CS 351 Assignment #1

Due Date: 13.12.2017, Wednesday, 23:00

Assignment Submission

Turn in your assignment by the due date through LMS.

No late submissions will be accepted.

All work in the questions must be your own; you must neither copy from nor provide assistance to anybody else. If you need guidance for any question, talk to the instructor or teaching assistant.

In this assignment, you will write and simulate MIPS assembly code to solve various problems. You are going to use MARS MIPS simulator. Please download and install MARS version 4.5 from the following link: http://courses.missouristate.edu/KenVollmar/MARS/

In order to run your code, you should first assemble it via clicking RunAssemble (or press F3) then you can run by clicking this symbol  in the toolbar.

For each question, you should create a file and name the file as answer **<question_number>.asm**.

Put all files under a folder (name the folder as **<student_id>_<your_last_name>_assignment1**).

Zip this folder and upload the zip file to LMS.

Name the zip file as **<student_id>_<your_last_name>_assignment1**.

Question 1 (50 Points)

You are given the following Python code. Please write the corresponding MIPS assembly code. In your MIPS code, hold the value of the variable x in register $t0, the value of the variable y in register $t1 and the value of the variable sum in register $s0.

Note: You are NOT allowed to use div instruction in this question

```
x, y, sum = 12, 1, 0
while y <= x:
    for i in range(y, 12, 3):
        if (i % 2) == 0:
            sum += 1
        else:
            sum += 2
    y += 1
```

Question 2 (50 Points)

Assume that two lists (A and B) of sorted integer numbers (each integer in 4-bytes) have been stored in memory. MIPS register $s0 holds the base address of list A, register $s1 stores the size of the list A, register $s2 holds the base address of list B, register $s3 stores the size of the list B. Please write a MIPS assembly code that merges these two sorted lists into another list (C) to produce new sorted list. MIPS register $s4 holds the base address of list C.

Hint : You can consider Method 2 in following link as a clue http://www.geeksforgeeks.org/merge-two-sorted-arrays/

Note: For this question, start with the code (answer2.asm) that has been provided to you with the assignment. The values of lists A and B in this code are given as examples. Your code should work for any list of sorted integers.