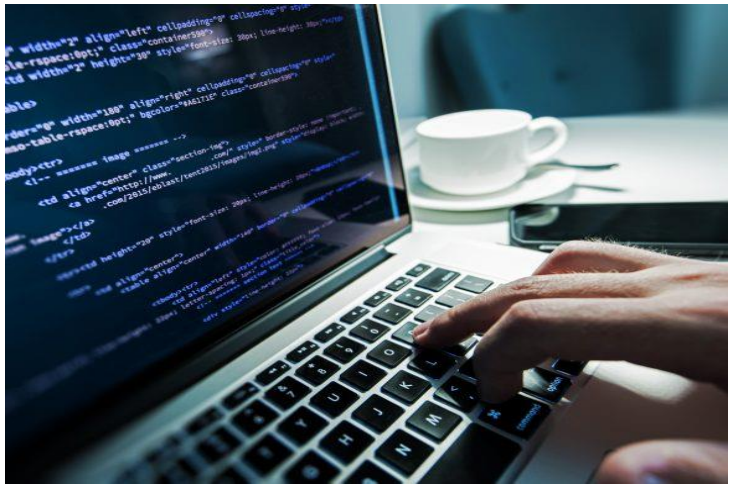
BOOTCAMP

Introduction to Python language with Robotic Process Automation (RPA)

Prof. Ms. Massaki de O. Igarashi

massaki.igarashi@mackenzie.br



Prof. Msc. Massaki Igarashi

massaki.igarashi@mackenzie.br

Electrical Engineer (ElectronicQualification),
Master in Information Engineering.
Main courses:
- Programming Language; Data Analisys;
- Innovation and Product Develoment
- Information and Comunication Technology
Experience with analytical instrumentation and development of equipment for chemical & petrochemical analysis.

INTRODUCTION TO PYTHON LANGUAGE WITH RPA

https://linktr.ee/rpapython

Digitalize and access

SCHEDULE

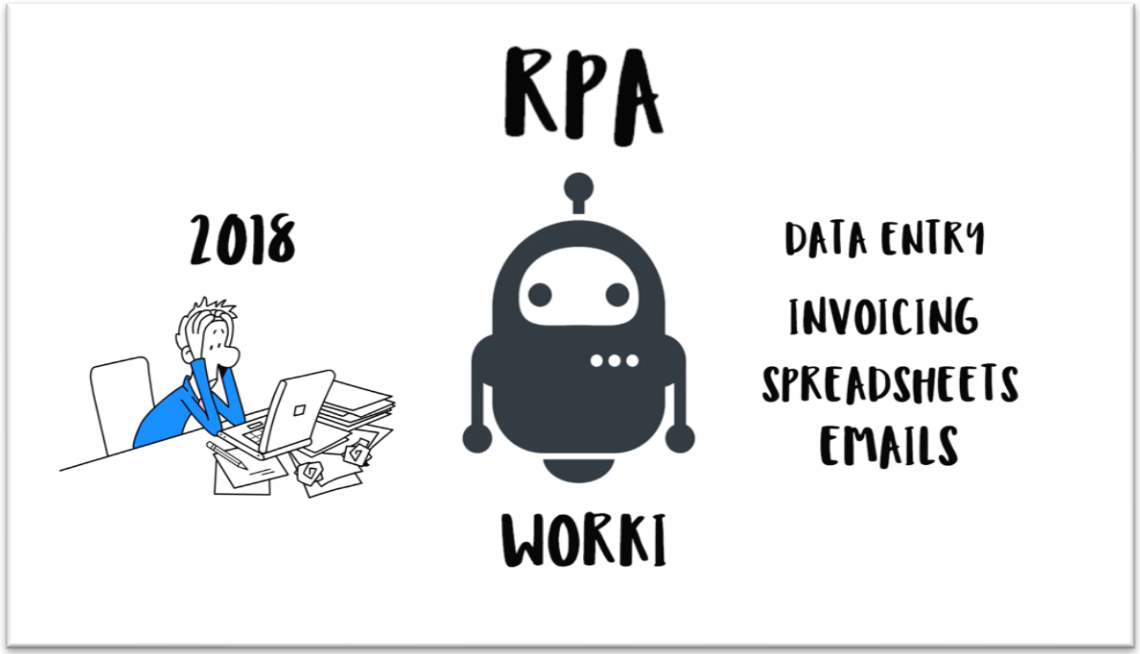
What is RPA?

