Homework 1: The Core Language and Interpreter

This homework is due January 30, 1992.

You should hand in a printout of your programs. To do this, edit the programs into a file `hw1.l` on Unix. (We will want to be able to see the `hw1.l` file in your directory.) Run your programs in the interpreter `chap1` using the `load` feature. Use the “lp” command printed on the side of the printers in 116A to get a printout.

Test your programs using the `chap1` command on Unix, which is the interpreter described in Appendix B.

1. Do problem 1 on page 18 of Kamin’s book (summation).
2. Do problem 4 on page 18 of Kamin’s book (Fibonacci numbers).
3. (Extra credit only) Write a second solutions for the above problem: if you used recursion and no assignments or loops before, use assignments and `while` now, and vice versa.
4. Translate the Pascal code in problem 7 on page 19 into the language of chapter 1. Include the translation in your printout. What is its output?
5. (Extra credit only) Do (one or more) of problems 3, 5, or 6 on pages 18-19.
6. Answer the following questions by citing specific parts of the interpreter (in Appendix B of Kamin’s book).
   (a) Does the order of the elements placed in `printNames` by `initNames` matter?
   (b) Can the value of `userinput[pos]` be a blank character after a call to the procedure `reader`?
   (c) (Extra credit only) Why is there a global variable `currentExp`?
   (d) (Extra credit only) Which of the constants defined on page 479 are easy to change? Which are not?
7. Do exercise 9 on page 19. Print out only the parts of the code that have to be changed for this (use the Unix `diff` command), and be sure to describe in English the differences, and to test your program. You will find the source for the interpreter in

   ```
   /home/cs342/public/src/chap.1/chap1.p
   ```

   Make a copy using the Unix `cp` command and then edit your copy. (Note, this interpreter does not have the “load” command, it’s exactly the same as in the book.)
8. (Extra credit) Do one (or more of) the following exercises starting on page 19: 8, 10, 11, 13 and 14.