Programming Tutorials And Lecture Notes

This open access book offers an initial introduction to programming for scientific and computational applications using the Python programming language. The presentation style is compact and example-based, making it suitable for students and researchers with little or no prior experience in programming. The book uses relevant examples from mathematics and the natural sciences to present programming as a practical toolbox that can quickly enable readers to write their own programs for data processing and mathematical modeling. These tools include file reading, plotting, simple text analysis, and using NumPy for numerical computations, which are fundamental building blocks of all programs in data science and computational science. At the same time, readers are introduced to the fundamental concepts of programming, including variables, functions, loops, classes, and object-oriented programming. Accordingly, the book provides a sound basis for further computer science and programming studies.

This book presents thoroughly arranged tutorial papers corresponding to lectures given by leading researchers at the Second International Summer School on Reasoning Web in Lisbon, Portugal, in September 2006. Building on the predessor school held in 2005 and published as LNCS 3564, the ten tutorial lectures presented provide competent coverage of current topics in semantic Web research and development.

Generic programming attempts to make programming more efficient by making it more general. This book is devoted to a novel form of genericity in programs, based on parameterizing programs by the structure of the data they manipulate. The book presents the following four revised and extended chapters first given as lectures at the Generic Programming Summer School held at the University of Oxford, UK in August 2002: - Generic Haskell: Practice and Theory - Generic Haskell: Applications - Generic Properties of Datatypes - Basic Category Theory for Models of Syntax

Bidirectional transformations (BX) are means of maintaining consistency between multiple information sources: when one source is edited, the others may need updating to restore consistency. BX have applications in databases, user interface design, model-driven development, and many other domains. This volume represents the lecture notes from the Summer School on Bidirectional Transformations, held in Oxford, UK, in July 2016. The school was one of the final activities on the project "A Theory of Least Change for Bidirectional Transformations", running at the University of Oxford and the University of Edinburgh from 2013 to 2017 and funded by the UK Engineering and Physical Sciences Research Council. The five chapters included in this volume are a record of most of the material presented at the summer school. After a comprehensive introduction to bidirectional transformations, they deal with triple graph grammars, modular edit lenses, putback-based bidirectional programming, and engineering of bidirectional transformations.

The CHOROCHRONOS Approach

Second International Conference, Reflection'99 Saint-Malo, France, July 19-21, 1999 Proceedings

Software Engineering

Reflections on the Teaching of Programming

4th Summer School, CEFP 2011, Budapest, Hungary, June 14-24, 2011, Revised Selected Papers

Programming in D

Objective-C Programming

The second part of this Handbook presents a choice of material on the theory of automata and rewriting systems, the foundations of modern programming languages, logics for program specification and verification, and some chapters on the theoretic modelling of advanced information processing.

Python for Everybody is designed to introduce students to programming and software development through the lens of exploring data. You can think of the Python programming language as your tool to solve data problems that are beyond the capability of a spreadsheet.Python is an easy to use and easy to learn programming language that is freely available on Macintosh, Windows, or Linux computers. So once you learn Python you can use it for the rest of your career without needing to purchase any software.This book uses the Python 3 language. The earlier Python 2 version of this book is titled "Python for Informatics: Exploring Information".There are free downloadable electronic copies of this book in various formats and supporting materials for the book at www.pythonlearn.com. The course materials are available to you under a Creative Commons License so you can adapt them to teach your own Python course.

Python is an easy to learn, powerful programming language. It has efficient high-level data structures and a simple but effective approach to object-oriented programming. Python's elegant syntax and dynamic typing, together with its interpreted nature, make it an ideal language for scripting and rapid application development in many areas on most platforms. The Python interpreter and the extensive standard library are freely available in source or binary form for all major platforms from the Python Web site, https: //www.python.org/, and may be freely distributed. The same site also contains distributions of and pointers to many free third party Python modules, programs and tools, and additional documentation. The Python interpreter is easily extended with new functions and data types implemented in C or C++ (or other languages callable from C). Python is also suitable as an extension language for customizable applications. This tutorial introduces the reader informally to the basic concepts and features of the python language and system. It helps to have a Python interpreter handy for hands-on experience, but all examples are self contained, so the tutorial can be read off-line as well. For a description of standard objects and modules, see library-index. reference-index gives a more formal definition of the language. To write extensions in C or C++, read extending-index and c-api-index. There are also several books covering Python in depth. This tutorial does not attempt to be comprehensive and cover every single feature, or even every commonly used feature. Instead, it introduces many of Python's most noteworthy features, and will give you a good idea of the language's flavor and style. After reading it, you will be able to read and write Python modules and *programs, and you will be ready to learn more about the various Python library modules described in library-index. The Glossary is also worth going through.*

