Programming Assignment 1: MIPS Assembly Programming

Total Marks: 50

Write MIPS assembly code to implement the following two sorting algorithms for signed integers

1. Insertion sort [**20 marks**]
2. Merge sort [**20 marks**]

You have to test the algorithm with three different sequence of inputs as given below. [**10 marks**]

(a) Sequence is in ascending order – generate the sequence using arithmetic progression: $a_n = a_1 + (n-1) * d$ with +ve common difference d

(b) Sequence is in decreasing order – generate the sequence using arithmetic progression $a_n = a_1 + (n-1) * d$ with –ve common difference d

(c) Sequence is in random order – generate the sequence using Xorshift method (https://en.wikipedia.org/wiki/Xorshift)

You need to generate the sequence of N numbers with required parameters for the sequence. Your program should prompt the user to input the required inputs to generate the sequence. In your report you should provide the total number of comparison operations that the two sorting algorithms take for the above three types of input sequence as given in the table below. You can count the number of comparisons by incrementing a counter in the sorting algorithm while doing comparison.

	Insertion Sort			Merge Sort		
Input Sequence	Ascending	Descending	Random	Ascending	Descending	Random
N = 25						
N = 50						
N = 75						
N = 100						

Submission Detail: Submit a project report with all your findings along with the source codes in a .zip file in Google Classroom.

Due Date: 15-09-2016, 11:59 pm

Late Submission Penalty: 20% for each late day (including weekend)