

Username: Pralay Patoria **Book:** The C++ Standard Library: A Tutorial and Reference, Second Edition. No part of any chapter or book may be reproduced or transmitted in any form by any means without the prior written permission for reprints and excerpts from the publisher of the book or chapter. Redistribution or other use that violates the fair use privilege under U.S. copyright laws (see 17 USC107) or that otherwise violates these Terms of Service is strictly prohibited. Violators will be prosecuted to the full extent of U.S. Federal and Massachusetts laws.

1.1. Why This Book

Soon after its introduction, C++ became a de facto standard in object-oriented programming. This led to the goal of standardization. Only by having a standard could programs be written that would run on different platforms — from PCs to mainframes. Furthermore, a standard *library* would enable programmers to use general components and a higher level of abstraction without losing portability rather than having to develop all code from scratch.

Now, with the second standard, called C++11 ([see Section 2.1, page 7](#), for the detailed history of C++ standards), we have a huge C++ standard library whose specification requires more than double the size of the core language features. The library enables the use of

- Input/output (I/O) classes
- String types and regular expressions
- Various data structures, such as dynamic arrays, linked lists, binary trees, and hash tables
- Various algorithms, such as a variety of sorting algorithms
- Classes for multithreading and concurrency
- Classes for internationalization support
- Numeric classes
- Plenty of utilities

However, the library is not self-explanatory. To use these components and to benefit from their power, you need an introduction that explains the concepts and the important details instead of simply listing the classes and their functions. This book is written exactly for that purpose. First, it introduces the library and all its components from a conceptual point of view. Next, the book describes the details needed for practical programming. Examples are included to demonstrate the exact use of the components. Thus, this book is a detailed introduction to the C++ library for both the beginner and the practicing programmer. Armed with the data provided herein, you should be able to take full advantage of the C++ standard library.

Caveat: I don't promise that everything described is easy and self-explanatory. The library provides a lot of flexibility, but flexibility for nontrivial purposes has a price. The library has traps and pitfalls, which I point out when we encounter them and suggest ways of avoiding them.