The Concept of Abstraction

- An *abstraction* is a view or representation of an entity that includes only the most significant attributes

- The concept of abstraction is fundamental in programming (and computer science)

- Nearly all programming languages support process abstraction with subprograms

- Nearly all programming languages designed since 1980 support *data abstraction*

Data Abstraction In Programming Languages

Frank M. Carrano

Data Abstraction In Programming Languages:

   Data Abstraction in Programming Languages Judith Mary Bishop,1986   Data Abstraction and Object-Oriented Programming in C++ Keith E. Gorlen,Sanford M. Orlow,Perry S. Plexico,1990-07-11 Software Programming Languages   Data Abstraction, Databases, and Conceptual Modelling Michael L. Brodie,1980   **Data Abstraction and Problem Solving with Java** Frank M. Carrano,Janet J. Prichard,2001 This work focuses on the important concepts of data abstraction and data structures It also introduces students to java classes along with other basic concepts of object oriented programming including inheritance polymorphism interfaces and packages   *Data Abstraction and Problem Solving with C++* Frank M. Carrano,1995 This work provides novice and professional programmers with a bridge from traditional programming methods to the object oriented techniques available in C It clearly explains encapsulation and C classes which are then used throughout to implement abstract data types such as lists stacks queues trees and tables Inheritance polymorphism templates and operator overloading are explained both conceptually and through examples The work offers early extensive coverage of recursion and uses the technique through many examples and exercises It sets out to provide a firm foundation in data abstraction emphasizing the distinction between specifiation and implementation   *Data Abstraction and Problem Solving with Java* Frank M. Carrano,Janet J. Prichard,2006 The second edition in Java of the classic Walls and Mirrors approach to programming designs solutions to problems using both data abstraction the walls and recursion the Mirrors Data Abstraction and Problem Solving with Java Walls and Mirrors 2eprovides a focus on the important concepts of data abstraction and data structures in a way that beginning programmers find accessible The first part of the book covers problem solving techniques including a review of Java fundamentals principles of programming and software engineering recursion and data abstraction and linked lists Later chapters focus on problem solving with abstract data types including stacks queues algorithm efficiency and sorting trees and graphs This edition contains enhanced material on OO implementation MARKET Readers searching for problem solving solutions through abstraction algorithmic refinement data structures and recursion   Bibliography on Abstract Data Types B. Kutzler,F. Lichtenberger,2012-12-06 Sponsored by the sterr Fonds zur F rderung der Wissenschaftlichen Forschung project nr P4567   **Data Abstraction** Joseph Bergin,1994 This text takes a object oriented approach to teaching data abstraction using C It consists of three main sections an overview in which the principles of object oriented design and development are presented the implementation of the various data abstractions including approximately 90 classes and three case studies The case studies and integrated examples reinforce other computer science topics and the discussions of finite automata program translation and database normalization are intended to introduce concepts that will be discussed again in detail in other courses   *A Data Abstraction Language for Concurrent Programming* Thomas Peter Murtagh,1983   **Data Abstraction and Problem Solving with C++** Frank M. Carrano,Janet J. Prichard,2002 This classic book has been revised to further enhance its focus on data abstraction and data

structures using C The book continues to provide a firm foundation in data abstraction emphasizing the distinction between specification and implementation as the foundation for an object oriented approach The authors cover key object oriented concepts including encapsulation inheritance and polymorphism However the focus remains on data abstraction instead of simply C syntax The authors also illustrate the role of classes and ADTs in the problem solving process and includes major applications of ADTs such as searching a flight map and event driven simulation The book offers early extensive coverage of recursion and uses this technique in many examples and exercises It also introduces analysis of algorithms and the Big O notation In addition this text reviews in an appendix basic C syntax for those who either have studied the language previously or are making the transition from another language to C **Data Abstraction** Joseph Bergin,1994-01 This text takes a object oriented approach to teaching data abstraction using C It consists of three main sections an overview in which the principles of object oriented design and development are presented the implementation of the various data abstractions including approximately 90 classes and three case studies The case studies and integrated examples reinforce other computer science topics and the discussions of finite automata program translation and database normalization are intended to introduce concepts that will be discussed again in detail in other courses **Data Abstraction & Problem Solving with C++** Frank M. Carrano,Timothy M. Henry,2013-11-06 This classic best selling data structures text provides a firm foundation in data abstraction that emphasizes the distinction between specifications and implementation as the basis for an object oriented approach Software engineering principles and concepts as well as UML diagrams are used to enhance student understanding The full text downloaded to your computer With eBooks you can search for key concepts words and phrases make highlights and notes as you study share your notes with friends eBooks are downloaded to your computer and accessible either offline through the Bookshelf available as a free download available online and also via the iPad and Android apps Upon purchase you ll gain instant access to this eBook Time limit The eBooks products do not have an expiry date You will continue to access your digital ebook products whilst you have your Bookshelf installed **Data Abstraction and Problem Solving with Java** Janet J. Prichard,Frank M. Carrano,2011 Data Abstraction and Problem Solving in C and is now updated to the Java programming language It uses the running theme of Walls and Mirrors to help make clear the challenging concepts of recursion the mirrors and data abstraction the walls Authors Carrano and Prichard cover key object oriented concepts including encapsulation inheritance and polymorphism However the focus of the book remains on data abstraction instead of simply Java syntax Programming Languages Terrence W. Pratt,Marvin V. Zelkowitz,2001 This describes programming language design by means of the underlying software and hardware architecture that is required for execution of programs written in those languages **Data Abstraction & Problem Solving with C++** Frank M. Carrano,2007 The classic best selling Data Abstraction and Problem Solving with C Walls and Mirrors book provides a firm foundation in data abstraction that emphasizes the distinction between specifications and implementation as the basis for an

