

PSR 1

PYTHON FOR IT PROFESSIONALS

Session 1

**Introduction to
Python**

Presented by -
Harsh Singh

Session 2

Python for AI & ML

Presented by -
Vedant Pandya

Session 3

**Python in Web-Dev,
Automation &
Cyber Security**

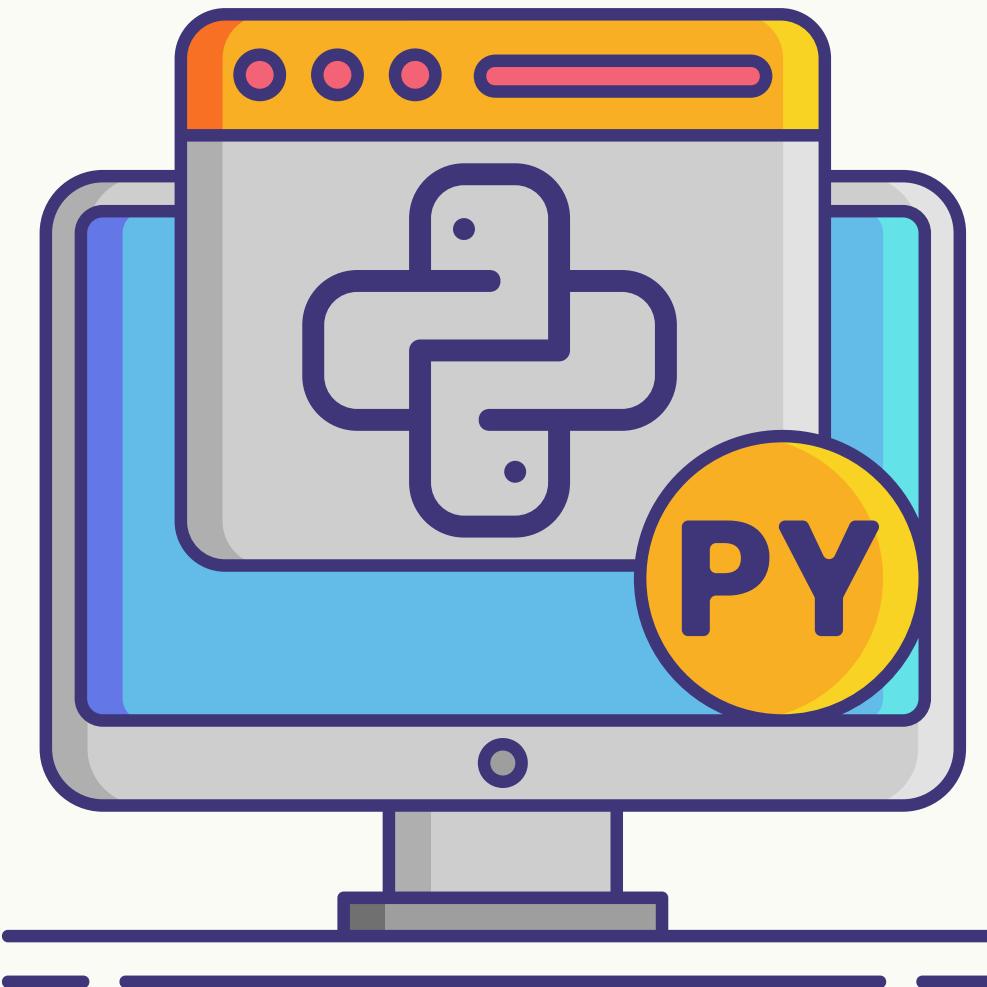
Presented by -
Anurag Singh

Introduction to Python Programming

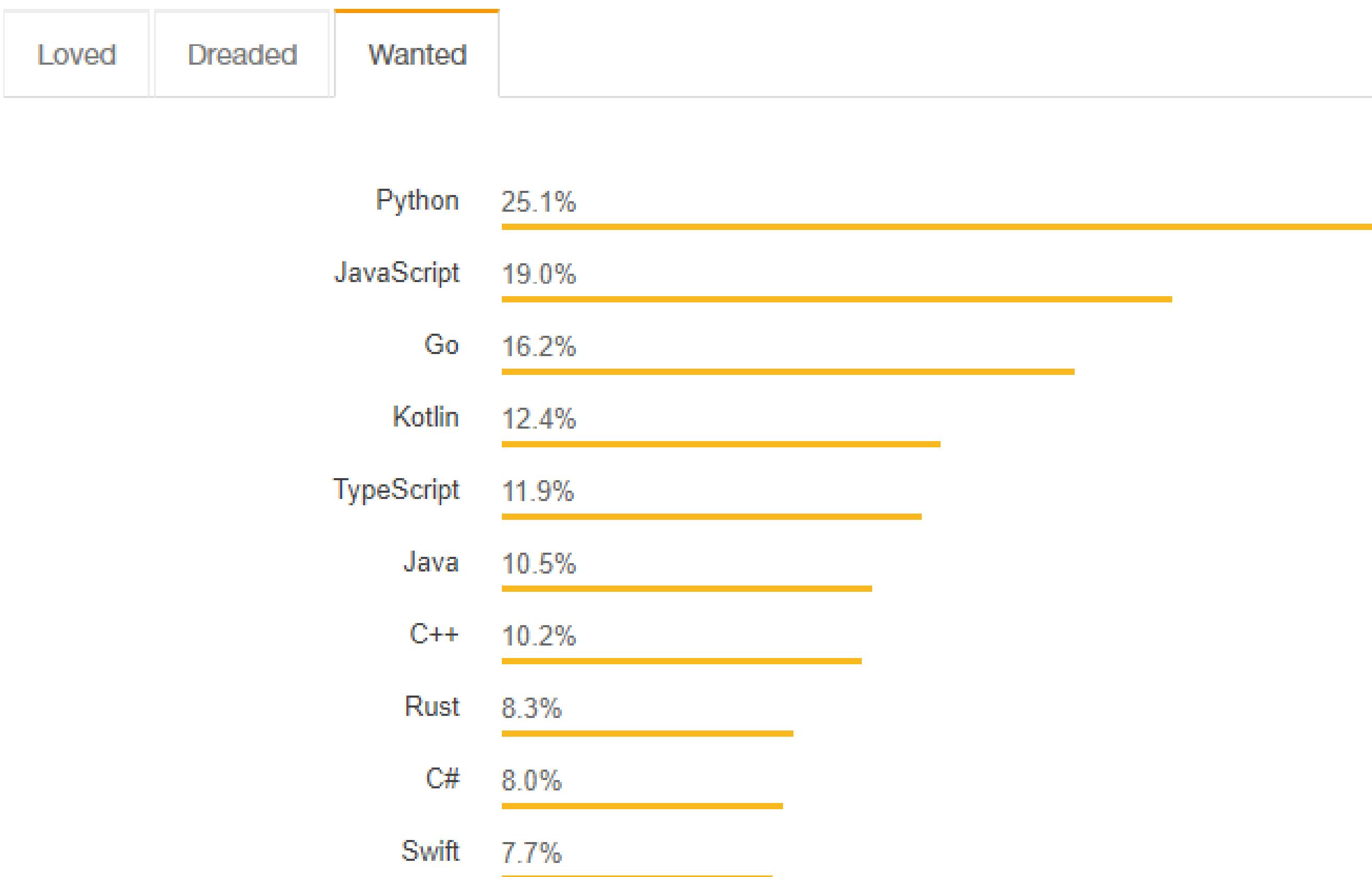
Presented by Harsh Singh

Why Python?

