

1. Program Information
oooooooo

2. Logistics
oooooo

3. Installations
ooo

4. Introduction
oooooooooooo

5. References
o

KOLT Python

Introduction

Ahmet Uysal

Tuesday 28th January, 2020



KOC
UNIVERSITY

OFFICE OF LEARNING AND TEACHING

1. Program Information
oooooooo

2. Logistics
oooooo

3. Installations
ooo

4. Introduction
oooooooooooo

5. References
o

Agenda

1. Program Information

2. Logistics

3. Installations

4. Introduction

5. References

Course Outcomes

- Apply basic programming concepts using Python
 - Demonstrate how Python can be used in different areas or disciplines
 - Create code that is easy to understand
 - **Implement practical challenges** by gaining experience in Python

Why Python?

- Easy Syntax
 - Beginner Friendly -most popular language for introductory CS courses in top universities[1]-
 - Wide usage area
 - Large and growing community

1. Program Information
OO●OOO

2. Logistics
OOOOO

3. Installations
OOO

4. Introduction
OOOOOOOOOOOO

5. References
O

Some of the Usage Areas [2]

- Data Analysis
- Web Development
- System Administration
- Machine Learning
- Web Parsers/Crawlers
- Testing
- Education
- Network Programming
- ...

1. Program Information

2. Logistics

3. Installations

4. Introduction

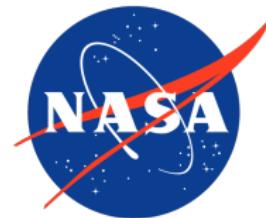


5. References

Python at Industry



Google



1. Program Information
oooo●○

2. Logistics
ooooo

3. Installations
ooo

4. Introduction
oooooooooooo

5. References
o

Python at Industry [3]

Web Service Efficiency at Instagram with Python



Instagram Engineering [Follow](#)

Jun 21, 2016 · 6 min read

Instagram currently features the world's largest deployment of the Django web framework, which is written entirely in Python. We initially chose to use Python because of its reputation for simplicity and practicality, which aligns well with our philosophy of "do the simple thing first." But simplicity can

The screenshot shows a blog post from Instagram Engineering. At the top, there's a header with the Instagram logo and the text "Instagram Engineering" followed by a "Follow" button. Below the header, the date "Jun 21, 2016 · 6 min read" is displayed. The main content of the post discusses the use of Python's Django framework at Instagram. Below the main text, there are two sections: "PyTransit" and "ktransit". Each section has a small thumbnail image, a GitHub link ("https://github.com/mrtommyb/ktransit"), a brief description, and some footer information like "Kepler" and "GNU General Public License (GPL) version 3".

PyTransit

<https://github.com/mrtommyb/ktransit>

Fast and easy-to-use tools for exoplanet transit light curve modelling with Python. PyTransit implements the quadratic Mandel & Agol and the Giménez transit models with various optimisations, and offers both a simple interface for model evaluation and a lower-level access for fine-tuning the model.

#Kepler

GNU General Public License (GPL) version 3

ktransit

<https://github.com/mrtommyb/ktransit>

1. Program Information
oooooo●

2. Logistics
ooooo

3. Installations
ooo

4. Introduction
oooooooooooo

5. References
o

Python Everywhere



imgflip.com

1. Program Information
oooooooo

2. Logistics
●oooo

3. Installations
ooo

4. Introduction
oooooooooooo

5. References
o

Who Are We?



Ahmet Uysal



Ceren Kocaoğullar



Hasan Can Aslan



Necla Mutlu



Fırat Tamur



Ayşe Turşucular



Haluk Ceyhun Gün



Halil Eralp Koçtaş

What Will We Do?

Lecture Tuesday 14:30-15:45 @SNA 158

- New concepts about Python & programming in general
 -

Section

- Starting next week
 - You will receive a Form with possible Section slots
 - Please select **every** option that suits you
 - Exercise questions for **you** to solve

We need your feedback to get better, don't hesitate to talk with us!

Programming Assignments

- 3-4 in total
 - Review sessions to **help you**
 - Some assignments will have **autograders** to help you find your mistakes and test your code.
 - Later assignments will be based on **your interests!**
Feel free to recommend subjects.

Certificate Requirements

- At most **3 unexcused absences**, including sections.
 - Working on and submitting all homework assignments. Submissions that do not pass the autograders will be examined by us.
 - We do not expect that you ace all programming assignments. But, we expect that you **spend time** on them!
 - Complying to *Koç University Code of Conduct*.



Extra

We will also organize complementary events throughout the semester,

- Workshops
 - Hackathons
 - Programming Contests
 - ...

These are not mandatory, but we highly encourage you to attend.

Stay tuned :)

Installing Python

- Go to python.org/downloads
- Install the latest version of Python for your operating system
- (Windows only) Make sure to add python to the environment variables by checking the corresponding permission on the installation or by hand
- Check the installation by running **python**(Windows)/**python3**(macOS/Linux) in terminal.

```
C:\Users\auysal>python
Python 3.8.0 (tags/v3.8.0:fa919fd, Oct 14 2019, 19:37:50) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print('Hello, world!')
Hello, world!
```

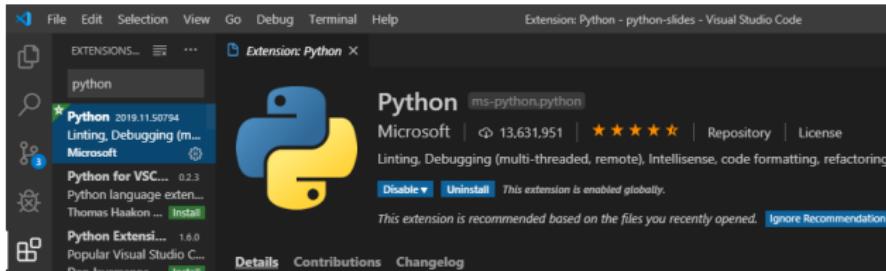
Installing an Editor/IDE(Integrated Development Environment)

- Having a specialized editor/IDE can help a lot.
 - We will use Visual Studio Code but you are free to use any editor/IDE of your choice.
 - Get Visual Studio Code from code.visualstudio.com/download



Configuring Visual Studio Code for Python

- Install Python extension for VS Code.
- Select the Python(3.8.1) Interpreter in VS Code.
- For more information, visit *VS Code Python Tutorial*.



