

Introduction to Python

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GitHub Repository



What we'll be talking about?

1. Introduction

- 1.1. 🐍 Background
- 1.2. 🐍 History
- 1.3. 🐍 Common Uses Today (2022)

2. Basics

- 2.1. 🐍 Data Types (Briefly)
- 2.2. 🐍 Control Flow, Loops, and Exception Handling
- 2.3. 🐍 Collections and How to Use Them
- 2.4. 🐍 Functions and Parameters
- 2.5. 🐍 OOP
- 2.6. 🐍 Creating Custom Packages

- 3. 🐍 Demo: Device Resource Monitoring (AM), Data Compression (PM)
- 4. 🐍 References / Resources for Further Practice and Study



1.1. Introduction: Background

Python is an...

- Interpreted
- Object-Oriented
- High-Level
- General Purpose

programming language with *dynamic semantics*.

Python supports multiple programming paradigms...

- Structured (Procedural)
- Object-Oriented
- Functional Programming



1.2. Introduction: History

- Created by *Guido van Rossum*; initially released on *February 20, 1991*.
- He named the programming language *Python*, based on the series *Monty Python's Flying Circus*. he wanted the name to be short, unique, and slightly mysterious.
- Python was supposed to be a descendant of the programming language ABC.



Guido van Rossum



Cast - Monty Python's Flying Circus

An example function to collect the set of all `words` in a document:

```
HOW TO RETURN words document:
  PUT {} IN collection
  FOR line IN document:
    FOR word IN split line:
      IF word not.in collection:
        INSERT word IN collection
  RETURN collection
```

Code Snippet - ABC



1.3. Introduction: Common Uses Today

Automations

(Report Generation, Resource Monitoring, Web Scraping, Email Sending)

Cloud Architecture

(AWS, Terraform)

Data Science

(NumPy, Pandas, SciKit Learn, SQLAlchemy, PySpark)

Desktop Applications

(tkinter, Qt)

Web Applications

(Django, Flask, FastAPI)



2.1. Basics: Data Types

String (str)

Integer (int)

Float (float)

None (None)

Boolean (True or False)

Bytes (bytes)



2.2. Basics: Control Flow

✓ if

```
if <condition>:  
    ...
```

✓ if-else

```
if <condition>:  
    ...  
else:  
    ...
```

✓ if-elif-else

```
if <condition 1>:  
    ...  
elif <condition 2>:  
    ...  
elif <condition n>:  
    ...  
else:  
    ...
```

✓ continue

Skip the current element in the loop and proceed to the next one if there are still any more elements.

✓ break

End the loop completely.

- Switch statements have been available since SDK version 3.10.
- SDK version 3.8.10 is the last release with 32-bit support.



2.2. Basics: Loops

For Loop

```
for <element> in <iterable>:
```

```
...
```

While Loop

```
while <condition>:
```

```
...
```



2.2. Basics: Exception Handling

try-except-raise

```
try:
    # code that will cause an error here

    # attempt to intercept error
    raise <exception type>(<error message>)

except <exception type> as <exception variable>:
    # do something to process the error
```



2.3. Basics: Collections and How to Use Them

	List	Tuple	Set	Dictionary
<i>What does it look like?</i>	<code>['LOREM', 'IPSUM']</code>	<code>('LOREM', 'IPSUM')</code>	<code>{ 'LOREM', 'IPSUM' }</code>	<code>{ 'LOREM': 'IPSUM', 'DOLOR': 'SIT' }</code>
<i>Can you add elements?</i>	YES (<code>append()</code>)	NO	YES (<code>add()</code>)	YES (<code>update()</code>)
<i>Can you remove elements?</i>	YES (<code>pop()</code>)	NO	YES (<code>pop()</code> , <code>random</code>)	YES (<code>pop()</code>)
<i>Can it have duplicate elements?</i>	YES	YES	NO	NO (in keys only)
<i>Can you sort its elements?</i>	YES (<code>sort()</code>)	NO	NO	YES (<code>sorted()</code> , keys only)
<i>Can you search through its elements?</i>	YES	YES	NO	YES

● See reference [here](#).

● For SDKs older than 3.10, switch statements can be implemented using dictionaries.

● All collections can be an element of each other (e.g. a list of dictionaries, a set of tuples, a list of tuples, etc.).



DEMO

- 🐍 Functions and Parameters
- 🐍 OOP
- 🐍 Creating Custom Packages
- 🐍 Demo: Device Resource Monitoring (AM), Data Compression (PM)



4. References / Resources for Further Practice and Study

- Python.org
- Python.org - Documentation
- Real Python
- Programiz
- DigitalOcean



Change Logs



2022-11-14

✓ initial release