- Created by Guido Van Rossum
- Released on 20 February 1991.
- OSI-approved open source license.
- Interpreted Programming Language.
- Supports multiple programming paradigms.
- Fast development.
- Active Community to clear your Problems.



Most Loved, Dreaded, and Wanted Languages



Survey Conducted By -



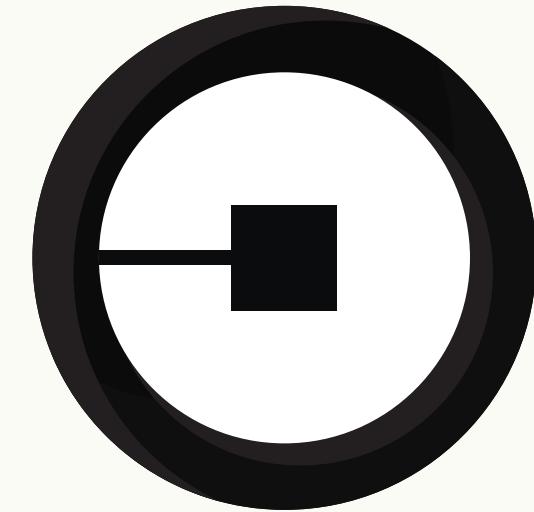
Apps that use Python



Instagram



Spotify



Uber



Netflix

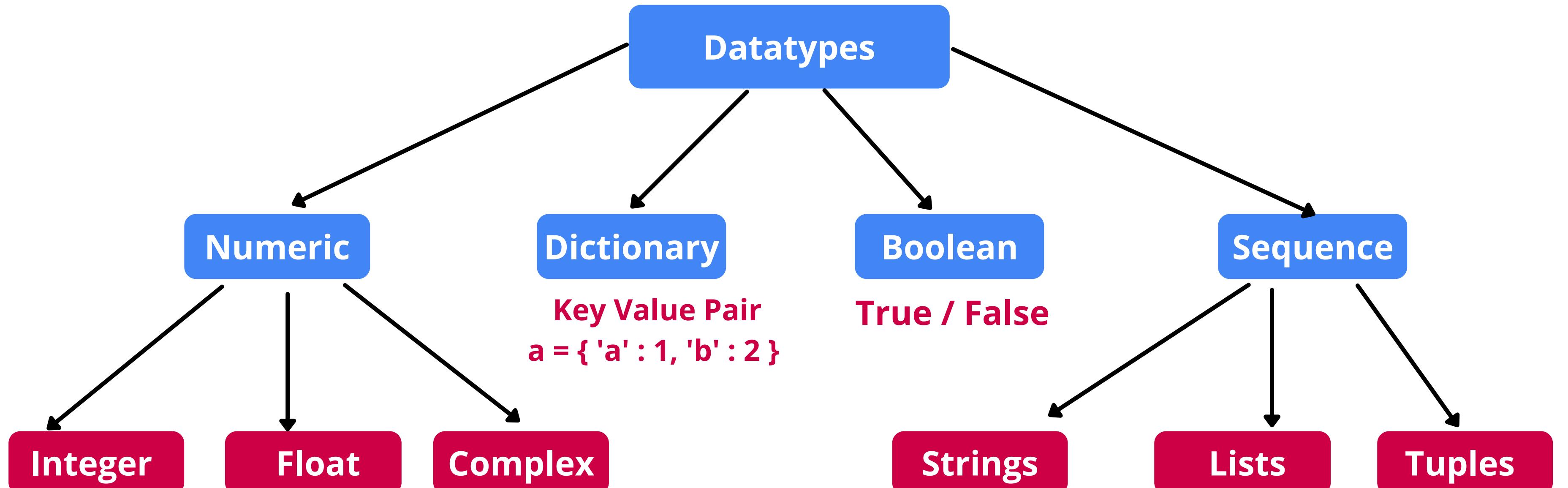


Reddit



Google

Datatypes in Python



Eg: **a = 5**

Eg: **a = 5.24**

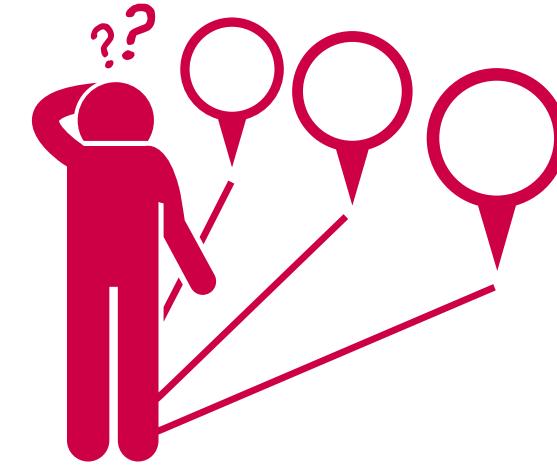
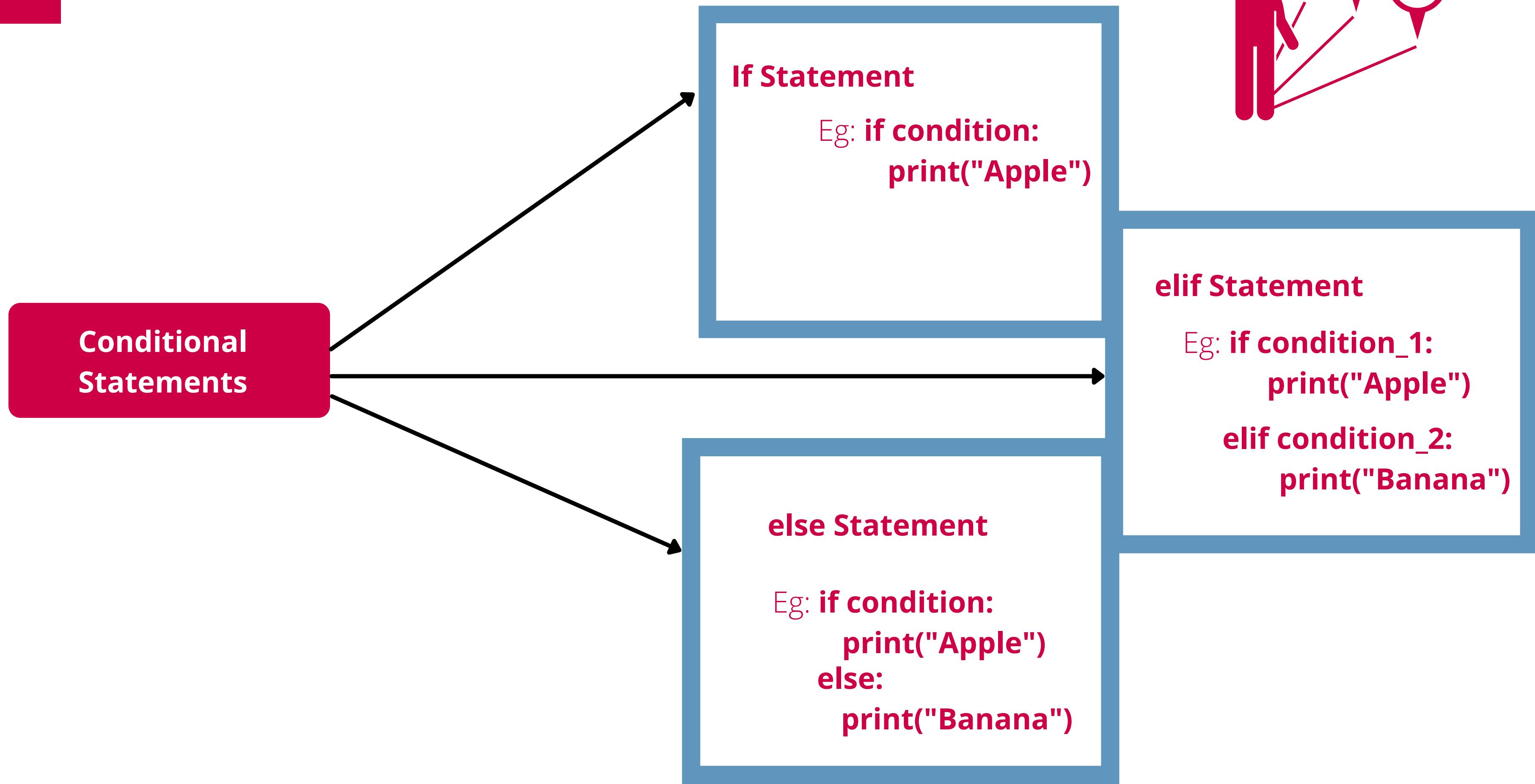
Eg: **a = 3 + 7j**

