C++ Programming

Step-by-Step

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IIUM PRESS
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

C++ PROGRAMMING: STEP BY STEP

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IIUM Press

Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011

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

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29. POLYMORPHISM AND VIRTUAL FUNCTIONS

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Abstract

In object-oriented programming, polymorphism is a concept wherein a name may denote instances of many different classes as long as they are related by some common super class.
Virtual functions are implemented behind the scenes using function pointers, so you really are using function pointers; it just happens that the compiler makes the work easier for you. Using polymorphism can be an appropriate strategy but it does lead to the overhead of having to create an object rather than simply pass in a function pointer.

29.1 Introduction

Modern object-Oriented (OO) languages provide three capabilities, encapsulation, inheritance and polymorphism. These three may increase the design, structure and reusability of the OOP codes. In OO languages polymorphism means that some code or operations behave differently in different contexts. For example a + operator may be have different functions to perform in different situations such as in there addition it does addition of two integers, for float number additions the same + operator does float additions and even for string operations it does concatenations of two strings. The same operator does three different functions. In C++ programming this type of polymorphism is called overloading.