Object-Oriented Programming with C++

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Thanks to
Brian A. Malloy PhD, Clemson University
Paul Gibson, PhD, NUI Maynooth

Course Material

There is no single recommended text book. The texts that I have used while preparing the course are:

- *Programming with C++*, Schaum's Outlines (J. Hubbard)
- *C++ How To Program*, Deitel and Deitel
- *C++ Program Design*, Cohoon and Davidson

Copies of all lecture slides will be provided the day of the lecture

Keep an eye on the course web site(s):

http://www.cs.clemson.edu/~malloy/courses/613/613.html

http://www.cs.may.ie/~pgibson/Teaching/CS613/CS613.html

Course Evaluation:

Daily Exercises --- total 15% (3% each day)

- *must* be submitted the day after they are set (9:30am)
- these will require 1-3 hours of work
- some, but not all, exercises involve group work
- time is set aside for assistance (from me/ each other) every afternoon

Week-long Development (Assignment) --- 25%

- *must* be submitted on/before Monday 7th October
- this will require 20+ hours of *development*
- you may choose to work in groups

Exam (Beginning December) --- 60%

- 3 hours
- 4 questions from 6

Course Topics (day-by-day):

Monday: Basic C++, procedural programming

Tuesday: introducing objects and classes - object/class based programming

Wednesday: introducing object oriented programming

Thursday: advanced OO programming techniques

Friday: STL, Design Patterns

The Time-table Structure

Rough teaching plan:

- **9.30 - 11.00** Lecturing
- 11.00 - 11.15 COFFEE BREAK
- **11.15 - 12.45** Practical Work /Lecturing
- 12.45 - 13.45 LUNCH
- **13.45 - 14.45** Lecturing
- 14.45 - 15.00 COFFEE BREAK
- **15.00 - ???** Practical Work - assignment for next day

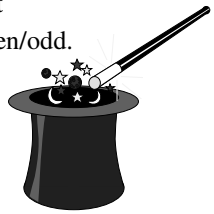
Learn to be a good programmer:

- Know the language,
- know the compiler,
- think analytically,
- work hard

Programming takes practice

Programming: tricks help

- swapping 2 numbers,
- find the largest number in a list,
- convert a char digit to an int
- determine if a number is even/odd.



Programming can be frustrating

If you've never been here, then you ain't programmed!

5 Kinds of Programmers

- Those who can't
- those who can without pointers
- those who can with pointers
- those who know object technology: OO
- those who can use generics/templates

Compiler

- g++ for unix or mingwin32 for Win95
  - GNU foundation
  - it's free
  - close to the standard
  - fairly complete
- others
  - VC++ 6.0, and .net
  - Borland
  - CC

Motivation for OO with C++

- C++ most widely used language,
- OO is the way of the present,
- familiarity increases marketability,
- viable for many years,
- excellent expressivity, and
- excellent speed.
- Easy to learn another language

Lots of “stuff”

- There is an intimidating amount of material in C++
- C++ was designed to be a powerful tool for professional programmers solving real problems in diverse domains
- C++ was NOT designed for academia!
- C++ was NOT designed to be a nice, “pure” language, good for teaching students how to program