1. • Definition
2. • Aplication
3. • Benefit
4. • Goals

Python Language

5. • PYTHON Resume
6. • Python IDEs
7. •Requirements
8. •Ptyhon Practice

DEFINITION



Robotic Automation for Industrial Processes ≠ **Robotic Process Automation (RPA)**

Industry robots automate routine production but RPA robots automate human work with data and information.

DEFINITION

“Robotic Process Automation - RPA is a generic word for software robot that operate on the user interface of other computer systems to mimic human behavior in repetitive tasks. It aims to replace people by automation done in an ‘‘outside-in’’ manner (VAN DER AALST, 2018).

DEFINITION

RPA tools execute [if, then, else] statements on data, typically using a combination of user interface, interactions, or connecting to APIs to target client servers, mainframes, or HTML code. They map a process described in the RPA tool language for the software robot to follow, with runtime allocated to run the script by a control panel **(TORNBOHM, 2017; VAN DER AALST, 2018**).

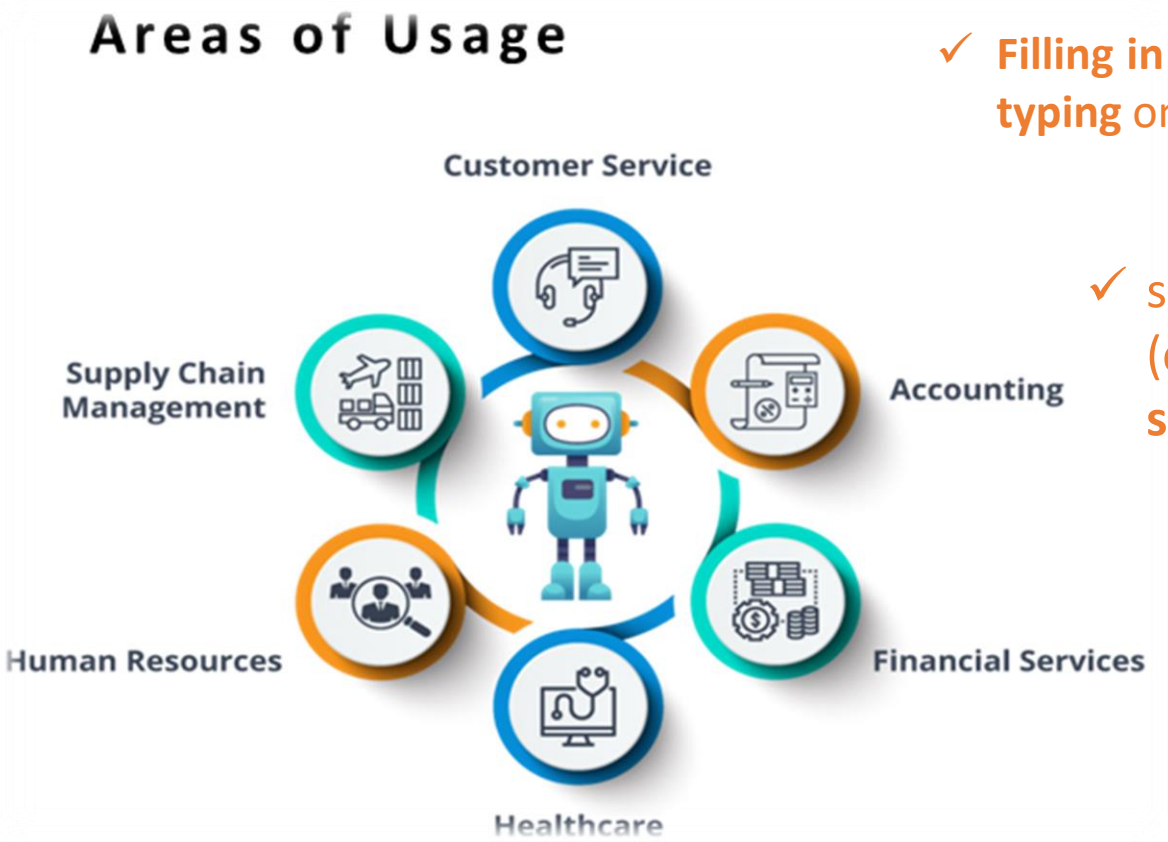
RPA tools reduce the burden and simple tasks on employees!

