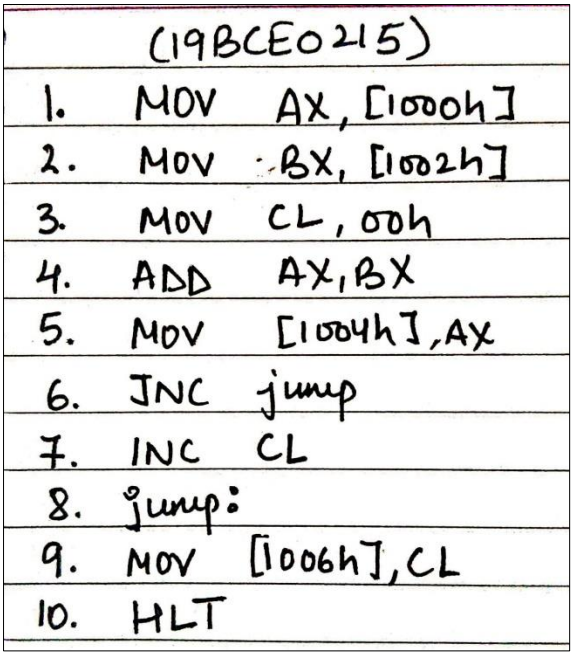
- CL = 00
- [1004] = 59
- [1005] = 55
- [1006] = 00 (no carry)

Result: 5559 (as expected)



2. Subtraction (16 bit) in emu8086:

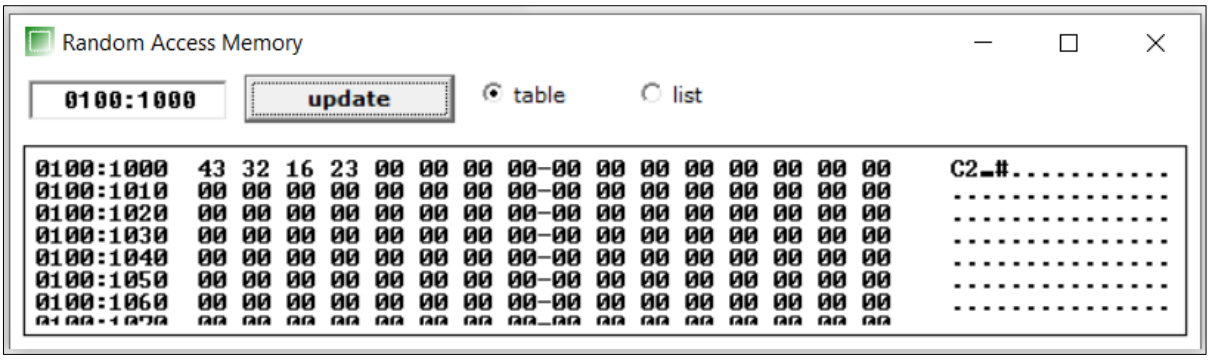
CODE:



OUTPUT:

Initial Memory in RAM:

- [1000] = 43
- [1001] = 32
- [1002] = 16
- [1003] = 23



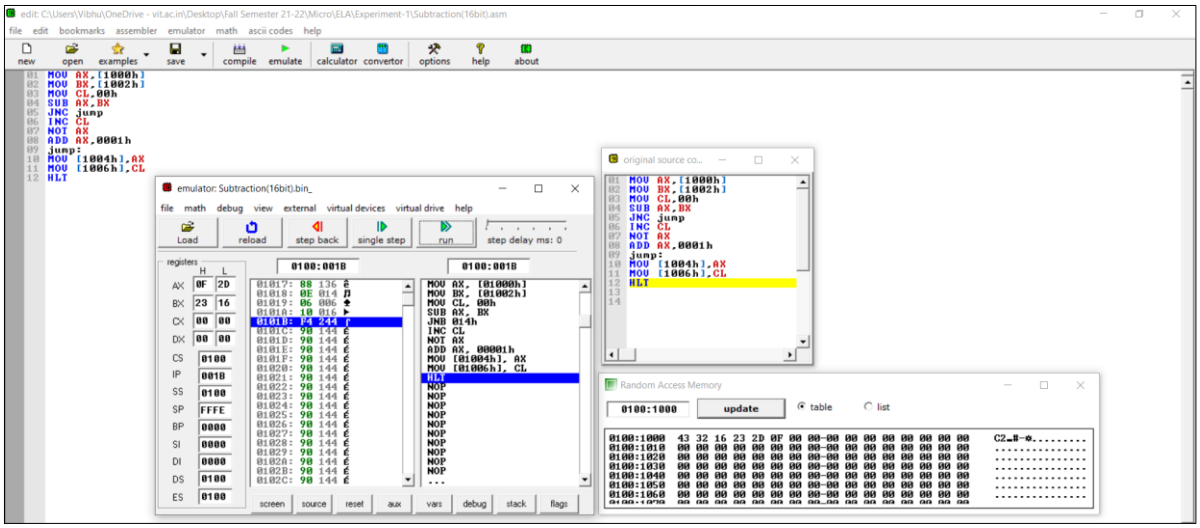
Expected Output:

```
  3243
 -2316
  0F2D
```

After Program Execution:

- AX = 0F2D
- BX = 2316
- CL = 00
- [1004] = 2D
- [1005] = 0F
- [1006] = 00 (no carry)

Result: 0F2D (as expected)



3. Multiplication (16 bit) in emu8086:

CODE:

```
        (19BCE0215)
1.  MOV   SI, 1100H
2.  MOV   AX, [SI]
3.  MOV   BX, [SI+2]
4.  MUL   BX
5.  MOV   [SI+4], AX
6.  MOV   [SI+6], DX
7.  HLT
```

