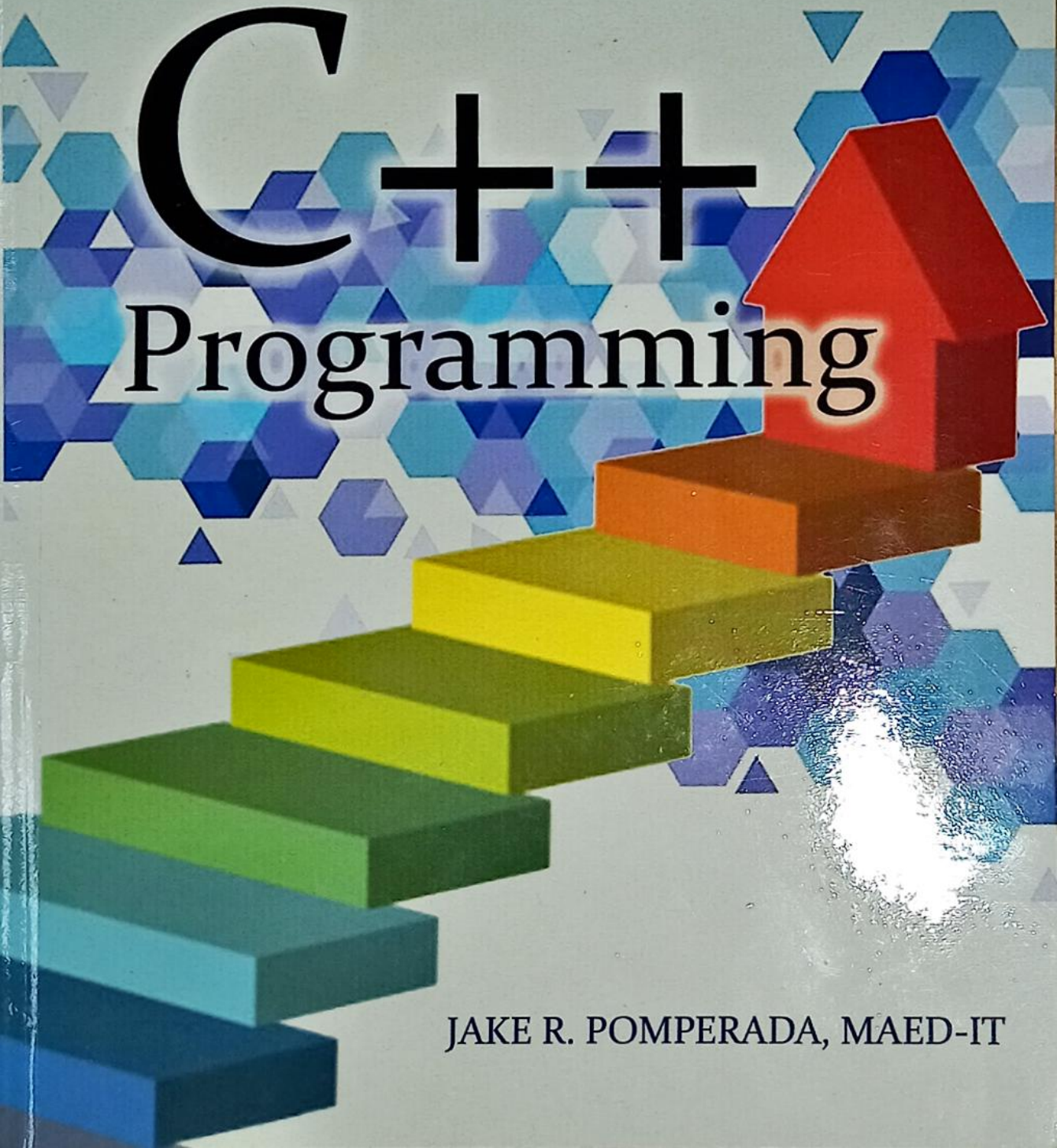
OBE OUTCOME-BASED EDUCATION

Beginner's Guide to C++ Programming



JAKE R. POMPERADA, MAED-IT

Beginner's Guide to
C++ Programming

JAKE R. POMPERADA, MAED-IT
Software Engineer | Teacher | Author | Entrepreneur

Beginner's Guide to
C++ Programming

COPYRIGHT 2019
Jake Pomperada

ISBN: 978-621-406-195-2

ALL RIGHTS RESERVED. *No part of this work covered by the copyright hereon, may be reproduced, used in any form by any means – graphic, electronic, or mechanical, including photocopying, recording, or information storage and retrieval systems – without written permission from the author.*

Published by: **MINDSHAPERS CO., INC.**
Rm. 108, Intramuros Corporate Plaza Bldg.,
Recoletos St., Manila
Telefax: (02) 527-6489
Tel. No.: (02) 2546160
Email: mindshapersco@yahoo.com

Layout & Cover Design: Erwin O. Bongalos

TABLE OF CONTENTS

Chapter I INTRODUCTION TO C++ 1

What is the C++ programming language? 1
Brief History of C++ 1
Features of C++ 2
Important Features of C++ 3
Standard Libraries in C++ 5
Advantages and Disadvantages of C++ 5
List of Software Written in C++ 6
Difference between C and C++ 10
Learning How to Program in C++ 11
How to Install Dev C++? 12
C++ Basic Program Structure 13
How to Compile and Execute a C++ program? 14
Comments in C++ 16
Semicolon and Blocks in C++ 17
Whitespace in C++ 18
Chapter I Essay Exercises 19

