

TEACHING C++ TO UNDERGRADUATES: VIRTUES AND VICES

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This tutorial is designed to help Computer Science faculty in separating the wheat from the chaff of C++. In it I will share our experiences over the past three years of redesigning our CS 1 and CS 2 courses to teach object-oriented programming and C++, with an eye toward what has worked and what hasn't. In hindsight, our successes and failures seem clearly to reflect the relative ease with which the basic principles of the OOP paradigm can (or cannot) be mapped into C++ and onto the curricular goals of the courses. I'll review these principles and discuss which seem to match our courses and which don't. We will then walk through some typical CS 1 and CS 2 programming examples (in both pseudo-code and C++) to get a feel for how the paradigm works, and what the necessary and sufficient features of C++ are to support its alleged advantages. Pedagogical techniques (many of which are derived directly from our collective Pascal experience) will be discussed in the context of these examples. Finally, we will have an open discussion to address the question that underlies all of the preceding: Is it worth it? That is, can the advertised advantages of teaching OOP/C++ to undergraduates be realized by faculty and students in practice?