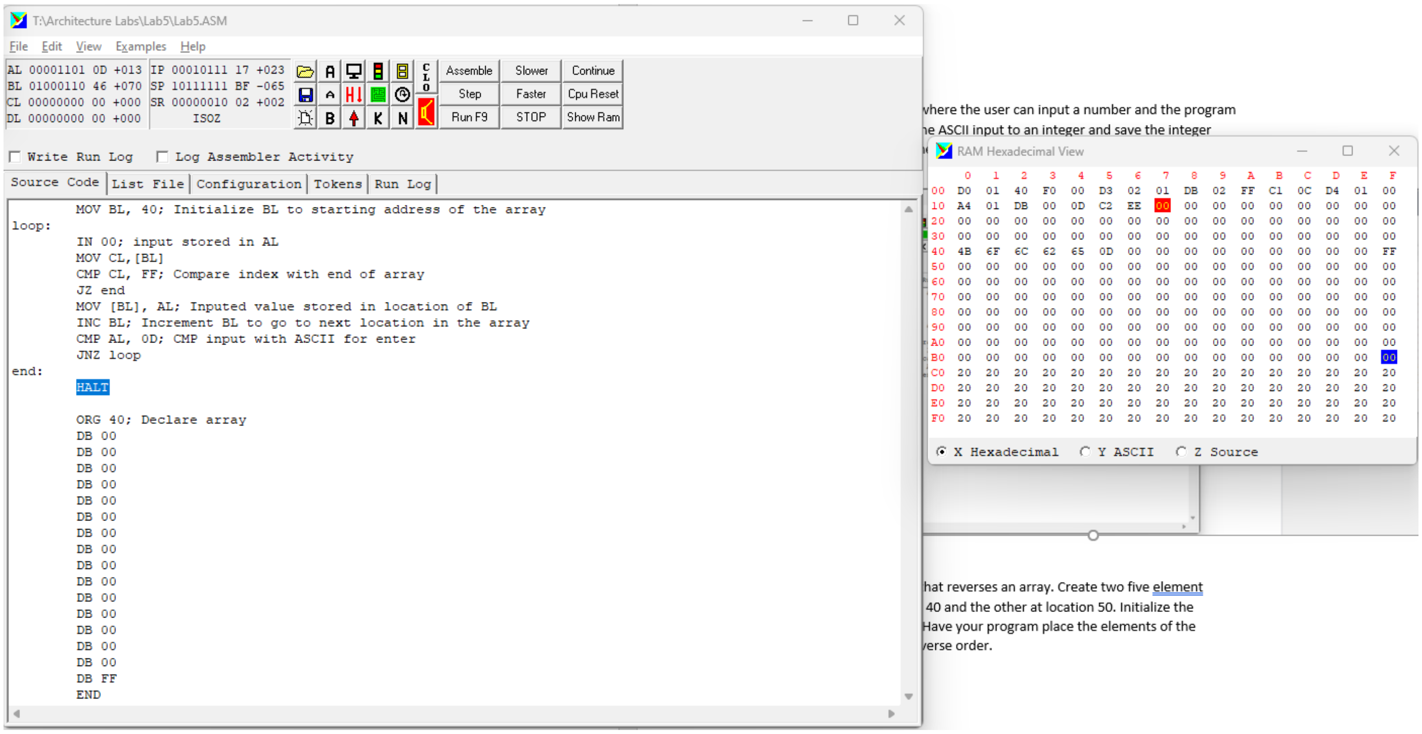
Exercises:

1. Write an assembly program where the user can input their name and save it into an array. Set aside 15 elements for your array (not including the termination element) starting at memory location 40. Set up your code to exit early when the user presses enter.



```
AL 00001101 0D +013 IP 00010111 17 +023
BL 01000110 46 +070 SP 10111111 BF -065
CL 00000000 00 +000 SR 00000010 02 +002
DL 00000000 00 +000        ISOZ
```

