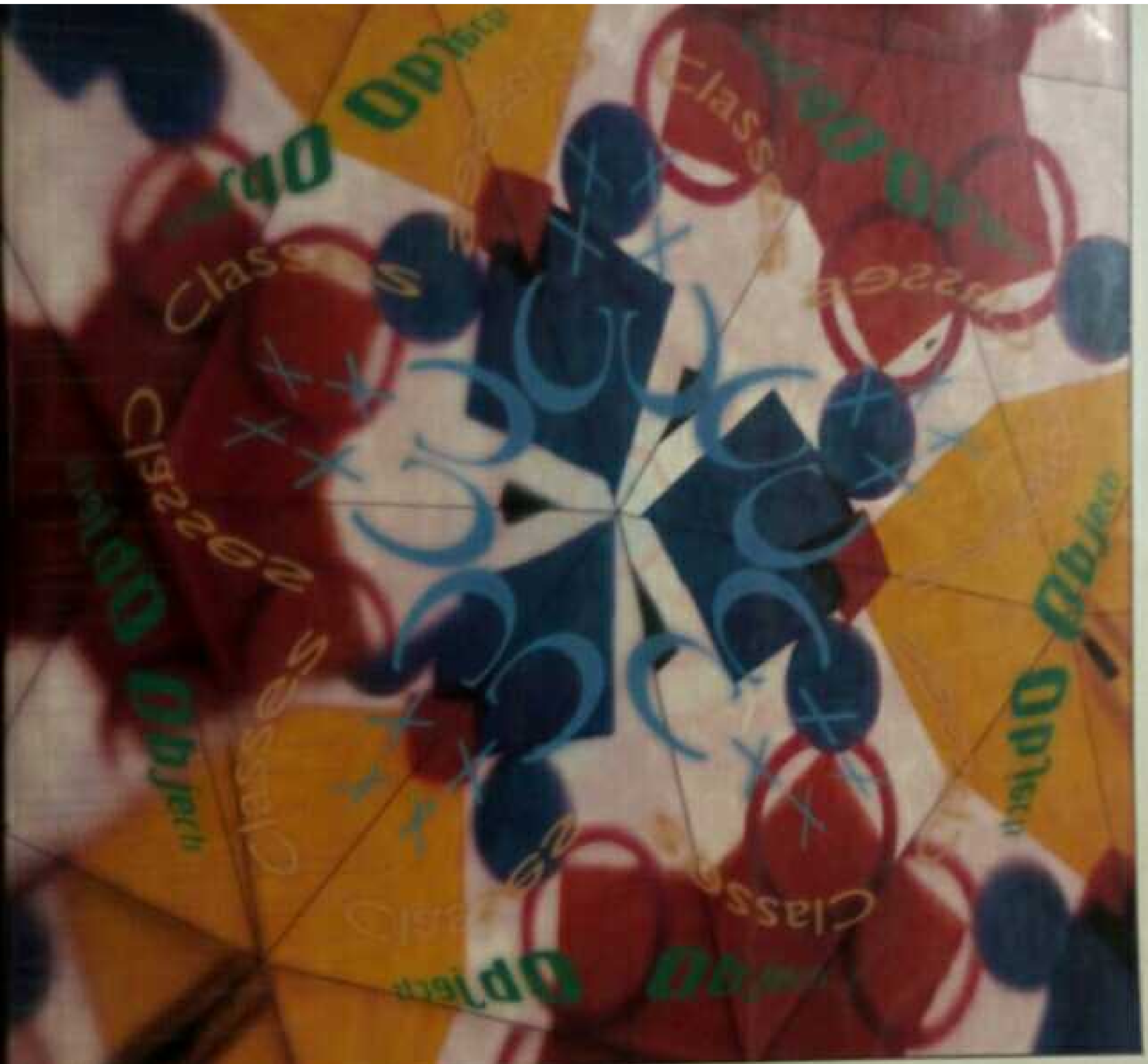
C++ PROGRAM DESIGN



An Introduction to
Programming and
Object-Oriented Design

James P. Cohoon ■ Jack W. Davidson

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CHAPTER 1

Computing and the object-oriented design methodology

Introduction

Computers are an integral part of life in the 90s. For example, most of us have used a word processing program. Computers are also being used in ways that are not as obvious. For example, every time you use your telephone, it likely connects to a computer system. Similarly, on your next plane trip, it may be that the aircraft was landed by a computer system and not the pilot! The term, *computer system*, is used to emphasize that there are two distinct components: hardware and software. The hardware is the computer itself. The software is the programs that tell the computer what to do. In the telephone system, it is the software that provides special features such as call waiting. Designing and building software is especially challenging today where a piece of software may consist of millions of lines of code. In recent years, the object-oriented programming design methodology has emerged and shown much promise for managing and coping with such complexity. In this chapter, we introduce basic computing terminology and the concepts behind object-oriented design. In successive chapters, we show how to design and write software using the object-oriented programming language C++.

Key Concepts

- CPU
- binary number system
- machine language
- system software
- application software
- operating system
- translation system
- compiler
- abstraction
- information hiding
- encapsulation
- modularization
- hierarchy
- reuse
- object-oriented design
- object-oriented language
- inheritance
- polymorphism

INTRODUCTION TO STATISTICS

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RONALD E. WALPOLE