

**THE**  
**C++**  
**PRIMER**

*A Gentle Introduction to C++*




*M. T. Skinner*

# The C++ Primer

## A Gentle Introduction to C++

M. T. Skinner

**P** Silicon Press  
Summit New Jersey USA

 **Prentice Hall**  
New York London Toronto Sydney Tokyo Singa

# CONTENTS

<b>PREFACE</b>	.....	ix
<b>CHAPTER 1</b>	<b>INTRODUCTION</b> .....	1
	1. WRITING PROGRAMS IN C++	2
	2. PROGRAM TERMINATION	14
	3. EXERCISE	14
<b>CHAPTER 2</b>	<b>BASICS</b> .....	15
	1. FONT CONVENTION	15
	2. CHARACTER SET	15
	3. IDENTIFIERS	16
	4. CONSTANTS (LITERAL VALUES)	18
	5. COMMENTS	20
	6. EXERCISES	21
<b>CHAPTER 3</b>	<b>TYPES AND OBJECTS</b> .....	23
	1. BASIC TYPES	23
	2. MORE TYPES	29
	3. OBJECTS	30
	4. TYPE DEFINITIONS	30
	5. EXERCISES	32
<b>CHAPTER 4</b>	<b>OPERATORS AND EXPRESSIONS</b> .....	33
	1. OPERATORS	34
	2. EXPRESSIONS	49
	3. EXPLICIT CONVERSIONS	50
	4. EXERCISES	51
<b>CHAPTER 5</b>	<b>STATEMENTS</b> .....	53
	1. DECLARATIONS AND DEFINITIONS	53
	2. EXPRESSION STATEMENT	56
	3. COMPOUND OR BLOCK STATEMENT	57
	4. CONDITIONAL EXECUTION	59
	5. LOOPS	62

- 6. JUMP STATEMENTS 68
- 7. NULL STATEMENT 70
- 8. EXERCISES 71

<b>CHAPTER 6</b>	<b>FUNCTIONS.....</b>	<b>73</b>
	1. FUNCTION DECL. OR PROTOTYPES	76
	2. FUNCTION DEFINITIONS (BODIES)	77
	3. FUNCTION CALL	81
	4. ARGUMENTS PASSING	81
	5. LOCAL AND GLOBAL VARIABLES	86
	6. MAIN FUNCTION	90
	7. RECURSION	91
	8. SEPARATE COMPILATION	92
	9. EXERCISES	93
 <b>CHAPTER 7</b>	 <b>ARRAYS, STRUCTURES, POINTERS.....</b>	 <b>95</b>
	1. ARRAYS	96
	2. STRUCTURES	111
	3. POINTERS	116
	4. ARRAYS AND POINTERS	123
	5. STRINGS	127
	6. EXERCISES	133
 <b>CHAPTER 8</b>	 <b>CLASSES.....</b>	 <b>135</b>
	1. COMPLEX DATA TYPE	135
	2. CLASS DEFINITIONS	142
	3. CLASS OBJECTS	144
	4. CLASS MEMBERS	145
	5. STACKS: AN EXAMPLE	157
	6. COPYING CLASS OBJECTS	162
	7. DYNAMIC OBJECT CREATION & DELETION	170
	8. FRIENDS	172
	9. CONSTANT MEMBERS & MEM. FUNCTIONS	176
	10. PERFORMING TYPE CONVERSIONS	177
	11. SPECIFYING TYPE CONVERSIONS	178
	12. INLINE FUNCTIONS	182
	13. FORWARD CLASS DECLARATIONS	183
	14. LISTS: A FINAL EXAMPLE	184
	15. EXERCISES	186

<b>CHAPTER 9</b>	<b>INHERITANCE</b> .....	189
	1. DERIVED CLASS SPECIFICATION	192
	2. MULTIPLE INHERITANCE	194
	3. ORDER OF CONSTRUCTOR ... CALLS	194
	4. ASSIGNMENT & CONSTRUCTORS ...	195
	5. VIRTUAL FUNCTIONS	197
	6. EXAMPLES	197
	7. EXERCISES	204
<b>CHAPTER 10</b>	<b>OVERLOADING</b> .....	205
	1. OPERATOR OVERLOADING	207
	2. EXAMPLES	211
	3. EXERCISES	212
<b>CHAPTER 11</b>	<b>INPUT / OUTPUT</b> .....	213
	1. STREAM HEADER FILE <code>iostream.h</code>	213
	2. INPUT	213
	3. OUTPUT STREAMS	217
	4. MANIPULATORS	220
	5. STREAM STATES	221
	6. EXTENDING THE STREAM I/O LIBRARY	222
	7. DEFINING NEW STREAMS	227
	8. ADDITIONAL FACILITIES	229
<b>CHAPTER 12</b>	<b>A LARGE EXAMPLE</b> .....	231
<b>CHAPTER 13</b>	<b>TEMPLATES</b> .....	243
	1. TEMPLATE DECLARATIONS AND DEFINITIONS	243
	2. EXAMPLES	247
	3. EXERCISE	250
<b>CHAPTER 14</b>	<b>VARIABLE ARGUMENT FUNCTIONS</b> .....	251
	1. EXAMPLE	252
	2. EXERCISES	254
<b>CHAPTER 15</b>	<b>PREPROCESSOR</b> .....	255
	1. MACRO DEFINITIONS	255
	2. FILE INCLUSION	257
	3. CONDITIONAL COMPILATION	258
	4. AVOIDING MULTIPLE FILE INCLUSIONS	259

CHAPTER 16	LIBRARY FACILITIES.....	261
	1. USING THE LIBRARIES	261
	2. STANDARD FUNCTIONS	263
BIBLIOGRAPHY		287
INDEX.....		289