object oriented approach This new edition offers the latest C features and an introduction to using Doxygen a documentation generator for C enhanced coverage of Software Engineering concepts and additional UML diagrams Frank s Making it Real blog http frank m carrano com blog extends his textbooks and lectures to a lively discussion with instructors and students about teaching and learning computer science Follow Frank on Twitter http twitter com Frank_M_Carrano Find him on Facebook https www facebook com makingitreal **Data Abstraction and Object-Oriented Programming in C++** Keith E. Gorlen,Sanford M. Orlow,Perry S. Plexico,1990-07-11 Software Programming Languages *A Course in Data Abstraction* Joseph Bergin,1994-01 This text takes a object oriented approach to teaching data abstraction using C It consists of three main sections an overview in which the principles of object oriented design and development are presented the implementation of the various data abstractions including approximately 90 classes and three case studies The case studies and integrated examples reinforce other computer science topics and the discussions of finite automata program translation and database normalization are intended to introduce concepts that will be discussed again in detail in other courses

Data Abstraction and Structures Using C++ Mark R. Headington,David D. Riley,1997 A text designed specifically for a second course in computer science fundamentals that uses C as the expository language After a review and expansion of introductory computer science concepts treatment progresses to data abstraction and structure recursion design of abstract data types object **Objects, Abstraction, Data Structures and Design** Elliot B. Koffman,Paul A. T. Wolfgang,2005-10-20 Koffman and Wolfgang introduce data structures in the context of C programming They embed the design and implementation of data structures into the practice of sound software design principles that are introduced early and reinforced by 20 case studies Data structures are introduced in the C STL format whenever possible Each new data structure is introduced by describing its interface in the STL Next one or two simpler applications are discussed then the data structure is implemented following the interface previously introduced Finally additional advanced applications are covered in the case studies and the cases use the STL In the implementation of each data structure the authors encourage students to perform a thorough analysis of the design approach and expected performance before actually undertaking detailed design and implementation Students gain an understanding of why different data structures are needed the applications they are suited for and the advantages and disadvantages of their possible implementations Case studies follow a five step process problem specification analysis design implementation and testing that has been adapted to object oriented programming Students are encouraged to think critically about the five step process and use it in their problem solutions Several problems have extensive discussions of testing and include methods that automate the testing process Some cases are revisited in later chapters and new solutions are provided that use different data structures The text assumes a first course in programming and is designed for Data Structures or the second course in programming especially those courses that include coverage of OO design and algorithms A C primer is provided for students who have taken a course in another programming language or

for those who need a review in C Finally more advanced coverage of C is found in an appendix Course Hierarchy Course is the second course in the CS curriculum Required of CS majors Course names include Data Structures and Data Structures Algorithms   Concepts of Programming Languages Robert W. Sebesta,2010 KEY BENEFIT A thorough introduction to the main constructs of contemporary programming languages and the tools needed to critically evaluate existing and future programming languages KEY TOPICS Evolution of the Major Programming Languages Describing Syntax and Semantics Lexical and Syntax Analysis Names Bindings Type Checking and Scopes Data Types Expressions and Assignment Statements Statement Level Control Structures Subprograms Implementing Subprograms Abstract Data Types and Encapsulation Constructs Support for Object Oriented Programming Concurrency Exception Handling and Event Handling Functional Programming Languages Logic Programming Languages MARKET An ideal reference encapsulating the history and future of programming languages

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