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Assignment 7

- Title: Bubble Sort
- Problem Statement:
  Write a x86 program to sort a list of integers in ascending/descending order using bubble sort. Read the input from the first text file & write the sorted data back to the same text file.
- Objective:
  1) To understand how to implement bubble sort using ALP.
  2) To implement file read & write operations.
- Outcome:
  1) Implement bubble sort for sorting single digit integers using ALP.
  2) Implement file read & write operations
- Requirements:
  1) 64 bit processor & OS
  2) NASM
  3) Editor, linker, loader, debugger, etc.

- Theory:

Each element is compared with it's adjacent element & exchanged if first is smaller than the second, this is repeated n times through the whole sequence.

```
for (i=0; i<n-2){
    for (j=0; j<n-i-1){
        if (array[i] > array[j+1]){
            swap
        }
    }
}
```

- Algorithm:

1) START
2) Read buffer & save length (n)
3) Set len as counter
4) [rsi] = start
5) counter2 = counter1 - 1
6) if ([rsi] > [rsi+1])
   swap
7) Increment rsi
8) Decrement counter2
   if zero goto (9) else (6)
9) Decrement counter1
   if zero goto (10) else (4)
10) Display buffer & write in file
11) STOP

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- Test Cases:

	Input	Expected o/p	Actual o/p
1.	9 3 1 7 8 6 5 (A)	1 3 5 6 7 8 9	Yes
2.	1 7 9 8 2 6 3 (D)	9 8 7 6 3 2 1	Yes

- Conclusion:
  Bubble sort for sorting contents of a file is implemented using an ALP