CS 351 Assignment #2

Due Date: 24.12.2017, Sunday, 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>_assignment2**).

Zip this folder and upload the zip file to LMS.

Name the zip file as **<student_id>_<your_last_name>_assignment2**.

Question 1 (50 Points)

In this question, please write MIPS assembly code that it converts a number (x) in base 10 to base 5 and store the result in a list (A). For example, if x equal to 582, then your list should be [2, 1, 3, 4]. In your MIPS code, register $s0 holds the base address of list A and register $s1 stores the value of x.

Note: For this question, start with the code (answer1.asm) that has been provided to you with the assignment. The values in this code are given as examples. Your code should work for any given positive integer.

Question 2 (50 Points)

Please write corresponding MIPS code for following Python code. In your MIPS code, register $s0 holds the base address of list my_data, $s1 holds the length of the list my_data, register $s2 holds the base address of list my_data2 and $s3 holds the length of the list my_data2.

```
def sum_to_x(x):
        sum = 0
        for i in range (x):
                sum += i
        return sum

my_data =  [1, 3, 6, 7]

my_data2 = [2, 1, 5]

for i in range( len( my_data ) ):

        my_data[ i ] = sum_to_x( my_data[ i ] )

for i in range( len( my_data2 ) ):
```

my_data2[i] = sum_to_x(my_data2[i])

Note: For this question, start with the code (answer2.asm) that has been provided to you with the assignment. You should follow proper function development rules: Use $a0-3 registers to pass parameters to the function and $v0-1 registers to return values from the function. If you use $s0-7 registers within the function, make sure to restore them to the original values at the end of the function.