APLICATIONS & AREAS OF USAGE

✓ **To automate social media msg sending**

✓ **To Send or receive e-mail**

✓ **Filling in forms and/or typing** on websites



✓ Extraction of information from other systems,

✓ supplying the internal system (**capturing information in spreadsheets, files ..or PDF**)

✓ Verification and comparison of content between two or more different document

✓ Capture documents data and transform into structured information

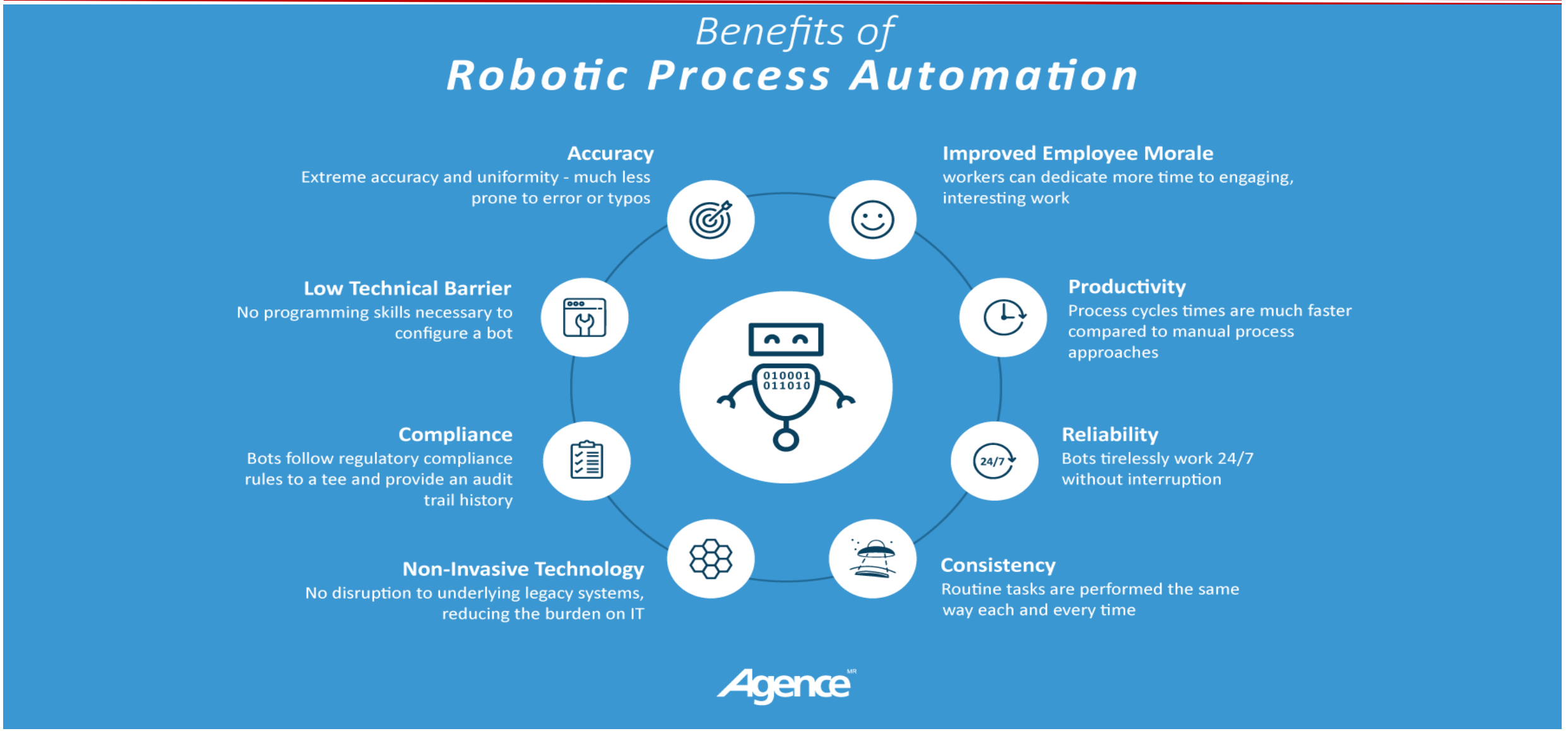
Source: https://www.entune.co/robotic-process-automation/

✓ Processes **with repetitive tasks in general**...

