COSE222 Computer Architecture
Assignment #3

No late turn-in accepted

Write a RV32I assembly program that sorts data in the descending order (from the biggest to the smallest) using any sorting algorithm. The input data are defined in the data section (`Input_data`). `Output_data` are initially filled with 0s, as shown below. After executing your sorting program, `Output_data` in the data section should have the sorted numbers from the biggest to the smallest (from +15 to -16). **All 32 input numbers** should be sorted in the descending order.

Explain your algorithm to sort the data. **Note that you should add comments beside 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 a video clip (up to 3-min) to YouTube and provide the link to Blackboard. Your video clip should have **at least** the following contents:
   - Your smiling face
   - Understanable explanation of the code with Jupyter demo

Note: This is an individual assignment. You are welcome to discuss, but DO NOT COPY solutions. If you are found to copy solutions from others or slightly modify the solutions from others, both of you will be given 0 credits.