PHYS 3340 Spring 2008 TE Coan Due: 6 Feb '08, 6pm via email.

Homework 2

1. Write a program that computes the machine precision e_m for so-called double precision numbers. Submit the source code and the value of e_m in your hw2 answer file. In your source file, include a comment briefly describing what the code does. That is, include a comment like "This code computes the machine precision for double precision numbers."

2. Write a program that computes the factorial of some integer N. The program should ask for an integer, compute the factorial, and then print the result to the screen. The top of your source code should include a brief comment indicating that this code "computes the factorial of an integer." Again, include this source code and sample output in your hw2 answer file.

3. Write a program that computes the Fibonacci series starting from 2 arbitrary integers N_1 and N_2 that it asks you to supply from the keyboard. The program should also ask you for the number of terms to compute. The program should return to the screen 2 quantities: the value of the last term it computes, and then the ratio of the last term to the penultimate term. This ratio, by the way, approaches the golden ratio as the number of terms increases. Include, as always, a descriptive comment describing the code, and include the code and sample output in your hw2 answer file.

4. Write a program that determines the *largest* and *smallest* real number that can be represented using double precision. This program does not require input from the keyboard. Include appropriate comments. The source code and sample output go in the hw2 answer file.

5. Extra Credit. Write a program that determines the largest *integer* that can be represented on your computer. Source code should include a descriptive comment and source and sample output should be included in your hw 2 answer file.