

# CS/SE 2340 Prog#1 - due Wed, Aug 28, 11:59pm

## FALL SEMESTER 2024, Sections 006, 502

INSTRUCTOR: DR. ALICE WANG

### Instructions:

Answers to the questions and screenshots should be in a PDF document. Assembly code should be a .ASM file.

Submit all of your work in a ZIP file to eLearning by the due date. If you are not familiar with the ZIP file format you can find out more about it from this [link](#).

Note: name your ZIP files for homework submission as follows:

<hw#>\_<FirstName>\_<LastName>.zip, e.g. Prog1\_Jane\_Doe.zip

IMPORTANT: do not use another archive format, e.g. RAR, because the grader will not be able to see your files, and you will get 0 points.

For assignments of this class you can submit your work unlimited times, the last submission will be graded.

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## MARS setup and assembly code (100pts)

Purpose: The goal of this project is to set up MARS and practice load/store/add/sub/addi instructions and syscalls.

Create a MIPS program that fulfills the following specifications:

- In the .data section (memory)
  - 1 variable to hold the user's name (use .space)
  - Variables for messages (use .asciiz)
    - A prompt for name
    - A prompt for 2 integers (a & b)
    - A prompt for your favorite sport
    - Message to display the results
- In the .text section write instructions to:
  - Prompt the user for their name and save it in memory

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- 3 times:
    - Prompt user for an integer between 1-50 (store in registers)
    - No input checking required
  - Calculate  $\text{ans1} = 3a - 2b + 32$
  - Calculate  $\text{ans2} = 2b - a - 12$
  - Hint: you can use  $3a = a + a + a$  since we did not learn the **mul** command in class
  - Display should look like

Greetings **<username>**

I see that you have entered the integers **<a>** **<b>**

Based on your input the score for the **<sport>**

game will be **<ans1>** to **<ans2>**

Where the values in the brackets are those computed by the assembly program.

Then assemble and run the program with MARS to show and capture the input/output for 2 sample runs. Include screenshot(s) showing results of your program execution in your PDF report. Include your .ASM program in your homework submission ZIP file. Make sure to include SysCalls.asm too.

Here is an example run that you can use to debug your program, but you should use more complex and interesting data for your HW submission.

```
Enter one integer from 1-50: 1
Enter one integer from 1-50: 2
Enter your favorite sport:tennis
Greetings Alice
I see that you entered the integers 1 2
Based on your input the score for the tennis
game will be 35 -9
-- program is finished running --
```

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## Note

- You will have to include a space between the numbers so that they don't run together
- Assume your user is smart not to enter a non integer. If they enter anything else it will cause an exception which we will deal with in future lectures.

Grading Rubric - You will receive deductions if your program:

Does not have .asm as the file extension: -5%

Does not include SysCalls.asm and did not have it included in the homework ZIP file: -5%

Does not have your name and other header information: -5%

Does not exit properly (use exit syscall). -5%

Is not properly commented (almost every line): -15%

Doesn't compile/assemble: -30%

## Bonus (20pts)

Inputs from the keyboard have a newline "\n". It would be better to remove the newline from the string containing <sport> before printing it. If you do this in your code, you can get 20pts. Please submit your assignment with the filename proj1\_bonus.asm if you elect to include this bonus.