Eg: **s = 'Python'**

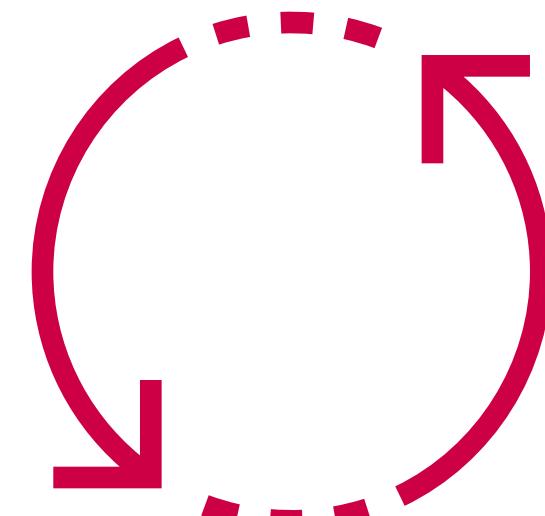
Eg: **s = ['a',1,2]**

Eg: **s = ('a',1)**

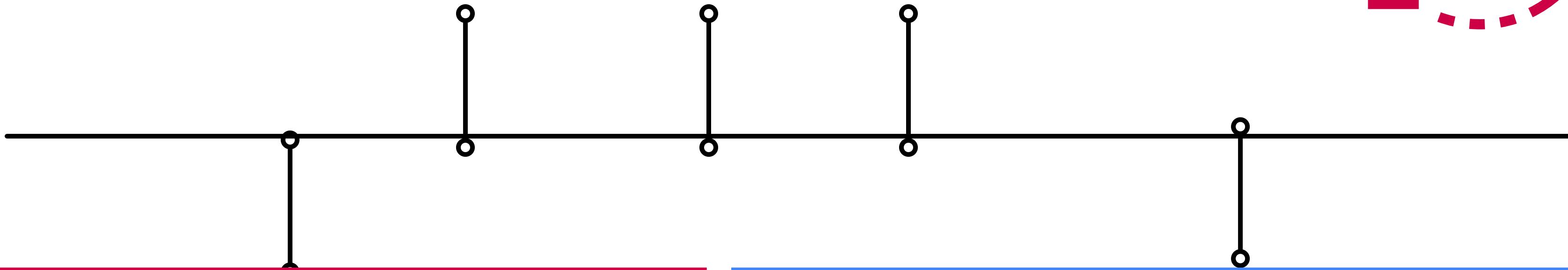
Conditional Statements - If Else



Looping Statements



Break **Continue** **Pass**



- **While Loop:**

Loops an instruction till a condition is True.

Eg. `n = 5`

```
while(n>1):
```

```
    print("Apple!")
```

```
    n = n-1
```

- **For Loop:**

This loop is used when you are well aware of the entire span of time for which loop will be executed

Eg. `for i in range (0,10,2):`

```
    print("The Value of i is =", i )
```

Coding with Functions

$f(x)$

Function Types

- Inbuilt Function:
- Already available with Python.
- We can use it but can't make changes to its working
- Eg.
`a = input()`
`b = octal(72)`
`c = [1,2,3,4]`
`print(len(c))`

- User-Defined Function
- Made by User
- Can be anything you want.
- Syntax:
`def function_name (arguments):`
 //statements
- Eg.
`def add (num1 , num2):`
 `return num1 + num2`

`print(add(10,5))`

Importing Files in Python

- Around 1,37,000 Libraries and Modules.
- From ML to Computer Vision, it has everything.

- Eg:

```
from math import pi, factorial  
  
print(pi)  
  
print(factorial(6))
```

- Output :

3.141592653589793

720

Some Famous Libraries



Keras

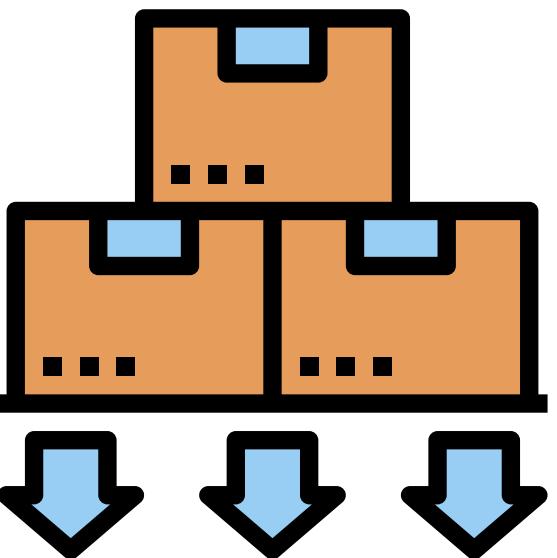


matplotlib

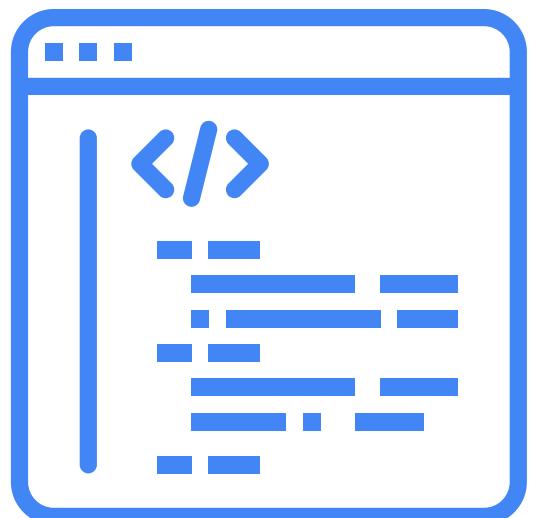


NumPy

From Libraries/Packages



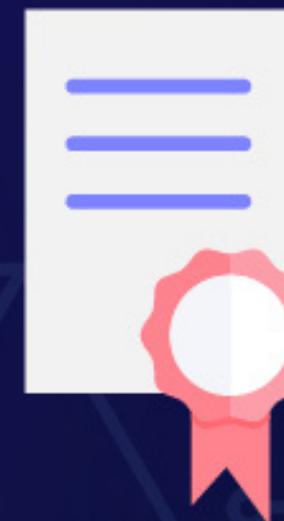
To your Code..



