CDA3100

Assignment 4

MIPS Assembly Programming
Assignment 1

Objectives:

Learn how to write a basic assembly program that uses integer arithmetic, manipulate registers, input simple numbers, output simple numbers and text, define constants and variables, and do simple if statements. You should submit your assignment as a single file to the Blackboard site portal for Assignment Number 4.

Program Specifications:

1. Print out an introduction that includes: Your name, a title, and a brief description of this program.
2. Prompt the user for two numbers and save them in two registers.
3. Make sure the numbers are positive. Stop the program if either number is below the number 1 and print out a message.
4. Print out in order:
    a. The equation and Sum of the two numbers
    b. The equation and Difference of the two numbers
    c. The equation and Product of the two numbers
    d. The equation and integer quotient and remainder of the division of the two numbers. You may assume that an attempt to divide by zero will not be made.
    e. Format the output as shown in the example below.
    f. Print out a concluding message.

Other Requirements:

You should have a comment beside each instruction in the assembly program (or at a minimum a comment for a small group of related instructions) to help make your code more understandable. You should also have comments at the top of the file indicating your name, this course, and the assignment. For example:

```
#########################################################
#                                                       #
#     Name: Joe Shmoe                                   #
#     Class: CDA 3100                                   #
#    Assignment:  #4 Read in two numbers  and find      #
#      The sum, difference, product,                    #
#      and the quotent/remainder.                       #
#                                                       #
#########################################################
```

This assignment has been designated by the FSU Computer Science Department for assessment of specified expected outcomes for its degree programs, as required by accreditation agencies, the University, and the State of

Florida. **Departmental policy does not permit a final grade of C- or better to be assigned unless a student has earned a grade of C- or better on this assignment, regardless of performance on other work in the course.**

Grading:

(1) 10% - Proper MIPS instructions that assemble with no errors.

(2) 10% - Recognizes that a value below zero was input.

(3) 10% - Appropriate output format and messages.

(4) 10% - Appropriate comments in the code.

(5) 60% - Produces the correct results

It is strongly suggested that you implement and test this assignment in stages, where each the possible scenarios and check the output. By implementing and testing the assignment in stages, you are more likely to receive partial credit if you are unable to entirely complete the assignment.

Sample Program Run:

```
Dr. David A. Gaitros, Teaching Faculty III
Add, Subtract, Multiply and Divide two numbers
Enter the first number:  20
Enter the second number: 5
20 + 5=25
20 – 5=15
20 * 5=100
20 / 5=4 rem 0
The program has stopped.. may the force be with you.
```

Sample Program Run:

```
Dr. David A. Gaitros, Teaching Faculty III
Add, Subtract, Multiply and Divide two numbers
Enter the first number:  20
Enter the second number: 0
*** Warning Will Robinson…The number is below 1. ***
```