

CS 3340 Computer Architecture – Spring 2019 – Mazidi

Homework 2: MIPS Programming Basics

Objective: Get started with MIPS programming in a MARS environment. Practice load/store instructions, add and sub instructions, as well as MIPS syscalls.

Instructions

Create a MIPS program that fulfills the following specifications:

- in the .data section:
 - 3 variables to hold input values: a, b, c
 - 3 variables to hold output values (name them whatever you like)
 - a variable to hold the user's name
 - 3 variables for messages:
 - A prompt for name
 - A prompt for integers
 - A message for results (similar to the sample run below)
- in the .text section write instructions to:
 - prompt the user for their name and save it in memory
 - 3 times:
 - prompt user for an integer between 1-100
 - read and store the integers in a, b, and c
 - no input checking required
 - calculate $\text{ans1} = 2a - b + 9$ (use $a+a$ for $2a$) and store the result
 - calculate $\text{ans2} = c - b + (a - 5)$ and store the result
 - calculate $\text{ans3} = (a - 3) + (b + 4) - (c + 7)$ and store the result
 - display the user name and message for results
 - display the 3 results but print a space character in between for readability
- at the bottom of your program, add **comments** with test values for a, b, c and the results you expect from the program for ans1, ans2, ans3 (see sample run below). Show at least 2 sample runs.

What to turn in:

- after you test your program, upload the .asm file to eLearning

Grading Rubric:

Points	Element
10	Data section set up; data values and results stored
5	Get name from user
15	Get 3 integers from user
30	Calculate 3 expressions
10	Display user name, message and results
10	Display space between results
10	Program test-data comments
10	Program contains meaningful comments and good use of whitespace

Sample Run: (you should use different and more interesting test data)

```
What is your name? Karen
Please enter an integer between 1-100: 10
Please enter an integer between 1-100: 20
Please enter an integer between 1-100: 30
Karen
your answers are: 9 15 -6
```

Note:

- Notice that printing the name string causes a newline, but don't worry about it
- Note also that you will need to print space ' ' between numbers so that they don't run together
- If the user types anything other than an integer, you will get an exception. We haven't learned how to deal with that, so assume that your user can follow instructions.