

Exposure Java PreAP, 2008 Table of Contents

Chapters I - XVI

I Introduction to Computer Science		
1.1	Teaching the Exposure Way	2
1.2	Exposure Equation	4
1.3	Roller Coaster Emotions	7
1.4	Tackling Computer Science	8
1.5	Excessive Help	10
1.6	Computer Fundamentals	11
1.7	A Brief History of Computing	12
1.8	How Do Computers Work?	19
1.9	Messages with Morse Code	21
1.10	Electronic Memory	22
1.11	Memory and Storage	26
1.12	What Is Programming?	29
1.13	Programming Languages	31
1.14	Networking	36
1.15	Hardware and Software	38
1.16	Summary	40
II Introduction to Java		
2.1	Introduction	44
2.2	Getting Started with Java	45
2.3	A Visit to the United Nations	45
2.4	Java Bytecode	47
2.5	Applications and Applets	50
2.6	Installing the Java Development Kit	51
2.7	Installing the JCreator IDE	68
2.8	Text Output With println	87
2.9	Program Compile Errors	93
2.10	The Responsible Use of Computers	96
2.11	Summary	102

III Java Simple Data Types		
3.1	Introduction	106
3.2	Declaring Variables	106
3.3	The int Data Type	112
3.4	The double Data Type	114
3.5	Arithmetic Shortcut Notations	116
3.6	The char & String Data Types.	119
3.7	The boolean Data Type	121
3.8	Declaring Constants	122
3.9	Documenting Your Programs	124
3.10	Mathematical Precedence	126
3.11	Summary	128
IV Java Program Organization		
4.1	Introduction	132
4.2	Java Program Components	133
4.3	Using the Math Class	135
4.4	Introduction to the Expo Class	144
4.5	Introduction to Cartesian Graphics	144
4.6	Introduction to Computer Graphics	152
4.7	Drawing Methods	156
4.8	Fill and Thick Methods	169
4.9	Using Expo Class Web Page Documentation	178
4.10	Implementing Mathematical Functions	183
4.11	Summary	187
V Control Structures 1		
5.1	Introduction	190
5.2	Types of Control Structures	191
5.3	Relational operators	195
5.4	Keyboard Input	198
5.5	One-Way Selection	207
5.6	Two-Way Selection	213
5.7	Multiple-Way Selection	217
5.8	Fixed Repetition	221
5.9	Conditional Repetition	230
5.10	Control Structures and Graphics.	236
5.11	Worked-Out Exercises	260
5.12	Summary	271

VI Using Object Methods		
6.1	Introduction	274
6.2	Classes and Objects	275
6.3	Using Object Methods	277
6.4	Using the DecimalFormat Class	284
6.5	Working with Graphics Objects	288
6.6	Overloading	304
6.7	Creating Random Numbers	307
6.8	Using Random with Graphics Objects	313
6.9	Summary	322
VII Making Methods		
7.1	Introduction	326
7.2	The Math and Expo Classes Revisited	328
7.3	Modular Programming and User-Created Methods	330
7.4	User-Declared Parameter Methods.	344
7.5	Void Methods and Return Methods.	354
7.6	Making a Utility Library Class	359
7.7	Introduction to Program Design	367
7.8	Summary	386
VIII Introduction to OOP, Encapsulation		
8.1	Introduction	390
8.2	OOP, a Gentle First Exposure.	390
8.3	Encapsulation and Reliability	393
8.4	The Bank Class From Scratch	397
8.5	The Cube Case Study	410
8.6	Method Summary	422
IX Introduction to OOP, Inheritance		
9.1	Introduction	430
9.2	Is-A and Has-A Relationships	430
9.3	Superclass and Subclass	433
9.4	Private and Protected Access.	438
9.5	Multi-Level Inheritance	441
9.6	The Fish Class Case Study	443
9.7	Summary	450

X Boolean Logic		
10.1	Introduction	452
10.2	What is a Boolean Statement	453
10.3	Boolean Operators.	454
10.4	Venn Diagrams & Boolean Algebra.	457
10.5	The Boolean Data Type	462
10.6	Compound Conditions	466
10.7	Summary	469
XI Web Page Creation with HTML		
11.1	Introduction to HTML Basics	472
11.2	Formatting Display.	481
11.3	Using Lists	493
11.4	Color in Web Pages	504
11.5	Manipulating Fonts	511
11.6	Linking to Other Web Pages	518
11.7	Adding Images to Web Pages	537
XII The Array Data Structure		
12.1	Introduction to Data Structures.	554
12.2	One-Dimensional Array Definition	561
12.3	Accessing Array Elements by Index	563
12.4	Assigning Random Array Values.	569
12.5	Array Processing with the Arrays Class	572
12.6	Summary	580
XIII Advanced Graphics		
13.1	Introduction	582
13.2	Using Mouse Events	584
13.3	Creating a Simple Draw Program	591
13.4	The Magic of Method update	607
13.5	Importing Images	610
13.6	Summary	617
XIV String Methods		
14.1	Introduction	624
14.2	Constructing String Objects	626
14.3	String Concatenation	628
14.4	Working with Substrings.	629
14.5	Changing Strings	634
14.6	Converting	637
14.7	Comparing Strings.	639
14.8	Summary	643

XV Algorithms		
15.1	Introduction	646
15.2	Controlling Random Numbers	647
15.3	The List Case Study	650
15.4	Improving Input and Output	654
15.5	The Linear Search	658
15.6	The Bubble Sort	666
15.7	Understanding the Binary Search	675
15.8	Summary	677
XVI Text Files		
16.1	Introduction	680
16.2	Different Types of Files	682
16.3	Reading In Text Files	683
16.4	Writing Out Text Files	692
16.5	Reading & Writing Simultaneously	696
16.6	Appending an Existing File	694
16.7	Summary	701