Basic MIPS Programming
Due: November 19, 2019 at 23:55 on MyCourses

Note: Since our final exam in on Dec 5th, assignment #6 will be given out earlier (before Nov 19) so that its submission date will not be too close to the final exam, this will allow me to post the assignment solutions earlier.

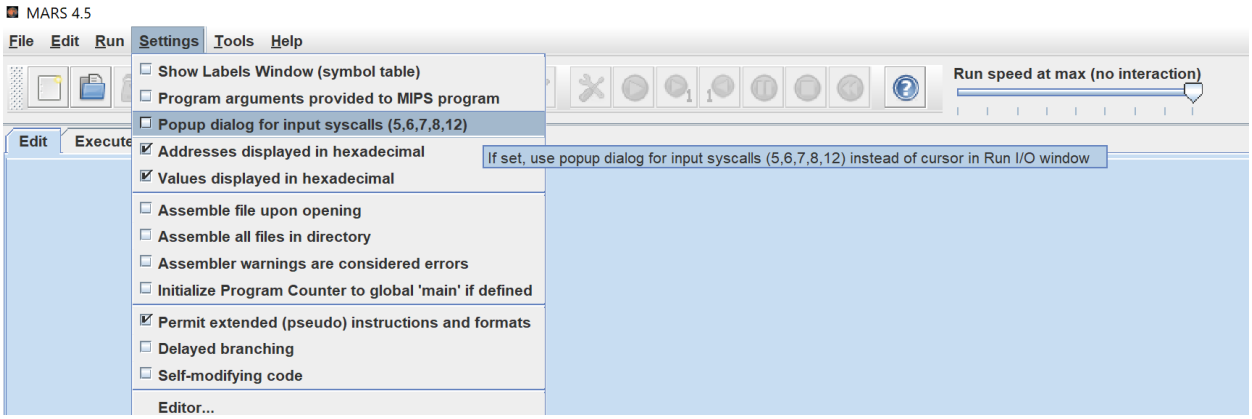
Tutorials G and H will be helpful for this assignment. Tutorial G covers how to use MARS. Tutorial H introduces programming. The assignment assumes you are familiar with MARS. Lecture weeks 8B, 9, and 10A will also be useful to review.

QUESTION ONE: How many days have I been alive?

Using MARS, write a program that does the following:

1. Prompts the user to input their age in years: "How old are you (in years)?" using the OS print_string() library.
2. Read in the value input by the user using the OS read_int() library. Assume the user always inputs a correct integer value greater than or equal to zero.
3. Assuming no leap years and assuming the user is born on January 1st, calculate the number of days they are alive using a for-loop and addition (do not multiply).
4. Print the message: "You have been alive for these many days:" using the OS print_string() library.
5. Print the number of days you calculated using the OS print_int() library.
6. Your program terminates.

You may need to activate the following switch on MARS to input data:



QUESTION TWO: Factorial

Lecture 18 slide 22 presents a function that calculates the factorial.

Write the following program using MARS:

1. In the main() prompt the user to input an integer number greater than or equal to zero.

2. If the user inputs a value less than zero, then terminate the program with the message: "The value you entered is less than zero. This program only works with values greater than or equal to zero."
3. If the user inputs a value greater than or equal to zero, then call the factorial function given in class. If there are any bugs in the code, fix them.
4. After factorial() returns the answer, from the main() print the following messages:
    a. "You input:" and the value they entered from the keyboard. New line.
    b. "The factorial is:" and the value returned by the function factorial. New line.
5. Now, prompt the user to see if they would like to do this again. Tell the user to input a single character 'Y' (capital letter Y) to do it again, all other characters will terminate the program. If the user inputs 'Y' then go to step 1.

WHAT TO HAND IN

Hand in the following to MyCourses:

- The MARS source code for question one, called Q1.asm
- The MARS source code for question two, called Q2.asm

HOW IT WILL BE GRADED

Question 1 — Total points = 20

Uses MARS	: 1 point
Step 1	: 1 point
Step 2	: 2 points
Step 3	: 3 points
Step 4	: 1 point
Step 5	: 1 point
Step 6	: 1 point

Each question is graded proportionally compared with the official solution.

Question 2

Uses MARS	: 1 point
Step 1	: 1 point
Step 2	: 2 points
Step 3	: 3 points
Step 4	: 1 point
Step 5	: 2 points

-5% per day late.
After 2 late days, the assignment is not accepted.