OUTPUT:

Initial Memory in RAM:

- [1100] = 1A
- [1101] = EF
- [1102] = 50
- [1103] = CD

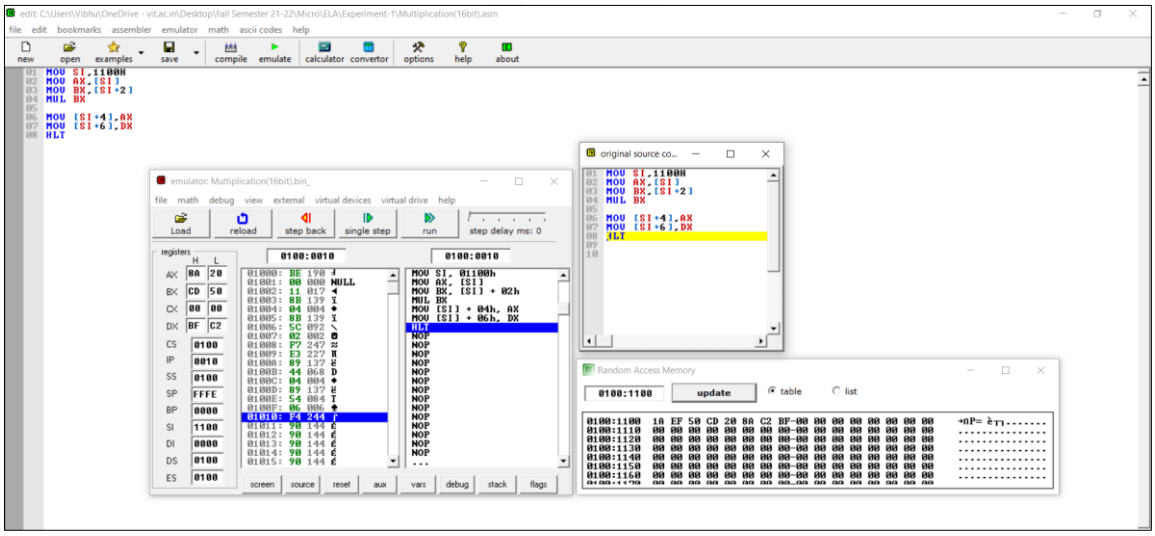
Expected Output:

EF1A
***CD50**
BFC28A20 (32 bit number)

After Program Execution:

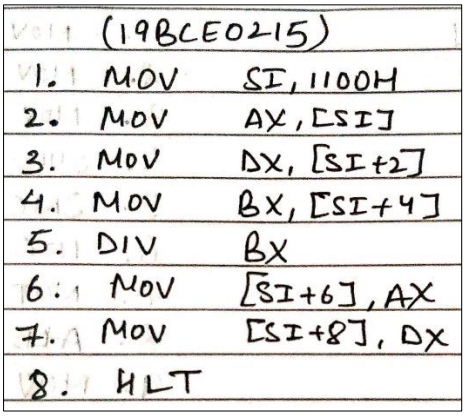
- AX = DA20
- BX = CD50
- DX = BFC2
- SI = 1100
- [1104] = 20
- [1005] = 8A
- [1006] = C2
- [1007] = BF

Result: BFC28A20 (as expected)



4. Division (32 bit by 16 bit) in emu8086:

CODE:



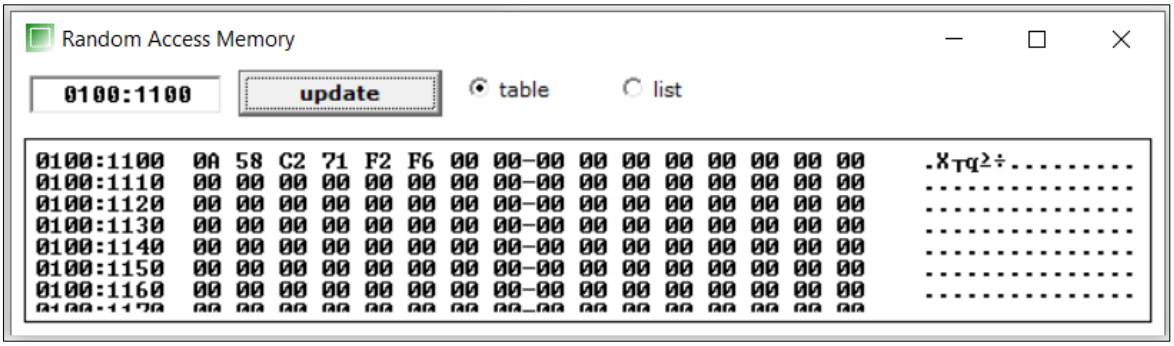
(19BCE0215)

```
1. MOV SI, 1100H
2. MOV AX, [SI]
3. MOV DX, [SI+2]
4. MOV BX, [SI+4]
5. DIV BX
6. MOV [SI+6], AX
7. MOV [SI+8], DX
8. HLT
```

OUTPUT:

Initial Memory in RAM:

- [1100] = 1A
- [1101] = EF
- [1102] = 50
- [1103] = CD



Expected Output:

```
    71C2580A
/___  F6F2
      75EE
(remainder: 290E)
```

After Program Execution:

- AX = 75EE (quotient)
- BX = F6F2 (divisor)
- DX = 290E (remainder)
- SI = 1100
- [1104] = F2
- [1005] = F6
- [1006] = EE
- [1007] = 75
- [1008] = 0E
- [1009] = 29

Result: 75EE (quotient), 290E (remainder) [as expected]