

**COMP 303 Fall 2019**  
**Assignment #2**

**Due Date: Wednesday, 30<sup>th</sup> 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 [here](#).
- 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.