CSC 212: Data Structures and Abstractions
University of Rhode Island

Laboratory #1

Agenda

Be sure you have an account on Piazza. If you haven't already, please go to piazza.com and make one.

On piazza.com, under the C++ Resources heading, the last section is titled Recommended IDEs, and here is where you'll find links to Xcode and Visual Studio.

Programming

Once your IDE is installed, we will use the following code to help get a feel for the running times of functions with various input sizes. You will need to fill in the function bodies (found below the main function) in order for the program to run properly. As straightforwardly as possible, write code that will be executed the indicated number of times (a simple multiplication will be enough). When you have the code working, experiment by running it with inputs of 10, 100, 1000, and even more.

```
//
//  main.cpp
//  Lab1
//

#include <iostream>
#include <cstdlib>
#include <ctime>

using namespace std;

void linear(int n);
void quadratic(int n);
void cubic(int n);

int main(int argc, char *argv[])
{
    if(argc != 2)
    {
        cout << "Usage:  Lab1 n" << endl;
        return 1;
    }// end if
```

```
    int n = atoi(argv[1]);

    cout << endl << "The running times are as follows for " << n << "." << endl << endl;
    clock_t start, finish;

    // get the time now
    start = clock();
    linear(n);
    finish = clock();

    // output the results
    cout << "linear " << (finish - start) /
        (double)(CLOCKS_PER_SEC / 1000) << " milliseconds." << endl;

    // get the time now
    start = clock();
    quadratic(n);
    finish = clock();

    // output the results
    cout << "quadratic " << (finish - start) /
        (double)(CLOCKS_PER_SEC / 1000) << " milliseconds." << endl;

    // get the time now
    start = clock();
    cubic(n);
    finish = clock();

    // output the results
    cout << "cubic " << (finish - start) /
        (double)(CLOCKS_PER_SEC / 1000) << " milliseconds." << endl;

    return 0;

}// end main

void linear(int n)
{
  // add your code here
}// end linear

void quadratic(int n)
{
  // add your code here
}// end quadratic

void cubic(int n)
{
  // add your code here
}// end cubic
```