

| CED Unit | Java Methods | JM Labs and Case Studies |
|---|------------------------|---------------------------------|
| Unit X0 Hardware, Software, Number Systems (Not included in CED) | Ch 1 | |
| Unit 1 Primitive Types | Ch 2, 5 | |
| 1.1 Why Programming? Why Java? | 2.2-2.4 | Ch 2 Three Ways to Say Hello |
| 1.2 Variables and Data Types | 5.1-5.6 | <i>Multiple labs</i> |
| 1.3 Expressions and Assignment Statements | 5.7 | Ch 5 BMI, Dog Age |
| 1.4 Compound Assignment Operators | 5.8 | Pie Chart and other labs |
| 1.5 Casting and Ranges of Variables | 5.3, 5.5, 5.7 | <i>Multiple labs</i> |
| Unit X1 Compilers, Interpreters, Bytecode (Not included in CED) | Ch 2, 2.2 - 2.3 | |
| Unit X2 Java Syntax and Style (Not included in CED) | Ch 3, Appx A | Ch 3 Correcting Syntax Errors |
| Unit 2 Using Objects | Ch 4, 8 | |
| 2.1 Objects: Instances of Classes | 4.1-4.4 | Ch 4 BalloonDraw, TestBalloon |
| 2.2 Creating and Storing Objects (Instantiation) | 4.4 | Ch 4 Balloon, and other labs |
| 2.3 Calling a Void Method | Ch 4, pp 77-80 | Ch 4 Greenie, InflatableBalloon |
| 2.4 Calling a Void Method with Parameters | Ch 4, pp 77-80 | Ch 4 TestBalloon |
| 2.5 Calling a Non-Void Method | Ch 4, pp 77-80 | Ch 2 Greetings2 |
| 2.6 <code>String</code> Objects: Concatenation, Literals, and More | 5.4, 8.1-8.3 | <i>Multiple labs</i> |
| 2.7 <code>String</code> Methods | 8.4 | Ch 8 StringTest, Lipograms |
| 2.8 Wrapper Classes: <code>Integer</code> and <code>Double</code> | 8.5, 8.6, 8.10 | Ch 11 Document Index |
| 2.9 Using the <code>Math</code> Class | 5.12 | <i>Multiple labs</i> |
| Unit 3 Boolean Expressions and if Statements | Ch 6 | |
| 3.1 Boolean Expressions | 6.1, 6.3-6.6 | Ch 6 Rolling Dice |
| 3.2 <code>if</code> Statements and Control Flow | 6.1 | Ch 6 Rolling Dice |
| 3.3 <code>if-else</code> Statements | 6.2 | Ch 6 Rolling Dice |
| 3.4 <code>else if</code> Statements | 6.8 | Ch 6 Rolling Dice |

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| 3.5 | Compound Boolean Expressions | 6.7 | Ch 6 Rolling Dice |
| 3.6 | Equivalent Boolean Expressions | 6.5 | Ch 6 Exercises 7-9, 12 |
| 3.7 | Comparing Objects | 8.4, 14.2 | <i>Multiple labs</i> |

Unit 4 Iteration

Ch 7

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|-----|-------------------------------------|----------|-----------------------------|
| 4.1 | <code>while</code> Loops | 7.2-7.3 | Ch 7 Euclid's Algorithm |
| 4.2 | <code>for</code> Loops | 7.3, 7.5 | Ch 7 Perfect Numbers |
| 4.3 | Developing Algorithms Using Strings | 8.8 | Ch 8 Palindromes, Lipograms |
| 4.4 | Nested Iteration | 7.6 | <i>Multiple labs</i> |
| 4.5 | Informal Code Analysis | 7.2 | |

