

# 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



# Objectives

- ▶ 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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- ▶ **Ubuntu Linux 14.04 operating system**
- ▶ **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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To practise this tutorial, you should know how to

- ▶ run basic Python commands on the ipython console



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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	



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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/>



# Acknowledgements

- ▶ **Spoken Tutorial Project is a part of the Talk to a Teacher project**
- ▶ **It is supported by the National Mission on Education through ICT, MHRD, Government of India**
- ▶ **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/>

