

## 8.2: LISTS ARE MUTABLE



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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-eth 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
```