Lab Experiment #4: Arrays, Memory Copy, and Arithmetic Operations

November 26, 2024

Objective

In this lab, you will:

- Learn how to work with arrays in 8086 assembly language.
- Implement memory copy operations.
- Perform arithmetic operations on array elements.

Task Description

Generate an array of N 8-bit integers, where N is assigned by the programmer. The array is generated based on the following recurrence function F_n:

$$F_n = \begin{cases} 0, & \text{if } n = 1 \\ 1, & \text{if } n = 2 \\ F_{n-1} - F_{n-2}, & \text{if } n > 2 \text{ and } n \text{ is odd} \\ F_{n-1} + F_{n-2}, & \text{if } n > 2 \text{ and } n \text{ is even} \end{cases}$$

Conditions:

- N must satisfy $14 < N < 26$.
- If N is outside this range, display the error message: *"Please enter a value between 14 and 26"*.

Example: For $N = 10$, the generated array values would be:

Index (n)	**Value (F_n)**	**Operation**
1	0	-
2	1	-
3	1	$F_2 - F_1$
4	2	$F_3 + F_2$
5	1	$F_4 - F_3$
6	3	$F_5 + F_4$
7	2	$F_6 - F_5$
8	5	$F_7 + F_6$
9	3	$F_8 - F_7$
10	8	$F_9 + F_8$

Hint

Use the following code snippet to display the error message:

```
LEA SI, MESSAGE
MOV CX, 38
MOV AH, 0Eh
GO: LODSB
INT 10h
LOOP GO
...
MESSAGE DB 'Please␣enter␣a␣value␣between␣14␣and␣26', 0
```

Evaluation Criteria

Your work will be evaluated during the lab session. Ensure you:

- Complete the task by the end of the lab.
- Demonstrate a clear understanding of array manipulation and arithmetic operations.
- Properly handle edge cases (e.g., invalid N values).