THE BENEFITS OF RPA

- ✓ Agility;
- ✓ Consistency;
- ✓ Precision;
- ✓ Uniformity;

THE BENEFITS OF RPA



WHY TO LEARN PYTHON?

The continued dominance of Python at *IEEE Spectrum's* annual interactive rankings of the top programming languages.

- ✓ **Most used language today globally;**
- ✓ **Easy to learn Interoperability with other languages;**
- ✓ **Allows integration and web development;**
- ✓ **It has many features and libraries for data visualization;**
- ✓ **Interprets scripts (does not require compilation as it interprets code directly);**

Rank	Language	Type	Score
1	Python		100.0
2	Java		95.4
3	C		94.7
4	C++		92.4
5	JavaScript		88.1
6	C#		82.4
7	R		81.7
8	Go		77.7
9	HTML		75.4
10	Swift		70.4

- ✓ https://spectrum.ieee.org/top-programming-languages-2021#toggle-gdpr

RESUME ABOUT PYTHON

The Python is a programming language created by the Dutchman Guido van Rossun around 1990 and it’s main philosophy is the simplicity and readability of the code. However, it is widely used by large companies such as YouTube, Google, Yahoo and Microsoft. Python is one of the most popular languages today. There are several libraries for data analysis and materials to help the development of algorithms.

Also, it's a powerful language... and has a fast development; interacts well with others, is user-friendly, easy to learn, and open source.

https://www.geeksforgeeks.org/history-of-python/

RESUME ABOUT PYTHON

The inspiration for the name came from **BBC's TV Show – 'Monty Python's Flying Circus'**
As van Rossun was a big fan of the TV show and also wanted a s
hort, unique and slightly mysterious name for his invention
and hence he named it Python!

For more information
http://www.montypython.com

The Monty Python group was very famous in England in the 70's and received a lot of criticism from conservatives because of its acid and irreverent humor.

You can download the latest Python version at: www.python.org.

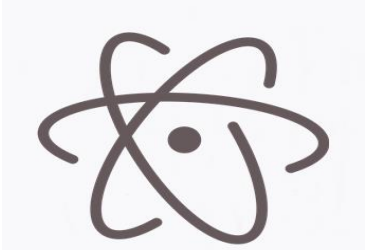
RESUME ABOUT PYTHON

Python is a scripting language that lets you run and test code immediately after writing it, making updates much easier. In other words, scripting languages are interpreted languages. **The interpreter runs the program just by translating commands into a series of one or more subroutines** that are then translated into other languages. A script is a collection of commands in a file designed to be executed as a program and not by the computer's processor, as with compiled languages. The file can contain variable functions and modules, but **the main idea is that it can run and fulfill a specific task from a command line.** A classic example of this is command prompt languages, as in the Windows batch file. In general, it is faster and easier to program using a scripting language than a more structured and compiled language such as C or C++.