□ Write Run Log □ Log Assembler Activity

```
        MOV BL, 40; Initialize BL to starting address of the array
loop:
        IN 00; input stored in AL
        MOV CL,[BL]
        CMP CL, FF; Compare index with end of array
        JZ end
        MOV [BL], AL; Inputed value stored in location of BL
        INC BL; Increment BL to go to next location in the array
        CMP AL, 0D; CMP input with ASCII for enter
        JNZ loop
end:
        HALT

        ORG 40; Declare array
        DB 00
        DB 00
        DB 00
        DB 00
        DB 00
        DB 00
        DB 00
        DB 00
        DB 00
        DB 00
        DB 00
        DB 00
        DB 00
        DB 00
        DB 00
        DB FF
        END
```

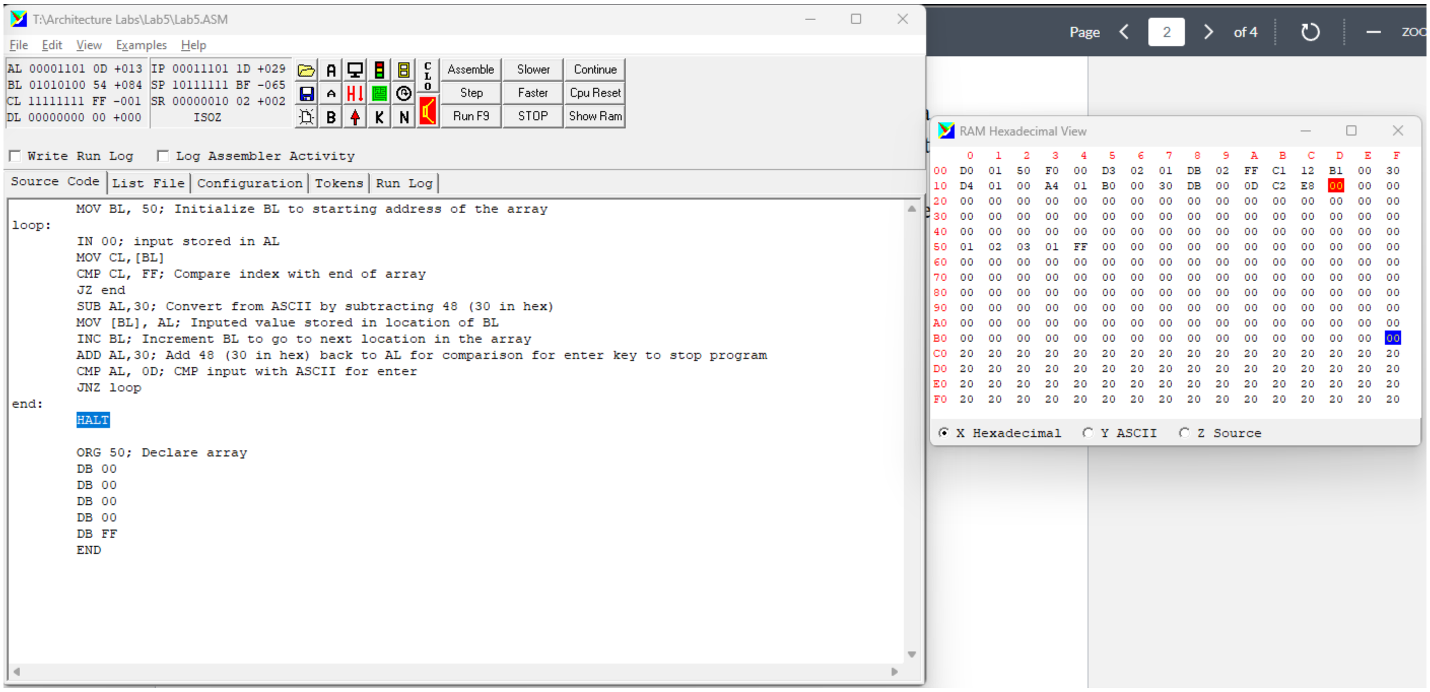
vhere the user can input a number and the program
he ASCII input to an integer and save the integer

```
    0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
00  D0 01 40 F0 00 D3 02 01 DB 02 FF C1 0C D4 01 00
10  A4 01 DB 00 0D C2 EE 00 00 00 00 00 00 00 00 00
20  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
30  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
40  4B 6F 6C 62 65 0D 00 00 00 00 00 00 00 00 00 FF
50  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
60  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
70  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
80  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
90  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
A0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
B0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
C0  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
D0  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E0  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
F0  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
```