This book is a tribute to Professor Ewa Orłowska, a Polish logician who was celebrating the 60th year of her scientific career in 2017. It offers a collection of contributed papers by different authors and covers the most important areas of her research. Prof. Orłowska made significant contributions to many fields of logic, such as proof theory, algebraic methods in logic and knowledge representation, and her work has been published in 3 monographs and over 100 articles in internationally acclaimed journals and conference proceedings. The book also includes Prof. Orłowska's autobiography, bibliography and a trialogue between her and the editors of the volume, as well as contributors' biographical notes, and is suitable for scholars and students of logic who are interested in understanding more about Prof. Orłowska's work.

R and Data Mining

Introduction to Scientific Programming with Python

Advanced Lectures

Advanced Functional Programming

The Java Tutorial

A Tutorial for Hobbyists, Self-starters, and All who Want to Learn the Art of Computer Programming

Tools for Practical Software Verification

This tutorial is intended as an introduction to Lisp programming for persons who already have experience programming in some language, e.g. FORTRAN. This course presents a set of basic system functions that are frequently used and are present in virtually every Lisp implementation. The material follows the conventions of Common Lisp. Five programming assignments are included.

R and Data Mining introduces researchers, post-graduate students, and analysts to data mining using R, a free software environment for statistical computing and graphics. The book provides practical methods for using R in applications from academia to industry to extract knowledge from vast amounts of data. Readers will find this book a valuable guide to the use of R in tasks such as classification and prediction, clustering, outlier detection, association rules, sequence analysis, text mining, social network analysis, sentiment analysis, and more. Data mining techniques are growing in popularity in a broad range of areas, from banking to insurance, retail, telecom, medicine, research, and government. This book focuses on the modeling phase of the data mining process, also addressing data exploration and model evaluation. With three in-depth case studies, a quick reference guide, bibliography, and links to a wealth of online resources, R and Data Mining is a valuable, practical guide to a powerful method of analysis. Presents an introduction into using R for data mining applications, covering most popular data mining techniques Provides code examples and data so that readers can easily learn the techniques Features case studies in real-world applications to help readers apply the techniques in their work

* Quick start to learning python—very example oriented approach * Book has its own Web site established by the author: http://diveintopython.org/ Author is well known in the Open Source community and the book has a unique quick approach to learning an object oriented language.

The LASER Summer School is intended for professionals from industry (engineers and managers) as well as university researchers, including PhD students. Participants learn about the most important software technology advances from pioneers in the field. Since its inception in 2004, the LASER Summer School has focused on an important software engineering topic each year. This volume contains selected lecture notes from the 10th LASER Summer School on Software Engineering: Leading-Edge Software Engineering.

