



# C++

# Programming Step-by-Step

Asadullah Shah



IIUM PRESS

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

# **C++ PROGRAMMING: STEP BY STEP**

---

**Editors**

Asadullah Shah



**IIUM Press**

Published by:  
IIUM Press  
International Islamic University Malaysia

First Edition, 2011  
©IIUM Press, IIUM

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without any prior written permission of the publisher.

Perpustakaan Negara Malaysia

Cataloguing-in-Publication Data

Bibliography p.  
Includes Index  
ISBN

ISBN: 978-967-418-090-4

Member of Majlis Penerbitan Ilmiah Malaysia · MAPIM  
(Malaysian Scholarly Publishing Council)

Printed by :  
**IIUM PRINTING SDN. BHD.**  
No. 1, Jalan Industri Batu Caves 1/3  
**Taman Perindustrian Batu Caves**  
Batu Caves Centre Point  
68100 Batu Caves  
Selangor Darul Ehsan

# CONTENTS

---

<b>DEDICATION</b>	iii
<b>PREFACE</b>	viii
<b>ACKNOWLEDGEMENT</b>	ix
<b>1. INTRODUCTION</b>	
<i>Asadullah Shah and Assadullah Shaikh</i> .....	1
<b>2. ARITHMETIC EXPRESSIONS AND DATA TYPES IN C++</b>	
<i>Asadullah Shah and Assadullah Shaikh</i> .....	5
<b>3. SENDING THE OUTPUT TO A PRINT FILE</b>	
<i>Asadullah Shah and Assadullah Shaikh</i> .....	11
<b>4. DECISION MAKING: IF-ELSE STATEMENTS AND RELATIONAL OPERATORS</b>	
<i>Asadullah Shah and Assadullah Shaikh</i> .....	17
<b>5. LOGICAL OPERATORS AND SWITCH STATEMENTS</b>	
<i>Asadullah Shah and Assadullah Shaikh</i> .....	25
<b>6. REVIEW, SUMMARY &amp; BUILDING SKILL</b>	
<i>Asadullah Shah and Khamran Khowaza</i> .....	33
<b>7. ITERATIVE STRUCTURES</b>	
<i>Asadullah Shah and Khamran Khowaza</i> .....	39

<b>8. THE FOR LOOP</b>	
<i>Asadullah Shah and Khamran Khowaza</i> .....	49
<b>9. THE DO-WHILE LOOP</b>	
<i>Asadullah Shah and Khamran Khowaza</i> .....	55
<b>10. REVIEW OF VARIABLES, FORMATTING</b>	
<i>Asadullah Shah and Khamran Khowaza</i> .....	59
<b>11. REVIEW OF ITERATIVE STRUCTURES</b>	
<i>Asadullah Shah and Sumbul Khowaza</i> .....	63
<b>12. POST-TEST AND NESTED LOOPS</b>	
<i>Asadullah Shah and Sumbul Khowaza</i> .....	73
<b>13. FUNCTIONS</b>	
<i>Asadullah Shah and Sumbul Khowaza</i> .....	83
<b>14. CALL-BY-VALUE AND REFERENCE</b>	
<i>Asadullah Shah and Sumbul Khowaza</i> .....	91
<b>15. MORE ON FUNCTIONS</b>	
<i>Asadullah Shah and Sumbul Khowaza</i> .....	99
<b>16. STRUCTURES (STRUCT) AND FILES</b>	
<i>Asadullah Shah and Muniba Shaikh</i> .....	111
<b>17. ARRAYS</b>	
<i>Asadullah Shah and Muniba Shaikh</i> .....	119
<b>18. EXERCISE OF ARRAY</b>	
<i>Asadullah Shah and Muniba Shaikh</i> .....	127

<b>19. READ DATA FROM A FILE</b>	
<i>Asadullah Shah and Muniba Shaikh</i> .....	137
<b>20. OBJECT ORIENTED PROGRAMMING</b>	
<i>Asadullah Shah and Muniba Shaikh</i> .....	143
<b>21. SELECTION SORTING</b>	
<i>Asadullah Shah and Syed Ifthar Ali</i> .....	153
<b>22. BUBBLE SORT ALGORITHM</b>	
<i>Asadullah Shah and Syed Ifthar Ali</i> .....	161
<b>23. REVIEW OF ARRAYS</b>	
<i>Asadullah Shah and Syed Ifthar Ali</i> .....	167
<b>24. LINEAR SEARCHING</b>	
<i>Asadullah Shah and Syed Ifthar Ali</i> .....	179
<b>25. BINARY SEARCH</b>	
<i>Asadullah Shah and Syed Ifthar Ali</i> .....	189
<b>26. VECTOR CLASS</b>	
<i>Asadullah Shah and Ejaz Ahmed</i> .....	199
<b>27. POINTERS</b>	
<i>Asadullah Shah and Ejaz Ahmed</i> .....	203
<b>28. FUNCTION POINTERS</b>	
<i>Asadullah Shah and Ejaz Ahmed</i> .....	213
<b>29. POLYMORPHISM AND VIRTUAL FUNCTIONS</b>	
<i>Asadullah Shah and Ejaz Ahmed</i> .....	219

<b>30. C++ REFERENCES</b>	
<i>Asadullah Shah and Ejaz Ahmed</i> .....	223
<b>31. CONST CORRECTNESS</b>	
<i>Asadullah Shah and Osama Mahfooz</i> .....	229
<b>32. MORE ON CONST KEYWORDS</b>	
<i>Asadullah Shah and Osama Mahfooz</i> .....	235
<b>33. GOTO STATEMENT</b>	
<i>Asadullah Shah and Osama Mahfooz</i> .....	241
<b>34. HANDLING ERRORS IN C++</b>	
<i>Asadullah Shah and Osama Mahfooz</i> .....	249
<b>35. STATIC: THE MULTIPURPOSE KEYWORD</b>	
<i>Asadullah Shah and Osama Mahfooz</i> .....	253