● X Hexadecimal ○ Y ASCII ○ Z Source

hat reverses an array. Create two five element
40 and the other at location 50. Initialize the
Have your program place the elements of the
verse order.

2. Write an assembly program where the user can input a number and the program will convert the number from the ASCII input to an integer and save the integer into an array. Make a four-element array at location 50 and input your birth year.



```
AL 00001101 0D +013  IP 00011101 1D +029
BL 01010100 54 +084  SP 10111111 BF -065
CL 11111111 FF -001  SR 00000010 02 +002
DL 00000000 00 +000         ISOZ
```

□ Write Run Log □ Log Assembler Activity

Source Code | List File | Configuration | Tokens | Run Log

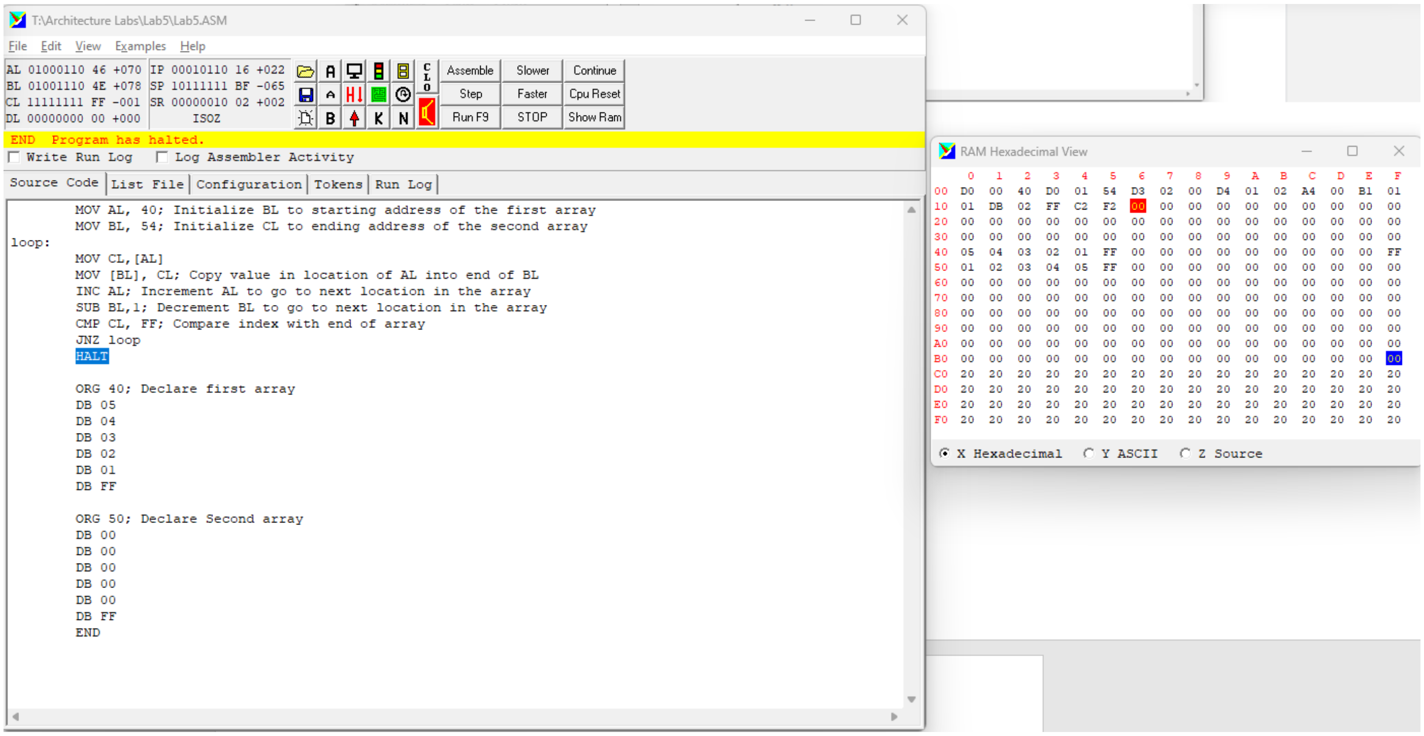
```
        MOV BL, 50; Initialize BL to starting address of the array
loop:
        IN 00; input stored in AL
        MOV CL,[BL]
        CMP CL, FF; Compare index with end of array
        JZ end
        SUB AL,30; Convert from ASCII by subtracting 48 (30 in hex)
        MOV [BL], AL; Inputed value stored in location of BL
        INC BL; Increment BL to go to next location in the array
        ADD AL,30; Add 48 (30 in hex) back to AL for comparison for enter key to stop program
        CMP AL, 0D; CMP input with ASCII for enter
        JNZ loop
end:
        HALT

        ORG 50; Declare array
        DB 00
        DB 00
        DB 00
        DB 00
        DB FF
        END
```

```
    0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
00 D0 01 50 F0 00 D3 02 01 DB 02 FF C1 12 B1 00 30
10 D4 01 00 A4 01 B0 00 30 DB 00 0D C2 E8 00 00 00
20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
30 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
40 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
50 01 02 03 01 FF 00 00 00 00 00 00 00 00 00 00 00
60 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
70 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
90 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
B0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
C0 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
D0 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E0 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
F0 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
```