Formal Models and Semantics

Crossing Design Boundaries

A Playful Introduction To Programming

Sixth Conference, New Delhi, India, December 18-20, 1986 : Proceedings

Introduction to C++

S. Chand's ICSE Commerical Applications for Classes 9

Exploring Data in Python 3

The free book "Fundamentals of Computer Programming with C#" is a comprehensive computer programming tutorial that teaches programming, logical thinking, data structures and algorithms, problem solving and high quality code with lots of examples in C#. It starts with the first steps in programming and software development like variables, data types, conditional statements, loops and arrays and continues with other basic topics like methods, numeral systems, strings and string processing, exceptions, classes and objects. After the basics this fundamental programming book enters into *more advanced programming topics like recursion, data structures (lists, trees, hash-tables and graphs), high-quality code, unit testing and refactoring, object-oriented principles (inheritance, abstraction, encapsulation and polymorphism) and their implementation the C# language. It also covers fundamental topics that each good developer should know like algorithm design, complexity of algorithms and problem solving. The book uses C# language and Visual Studio to illustrate the programming concepts and explains some C# / .NET specific technologies like lambda expressions, extension methods and LINQ. The book is written by a team of developers lead by Svetlin Nakov who has 20+ years practical software development experience. It teaches the major programming concepts and way of thinking needed to become a good software engineer and the C# language in the meantime. It is a great start for anyone who wants to become a skillful software engineer. The books does not teach technologies like databases, mobile and web development, but shows the true way to master the basics of programming regardless of the languages, technologies and tools. It is good for beginners and intermediate developers who want to put a solid base for a successful career in the software engineering industry. The book is accompanied by free video lessons, presentation slides and mind maps, as well as hundreds of exercises and live examples. Download the free C# programming book, videos, presentations and other resources from http://introprogramming.info. Title: Fundamentals of Computer Programming with C# (The Bulgarian C# Programming Book) ISBN: 9789544007737 ISBN-13: 978-954-400-773-7 (9789544007737) ISBN-10: 954-400-773-3 (9544007733) Author: Svetlin Nakov & Co. Pages: 1132 Language: English Published: Sofia, 2013 Publisher: Faber Publishing, Bulgaria Web site: http://www.introprogramming.info License: CC-Attribution-Share-Alike Tags: free, programming, book, computer programming, programming fundamentals, ebook, book programming, C#, CSharp, C# book, tutorial, C# tutorial; programming concepts, programming fundamentals, compiler, Visual Studio, .NET, .NET Framework, data types, variables, expressions, statements, console, conditional statements, control-flow logic, loops, arrays, numeral systems, methods, strings, text processing, StringBuilder, exceptions, exception handling, stack trace, streams, files, text files, linear data structures, list, linked list, stack, queue, tree, balanced tree, graph, depth-first search, DFS, breadth-first search, BFS, dictionaries, hash tables, associative arrays, sets, algorithms, sorting algorithm, searching algorithms, recursion, combinatorial algorithms, algorithm complexity, OOP, object-oriented programming, classes, objects, constructors, fields, properties, static members, abstraction, interfaces, encapsulation, inheritance, virtual methods, polymorphism, cohesion, coupling, enumerations, generics, namespaces, UML, design patterns, extension methods, anonymous types, lambda expressions, LINQ, code quality, high-quality code, high-quality classes, high-quality methods, code formatting, self-documenting code, code refactoring, problem solving, problem solving methodology, 9789544007737, 9544007733*

Python is a powerful, expressive programming language that’s easy to learn and fun to use! But books about learning to program in Python can be kind of dull, gray, and boring, and that’s no fun for anyone. Python for Kids brings Python to life and brings you (and your parents) into the world of programming. The ever-patient Jason R. Briggs will guide you through the basics as you experiment with unique (and often hilarious) example programs that feature ravenous monsters, secret agents, thieving ravens, and more. New terms are defined; code is colored, dissected, and explained; and quirky, full-color illustrations keep things on the lighter side. Chapters end with programming puzzles designed to stretch your brain and strengthen your understanding. By the end of the book you’ll have programmed two complete games: a clone of the famous Pong and "Mr. Stick Man Races for the Exit"—a platform game with jumps, animation, and much more. As you strike out on your programming adventure, you’ll learn how to: –Use fundamental data structures like lists, tuples, and maps –Organize and reuse your code with functions and modules –Use control structures like loops and conditional statements –Draw shapes and patterns with Python’s turtle module –Create games, animations, and other graphical wonders with tkinter Why should serious adults have all the fun? Python for Kids is your ticket into the amazing world of computer programming. For kids ages 10+ (and their parents) The code in this book runs on almost anything: Windows, Mac, Linux, even an OLPC laptop or Raspberry Pi!

An easy to read introduction to programming in Pascal which assumes no basic programming knowledge. Illustrated throughout with code samples and includes suggested tutorial exercises, some with solutions for review purposes. Based on slides written to deliver Introduction to Programming in Pascal 101.

