8.1 A list is a sequence Like a string

, a list is a sequence of values. In a string, the values are characters; in a list, they can be any type. The values in list are called elements or sometimes items. There are several ways to create a new list; the simplest is to enclose the elements in square brackets (“[" and “]”):

The first example is a list of four integers. The second is a list of three strings. The elements of a list don’t have to be the same type.

A list within another list is nested. A list that contains no elements is called an empty list; you can create one with empty brackets, []. As you might expect, you can assign list values to variables: >>> cheeses = ['Cheddar', 'Edam', 'Gouda'] >>> numbers = [17, 123] >>> empty = [] >>> print(cheeses, numbers, empty) ['Cheddar', 'Edam', 'Gouda'] [17, 123] []

8.2 Lists are mutable

The syntax for accessing the elements of a list is the same as for accessing the characters of a string: the bracket operator. The expression inside the brackets specifies the index. Remember that the indices start at 0: >>> print(cheeses[0]) Cheddar Unlike strings, lists are mutable because you can change the order of items in a list or reassign an item in a list. When the bracket operator appears on the left side of an assignment, it identifies the element of the list that will be assigned. >>> numbers = [17, 123] >>> numbers[1] = 5 >>> print(numbers) [17, 5] The one-th element of numbers, which used to be 123, is now 5. You can think of a list as a relationship between indices and elements. This relationship is called a mapping; each index “maps to” one of the elements. List indices work the same way as string indices: • Any integer expression can be used as an index. • If you try to read or write an element that does not exist, you get an IndexError. • If an index has a negative value, it counts backward from the end of the list. The in operator also works on lists. >>> cheeses = ['Cheddar', 'Edam', 'Gouda'] >>> 'Edam' in cheeses True >>> 'Brie' in cheeses False

8.3 Traversing

Usually when we are reading a file we want to do something to the lines other than just printing the whole line. Often we want to find the “interesting lines” and then parse the line to find some interesting part of the line. What if we wanted to print out the day of the week from those lines that start with “From”?

aliasing A circumstance where two or more variables refer to the same object. delimiter A character or string used to indicate where a string should be split. element One of the values in a list (or other sequence); also called items. equivalent Having the same value. index An integer value that indicates an element in a list. identical Being the same object (which implies equivalence). list A sequence of values. list traversal The sequential accessing of each element in a list. nested list A list that is an element of another list. object Something a variable can refer to. An object has a type and a value. reference The association between a variable and its value