Objective:
This is a warm-up laboratory to get you up to speed quickly with C++.

Background:
Every week we will have a lab meeting. Each lab will consist of three parts: a Pre-Lab (to be completed BEFORE coming to lab), an In-Lab (activity to be done during lab), and a Post-Lab. Parts of all three of these may be required to turn in on Thursday evening. Unless otherwise stated, labs will be due electronically at 11:59pm on Thursday.
Lab Description

The readings in Weiss *C++ for Java Programmers (CFJP)* cover the following topics:

0. **Introduction**
   1. **Basic Types and Control Structures.**
   2. **Functions, Arrays, Strings, and Parameter Passing.**

Here is Figure 2-9, on p. 30 in Weiss CFJP. It is a sample function with a main function that calls it. The source code for this and other examples from the book is linked from our course home page. You may find this and other examples helpful in writing your function to computer $X^N$ and a main function to call it.

```cpp
#include <iostream>
using namespace std;

// Correct implementation of swap2
void swap2( int & a, int & b )
{
    int tmp = a;
    a = b;
    b = tmp;
}

int main( )
{
    int x = 37;
    int y = 52;

    swap2( x, y );

    cout << x << " " << y << endl;
    return 0;
}
```

Please take a look at the object life-cycle code posted on the labs web page. Use it as a mechanism for understanding how various aspects of C++ work. Compile and run the program. Try stepping through it by hand. Use Weiss *CFJP*, the web, and any other C++ references to help you look up parts of the program you do not understand.
Lab Procedure

Pre-lab

0. Read Weiss *C++ for Java Programmers* Chapters 0, 1, and 2 (pp. 1-33). (see description of contents on previous page)
1. Do the tutorial on creating a project in VS .NET 2003 found on our course web page, or directly at this link: http://www.cs.virginia.edu/~cs216/labs/msVisualTutorial.doc
2. Write a function to compute $X^N$ for nonnegative integers $N$. Assume that $X^0 = 1$. Put this function in a program with a main function and be ready to demonstrate that it works at the beginning of lab. (see notes on previous page)
3. Examine the Object life-cycle code posted on the labs web page. You may not understand everything in this program by the beginning of lab, but you should by the end of next week. We will be using this program during the in-lab activity.

In-lab

*Come to lab with a printed copy of the checkoff sheet.*

0. Pick up a checkoff sheet from the front of the room and fill it in before calling over a TA. (normally you will need to bring a checkoff sheet to lab).
1. Demonstrate your $X^N$ function to one of the TAs.
2. < more activities will be given in the lab >
3. Be sure to LEAVE your checkoff sheet with the head TA before leaving lab.

Post-lab

0. <details TBA>

1. For this lab you will be submitting your code electronically via the toolkit. Your fully functional code (*<more details will be announced>* ) is due at 11:59 pm Thursday September 1, 2005. Be sure to include: your name, the date, and the name of the file in a banner comment at the beginning of each file you submit. A link for turn-in will be posted on the labs page before that time.