One last time with the MIPS simulator! We’re going to write a couple of small programs that use procedures...

1 Your assignment

1.1 find-max revisited

Recall, from Lab-6, that you wrote a program named find-max.s that search through an array of integers to find a maximum value. For this assignment, you need to revise that program. Specifically, begin by copying a skeleton of the program from my directory:

$ cp ~sfkaplan/public/cs16/new-find-max.s .

Open the file, and you will see that there are three methods that you write, and then three locations (marked STEP 1, STEP 2, and STEP 3 in the comments) where you must call each of those methods in turn. Specifically, the methods you must write are:

- **PrintArray**: Given a pointer to an array and its length, print its contents to the screen, where each row specifies first the *index* and then the *value* at that index. For example, the array \[5, 3, -1, 6\] should appear as:

  0 5
  1 3
  2 -1
  3 6

- **FindMax**: Given a pointer to an array and its length, search for the maximum value in the array and *return the index of that maximum value*.

- **PrintResult**: Print the outcome of the call to FindMax, like so:

  The maximum value is 6, found at index 3.
1.2 Calculating exponents

Assume that we have two integers, \( x \) and \( y \), where \( x \) can have any value, and \( y \) must be non-negative. We want a program that will calculate \( x^y \) and print the result for us.

Write a program, `calc-exponent.s`, where \$a0\ holds the value of \( x \) and \$a1\ holds the value of \( y \), and \( \text{calcexp} \) is the name of a procedure that calculates \( x^y \).

There are some important restrictions on how the \text{calcexp}\ procedure can be written. Specifically, it cannot contain a loop, nor may it call another method that contains a loop. In order to calculate \( x^y \), take advantage of the following definition:

- \( x^0 = 1 \)
- \( x^y = x \times x^{y-1} \), if \( y > 0 \).

The output of this program should look like this:

\[
5 \ ^ { 3} = 125
\]

2 How to submit your work

Once again, use the \text{cs16-submit}\ command to turn in programming work. Specifically:

\[
\text{cs16-submit lab-7 new-find-max.s calc-exponent.s}
\]

This assignment is due on Friday, November 7, at 11:00 am