● X Hexadecimal ○ Y ASCII ○ Z Source

3. Write an assembly program that reverses an array. Create two five element arrays, one at memory location 40 and the other at location 50. Initialize the first array with random values. Have your program place the elements of the first array into the second in reverse order.



```
AL 01000110 46 +070   IP 00010110 16 +022
BL 01001110 4E +078   SP 10111111 BF -065
CL 11111111 FF -001   SR 00000010 02 +002
DL 00000000 00 +000          ISOZ
```

END Program has halted.

□ Write Run Log   □ Log Assembler Activity

```
        MOV AL, 40; Initialize BL to starting address of the first array
        MOV BL, 54; Initialize CL to ending address of the second array
loop:
        MOV CL,[AL]
        MOV [BL], CL; Copy value in location of AL into end of BL
        INC AL; Increment AL to go to next location in the array
        SUB BL,1; Decrement BL to go to next location in the array
        CMP CL, FF; Compare index with end of array
        JNZ loop
        HALT

        ORG 40; Declare first array
        DB 05
        DB 04
        DB 03
        DB 02
        DB 01
        DB FF

        ORG 50; Declare Second array
        DB 00
        DB 00
        DB 00
        DB 00
        DB 00
        DB FF
        END
```

```
     0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
00  D0 00 40 D0 01 54 D3 02 00 D4 01 02 A4 00 B1 01
10  01 DB 02 FF C2 F2 00 00 00 00 00 00 00 00 00 00
20  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
30  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
40  05 04 03 02 01 FF 00 00 00 00 00 00 00 00 00 FF
50  01 02 03 04 05 FF 00 00 00 00 00 00 00 00 00 00
60  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
70  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
80  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
90  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
A0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
B0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
C0  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
D0  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E0  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
F0  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
```

● X Hexadecimal   ○ Y ASCII   ○ Z Source