COSE321 Computer Systems Design

Assignment #2

No late turn-in accepted

Write an ARM assembly program that sorts data in ascending order from the smallest to the largest. The input data is defined in the data section as 'Input_data'. After executing your sorting program, 'Output_data' in the data section should list the sorted integers of **all 32 input data** from the smallest to the largest. Note that you should add comments next to each line of your assembly code.

```
.data
.align  4
Input_data:    .word   2, 0, -7, -1, 3, 8, -4, 10
               .word   -9, -16, 15, 13, 1, 4, -3, 14
               .word   -8, -10, -15, 6, -13, -5, 9, 12
               .word   -11, -14, -6, 11, 5, 7, -2, -12

Output_data:   .word  0, 0, 0, 0, 0, 0, 0, 0
               .word  0, 0, 0, 0, 0, 0, 0, 0
               .word  0, 0, 0, 0, 0, 0, 0, 0
               .word  0, 0, 0, 0, 0, 0, 0, 0
```

What and How to submit:

1. Upload your assembly code to Blackboard.
2. Upload video clip (3-min?) to YouTube and provide the link to Blackboard. Your video clip should have **at least** the following contents:
    - Understandable explanation of the sorting algorithm and assembly code
    - Sorted output (memory dump screen in Vitis IDE) after the program execution

Note: This is an individual assignment. You are welcome to discuss, but DO NOT COPY solution. If you are found to copy a solution from others or slightly modify the solution from others, both of you will be given zero credits.