This volume presents the revised lecture notes of selected talks given at the Fourth Central European Functional Programming School, CEFP 2011, held in June 2011 in Budapest, Hungary. The 11 revised full papers presented were carefully reviewed by experts on functional programming and revised based on the reviews. The lectures cover a wide range of distributed and multicore functional programming subjects. The last 2 papers are selected papers of the PhD Workshop organized for the participants of the summer school.

Ewa Orłowska on Relational Methods in Logic and Computer Science

Python for Kids

Release 3. 6. 6rc1

Android Programming Tutorials

The Ten Years of CPAIOR

Python Tutorial

Elements and Digitization of Computer

An easy to read introduction to programming in C++ which assumes some basic programming knowledge. Illustrated throughout with code samples and includes suggested tutorial exercises without solutions for review purposes. Based on slides written to deliver Introduction to Programming in C++ / C++ 101.

Are you a... Systems administrator frustrated by the deficiencies of your existing tools? Web site creator wanting to produce more dynamic content? Computer user with a desire to know what's going on inside the box? Then "Learn to Program Using Python" is the book for you. You will find this book to be an ideal starting point for learning the essentials of computer programming. Assuming no prior knowledge (other than basic computer operation), this unintimidating and clearly written guide introduces you to programming terminology, fundamental concepts, and techniques for writing actual code. Python is ideal for novice programmers: it is available for free; it has simple syntax but powerful features; it supports lots of programming styles; it runs on many platforms; it has a friendly and helpful user community. This book uses the Python language to teach you the fundamentals of computer programming. Once you master the basic techniques and concepts you learn in this book, you can apply them to any language you choose to work with. "Learn to Program Using Python" is based on a popular on-line tutorial that has been expanded and enhanced for this book. It takes you step-by-step through all the essential programming topics. You will learn about: Sequences, branching, and looping Data types and variables Input and output Modular programming Handling files and text Errors Recursion Namespaces Object-oriented programming Event-driven programming Regular expressions Debugging In addition, the book introduces elements of programming style and offers a look at the thinking and steps involved in designing a software solution. Several sample applications illustrate techniques and ideas in action.

This book has been written to meet the requirement of the students of First year of all Universities. I have adopted a simple style that will help students to learn according to the new syllabus , features and commands in a step-by-step manner. This book is organized into thirteen chapters.

Want to write iOS apps or desktop Mac applications? This introduction to programming and the Objective-C language is your first step on the journey from someone who uses apps to someone who writes them. Based on Big Nerd Ranch's popular Objective-C Bootcamp, Objective-C Programming: The Big Nerd Ranch Guide covers C, Objective-C, and the common programming idioms that enable developers to make the most of Apple technologies. Compatible with Xcode 5, iOS 7, and OS X Mavericks (10.9), this guide features short chapters and an engaging style to keep you motivated and moving forward. At the same time, it encourages you to think critically as a programmer. Here are some of the topics covered: Using Xcode, Apple’s documentation, and other tools Programming basics: variables, loops, functions, etc. Objects, classes, methods, and messages Pointers, addresses, and memory management with ARC Properties and Key-Value Coding (KVC) Class extensions Categories Classes from the Foundation framework Blocks Delegation, target-action, and notification design patterns Key-Value Observing (KVO) Runtime basics

Introduction to Pascal

Second Summer School, CEFP 2007, Cluj-Napoca, Romania, June 23-30, 2007, Revised Selected Lectures

Examples and Case Studies

The C Programming Language

Tutorial and Reference

Lecture Notes of the SVOR/ASRO Tutorial Thun, Switzerland, October 14–16, 1992

Second International Summer School 2006, Lisbon, Portugal, September 4-8, 2006, Tutorial Lectures

This tutorial book presents seven carefully revised lectures given at the 6th International School on Functional Programming, AFP 2008, in Heijen, The Netherlands in May 2008. The book presents the following seven, carefully cross-reviewed chapters, written by leading authorities in the field: Self-adjusting: Computation with Delta ML, spider spinning for dummies, from reduction-based to reduction-free normalization, libraries for generic programming in Haskell, dependently typed programming in agda, parallel and concurrent programming in Haskell and an iTask case study: a conference management system.

