# 4.19. Lists

Throughout the discussion of basic data structures, we have used Python lists to implement the abstract data types presented. The list is a powerful, yet simple, collection mechanism that provides the programmer with a wide variety of operations. However, not all programming languages include a list collection. In these cases, the notion of a list must be implemented by the programmer.

A **list** is a collection of items where each item holds a relative position with respect to the others. More specifically, we will refer to this type of list as an unordered list. We can consider the list as having a first item, a second item, a third item, and so on. We can also refer to the beginning of the list (the first item) or the end of the list (the last item). For simplicity we will assume that lists cannot contain duplicate items.

For example, the collection of integers 54, 26, 93, 17, 77, and 31 might represent a simple unordered list of exam scores. Note that we have written them as comma-delimited values, a common way of showing the list structure. Of course, Python would show this list as $[54, 26, 93, 17, 77, 31]$.

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