Python for AI & ML

Presented by Vedant Pandya

AI patent applications*



↗400%
increase of published AI patent
applications in last decade

AI as part of the digital and green transition



60 million new jobs

could be created by AI and robotics worldwide by 2025

The EU helps create benefits for people and companies by funding AI projects through the Skills Agenda, the Just Transition Fund, Horizon etc.

*in period 1960-2018

Sources: European Commission (2019), IPOL (2020)



europarl.eu

Python & Data Science

The Past, Present, and Future of Big Data

► THE PAST

Digital storage grew annually by **23%** between 1986 and 2007.

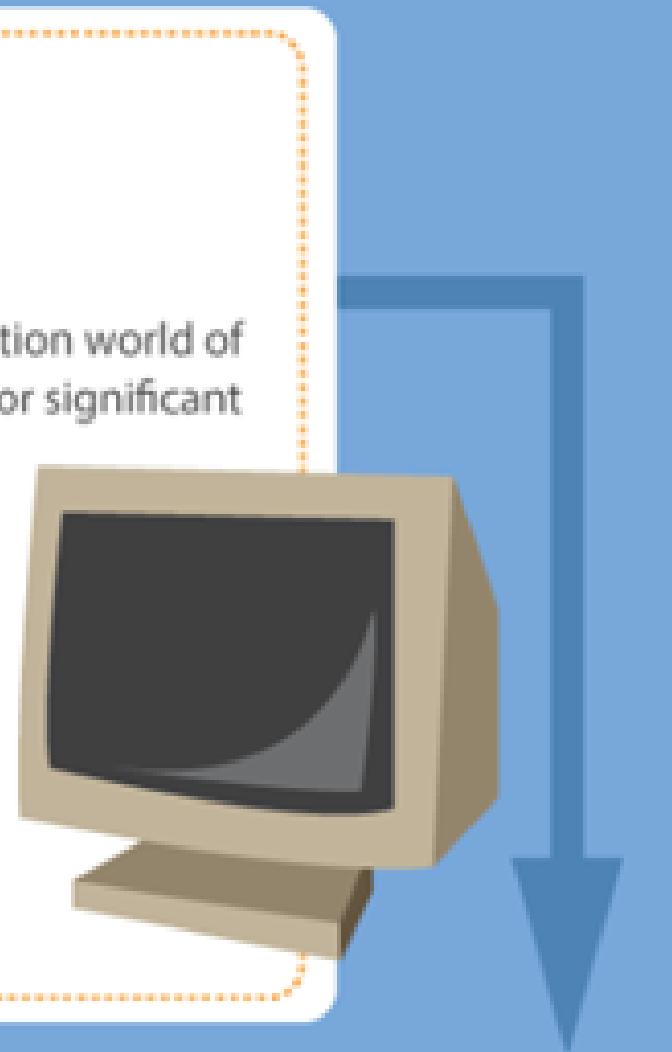
Most data was stored on **videotapes** such as VHS cassettes in the pre-digital revolution world of the late 1980s. Vinyl LP records, audio cassette tapes, and photography accounted for significant portions as well.

Paper-based storage represented **33%** of all data storage on its own in 1986.

25% of all data stored in the world in 2000 was stored digitally.

2002 is the first year that digital storage capacity overtook analog capacity.

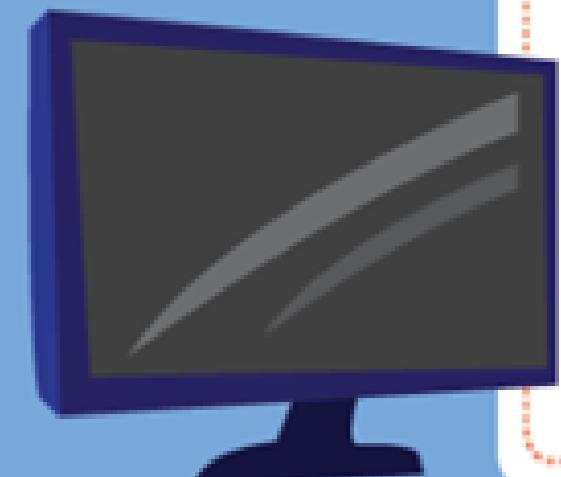
94% of all data was stored in digital format by 2007.



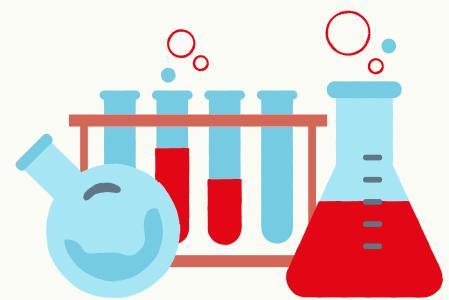
► PRESENT

Today, more than **2.5 exabytes** (2.5 billion gigabytes) of data is generated every single day. This is expected to continue growing at a significant rate with mobile devices accounting for much of this data.

Some experts have estimated that **90%** of all of the data the world today was produced within the last two years.



