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CHAPTER 6

Lists Deep-dive

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AGENDA

- Lists Revision
- Lists Methods
- Reading Documentations
- List Methods Exercises
  - index ()
  - insert()
  - remove()
  - append()

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Lists Revision

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What is List?

- Lists/Arrays is simply a list of value or objects (Wrapped by squared brackets)
- Technically, you could put anything in it (even if each elements are of different types)
- **Best Practice: You should try to put only same type of values/objects into the same array**

```
// Good Example
a = [1, 2, 3, 4, 5]
b = ["apple", "banana", "orange"]
```

```
// Bad Example
a = [1, "apple", 2.3, None]
b = ["apple", 7, None, ""]
```

How to access content in the array?

- use array_name[index]
- index start from 0
- index can also be a variable or a result of calculation

```
1  a = [1, 2, 3, 4, 5]
2  print(a[0])       # 1
3  print(a[1 + 2])   # a[3] => 4
4
5  b = 2
6  print(a[b])       # a[2] => 3
7
8  c = a[a[2]]       # a[3] => 4
```

Looping Through a List with For Loop

Looping the List Directly

```
1  words = ["dog", "cat", "apple", "boy"]
2
3  for i in words:
4      print(i)
```

Looping with Index

```
1  words = ["dog", "cat", "apple", "boy"]
2
3  for i in range(len(words)):
4      print("Index " + str(i) + " is " + words[i])
```

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Looping Through a List with While Loop

Looping with Index

```
1  words = ["dog", "cat", "apple", "boy"]
2
3  i = 0
4  while i < len(words):
5      print(words[i])
6      i += 1
```

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Lists Methods

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Lists Methods

They are a list of “functions” to help you in using and working with lists.

METHOD	DESCRIPTION
append()	Adds an element at the end of the list
clear()	Removes all the elements from the list
copy()	Returns a copy of the list
count()	Returns the number of elements with the specified value
extend()	Add the elements of a list (or any iterable), to the end of the current list
index()	Returns the index of the first element with the specified value
insert()	Adds an element at the specified position
pop()	Removes the element at the specified position
remove()	Removes the first item with the specified value
reverse()	Reverses the order of the list
sort()	Sorts the list

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Reading Methods Documentations

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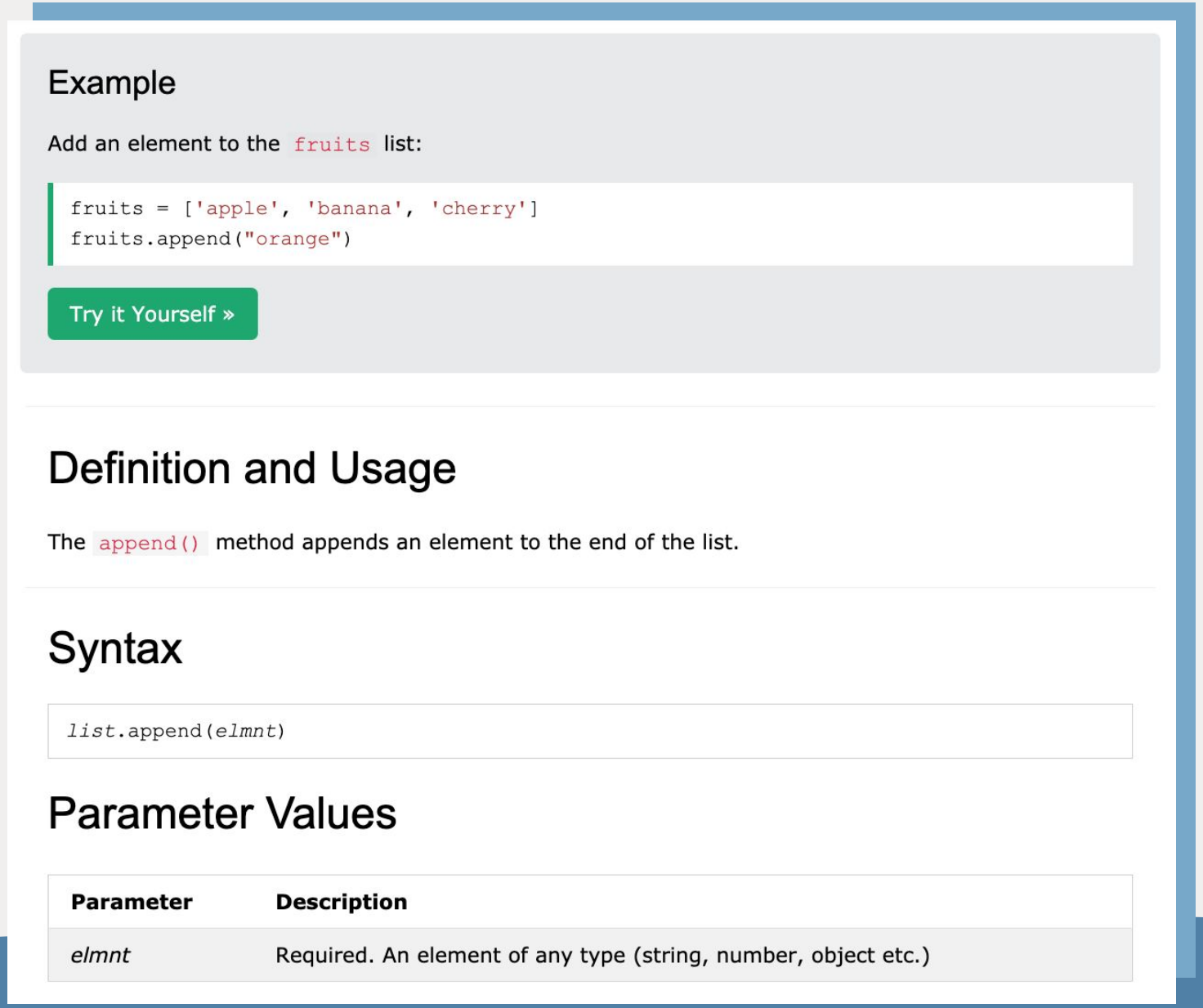
How do we read documentations?

