Lab 4 and 5 100 points

Q1) Implement the Bubble Sort algorithm in MASM x86 Assembly Language. The program should sort an array of signed 32-bit integers in ascending order using the Bubble Sort technique.

Requirements

Program Input (20 Points):

- Define an array of signed 32-bit integers in the .data segment.
- The array should contain at least 10 elements.
- Display the original array before sorting.

Bubble Sort Implementation (55 Points):

- Implement the Bubble Sort algorithm using:
  - Nested loops to iterate through the array.
  - Conditional jump instructions for comparisons.
  - Register operations for swapping elements.
- Ensure the sorted array is in ascending order.

Program Output (20 Points):

- Display the sorted array.
- Ensure the output is clean and well-formatted.

Code Documentation and Style (5 Points):

- Use comments to explain each section of the code.
- Maintain proper indentation and labels.
- Include your name, date, and a brief description at the beginning of the code.

Original Array: 5 -3 8 12 -7 6 4 10 2 0

Sorted Array: -7 -3 0 2 4 5 6 8 10 12

- Use .data segment for array declaration and .code segment for logic.
- Consider using procedures for displaying the array to keep the code modular.
- Test with different sets of data.