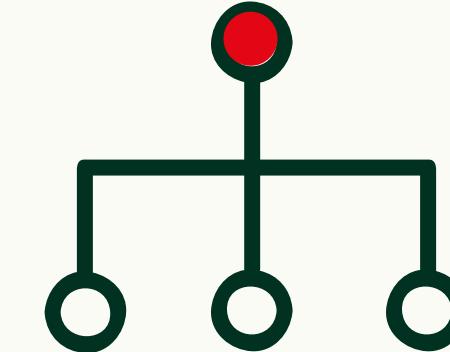
DATA SCIENCE



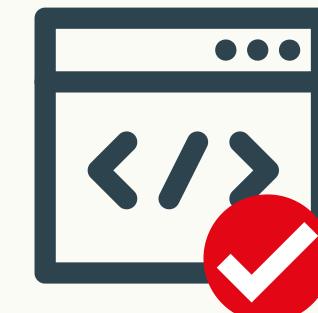
ANALYSIS



STRUCTURE



ALGORITHM

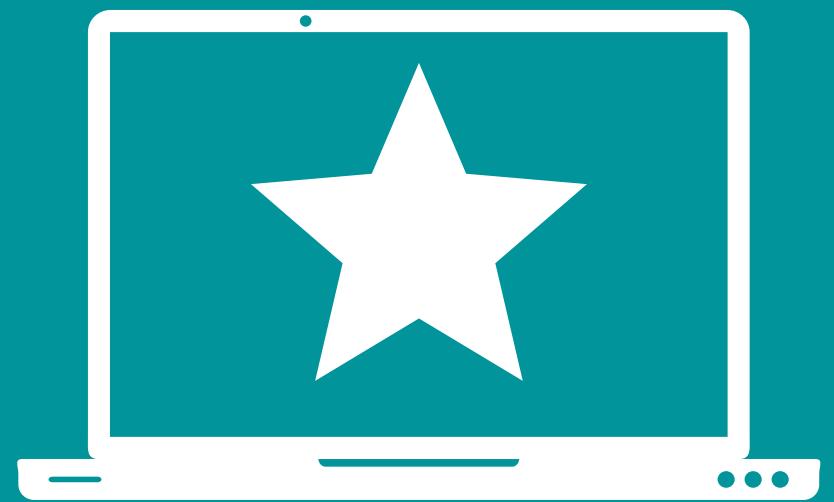


CODING



SOLVING

Structured Data



Structured Data is Quantitative

Un-Structured Data



Un-Structured Data is Qualitative

Why Python for Data Science?

