

# 4 Control Statements: Part 1; Assignment, ++ and -- Operators

## Objectives

In this chapter you'll:

- Learn basic problem-solving techniques.
- Develop algorithms through the process of top-down, stepwise refinement.
- Use the `if` and `if...else` selection statements to choose between alternative actions.
- Use the `while` iteration statement to execute statements in a program repeatedly.
- Use counter-controlled iteration and sentinel-controlled iteration.
- Use the compound assignment operator and the increment and decrement operators.
- Learn about the portability of primitive data types.

## Outline

1. 4.1 Introduction
2. 4.2 Algorithms

3. 4.3 Pseudocode
4. 4.4 Control Structures
  1. 4.4.1 Sequence Structure in Java
  2. 4.4.2 Selection Statements in Java
  3. 4.4.3 Iteration Statements in Java
  4. 4.4.4 Summary of Control Statements in Java
5. 4.5 if Single-Selection Statement
6. 4.6 if...else Double-Selection Statement
  1. 4.6.1 Nested if...else Statements
  2. 4.6.2 Dangling-else Problem
  3. 4.6.3 Blocks
  4. 4.6.4 Conditional Operator (?:)
7. 4.7 Student Class: Nested if...else Statements
8. 4.8 while Iteration Statement
9. 4.9 Formulating Algorithms: Counter-Controlled Iteration
10. 4.10 Formulating Algorithms: Sentinel-Controlled Iteration
11. 4.11 Formulating Algorithms: Nested Control Statements
12. 4.12 Compound Assignment Operators
13. 4.13 Increment and Decrement Operators
14. 4.14 Primitive Types
15. 4.15 (Optional) GUI and Graphics Case Study: Event Handling; Drawing Lines
  1. 4.15.1 Test-Driving the Completed **Draw Lines** App
  2. 4.15.2 Building the App's GUI
  3. 4.15.3 Preparing to Interact with the GUI Programmatically

4. 4.15.4 Class DrawLinesController
5. 4.15.5 Class DrawLines—The Main Application Class
6. 4.16 Wrap-Up

1. Summary
2. Self-Review Exercises
3. Answers to Self-Review Exercises
4. Exercises
5. Making a Difference