4.16 Wrap-Up

This chapter presented basic problem solving for building classes and developing methods for these classes. We demonstrated how to construct an algorithm (i.e., an approach to solving a problem), then how to refine the algorithm through several phases of pseudocode development, resulting in Java code that can be executed as part of a method. The chapter showed how to use top-down, stepwise refinement to plan out the specific actions that a method must perform and the order in which the method must perform these actions.

Only three types of control structures—sequence, selection and iteration—are needed to develop any problem-solving algorithm. Specifically, this chapter demonstrated the `if` single-selection statement, the `if`…`else` double-selection statement and the `while` iteration statement. These are some of the building blocks used to construct solutions to many problems. We used control-statement stacking to total and compute the average of a set of student grades with counter- and sentinel-controlled iteration, and we used control-statement nesting to analyze and make decisions based on a set of exam results. We introduced Java's compound assignment operators and its increment and decrement operators. Finally, we discussed Java's primitive types. In Chapter 5, we continue our discussion of control statements, introducing the `for`, `do`…`while` and `switch` statements.