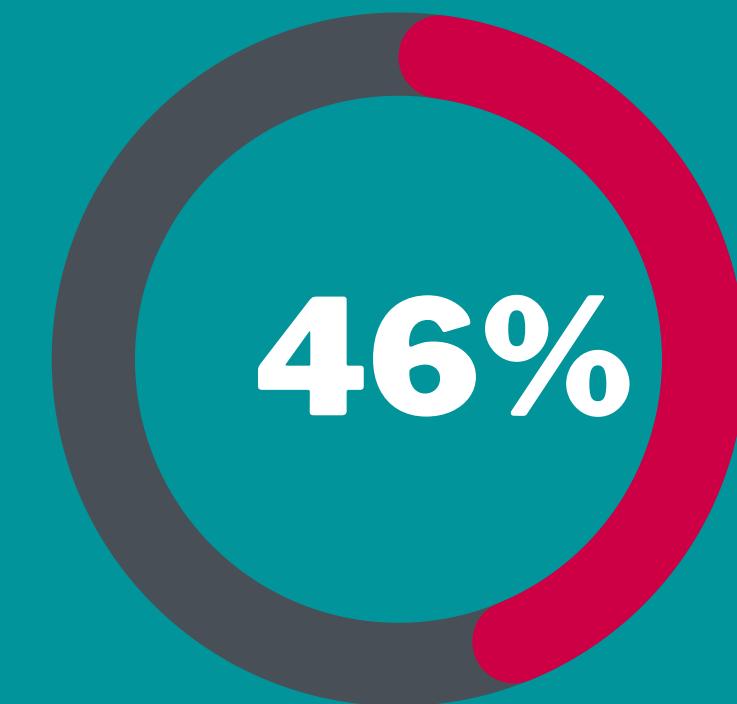
TOP 3 PROGRAMMING LANGUAGES FOR DS



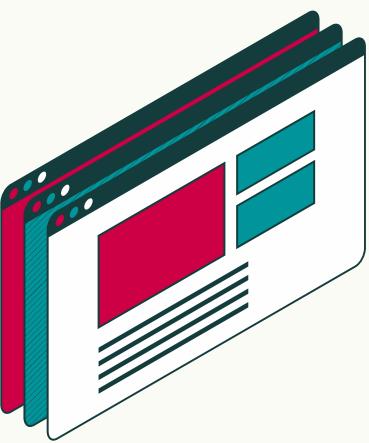
Python



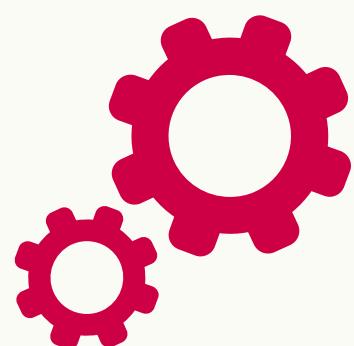
SQL



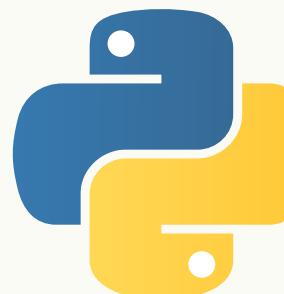
R



Less Code



Libraries



Ease of Learning



Community

LIBRARIES



NumPy



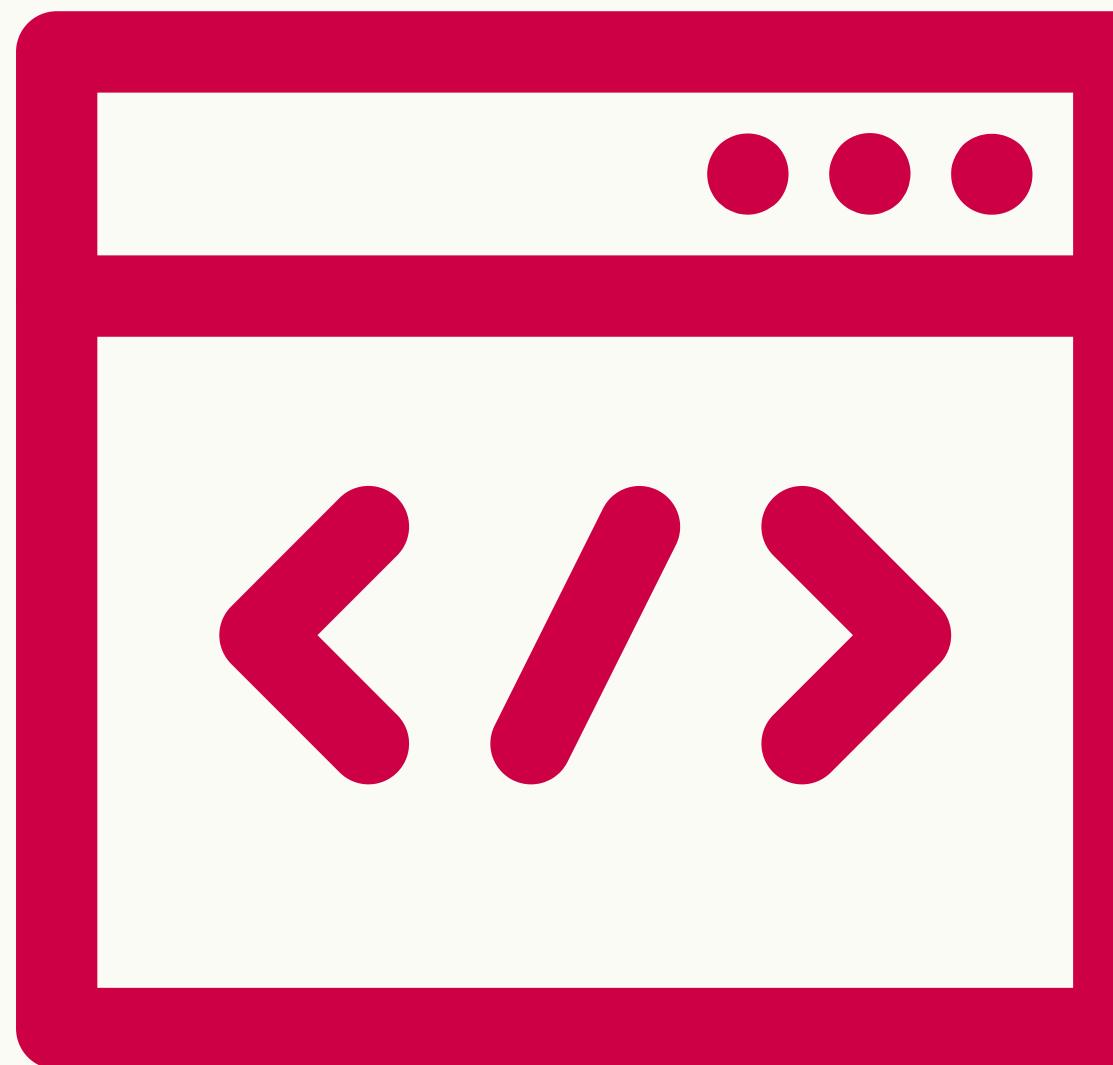
IP[y]: IPython
Interactive Computing

pandas

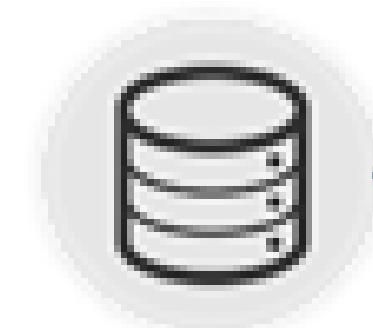
$$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$$