This book is an introduction and source book for practitioners, graduate s- dents, and researchers interested in the state of the art and practice in spatiot- poral databases. It collects the most important and representative research c- ried out in the project CHOROCHRONOS and presents it in a uni?ed fashion. CHOROCHRONOS was a Training and Mobility Research Network funded by the European Commission with the objective to study the design, implemen- tion, and application of spatiotemporal database management systems. This book would never have been possible if it was not for the devoted work of many people. First and foremost, we would like to thank the authors of the nine chapters of this book for their hard work. We would also like to acknowledge the help of Christiane Bernard, our o?cer from the European Commission, who saw the project to its conclusion, working as hard as we did to make it a thorough success. The constructive comments and feedback of our reviewer Colette Roland (University of Paris-1) are also very much appreciated. Last, but not least, we would like to thank all the students and postdoctoral fellows who were trained during CHOROCHRONOS. We hope the time they spent at CHOROCHRONOS node institutions was rewarding and lots of fun! March 2003 Timos Sellis Manolis Koubarakis Andrew Frank, Vienna St ´ ephane Grumbach Ralf Hartmut Guting ¨ Christian Jensen Nikos Lorentzos Yannis Manolopoulos Enrico Nardelli Barbara Pernici Babis Theodoulidis Nectaria Tryfona Hans-J ¨ org Schek Michel Scholl Table of Contents 1 Introduction . . . .

Introduces the features of the C programming language, discusses data types, variables, operators, control flow, functions, pointers, arrays, and structures, and looks at the UNIX system interface

The LASER school is intended for professionals from the industry (engineers and managers) as well as university researchers, including PhD students. Participants learn about the most important software technology advances from the pioneers in the field. The school's focus is applied, although theory is welcome to establish solid foundations. The format of the school favors extensive interaction between participants and speakers. LASER 2011 is devoted to software verification tools. There have been great advances in the field of software verification in recent years. Today verification tools are being increasingly used not only by researchers, but by programming practitioners. The summer school will focus on several of the most prominent and practical of such tools from different areas of software verification (such as formal proofs, testing and model checking). During the school the participants will not only learn the principles behind the tools, but also get hands-on experience, trying the tools on real programs.

Reasoning Web

Generic Programming

Spatio-Temporal Databases

Programming with C++

Meta-Level Architectures and Reflection

Verified Functional Programming in Agda

International Summer School, Oxford, UK, July 25-29, 2016, Tutorial Lectures

Hybrid Optimization focuses on the application of artificial intelligence and operations research techniques to constraint programming for solving combinatorial optimization problems. This book covers the most relevant topics investigated in the last ten years by leading experts in the field, and speculates about future directions for research. This book includes contributions by experts from different but related areas of research including constraint programming, decision theory, operations research, SAT, artificial intelligence, as well as others. These diverse perspectives are actively combined and contrasted in order to evaluate their relative advantages. This volume presents techniques for hybrid modeling, integrated solving strategies including global constraints, decomposition techniques, use of relaxations, and search strategies including tree search local search and metaheuristics. Various applications of the techniques presented as well as supplementary computational tools are also discussed.

This volume presents the revised lecture notes of selected talks given at the second Central European Functional Programming School, CEFP 2007, held June 23–30, 2007 at Babe¸ s-Bolyai University, Cluj-Napoca, Romania. The summer school was organized in the spirit of the advanced progr- ming schools. CEFP focuses on involving an ever-growing number of students, researchers,andteachersfromcentral,andeasternEuropeancountries.We were glad to welcome the invited lecturers and the participants: 15 professors and 30 students from 9 di?erent universities. The intensive program o?ered a creative and inspiring environment and a great opportunity to present and exchange ideas in new topics of functional programming. The lectures covereda wide range of topics like interactive work ?ows for the Web, proving properties of lazy functional programs, lambda calculus and - stract lambda calculus machines, programming in ? mega, object-oriented fu- tional programming, and refactoring in Erlang. We are very grateful to the lecturers and researchers for the time and the e?ort they devoted to the talks and the revised lecture notes. The lecture notes were each carefully checked by reviewers selected from experts of functional programming. Afterwards the papers were revised once more by the lecturers. This revision process guaranteed that only high-quality papers are accepted in the volume of the lecture notes.