1. Program Information
oooooooo

2. Logistics
ooooo

3. Installations
ooo

4. Introduction
●oooooooooooo

5. References
o

Comments

```
# Single line comments start with a '#'
```

```
"""
```

Multiline comments can be written between three "s and are often used as function and module comments.

```
"""
```

```
print('Hello, stranger!')
```

Python will basically ignore comments, they are purely written **for humans!**

1. Program Information
oooooooo

2. Logistics
oooooo

3. Installations
ooo

4. Introduction
o●oooooooooooo

5. References
o

Variables

- How to represent/store values in Python?
- The answer is:
- **VARIABLES!**
- But what are variables?

1. Program Information
oooooooo

2. Logistics
oooooo

3. Installations
ooo

4. Introduction
oo●oooooooooooo

5. References
o

Variables

Think of them as



1. Program Information
oooooooo

2. Logistics
oooooo

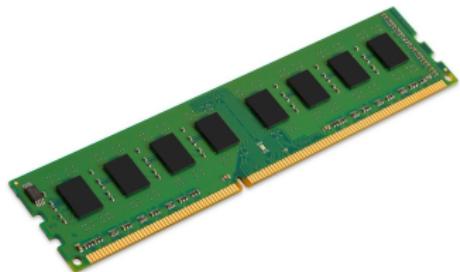
3. Installations
ooo

4. Introduction
ooo●oooooooooooo

5. References
o

Variables

Tiny boxes in the computer memory



1. Program Information
ooooooo

2. Logistics
ooooo

3. Installations
ooo

4. Introduction
oooo●oooooooo

5. References
o

Variables

- Which kind of values we need to keep in these boxes (variables)?
 - Numbers?
 - Texts?
 - Individual Characters?
 - Starting time of the class?
 - Colors?
 - Truth Values?
 - People?

1. Program Information
oooooo

2. Logistics
ooooo

3. Installations
ooo

4. Introduction
oooooooo●oooooooo

5. References
o

Variables

Type	Explanation	Examples
int	represent integers	3, 4, 17, -10
float	represent real numbers	3.0, 1.11, -109.123123
bool	represent boolean truth values	True, False
str	A sequence of characters.	'Hello', ", '3'
NoneType	special and has one value, None	None

OK, but how do we create one?

1. Program Information
oooooooo

2. Logistics
oooooo

3. Installations
ooo

4. Introduction
oooooooo●oooooooo

5. References
o

Variables

```
x = 2
x * 7
# => 14

x
# => 2
x = x * 7


y = 'Hello'
y + ' World!'
# => 'Hello World!'
```

1. Program Information
oooooooo

2. Logistics
oooooo

3. Installations
ooo

4. Introduction
oooooooo●oooo

5. References
o

Variables

- Andy could fit all his toys into one box, but this is not the Toy Story.
- These variable boxes can keep only **one thing at a time.**



How about types of variables?

Special method called `type()`

```
type(1) # => <class 'int'>
type('Hello') # => <class 'str'>
type(None) # => <class 'NoneType'>
type('') # => <class 'str'>

type(int) # => <class 'type'>
type(type(int)) # => <class 'type'>
```

Python knows variables' type even if you don't know it!

1. Program Information
oooooooo

2. Logistics
oooooo

3. Installations
ooo

4. Introduction
oooooooooooo●ooo

5. References
o

Console I/O(Input/Output)

Now we can store the data we know, how about interacting with the user?

`print(), input()`

Let's write our first program!

```
# Print descriptive text to console
# and assign input to variable
name = input('Enter a sentence:')
# Greet user
print('Hello from Python,', name)
```

Console I/O(Input/Output)

```
print(*args, sep=' ', end='\n')
```

- Can take arbitrary number of arguments
- Separates elements with space by default
- Adds newline character '\n' to end by default

```
input([prompt])
```

- Prints the prompt to Console
- Program is paused until user enters something
- **returns an str object!**

1. Program Information
ooooooo

2. Logistics
ooooo

3. Installations
ooo

4. Introduction
oooooooooooo●

5. References
o

Example Program

```
number = input('Rate us out of 100 :')
# Assume user entered 34
result = number + (100 - number)
# What will we see in console?
print(result)
```



References

- [1] P. Guo, "Python is now the most popular introductory teaching language at top u.s. universities." [Online]. Available: <https://cacm.acm.org/blogs/blog-cacm/176450-python-is-now-the-most-popular-introductory-teaching-language-at-top-u-s-univefulltext>
- [2] JetBrains, "Python developers survey 2018." [Online]. Available: <https://www.jetbrains.com/research/python-developers-survey-2018/>
- [3] M. Ni, "Web service efficiency at instagram with python." [Online]. Available: <https://instagram-engineering.com/web-service-efficiency-at-instagram-with-python-4976d078e366>