Demonstration - Basic Dataset Pre-Processing



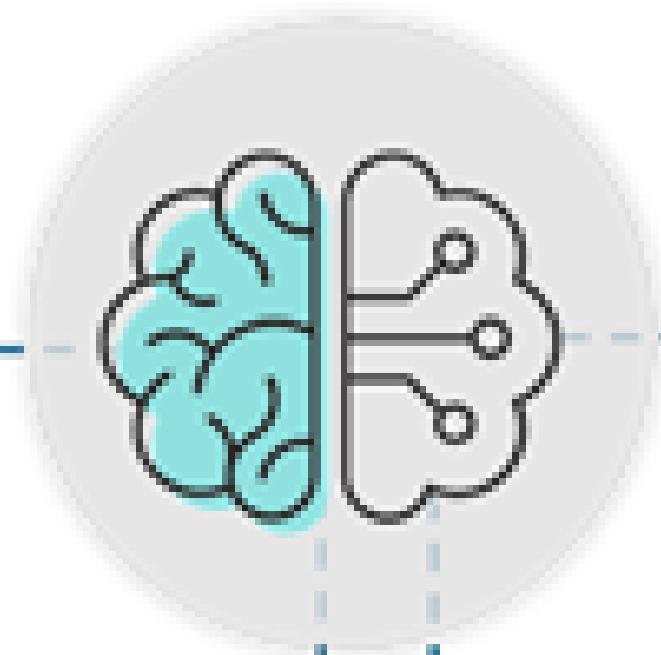
Python & Machine Learning



Increase in Data Generation



Improve Decision Making



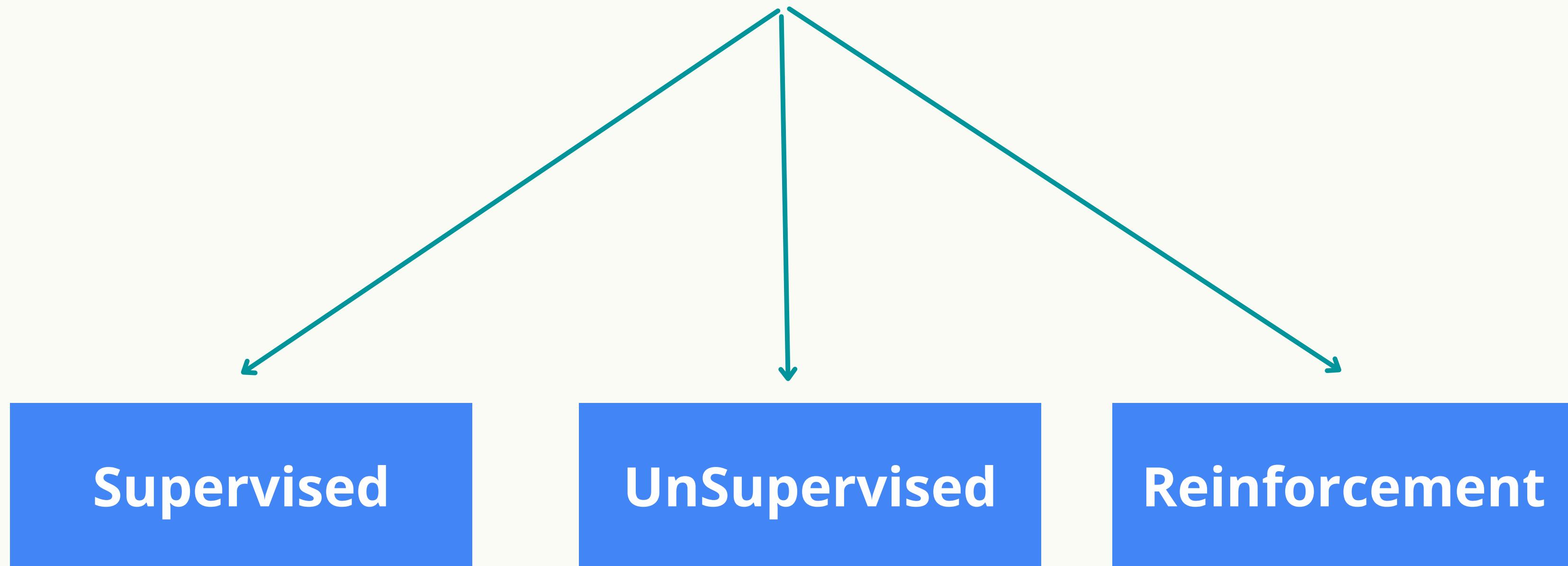
Uncover patterns & trends in data



Solve complex problems



Machine Learning



LIBRARIES

NLTK



theano



Keras



TensorFlow



Scikit-learn



Numpy

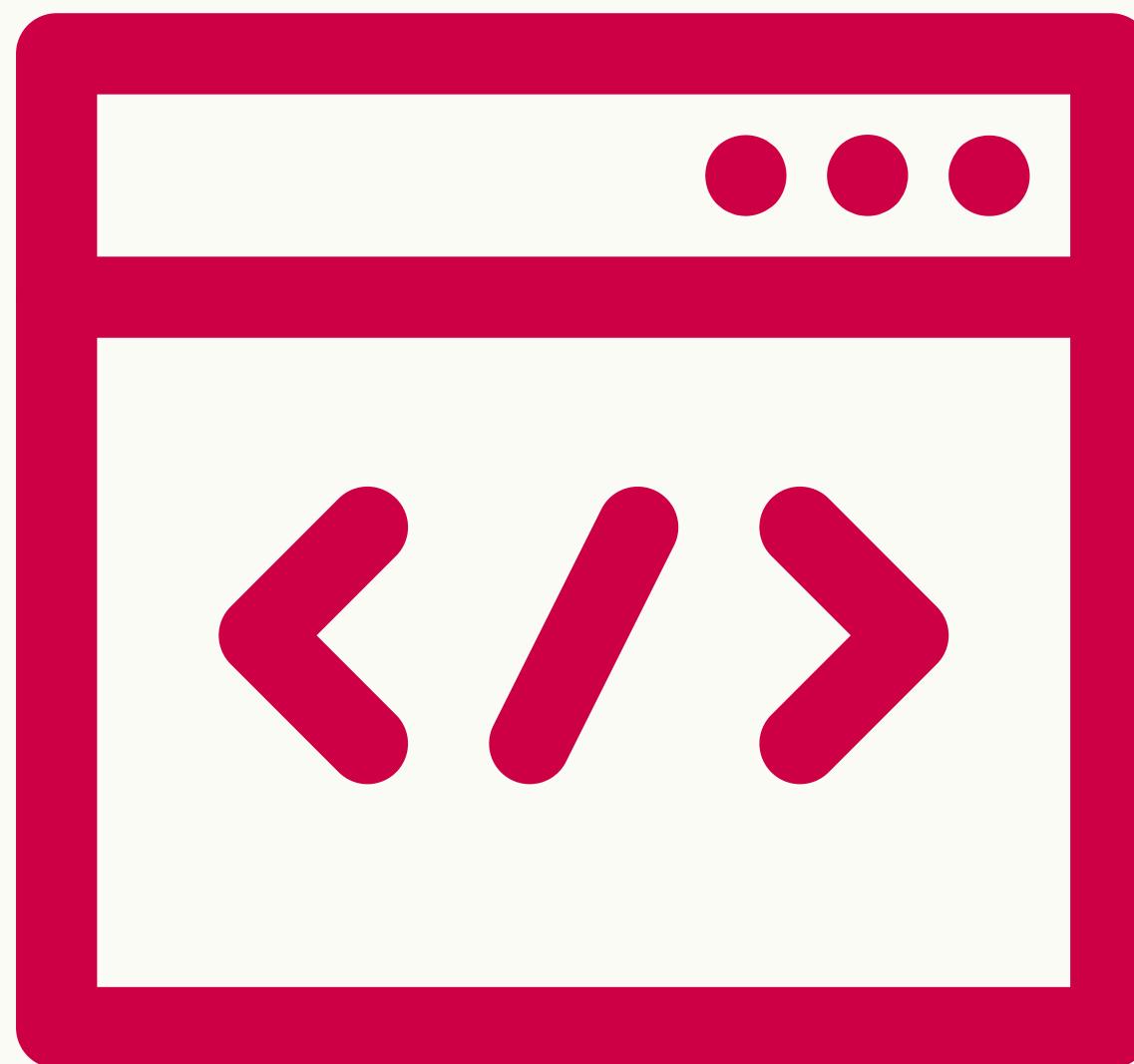


Pytorch



Pandas

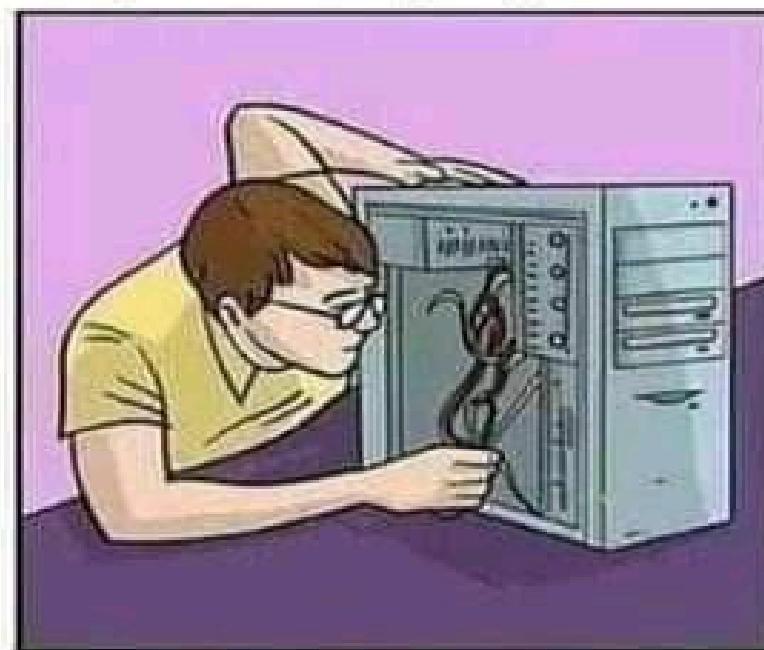
Demonstration - Iris Classification



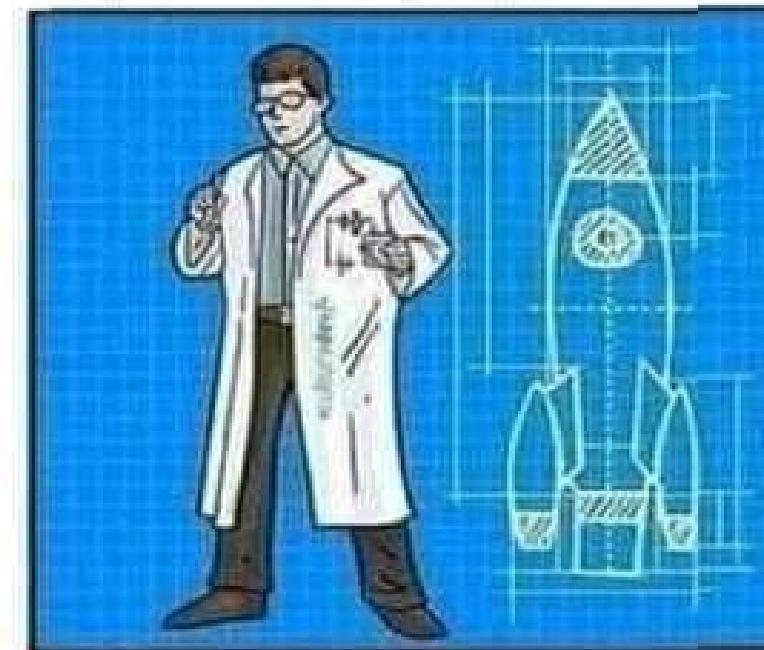
Applications of Python

Presented by Anurag Singh

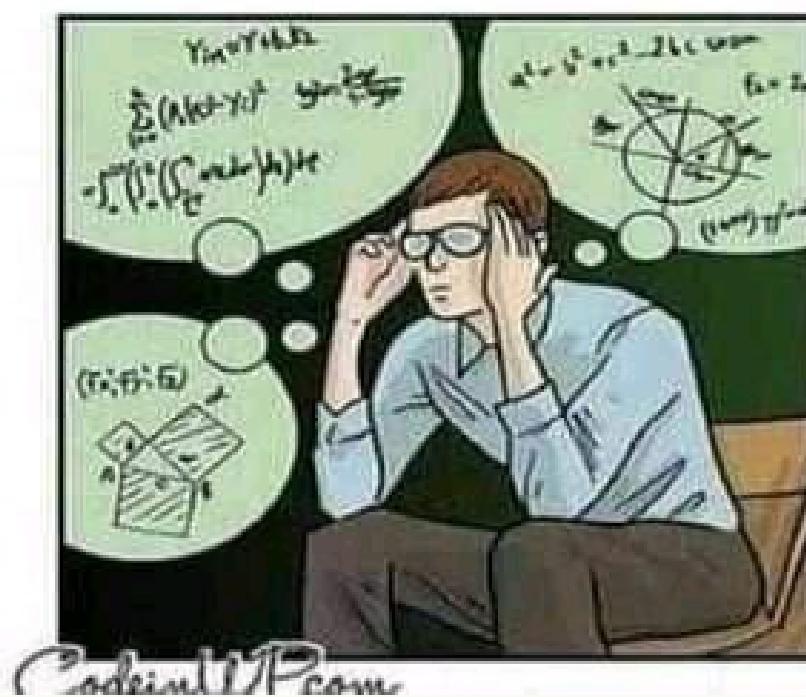
**What my friends
think I do**



**What my family
thinks I do**



**What
I think I do**



**What
I really do**



PYTHON IN WEB DEVELOPMENT

FLASK

- Microframework – only Core
- Extended using Libraries for :
 - Database Integration
 - Form Validations
 - Upload Handling
- Suitable for small scale uses.
- More Code – Custom Made



Let's make a flask Project !

1

INSTALL FLASK

pip install flask

2

MAKE FLASK APP

```
from flask import Flask  
app = Flask(__name__)
```

```
@app.route("/")  
def hello():  
    return "Python is Easy!!"
```

```
if __name__ == "__main__":  
    app.run()
```

3

MAKE FLASK APP