IDEs for PYTHON DEVELOPMENT

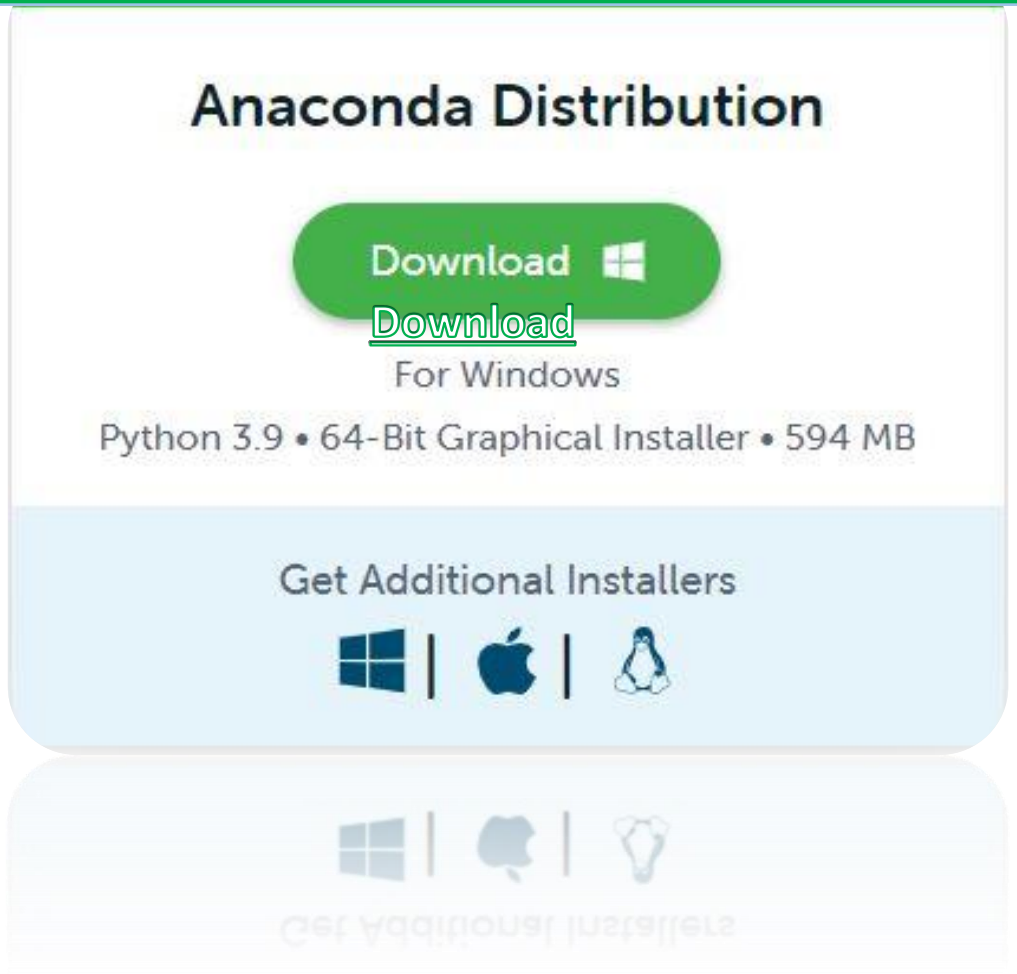
The **IDE (*Integrated Development Environment*)** is used to define a software or integrated development environment that unites development tools in a single graphical user interface (GUI) to write and test code written in different programming languages.

The Mainly PYTHON IDE's :

