Chapter 8
Exploring Python's Powerful Data Collections

Mastan Vali Shaik
University of Technology and Applied Sciences, Ibri, Oman

Rajasrkaran Selvaraju
University of Technology and Applied Sciences, Ibri, Oman

ABSTRACT

One of the powerful data types for programmers that a Python supports is a list. A list is a mutable data structure that holds an ordered collection of items. Lists are useful to work with related data. A tuple is an immutable data type that stores values in a sequence. Slicing can be used to get a range of items. In Python, a set is variable that can store a variety of data, and different data types perform different operations. A set data type in Python is used to store multiple values in a single variable. In Python, dictionary is one of the built-in data types where elements are key: value pairs. In other programming languages, these are called associative memory or associative arrays. Dictionaries are faster in execution, provide easy lookups, and are implemented as hash tables. This chapter focuses on data collection in Python.

INTRODUCTION TO LIST

A list is a sequence of values and can be of any type. A list is a data structure that holds an ordered collection of items i.e., and you can store a sequence of items in a list. The values in the list are called elements or items. List values are accessed by using an index. The index value can be positive from 0 or negative from -1. Once you have created a list, you can add, remove or search for items in the list. Since

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we can add and remove items, we say that a list is a mutable data type, i.e., this type can be altered (Learn to code for IoT with python essentials course, 2022). Figure 1 illustrates the list representation, while Table 1 provides information on accessing list values.

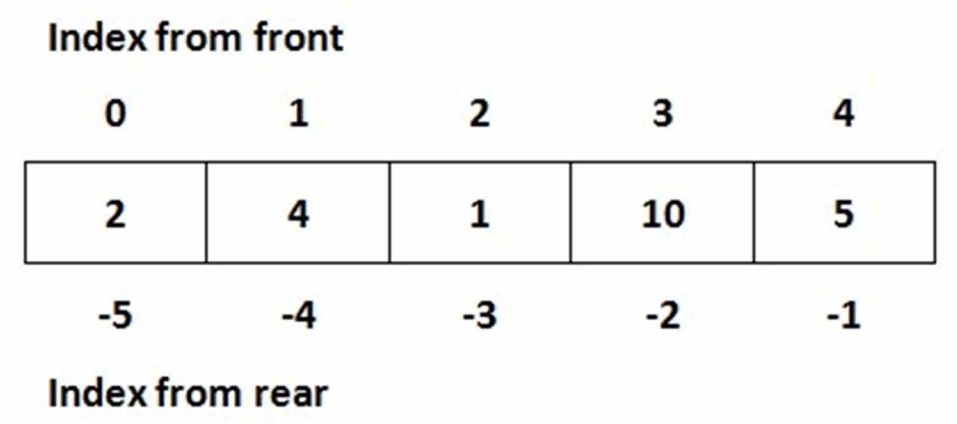
Example

```
List1 = [10, 20,15.7, 30, 40.2]
List2 = ['Chocolate', 'Juice', 'Burger', 'Pepsi']
List3 = []   #empty list
```

Accessing List Values

```
num = [ 2, 4, 1, 10, 5]
```

Figure 1. List representation



Slicing a List

The slicing operation takes a specific range of elements from the list (Moruzzi, 2020). Slice operation is performed on Lists with the use of a colon.