

## Chapter 2

# Organizing Data Using Lists: A Sequential Data Structure

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### **ABSTRACT**

*Computer programming aims to organize and process data to get the desired result. Software developer chooses a programming language for application development based on the data processing capabilities of the language. The list is one of the sequential data structures in Python. A list is limited to a particular data type, such as numbers or strings. Occasionally, a list may include data of mixed types, including numbers and strings. Elements in the list can be accessed by using the index. Usually, a list's elements are enclosed within square brackets and divided using commas. The list may be referred to as a dynamic-sized array, which denotes that its size increases as additional data is added and that its size is not predefined. List data structure allows repetition; hence, a single data item may appear several times in a list. The list assists us in solving several real-world problems. This chapter deals with the list's creation and manipulation, the complexity of processing the list, sorting, stack, and queue operations.*

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Figure 1. Three items list

```
country=['india','oman','dubai']
```

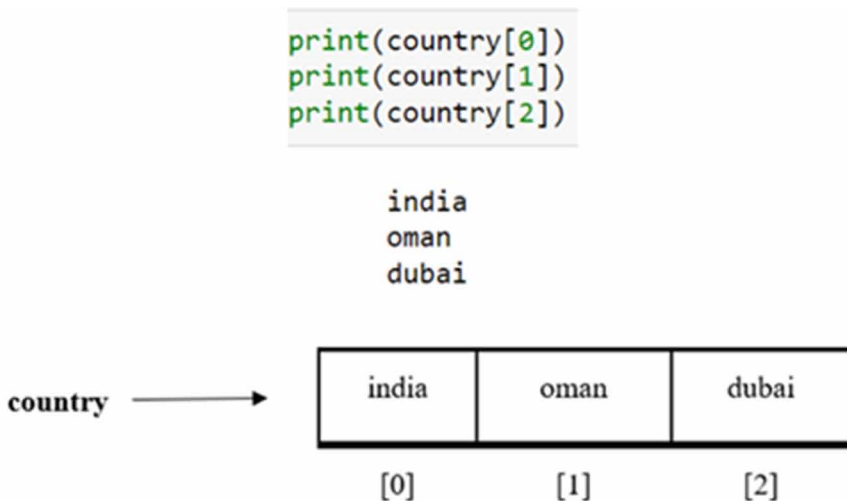
## THE BASICS OF LIST

Python has a sequence data type called List. It can ably hold multiple elements of different data types. However, it may have multiple elements of the same data type in practice. The elements in a list are separated by commas (Erciyes, 2021). All the elements in a list must be placed inside the square bracket [], as shown in Figure 1.

### Accessing an Item in the List

A list is an ordered sequence of items, and each element is accessed by its index, as shown in Figure 2. The index must be an integer. The first item is indexed with [0], the second with [1], and so on.

Figure 2. Accessing an item in the list using an index



Python allows negative indexing for its sequences, as shown in Figure 3. The last item is represented by the index of -1, the second last by -2, and so on.

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