Unit 5 Writing Classes

Ch 10

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|------|--|----------------------------|------------------------|
| 5.1 | Anatomy of a Class | 3.2; 10.1-10.2 | Ch 10 Fraction |
| 5.2 | Constructors | 10.3 | Ch 10 Fraction |
| 5.3 | Documentation with Comments | 10.3 | Ch 10 SnackBar |
| 5.4 | Accessor Methods | 10.1-10.2, 10.5, 10.13 | Ch 10 SnackBar |
| 5.5 | Mutator Methods | 10.2 | Ch 10 SnackBar |
| 5.6 | Writing Methods | 10.1-10.2, 10.5-10.6, 10.8 | Ch 10 SnackBar |
| 5.7 | Static Variables and Methods | 10.11; 5.13 | Ch 10 SnackBar, Part 2 |
| 5.8 | Scope and Access | 10.1-10.2, 10.6-10.7 | Ch 10 SnackBar |
| 5.9 | <code>this</code> Keyword | 10.6, 10.11 | |
| 5.10 | Ethical and Social Implications of Computing Systems | 28.3-28.5 | |

Unit 6 Array

Ch 9

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|-----|---|----------|--------------------------------|
| 6.1 | Array Creation and Access | 9.1-9.2 | Ch 9 FortuneTeller |
| 6.2 | Traversing Arrays | 9.6 | Ch 9 Exercises 22-27 |
| 6.3 | Enhanced <code>for</code> Loop for Arrays | 9.6 | <i>Multiple labs</i> |
| 6.4 | Developing Algorithms Using Arrays | 9.7-9.10 | Ch 9 The Sieve of Eratosthenes |

Unit 7 ArrayList

Ch 11, 14

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|-----|--|-----------------|---------------------|
| 7.1 | Introduction to <code>ArrayList</code> | 11.1-11.2, 11.7 | Ch 11 Exercises 1-4 |
| 7.2 | <code>ArrayList</code> Methods | 11.3 | Multiple exercises |

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| 7.3 | Traversing <code>ArrayList</code> | 11.5 | Ch 11 Exercises 5-7, 9-11 |
| 7.4 | Developing Algorithms Using <code>ArrayLists</code> | 11.5 | Ch 11 Shuffler, <code>DocumentIndex</code> |
| 7.5 | Searching | 14.1-14.3 | Ch 14 <code>KeepingThingsInOrder</code> |
| 7.6 | Sorting | 14.5-14.6 | Ch 14 Benchmarks |
| 7.7 | Ethical Issues Around Data Collection | 28.3-28.5 | |

Unit 8 2D Array

Ch 9

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|-----|----------------------|-----|------------|
| 8.1 | 2D Arrays | 9.4 | Ch 9 Chomp |
| 8.2 | Traversing 2D Arrays | 9.6 | Ch 9 Chomp |

Unit 9 Inheritance

Ch 12

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|-----|---|----------------------|--------------------------------------|
| 9.1 | Creating Superclasses and Subclasses | 12.1-12.2; 4.5-4.6 | Ch 4 <code>InflatableBalloon</code> |
| 9.2 | Writing Constructors for Subclasses | 12.4 | Ch 12 Exercises 2, 4, 6 |
| 9.3 | Overriding Methods | 12.1-12.2, 12.7; 4.5 | Multiple labs and exercises |
| 9.4 | <code>super</code> Keyword | 12.5 | Ch 12 Exercises 2-4, 6 |
| 9.5 | Creating References Using Inheritance Hierarchies | Ch 12 exercises; 4.5 | Ch 4 <code>BalloonsOfAllKinds</code> |
| 9.6 | Polymorphism | 12.6 | Ch 12 Exercises 4, 6 |
| 9.7 | <code>Object</code> Superclass | 12.4; 4.5 | Ch 12 Exercise 7 |

Unit 10 Recursion

Ch 13, 14

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|------|---------------------------------|-------------------|--------------------|
| 10.1 | Recursion | 13.1-13.4 | Ch 13 File Manager |
| 10.2 | Recursive Searching and Sorting | 14.3, 14.7, 14.11 | Ch 14 Benchmarks |
