7.18 Wrap-Up

This chapter began our introduction to data structures, exploring the use of arrays to store data in and retrieve data from lists and tables of values. The chapter examples demonstrated how to declare an array, initialize an array and refer to individual elements of an array. The chapter introduced the enhanced `for` statement to iterate through arrays. We used exception handling to test for `ArrayIndexOutOfBoundsException`s that occur when a program attempts to access an array element outside the bounds of an array. We also illustrated how to pass arrays to methods and how to declare and manipulate multidimensional arrays. Finally, the chapter showed how to write methods that use variable-length argument lists and how to read arguments passed to a program from the command line.

We introduced the `ArrayList<E>` generic collection, which provides all the functionality and performance of arrays, along with other useful capabilities such as dynamic resizing. We used the `add` methods to add new items to the end of an `ArrayList` and to insert items in an `ArrayList`. The `remove` method was used to remove the first occurrence of a specified item, and an overloaded version of `remove` was used to remove an item at a specified index. We used the `size` method to obtain number of items in the `ArrayList`.

We continue our coverage of data structures in Chapter 16, Generic Collections. Chapter 16 introduces the Java Collections Framework, which uses generics to allow you to specify the exact types of objects that a particular data structure will store. Chapter 16 also introduces Java's other predefined data structures. Chapter 16 covers additional methods of class `Arrays`. You'll be able to use some of the `Arrays` methods discussed in Chapter 16 after reading the current chapter, but some of the `Arrays` methods require knowledge of concepts presented later in the book. Chapter 20 discusses generics, which enable you to create general models of methods and classes that can be declared once, but used with many different data types. Chapter 21, Custom Generic Data Structures, shows how to build dynamic data structures, such as lists, queues, stacks and trees, that can grow and shrink as programs execute.

We've now introduced the basic concepts of classes, objects, control statements, methods, arrays and collections. In Chapter 8, we take a deeper look at classes and objects.