

Comprehensive Python Programming

From Fundamentals to Advanced

(21 Oct 2024 - 13 Nov 2024)

Python Object and Data Structure Basics

IHUB DivyaSampark IIT Roorkee
and

Ritvij Bharat Pvt. Ltd.

Led by : Shreyas Shukla

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Basic Data Types

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Let's quickly discuss all of the possible data types,
then we'll have lectures that go into more detail about
each one!

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| Name | Type | Description |
|----------------|-------|--|
| Integers | int | Whole numbers, such as: 3 300 200 |
| Floating point | float | Numbers with a decimal point: 2.3 4.6 100.0 |
| Strings | str | Ordered sequence of characters: "hello" 'Sammy' "2000" "楽しい" |
| Lists | list | Ordered sequence of objects: [10,"hello",200.3] |
| Dictionaries | dict | Unordered Key:Value pairs: {"mykey": "value", "name": "Frankie"} |
| Tuples | tup | Ordered immutable sequence of objects: (10,"hello",200.3) |
| Sets | set | Unordered collection of unique objects: {"a","b"} |
| Booleans | bool | Logical value indicating True or False |

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Let's code !

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Numbers

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Integers which are whole numbers.

Floating Point numbers which are numbers with a decimal.

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Variable Assignments

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It would be nice to assign these data types a variable name to easily reference them later on in our code!

For example:

X = 2

My_Number = 1000

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Rules:-

1. Names can not start with a number.
2. There can be no spaces in the name, use _ instead.
3. Can't use: '"', '<>/?|\\()!@#\$%^&*~ - + and similar symbols.

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Rules for variable names

- It's considered best practice (PEP8) that names are lowercase.
- Avoid using words that have special meaning in Python like "list" and "str"

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Python uses **Dynamic Typing**: you can reassign variables to different data types.

This makes Python very flexible in assigning data types, this is different than other languages that are “**Statically-Typed**”

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cats = 2

cats = ["Jackie" , "Mickie"]

**This is okay in
Python!**

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```
cats = 2
```

```
cats = [ "Jackie" , "Mickie" ]
```

ERROR
in other
Languages!

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```
int cat = 1;
```

```
cat = "Jackie" ; //RESULTS IN ERROR
```

**Example of Static Typing
(C++)**

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Pros of Dynamic Typing:

- Very easy to work with
- Faster development time

Cons of Dynamic Typing:

- May result in bugs for unexpected data types!
- You need to be aware of **type()**

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