Chapter II VARIABLE DECLARATION 21

What is a Variable? 21
Assignment Statement 21
Identifier 22
Rules in Declaring a Variable in C++ 22
Keywords in C++ 25
Variable Scope in C++ 26
Local Variables 26
Global Variables 27
Initializing Local and Global Variables 28
Data Type 28
Primitive Data Types 29
Data Type Modifiers 30
Abstract or User Defined Data Type 31
Escape Sequences 31
Relational Operators 32
Logical Operators 33
Arithmetic Operators 35
Conditional Ternary Operator 35
Bitwise Operators 37
Chapter II Laboratory Exercises 51

Chapter III CONDITIONAL STATEMENTS 53

The if Statement 53
The if..else Statement 53
C++ Nested if..else Statement 53
Switch Statement 73
Rules for Applying Switch Statement 75
Limitations of Switch Statement 75
Ternary Operator in C++ 83
The advantage of Using Ternary Operator 83
Chapter III Laboratory Exercises 93

Chapter IV LOOPING STATEMENTS 95

What is a Loop? 95
Why use Loop? 95
Advantage of Using Looping statement 96
For Loop Statement 96
Syntax 96
Flowchart of For Loop Statement in C++ 96
While Loop Statement 104
Syntax 104
Do While Loop Statement 112
Syntax 112
When to use the do while loop statement 113
C++ Nested Loop 118
The Syntax of Nested Loop 118
Jump Statements 120
The goto Statement 120
The break Statement 121
The continue Statement 122
Chapter IV Laboratory Exercises 125

Chapter V FUNCTIONS 127

Reasons for Using Functions 127
The Disadvantages of Using a Function 127
Two Types of Functions in C++ 128
Advantages of User-Defined Function 128
Defining a Function 128
Function Declaration 129
Calling a Function 130
Function Arguments 131
Call Type and Description 131
Call By Value 131
Call By Address / Pointer 132

Call By Reference 133
Default Values for Parameters 135
Chapter V Laboratory Exercises 142

Chapter VI ARRAYS 149

History of Arrays 149
Applications of Arrays 149
Advantage of Arrays 150
The disadvantage of Using Arrays 150
Types of Arrays 150
One-Dimensional Array 150
The Syntax of One-Dimensional Array 151
Graphical Representation Analogy 151
Accessing One-Dimensional Array 151
Initializing One-Dimensional Array in C++ 151
Two-Dimensional Array 162
The Syntax of Two-Dimensional Array 162
Initializing of Two-Dimensional Array in C++ 163
Considerations in Initializing a Two-Dimensional Array 163
How to Store User Input Data into a Two-Dimensional Array? 164
Chapter VI Laboratory Exercises 175

Chapter VII STRINGS 177

Two Types of Strings in C++ 177
The C-Stlye Character String 177
The String Class in C++ 179
Declaring Strings in C++ 180
Initializing Strings in C++ 180
C++ String Examples 180
Chapter VII Laboratory Exercises 193

Chapter VIII STRUCTURES 195

Why Use Structure in C++? 196
Advantages of Using Structures 196
Defining a Structure 196
Syntax to Create Structure Variable 196
Syntax to Access Structure Members 198
Accessing Structure Members 198
Nested Structure in C++ 202
Nested Structure Definition 202
Accessing Nested Structure Member 202
Nested Structure Program Example 203
Chapter VIII Laboratory Exercises 215

Chapter IX FILE HANDLING 217

Why Use File Handling in C++ ? 217
How to Achieve File Handling? 218
Functions Use in File Handling 218
Opening a file 218
Defining and Opening a File 218
Syntax 218
Example 219
Closing a File 219
File Opening Mode 219
Example 219
File Pointer 219
Function for Manipulation of File Pointer 220
put() and get() function 220
read() and write() function 220
Example 220
Creating and Storing Text in a Text File 220
Reading a Text File 222
Chapter IX Laboratory Exercises 247

Bibliography 249
Web References 250

About the Author

MR. JAKE RODRIGUEZ POMPERADA, MAED-IT is currently working as Freelance Software Engineer, Software Quality Assurance Engineer, Document Analyst, IT Consultant, Author, Entrepreneur, Computer and Electronics Technician and Information Technology Instructor in his hometown in Bacolod City, Negros Occidental, Philippines.

He obtained his Bachelor of Science in Computer Science at the University of Negros Occidental – Recoletos in 1999 in Bacolod City, Negros Occidental. He also finished his Master of Arts in Education Major in Instructional Technology at La Consolacion College, Bacolod City in 2008 graduated Cum Laude. He is also a recipient of Computer Programming Proficiency Award during his college days. Presently Mr. Pomperada is taking up his Master of Information Technology at Northern Negros State College of Science and Technology, Brgy. Old Sagay, Sagay City, Negros Occidental, Philippines.

You can visit his personal websites at the following address http://www.jakerpomperada.com and http://www.jakerpomperada.blogspot.com.

If you have some questions regarding the content of this book you can send an email to him at the following email address: jakerpomperada @jakerpomperada.com, jakerpomperada@yahoo.com, and jakerpomperada @gmail.com.

MINDSHAPERS CO., INC.

Rm. 108, ICP Bldg., Recoletos St., Intramuros, Manila
Tel. No.: (02) 2546160 • Telefax: (02) 5276489
Email: mindshapersco@yahoo.com

ISBN: 978-621-406-195-2