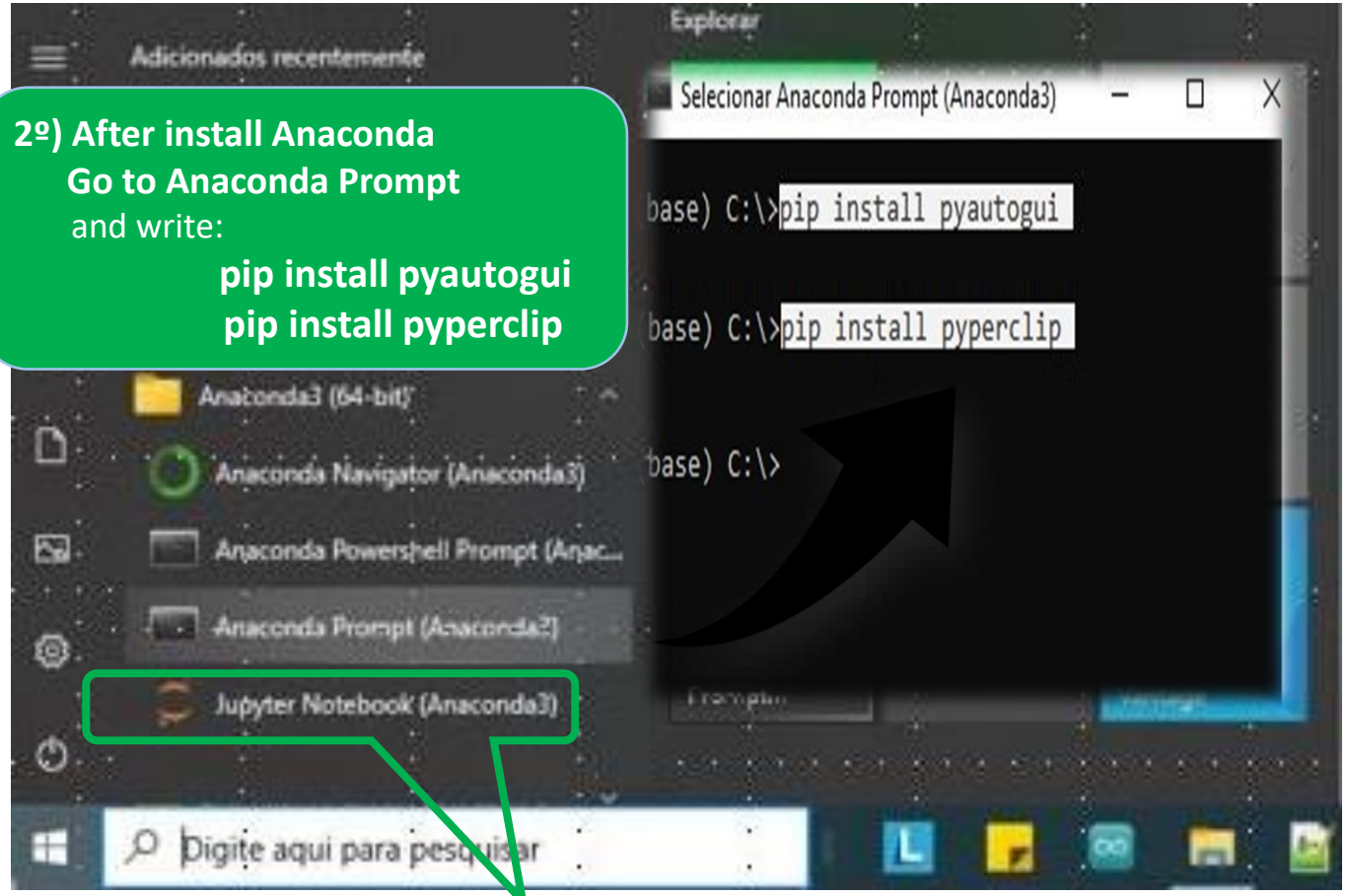


REQUIREMENTS

1º) Download and install Anaconda Distribution of Python:
https://www.anaconda.com/products/distribution



2º) After install Anaconda
Go to Anaconda Prompt
and write:
pip install pyautogui
pip install pyperclip

