

Contents

Contents

iii

Preface

v

Preface to the Fourth Edition	v
Preface to the Third Edition	ix
Preface to the Second Edition	xi
Preface to the First Edition	xii

Part I: Introductory Material

1

1. Notes to the Reader	3
2. A Tour of C++: The Basics	37
3. A Tour of C++: Abstraction Mechanisms	59
4. A Tour of C++: Containers and Algorithms	87
5. A Tour of C++: Concurrency and Utilities	111

Part II: Basic Facilities

133

6. Types and Declarations	135
7. Pointers, Arrays, and References	171
8. Structures, Unions, and Enumerations	201
9. Statements	225
10. Expressions	241

11. Select Operations	273
12. Functions	305
13. Exception Handling	343
14. Namespaces	389
15. Source Files and Programs	419

Part III: Abstraction Mechanisms

447

16. Classes	449
17. Construction, Cleanup, Copy, and Move	481
18. Operator Overloading	527
19. Special Operators	549
20. Derived Classes	577
21. Class Hierarchies	613
22. Run-Time Type Information	641
23. Templates	665
24. Generic Programming	699
25. Specialization	721
26. Instantiation	741
27. Templates and Hierarchies	759
28. Metaprogramming	779
29. A Matrix Design	827

Part IV: The Standard Library

857

30. Standard Library Summary	859
31. STL Containers	885
32. STL Algorithms	927
33. STL Iterators	953
34. Memory and Resources	973
35. Utilities	1009
36. Strings	1033
37. Regular Expressions	1051
38. I/O Streams	1073
39. Locales	1109
40. Numerics	1159
41. Concurrency	1191
42. Threads and Tasks	1209
43. The C Standard Library	1253
44. Compatibility	1267