COMP 303 Fall 2019
Assignment #2

Due Date: Wednesday, 30th of October 2019 at noon
For any questions you may have about the assignment, contact with Aditya Sasongko (Office ENG110).

In this project, you are asked to implement Insertion sort algorithm with duplicate removal and reduction using MIPS assembly language.

- You may work on the assignment as a **team of two**.

- Use the MARS MIPS simulator to implement the assignment, you can download the simulator from here: http://courses.missouristate.edu/KenVollmar/MARS/

- Submit your assignment through Blackboard.

- Submit a short report serving as a README along with the assignment.

- You have to use the template provided on blackboard for your solution.

- Any sort of cheating will be penalized.

Assignment Composition:
This assignment comprises of three sections.
Section 1: Sorting
Section 2: Removing duplicates
Section 3: Reduction

Section 1: Sorting (45 %)
Implement Insertion sort algorithm on a list of integers.
- Take the size of list as command line argument (e.g -n 10).
- Input the elements of list one by one.
- Implement Insertion sort algorithm, which is well explained in the following link.
  https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-006-introduction-to-algorithms-fall-2011/lecture-videos/MIT6_006F11_lec03.pdf
- Print sorted list on the console.

Section 2: Removing duplicates (25 %)
Remove multiple occurrences of the elements from sorted list. Print the new list with all unique elements.

Section 3: Reduction (20 %)
Sum up the elements of the new list with unique elements and print the sum on the console.
Exit the program with an exit message.

Demo and Report (10%)
You will schedule a demo time with TA, please print and bring your report to the demo. Come on time and prepare for any questions related to your code for the demo.

Sample Output

```
-n 6
Enter Integers
2
3
5
1
5
3
Sorted List
1 2 3 3 5 5
Sorted list without duplicates
1 2 3 5
List Sum
11
Program Finished
```

General instruction:
- Incorporate print messages after every stage of execution (Sorted List, List without duplicates, and Reduction).
- Adequately comment your implementation
- Organize your files as follows:
  - Create a directory with your KUSIS IDs (A2_ID1_ID2.zip)
  - Add A2.asm (Mips code) to the folder
  - Add Readme to the folder (Readme should explain how to run your code and mention which sections work properly)
  - Compress the folder as a .zip file and upload to blackboard.

Plagiarism:
Your code **will be tested for plagiarism** through program similarity software. Do not copy even a small code snippet from others or web; otherwise we will take disciplinary actions.

Good Luck.