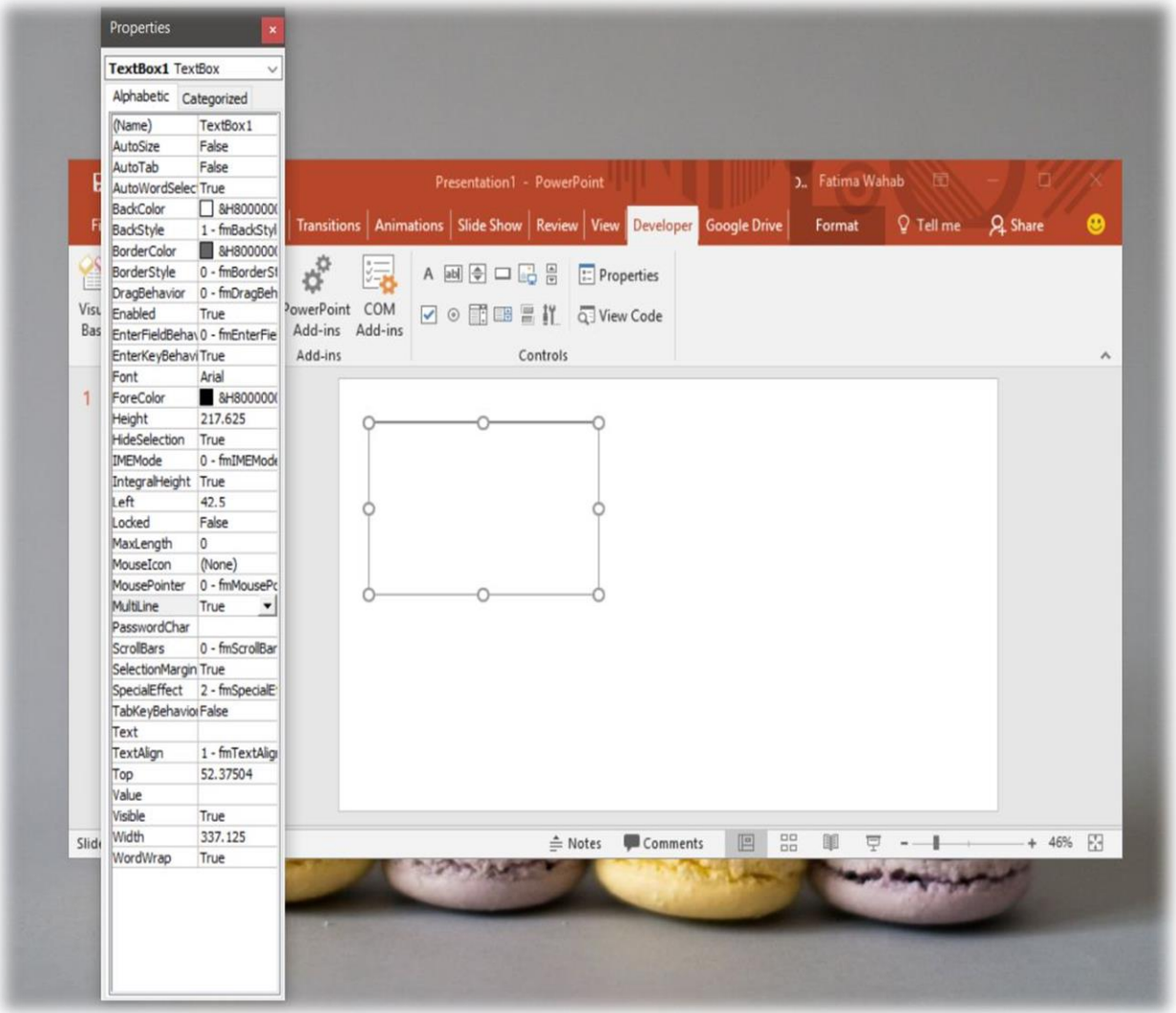


3º) After Libraries instalation
You need click on **Jupyter Notebook**

INTRODUCTION TO PYTHON

The first step in understanding Python is to understand that PYTHON is fundamentally **Object-Oriented language**. Therefore, we need to understand the following concepts:

- Classes,
- Objects
- and Functions



Source: https://www.addictivetips.com/microsoft-office/powerpoint-add-text-to-a-slide-during-a-presentation/

INTRODUCTION TO PYTHON

Is the fact that **Python** is an object-oriented language! This means that **it can deal with classes and objects to model the real world. A method is a label that you can call on an object;** it is **a piece of code** to execute on that object

To take an example, I would suggest thinking of a Person.

The class ‘Person’ contains properties like **Name, Height.**

It also **holds behavior like growth()**

A Person Massaki has the following ***characteristics*** (like properties):

INTRODUCTION TO PYTHON

Classe_CONCEITO.ipynb ☆

Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda Todas as alterações foram salvas

+ Código + Texto

```
[34] class Person:

        # The __init__ function run always when create a new Person

        def __init__(self, name, height):

            # self indicate the object.

            self.name = name

            self.height = height

        # ? Aqui temos um método

        def growth(self):

            growUp = self.height * .2

            self.height += growUp

            print(f"{self.name} grown Up {growUp} meters.")
```

```
[35] me = Person("Massaki", 1)
```

```
[36] me.name

'Massaki'
```

```
[37] me.height

1
```

```
[38] me.growth()

Massaki grown Up 0.2 meters.
```

```
[39] me.height

1.2
```

To access this code:

https://colab.research.google.com/drive/1byK_gCBVPcMKXqL70iybUH2UiJis7gIX?usp=sharing

SCAN ME

FIRST STEPS

In addition to our own code, there is code sharing in the form of libraries (packages) available to aid programming. The use of already validated libraries speeds up development. To use these libraries, once again we have to use the “Import” command.

To import **all** package:

import package

```
In [6]: import math
        print(math.sqrt(36))
```

```
6.0
```

To import **a specific method** of a package:

```
In [7]: from math import sqrt
        print(sqrt(36))
```

```
6.0
```

REFERENCES

BORGES, Luiz Eduardo. **Python para desenvolvedores: aborda Python 3.3**. Novatec Editora, 2014.

VANDERPLAS, Jake. **Python data science handbook: Essential tools for working with data**. " O'Reilly Media, Inc.", 2016.

Links:

- ✓ http://devfuria.com.br/python/imports/
- ✓ https://www.upgrad.com/blog/why-learn-python/
- ✓ https://data-flair.training/blogs/python-method/
- ✓ https://spectrum.ieee.org/top-programming-languages-2021#toggle-gdpr