

Getting Started with Lists

Spoken Tutorial Project

<http://spoken-tutorial.org>

National Mission on Education through ICT

<http://sakshat.ac.in>

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Objectives



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- ▶ Create lists



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- ▶ Create lists
- ▶ Access list elements



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- ▶ Create lists
- ▶ Access list elements
- ▶ **Append elements to lists**



Objectives

- ▶ Create `lists`
- ▶ Access `list` elements
- ▶ Append elements to `lists`
- ▶ Delete elements from `lists`



System Specifications



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- ▶ **Ubuntu Linux 14.04 operating system**



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- ▶ **Python 3.4.3**



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- ▶ **Python 3.4.3**
- ▶ **IPython 5.1.0**



Pre-requisites



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To practise this tutorial, you should know how to



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- ▶ **run basic Python commands on the ipython console**



Pre-requisites

To practise this tutorial, you should know how to

- ▶ run basic Python commands on the ipython console

If not, see the relevant Python tutorials on <http://spoken-tutorial.org>



What is a List?



What is a List?

- ▶ **A List can store a sequence of elements**



What is a List?

- ▶ A List can store a sequence of elements
- ▶ All elements need not be of the same data types



What is a variable?



What is a variable?

- ▶ **Variable must either start with an alphabet or an underscore**



What is a variable?

- ▶ **Variable** must either start with an alphabet or an underscore
- ▶ **They cannot start with numbers and cannot be the same as Python keywords**



Examples of Keywords



Examples of Keywords

- ▶ **for, if, else, elif, while, in, def, or, and**



Examples of Keywords

- ▶ `for`, `if`, `else`, `elif`, `while`, `in`, `def`, `or`,
`and`
- ▶ A **variable** name cannot have
spaces or punctuation characters
or any arithmetic characters



Valid and Invalid variables

- ▶ **Valid names:**

- ▶ `x, y, xx, abc, a_b_c, a1, variable1, mylist, _x`
- ▶ `foreign, spiff, while_true, or_else, and_od_else_1`

- ▶ **Invalid names:**

- ▶ `1_x, 2_var, x-, x+, x;, x:`
- ▶ `x y, x+y x*y x&^ae, for, in, elif`



List index



List index

Variable	= [item1, item2, item3]		
Index	0	1	2
Negative indices	-3	-2	-1



List index

Variable	= [item1, item2, item3]		
Index	0	1	2
Negative indices	-3	-2	-1

Syntax:

variable[index]



Exercise 1

- ▶ What happens when you type `mylist[-1]`?



List in list

- ▶ We can also create a list inside a list



List in list

- ▶ We can also create a list inside a list
- ▶ This property makes lists heterogeneous data structures



List in list

- ▶ We can also create a `list` inside a `list`
- ▶ This property makes lists heterogeneous data structures
- ▶ **Syntax:**
`variable = [list1[list2]]`



Exercise 2

```
doublelist=['a', ['b','c','d'], 'and', 5, 6,  
7, 8]
```



Exercise 2

```
doublelist=['a', ['b','c','d'], 'and', 5, 6,  
7, 8]
```

1. What is the command to get the element **'and'** in the list **doublelist**?



Exercise 2

```
doublelist=['a', ['b','c','d'], 'and', 5, 6,  
7, 8]
```

2. How would you get **'and'** using negative indices?

3. How would you get element **'d'** from the list **doublelist**?



Solution 2

1. `doublelist [2]`
2. `doublelist [-5]`
3. `doublelist [1] [2]`



len function



len function

- ▶ **len()** function is used to check the number of elements in the list



len function

- ▶ **len()** function is used to check the number of elements in the list
- ▶ **Syntax:**
len(variable)



Append function



Append function

- ▶ We can append elements to the list using the **append** function



Append function

- ▶ We can append elements to the list using the **append** function
- ▶ This function will add the element to the end of the list



Append function

- ▶ We can append elements to the list using the **append** function
- ▶ This function will add the element to the end of the list
- ▶ **Syntax:**
variable.append(element)



del function



del function

- We can also remove elements from lists



del function

- ▶ We can also remove elements from lists
- ▶ One is by using the index with **del** keyword



del function

- ▶ We can also remove elements from lists
- ▶ One is by using the index with **del** keyword
- ▶ **Syntax:**
del variable[index]



remove function



remove function

- ▶ The other way is removing element by the value using **remove** function



remove function

- ▶ The other way is removing element by the value using **remove** function
- ▶ **Syntax:**
`variable.remove(element)`



Exercise 3

1. Delete the fourth element from the list **doublelist**
2. Remove **'and'** from the list **doublelist**



Solution 3

1. `del doublelist[3]`
2. `doublelist.remove('and')`



Summary

In this tutorial we have learnt to,

- ▶ **Create :**
 - ▶ **List with elements**
 - ▶ **Empty list**
 - ▶ **List within a list**



Summary

We also learnt to,

- ▶ **Find out the list length using `len` function**
- ▶ **Access elements using their index numbers**



Summary

- ▶ Append elements to list using the function **append**
- ▶ Delete element from list using the **del** and **remove** function



Evaluation

1. How do you create an empty list ?
2. Can you have a list inside a list ?
3. How would you access the last element of a list without finding its length?



Solutions

1. `myemptylist=[]`
2. Yes, list can contain all the other data types, including list
3. Using negative indices, we can access the last element from the list



Forum to answer questions

- ▶ Do you have questions in THIS Spoken Tutorial?
- ▶ Choose the minute and second where you have the question
- ▶ Explain your question briefly
- ▶ Someone from the FOSSEE team will answer them. Please visit

<http://forums.spoken-tutorial.org/>



Forum to answer questions

- ▶ Questions not related to the Spoken Tutorial?
- ▶ Do you have general / technical questions on the Software?
- ▶ Please visit the FOSSEE Forum
<http://forums.fossee.in/>
- ▶ Choose the Software and post your question



Textbook Companion Project

- ▶ The FOSSEE team coordinates coding of solved examples of popular books
- ▶ We give honorarium and certificate to those who do this

For more details, please visit this site:

<http://tbc-python.fossee.in/>



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- ▶ **More information on this Mission is available at:**

<http://spoken-tutorial.org/NMEICT-Intro>



THANK YOU!

For more Information, visit our website
<http://fossee.in/>

