The Fun of Programming

Edited by

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Preface

Functional programming has come of age: it is now a standard course in any computer science curriculum. Ideas that were first developed in the laboratory environment of functional programming have proved their values in wider settings, such as generic Java and XML. The time is ripe, therefore, to teach a second course on functional programming, delving deeper into the subject. This book is the text for such a course.

The emphasis is on the fun of programming in a modern, well designed programming language such as Haskell. There are chapters that focus on applications, in particular pretty printing, musical composition, hardware description, and graphical design. These applications are interspersed with chapters on techniques, such as the design of efficient data structures, interpreters for other languages, program testing and optimisation. These topics are of interest to every aspiring programmer, not just to those who choose to work in a functional language. Haskell just happens to be a very convenient vehicle for expressing the ideas, and the theme of functional programming as a *lingua franca* to communicate ideas runs throughout the book.

The prerequisites for this material are covered in any introductory course on functional programming. In fact, it is a seamless sequel to courses that are based on *An introduction to functional programming using Haskell* by Richard Bird [15]. Throughout the text, references to that book are made by the abbreviation 'IFPH'. The present volume could also be used as a sequel to other introductory books, however. All that is expected of the reader is a working knowledge of higher-order functions and polymorphism, and an understanding of lazy evaluation. Many of the chapters in this book are accompanied by software, which can be found on the website

http://web.comlab.ox.ac.uk/oucl/publications/books/fop

As the book is adopted for courses by others, we shall be happy to add links to further teaching materials.

This book was produced to celebrate the work of Richard S. Bird on his sixtieth birthday. For many years, Richard has led the development of functional programming, in particular in the area of synthesising programs from

specifications. Apart from these research contributions, he educated many generations of programmers through his textbooks. When the question of a festschrift came up, it was immediately evident that it should be a textbook of lasting value, written by his friends in the research community. Above all, we hope it conveys Richard's sense of fun in the subject, which has delighted us all. For this reason we have borrowed the title of one of Richard's own lectures: the *Fun of Programming*. Many happy returns, Richard!

We would like to thank our editors at Palgrave, Tracey Alcock, Esther Thackeray and Rebecca Mashayekh, for their efficient help in the production of this book. Andres Löh gave sterling help with thorough last-minute reviewing.

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