CSI 201 — Computer Science I

Homework #09 - due April 26, 2006

Write the following program on sampson. Hand it in by printing the source in GLDS 202 using `enscript hw9.cpp`. To receive a grade, your program MUST compile and execute on sampson in the 201 directory under the filename hw9.cpp

Remember to always cd 201 and save your work. Your program output should exactly match the sample execution shown below for full credit. Executing ./p201 will test your program against some other sample executions. (Remember ./ws201 can help you check your programs too.)

Create a program to compute the factorial of a number using a recursive function with integer input and ouput. Factorial is often represented by using the exclamation (!) symbol. Thus, 0! is defined to be 1. Otherwise, the factorial of **n** is the multiplication of all numbers from 1 to **n**. For example 3! is 6.

Answer the following questions in a multi-line comment:

Demonstrate that this function is indeed proven to be correct.
What is the highest correct factorial computed?
Why are higher numbers incorrectly computed?
At what number does the factorial cause a segmentation fault?
Why does this segmentation fault occur?

Sample Executions:

```
Input the number for factorial: 3
The factorial of 3 is 6

Input the number for factorial: 10
The factorial of 10 is 3628800

Input the number for factorial: 0
The factorial of 0 is 1
```