Assignment #8
Implement Your Python Programs in C++
Due: Wednesday, 12/04/13, 11:59pm

1. **(40 pts)** First, convert your Python program that takes a positive number \( n \) as input and outputs the square root of \( n \) using the Babylonian algorithm into a C++ program. Remember, the Babylonian algorithm computes the square root of a positive number, \( n \), as follows:

   1. Make a guess at the answer (you can pick \( n/2 \) as your initial guess).
   2. Compute \( r = n / \text{guess} \)
   3. Set guess = \((\text{guess} + r) / 2\)
   4. Go back to step 2 for as many iterations as necessary. The more steps 2 and 3 are repeated, the closer guess will become to the square root of \( n \).
   5. Compare your calculated square root with the `sqrt(num)` result, but you need to include the `<cmath>` library.

2. **(60 pts)** Now, we will re-write our calculator in C++. You will have to take the following operator as input from the user and then convert that into an operation between two operands. For example: If we got a number1 and number2 from the user with an operation input of +, then we should get an output of num1 + num2 for the answer.

   ```cpp
   int num1, num2;
   cout << "Enter your 1st num: ";
   cin >> num1;
   cout << "Enter your 2nd num: ";
   cin >> num2;
   cout << num1 + num2;
   ```

   From here on out, you have to figure out the symbol/operation selection. Here is an example of some code/program that takes a number from the user and then another number from the user before we display it to the user. Here is an example of how this operation/input works…

   Enter a number operation (+, -, /, *, ^, %): ^
   Enter your first number: 2
   Enter your second number: 10
   1024.0
   Would you like to play again? (0 - no, 1 - yes): 0
Now, you can decide if you want to read the operation as a character or a string. If you decide to declare the op as a string, then you need to include the cstring library:

```cpp
#include <cstring>
int main() {
    string op;

    cin >> op;

    return 0;
}
```

If you take in the input as a character, then you don’t need the cstring library. You will need to include the `<cmath>` library to use the pow function for exponents. There isn’t an exponent operator in C++, as in Python.

Electronically submit your **two C++ programs, .cpp files**, by the assignment due date, using TEACH: [https://secure.engr.oregonstate.edu:8000/teach.php?type=want_auth](https://secure.engr.oregonstate.edu:8000/teach.php?type=want_auth)