This state-of-the-art survey, reflecting on the teaching of programming, has been written by a group of primarily Scandinavian researchers and educators with special interest and experience in the subject of programming. The 14 chapters - contributed by 24 authors - present practical experience gathered in the process of teaching programming and associated with computing education research work. Special emphasis is placed on practical advice and concrete suggestions. The authors are all members of the Scandinavian Pedagogy of Programming Network (SPoP), and bring together a diverse body of experiences from the Nordic countries. The 14 chapters of the book have been carefully written and edited to present 4 coherent units on issues in introductory programming courses, object-oriented programming, teaching software engineering issues, and assessment. Each of these individual parts has its own detailed introduction. The topics addressed span a wide range of problems and solutions associated with the teaching of programming such as introductory programming courses, exposition of the programming process, apprentice-based learning, functional programming first, problem-based learning, the use of on-line tutorials, object-oriented programming and Java, the BlueJ environment to introduce programming, model-driven programming as opposed to the prevailing language-driven approach, teaching software engineering, testing, extreme programming, frameworks, feedback and assessment, active learning, technology-based individual feedback, and mini project programming exams.

"Android Programming Tutorials" show you what you can do with Android, through a series of 28 individual exercises, giving you hands-on instruction in how to build sophisticated Android applications, using many of the technologies outlined in CommonsWare's other Android books. These exercises lead you through the basics of creating Android applications, all the way through many fun Android features like Internet access, location tracking, maps, integrated WebKit browsers, cameras, accelerometers, and much more. Full source code to all the exercise answers is available right on this page, to help you if you get stuck. "Android Programming Tutorials" makes an excellent companion volume to more traditional Android books that merely tell you what is possible. The book has been battle-tested, used in the author's live Android training events, with the exercises put through their paces by hundreds of students.

Central European Functional Programming School

Lisp Programming Lecture Notes

Foundations of Software Technology and Theoretical Computer Science

International Summer School, LASER 2011, Elba Island, Italy, Revised Tutorial Lectures

The Bulgarian C# Book

Proceedings of the 3rd Engineering & Product Design Education International Conference, 15-16 September 2005, Edinburgh, UK

International Summer Schools, LASER 2013-2014, Elba, Italy, Revised Tutorial Lectures

S. Chand’s ICSE Commerical Applications for Classes 9

The Java® Tutorial, Fifth Edition, is based on Release 7 of the Java Platform Standard Edition. This revised and updated edition introduces the new features added to the platform, including a section on NIO.2, the new file I/O API, and information on migrating legacy code to the new API. The deployment coverage has also been expanded, with new chapters such as “Doing More with Rich Internet Applications” and “Deployment in Depth,” and a section on the fork/join feature has been added to the chapter on concurrency. Information reflecting Project Coin developments, including the new try-with-resources statement, the ability to catch more than one type of exception with a single exception handler, support for binary literals, and diamond syntax, which results in cleaner generics code, has been added where appropriate. The chapters covering generics, Java Web Start, and applets have also been updated. In addition, if you plan to take one of the Java SE 7 certification exams, this guide can help. A special appendix, “Preparing for Java Programming Language Certification,” lists the three exams available, details the items covered on each exam, and provides cross-references to where more information about each topic appears in the text. All of the material has been thoroughly reviewed by members of Oracle Java engineering to ensure that the information is accurate and up to date.

Software defects lead to enormous costs for the software industry and society as a whole. While testing is useful to find bugs, it is insufficient to show the absence of certain kinds of errors or that a program satisfies its specification. Such high levels of software quality can be achieved by software verification, that is, by proving the correctness of a program with respect to its specification. Software verification has seen tremendous progress during the last decade; it continues to be an active research topic and is now also becoming increasingly popular among practitioners. This tutorial contains selected papers from the LASER summer Schools 2007 and 2008, both of which focused on correctness - Applied Software Verification in 2007 and Concurrency and Correctness in 2008. Topics covered include verification of fine-grain concurrency and transactions, the SCOOP model for concurrent object-oriented programming, the Spec# programming and verification system, verification in the prototype verification system PVS, and multi-core chip design.

