|  |
| --- |
| **Chapter 1** |
| * Chapter Topics |
| * Java History |
| * Introduction |
| * Java Applications and Applets |
| * Why Program? |
| * Computer Systems: Hardware |
| * Central Processing Unit |
| * Main Memory |
| * Secondary Storage Devices |
| * Input Devices |
| * Output Devices |
| * Computer Systems: Software |
| * Operating Systems |
| * Application Software |
| * Programming Languages |
| * Common Language Elements |
| * Sample Program |
| * Lines vs Statements |
| * Variables |
| * The Compiler and the Java Virtual Machine |
| * Program Development Process |
| * Portability |
| * Java Versions |
| * Compiling a Java Program |
| * The Programming Process |
| * Software Engineering |
| * Procedural Programming |
| * Object-Oriented Programming |
|  |
| **Chapter 2** |
| * Chapter Topics (2) |
| * Parts of a Java Program |
| * Analyzing The Example |
| * Java Statements |
| * Short Review |
| * Special Characters |
| * Console Output |
| * Java Escape Sequences |
| * Variables and Literals |
| * The + Operator |
| * String Concatenation |
| * Identifiers |
| * Java Reserved Keywords |
| * Variable Names |
| * Java Naming Conventions |
| * Primitive Data Types |
| * Numeric Data Types |
| * Variable Declarations |
| * Integer Data Types |
| * Floating Point Data Types |
| * Floating Point Literals |
| * Scientific and E Notation |
| * The boolean Data Type |
| * The char Data Type |
| * Unicode |
| * Variable Assignment and Initialization |
| * Arithmetic Operators |
| * Integer Division |
| * Operator Precedence |
| * Grouping with Parenthesis |
| * Combined Assignment Operators |
| * Creating Constants |
| * The String Class |
| * Primitive vs. Reference Variables |
| * String Objects |
| * The String Methods |
| * String Methods |
| * Scope |
| * Commenting Code |
| * Programming Style |
| * Indentation |
| * The Scanner Class |
| * Dialog Boxes |
| * The JOptionPane Class |
| * Message Dialogs |
| * Input Dialogs |
| * The System.exit Method |
| * Converting a String to a Number |
| * The Parse Methods |
| * Reading an Integer with an Input Dialog |
| * Reading a double with an Input Dialog |
| **Chapter 3** |
| * The if Statement |
| * Flowcharts |
| * Relational Operators |
| * Boolean Expressions |
| * if Statements and Boolean Expressions |
| * Programming Style and if Statements |
| * Block if Statements |
| * Flags |
| * Comparing Characters |
| * if-else Statements |
| * if-else Statement Flowcharts |
| * Nested if Statements |
| * Nested if Statement Flowcharts |
| * if-else Matching |
| * Alignment and Nested if Statements |
| * if-else-if Statements |
| * if-else-if Flowchart |
| * Logical Operators |
| * The && Operator |
| * The || Operator |
| * The ! Operator |
| * Short Circuiting |
| * Order of Precedence |
| * Comparing String Objects |
| * Ignoring Case in String Comparisons |
| * Variable Scope |
| * The Conditional Operator |
| * The switch Statement |
| * The case Statement |
| * The System.out.printf Method |
| * The String.format Method |
| **Chapter 4** |
| * The Increment and Decrement Operators |
| * Differences Between Prefix and Postfix |
| * The while Loop |
| * The while loop Flowchart |
| * Infinite Loops |
| * Block Statements in Loops |
| * The while Loop for Input Validation |
| * The do-while Loop |
| * The do-while Loop Flowchart |
| * The for Loop |
| * The for Loop Flowchart |
| * The Sections of The for Loop |
| * The for Loop Initialization |
| * The Update Expression |
| * Modifying The Control Variable |
| * Multiple Initializations and Updates |
| * Running Totals |
| * Logic for Calculating a Running Total |
| * Sentinel Values |
| * Nested Loops |
| * The break Statement |
| * The continue Statement |
| * Deciding Which Loops to Use |
| * File Input and Output |
| * Writing Text To a File |
| * The PrintWriter Class |
| * Exceptions |
| * Appending Text to a File |
| * Specifying a File Location |
| * Reading Data From a File |
| * Detecting The End of a File |
| * Detecting the End of a File |
| * Generating Random Numbers with the Random Class |
| * Some Methods of the |
| * Random Class |
| **Chapter 5** |
| * Why Write Methods? |
| * void Methods and Value-Returning Methods |
| * Defining a void Method |
| * Two Parts of Method Declaration |
| * Parts of a Method Header |
| * Calling a Method |
| * Documenting Methods |
| * Passing Arguments to a Method |
| * Passing 5 to the **displayValue** Method |
| * Argument and Parameter Data Type Compatibility |
| * Passing Multiple Arguments |