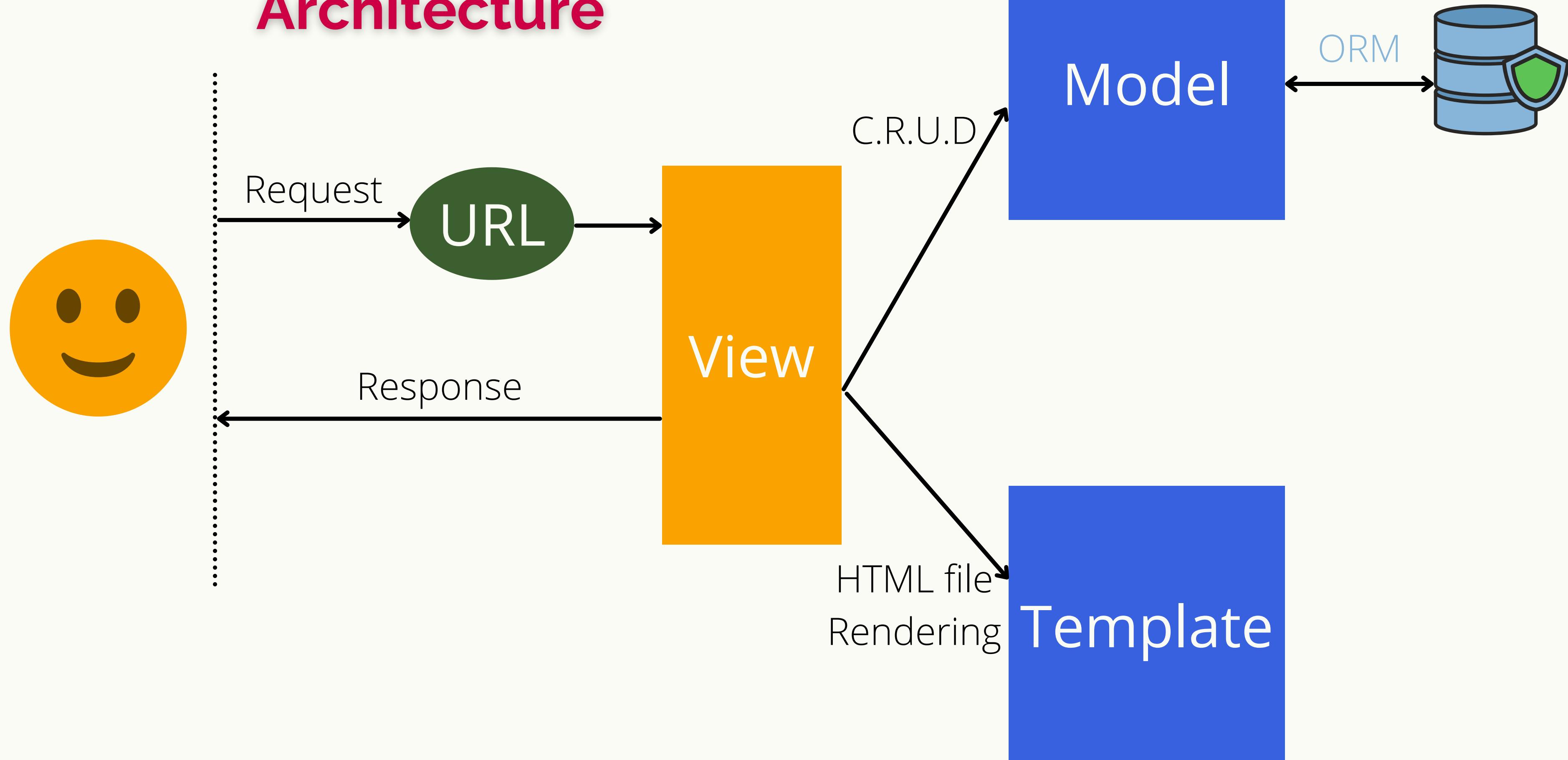
python filename.py

4

Open localhost:5000 in browser

MVT (Model View Template)

Architecture



DJANGO

- Based On MVT architecture.
- High Level Framework
- Faster Development
- Already Many things included. - Admin, Auth, User Roles, Permissions, Database Management(ORM)
- Highly Scalable and Secure
- Suitable for Large scale uses.
- Better Collaboration
- Great Community and Documentation.



PYTHON IN AUTOMATION

AUTOMATION

- Performing task with minimal human intervention by use of machine
- Web Scraping and Analysis - Selenium & beautifulsoup4
- GUI Automation(Mouse, keyboard, Screenshot) - PyAutoGUI
- Chatbots & Social media automation - pywhatkit, InstaBot, twitter.
- Camera Based Projects - OpenCV
- File System automations - os , sys

DEMO TIME

SELF-DESTROYING SCRIPT

A Python Script which creates folder if not there, then downloads some images listed in a text file and at the end deletes itself.

PYTHON IN CYBER SECURITY

CYBER SECURITY

- Python is easier, faster, simpler, automatic memory management.
- Lets take an Example...
 - Ping 100 sites using python script

“

**Programming is a skill
best acquired by practice
and example rather than
from books**

- Alan Turing

THANK YOU!

Open For Discussion!