w3schools.com



Example

Add an element to the `fruits` list:

```
fruits = ['apple', 'banana', 'cherry']
fruits.append("orange")
```

Try it Yourself »

Definition and Usage

The `append()` method appends an element to the end of the list.

Syntax

```
list.append(elmnt)
```

Parameter Values

Parameter	Description
elmnt	Required. An element of any type (string, number, object etc.)

Lists Methods 1 - index ()

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Study this for 1 minute:

Example

What is the position of the value "cherry":

```
fruits = ['apple', 'banana', 'cherry']

x = fruits.index("cherry")
```

Try it Yourself »

Definition and Usage

The `index()` method returns the position at the first occurrence of the specified value.

Syntax

```
list.index(elmnt)
```

Parameter Values

Parameter	Description
elmnt	Required. Any type (string, number, list, etc.). The element to search for

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In-class Exercise 1

```
1  students = ['Darren', 'Peter', 'Tom', 'Mary']
2
3  # Task: Find the index of the Peter in the list
```

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Lists Methods 2 - insert ()

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Study this for 1 minute:

Example

Insert the value "orange" as the second element of the `fruit` list:

```
fruits = ['apple', 'banana', 'cherry']

fruits.insert(1, "orange")
```

Try it Yourself »

Definition and Usage

The `insert()` method inserts the specified value at the specified position.

Syntax

```
list.insert(pos, elmnt)
```

Parameter Values

Parameter	Description
pos	Required. A number specifying in which position to insert the value
elmnt	Required. An element of any type (string, number, object etc.)

In-class Exercise 2

```
1  students = ['Darren', 'Peter', 'Tom', 'Mary']
2
3  # Task: I want to add a new student "Betty" to the list
4  # She should be the third student in the list
```

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Lists Methods 3 - remove ()

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Study this for 1 minute:

Example

Remove the "banana" element of the `fruit` list:

```
fruits = ['apple', 'banana', 'cherry']

fruits.remove("banana")
```

Try it Yourself »

Definition and Usage

The `remove()` method removes the first occurrence of the element with the specified value.

Syntax

```
list.remove(elmnt)
```

Parameter Values

Parameter	Description
elmnt	Required. Any type (string, number, list etc.) The element you want to remove

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In-class Exercise 3

```
1  students = ['Darren', 'Peter', 'Tom', 'Mary']
2
3  # Task: I want to remove a student "Tom" from the list
```


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Lists Methods 4 - append ()

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Study this for 1 minute:

Example

Add an element to the `fruits` list:

```
fruits = ['apple', 'banana', 'cherry']
fruits.append("orange")
```

Try it Yourself »

Definition and Usage

The `append()` method appends an element to the end of the list.

Syntax

```
list.append(elmnt)
```

Parameter Values

Parameter	Description
elmnt	Required. An element of any type (string, number, object etc.)

In-class Exercise 4

```
1   students = ['Darren', 'Peter', 'Tom']
2
3   # Task: I want to add a new student "Mary" to the end of the list
```


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