EEL 3801 - Computer Organization
Summer 2013
Project #2

Due date: Wed July 10, 2013 (11:59 P.M.)
The project code and report must be submitted online through WebCourses as specified.

Literature

- Slides on introduction to assembly: Procedures
- Patterson and Hennessy: Chapters 3.5 floating-point
- MIPS floating-point arithmetic: http://howardhuang.us/teaching/cs232/10-MIPS-floating-point-arithmetic.pdf

Introduction

In statistics, arithmetic mean μ (or simply mean, average, or expected value) of a series $a_0, a_1, a_3, \ldots\ a_{N-1}$ is defined as:

$$\mu = \frac{1}{N}\sum_{i=0}^{N-1} a_i$$

The dot product of two vectors A and B is given by:

$$A.B = \sum_{i=0}^{N-1} a_i \,.\, b_i$$

Project Description

Write an assembly program that reads two lists of floating point numbers from keyboard and displays the measures given above on the simulator's console.
The program's specifications are given below:

- Each input vector should be of size 10, i.e., N=10
- The program should use PROCEDURES to compute mean and dot-product

For example, given the following input vectors:
A=[0.11 0.34 1.23 5.34 0.76 0.65 0.34 0.12 0.87 0.56]
B=[7.89 6.87 9.89 7.12 6.23 8.76 8.21 7.32 7.32 8.22]
(It is not required to enter an array as a single string; each floating point number can be a separate input)
The program's output should be similar to given in the following:

```
The Mean of A = 1.03
The Mean of B = 7.78
The dot product of A and B = 78.45
```

(The truncation/round-off errors as well as an arbitrary number of digits in the fractional part are also acceptable)

Turn in the written project report using the format given.

Project Report Format

Name:
Date:
Introduction: An introduction explaining the lab assignment and what are the goals of the assignment (what is the code implementing).
Code Description: This section describes how the program implemented met the requirements of the task assignment. Specifically, describe the roles of various registers you used to implement the program and the overall flow of the program.
Test Procedure: This is a step by step procedure that tells how to test each element of the program. It must be detailed enough so the user can follow each step. This is similar to the steps in a cookbook. Include the screenshots of your program's output.

What you need to submit?

1. Project report in **.pdf** format
2. Commented assembly code **.s** file (or .asm file) for the program written for the project.