| * Arguments are Passed by Value |
| * Passing Object References to a Method |
| * Passing a Reference as an Argument |
| * Strings are Immutable Objects |
| * @param Tag in Documentation Comments |
| * More About Local Variables |
| * Returning a Value from a Method |
| * Defining a Value-Returning Method |
| * Calling a Value-Returning Method |
| * @return Tag in Documentation Comments |
| * Returning a booleanValue |
| * Returning a Reference to a String Object |
| * Problem Solving with Methods |
| * Calling Methods that Throw Exceptions |
| **Chapter 6** |
| * Objects and Classes |
| * Writing a Class, Step by Step |
| * UML Diagram |
| * UML Diagram for |
| * Rectangle class |
| * Writing the Code for the Class Fields |
| * Access Specifiers |
| * Header for the setLength Method |
| * Writing and Demonstrating the setLength Method |
| * Creating a Rectangle object |
| * Calling the setLength Method |
| * Writing the getLength Method |
| * Writing and Demonstrating the getArea Method |
| * Accessor and Mutator Methods |
| * Accessors and Mutators |
| * Data Hiding |
| * Stale Data |
| * UML Data Type and Parameter Notation |
| * Converting the UML Diagram to Code |
| * Class Layout Conventions |
| * Instance Fields and Methods |
| * States of Three Different Rectangle Objects |
| * Constructors |
| * Constructor for Rectangle Class |
| * Constructors in UML |
| * Uninitialized Local Reference Variables |
| * The Default Constructor |
| * Writing Your Own No-Arg Constructor |
| * The String Class Constructor |
| * Passing Objects as Arguments |
| * Overloading Methods and Constructors |
| * Overloaded Method add |
| * Method Signature and Binding |
| * Rectangle Class Constructor Overload |
| * The BankAccount Example |
| * Scope of Instance Fields |
| * Shadowing |
| * Packages and import Statements |
| * Some Java Standard Packages |
| * Object Oriented Design |
| * Finding Classes and Their Responsibilities |
| **Chapter 7** |
| * Introduction to Arrays |
| * Creating Arrays |
| * Accessing the Elements of an Array |
| * Inputting and Outputting |
| * Array Elements |
| * Bounds Checking |
| * Off-by-One Errors |
| * Array Initialization |
| * Alternate Array Declaration |
| * Processing Array Contents |
| * Array Length |
| * The Enhanced for Loop |
| * Array Size |
| * Reassigning Array References |
| * Copying Arrays |
| * Passing Array Elements to a Method |
| * Passing Arrays as Arguments |
| * Comparing Arrays |
| * Comparing Arrays: Example |
| * Useful Array Operations |
| * Partially Filled Arrays |
| * Arrays and Files |
| * Returning an Array Reference |
| * String Arrays |
| * Calling String Methods On Array Elements |
| * The length Field & The length Method |
| * Arrays of Objects |
| * The Sequential Search Algorithm |
| * Two-Dimensional Arrays |
| * Accessing Two-Dimensional Array Elements |
| * Initializing a Two-Dimensional Array |
| * The length Field |
| * Summing The Elements of a Two-Dimensional Array |
| * Summing The Rows of a Two-Dimensional Array |
| * Summing The Columns of a Two-Dimensional Array |
| * Passing and Returning Two-Dimensional Array References |
| * Ragged Arrays |
| * More Than Two Dimensions |
| * Selection Sort |
| * Binary Search |
| * Command-Line Arguments |
| * Variable-Length Argument Lists |
| * The ArrayList Class |
| * Creating an ArrayList |
| * Using an ArrayList |
| **Chapter 8** |
| * Review of Instance Fields and Methods |
| * Static Class Members |
| * Static Fields |
| * Static Methods |
| * Returning Objects From Methods |
| * The toString Method |
| * The equals Method |
| * Methods That Copy Objects |
| * Copy Constructors |
| * Aggregation |
| * Aggregation in UML Diagrams |
| * Returning References to Private Fields |
| * Null References |
| * The this Reference |
| * Enumerated Types |
| * Enumerated Types - Methods |
| * Enumerated Types - Switching |
| * Garbage Collection |
| **Chapter 10** |
| * What is Inheritance? |
| * Generalization vs. Specialization |
| * Inheritance |
| * The “is a” Relationship |
|  |
| * Inheritance, Fields and Methods |
| * Inheritance and Constructors |
| * The Superclass’s Constructor |
| * Calling The Superclass Constructor |
| * Overriding Superclass Methods |
| * Preventing a Method from Being Overridden |
| * Protected Members |
| * Chains of Inheritance |
| * The Object Class |
| * Polymorphism |
| * Polymorphism and Dynamic Binding |
| * Abstract Classes |
| * Abstract Methods |
| * Interfaces |
| * Fields in Interfaces |
| * Implementing Multiple Interfaces |