This book constitutes the refereed proceedings of the Second International Conference on Meta-Level Architectures and Reflection, Reflection'99, held in St. Malo, France in July 1999. The 13 revised full papers presented were carefully selected from 44 submissions. Also included are six short papers and the abstracts of three invited talks. The papers are organized in sections on programming languages, meta object protocols, middleware/multi-media, work in progress, applications, and meta-programming. The volume covers all current issues arising in the design and analysis of reflective systems and demontrates their practical applications.

Non-Programmers Tutorial For Python 2 and 3

Lecture Notes

The Big Nerd Ranch Guide

6th International School, AFP 2008, Heijen, The Netherlands, May 19-24, 2008, Revised Lectures

Python for Everybody

A Short Course on the Basics

Fundamentals of Computer Programming with C#

Agda is an advanced programming language based on Type Theory. Agda's type system is expressive enough to support full functional verification of programs, in two styles. In external verification, we write pure functional programs and then write proofs of properties about them. The proofs are separate external artifacts, typically using structural induction. In internal verification, we specify properties of programs through rich types for the programs themselves. This often necessitates including proofs inside code, to show the type checker that the specified properties hold. The power to prove properties of programs in these two styles is a profound addition to the practice of programming, giving programmers the power to guarantee the absence of bugs, and thus improve the quality of software more than previously possible. Verified Functional Programming in Agda is the first book to provide a systematic exposition of external and internal verification in Agda, suitable for undergraduate students of Computer Science. No familiarity with functional programming or computer-checked proofs is presupposed. The book begins with an introduction to functional programming through familiar examples like booleans, natural numbers, and

lists, and techniques for external verification. Internal verification is considered through the examples of vectors, binary search trees, and Braun trees. More advanced material on type-level computation, explicit reasoning about termination, and normalization by evaluation is also included. The book also includes a medium-sized case study on Huffman encoding and decoding.

This tutorial volume includes revised and extended lecture notes of six long tutorials, five short tutorials, and one peer-reviewed participant contribution held at the 4th International Summer School on Generative and Transformational Techniques in Software Engineering, GTTSE 2011. The school presents the state of the art in software language engineering and generative and transformational techniques in software engineering with coverage of foundations, methods, tools, and case studies.

This book presents over 100 papers from the 3rd Engineering & Product Design Education International Conference dedicated to the subject of exploring novel approaches in product design education. The theme of the book is "Crossing Design Boundaries" which reflects the editors' wish to incorporate many of the disciplines associated with, and integral to, modern product design and development pursuits. Crossing Design Boundaries covers, for example, the conjunction of anthropology and design, the psychology of design products, the application of soft computing in wearable products, and the utilisation of new media and design and how these can be best exploited within the current product design arena. The book includes discussions concerning product design education and the cross-over into other well established design disciplines such as interaction design, jewellery design, furniture design, and exhibition design which have been somewhat under represented in recent years. The book comprises a number of sections containing papers which cover highly topical and relevant issues including Design Curriculum Development, Interdisciplinarity, Design Collaboration and Team Working, Philosophies of Design Education, Design Knowledge, New Materials and New Technologies in Design, Design Communication, Industrial Collaborations and Working with Industry, Teaching and Learning Tools, and Design Theory.

Permanently increasing requirements in power supply necessitate efficient control of electric power systems. An emerging subject of importance is optimization. Papers on modelling aspects of unit commitment and optimal power flow provide the introduction to power systems control and to its associated problem statement. Due to the nature of the underlying optimization problems recent developments in advanced and well established mathematical programming methodologies are presented, illustrating in which way dynamic, separable, continuous and stochastic features might be exploited. In completing the various methodologies a number of presentations have stated experiences with optimization packages currently used for unit commitment and optimal power flow calculations. This work represents a state-of-the-art of mathematical programming methodologies, unit commitment, optimal power flow and their applications in power system control.

Advanced Lectures on Software Engineering

Learn to Program Using Python

Methods and Implementations

LASER Summer School 2007/2008

Generative and Transformational Techniques in Software Engineering IV

International Summer School, GTTSE 2011, Braga, Portugal, July 3-9, 2011, Revised and Extended Papers

Hybrid Optimization