

# Inteligência Artificial

Python e Anaconda: Introdução e Instalação/Google Colab (Colaboratory)

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# Python

## Introdução

- Python é uma linguagem de programação de uso geral.
- Pode ser usada para construir qualquer tipo de aplicação que não precisa acessar diretamente o hardware do computador.
- Linguagem relativamente simples e fácil de aprender.
- Há uma grande quantidade de bibliotecas gratuitas que fornecem funcionalidades adicionais.
- Python possui orientação a objetos.
- Python é uma linguagem interpretada.

# Python

Anaconda – Versão a ser utilizada na nossa disciplina

- Gerenciar seus pacotes e ambientes ao trabalhar com python
- instalar pacotes que serão utilizados para análise de dados
- criar ambientes virtuais permitindo: trabalhar com diversos projetos de forma mais fácil; permite lidar com diversos pacotes e versões do python ao mesmo tempo.
- Contém o conda, o Python e mais de 150 pacotes científicos e suas dependências.
- A aplicação conda é o gerenciador de pacotes e ambientes.
- Download pesado ~500MB porque vem com os pacotes mais comuns de *data science* do Python.

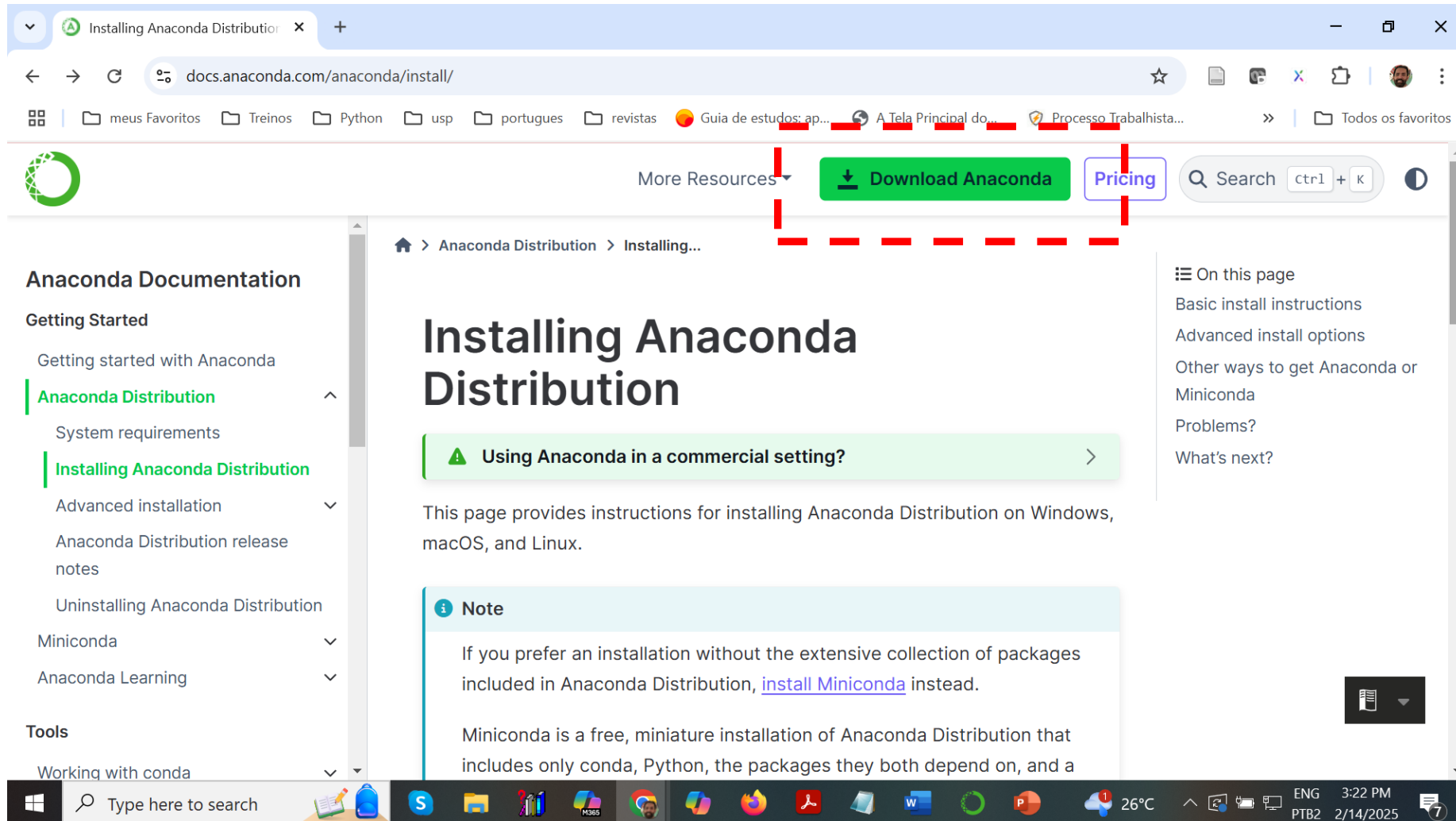
# Python

Anaconda

- O conda é um programa utilizado apenas pela linha de comando, então, caso não esteja confortável com isso, dê uma olhada no tutorial para linha de comando do Windows.
- A instalação do Anaconda é interessante porque vêm com um monte de pacotes de *data science*, ou seja, estaremos preparados para trabalhar com dados.
- Usar o conda para gerenciar seus pacotes e ambientes reduzirá o número de problemas futuros decorrentes das diversas bibliotecas que você utilizará.

# Python

Anaconda – Instalação Acesse: <https://docs.anaconda.com/anaconda/install/>



The screenshot shows a web browser window with the URL `docs.anaconda.com/anaconda/install/`. The browser's address bar and tabs are visible at the top. Below the browser window, the Anaconda documentation page is displayed. The page has a light blue header with the Anaconda logo on the left and navigation links: "More Resources", "Download Anaconda" (a green button with a download icon), and "Pricing" (a purple button). A search bar is also present on the right side of the header. The main content area has a breadcrumb trail: `Home > Anaconda Distribution > Installing...`. The title "Installing Anaconda Distribution" is prominently displayed in a large, bold, black font. Below the title, there is a green callout box with a warning icon and the text "Using Anaconda in a commercial setting?". The main text states: "This page provides instructions for installing Anaconda Distribution on Windows, macOS, and Linux." Below this, there is a "Note" section with a light blue background, containing information about Miniconda. On the right side of the page, there is a sidebar titled "On this page" with a list of links: "Basic install instructions", "Advanced install options", "Other ways to get Anaconda or Miniconda", "Problems?", and "What's next?". The left sidebar of the page is titled "Anaconda Documentation" and contains a "Getting Started" section with links to "Getting started with Anaconda", "Anaconda Distribution" (highlighted in green), "System requirements", "Installing Anaconda Distribution" (highlighted in green), "Advanced installation", "Anaconda Distribution release notes", "Uninstalling Anaconda Distribution", "Miniconda", and "Anaconda Learning". Below this is a "Tools" section with a link to "Working with conda". The Windows taskbar is visible at the bottom of the screen, showing various application icons and the system clock indicating 3:22 PM on 2/14/2025.

Installing Anaconda Distribution

Using Anaconda in a commercial setting?

This page provides instructions for installing Anaconda Distribution on Windows, macOS, and Linux.

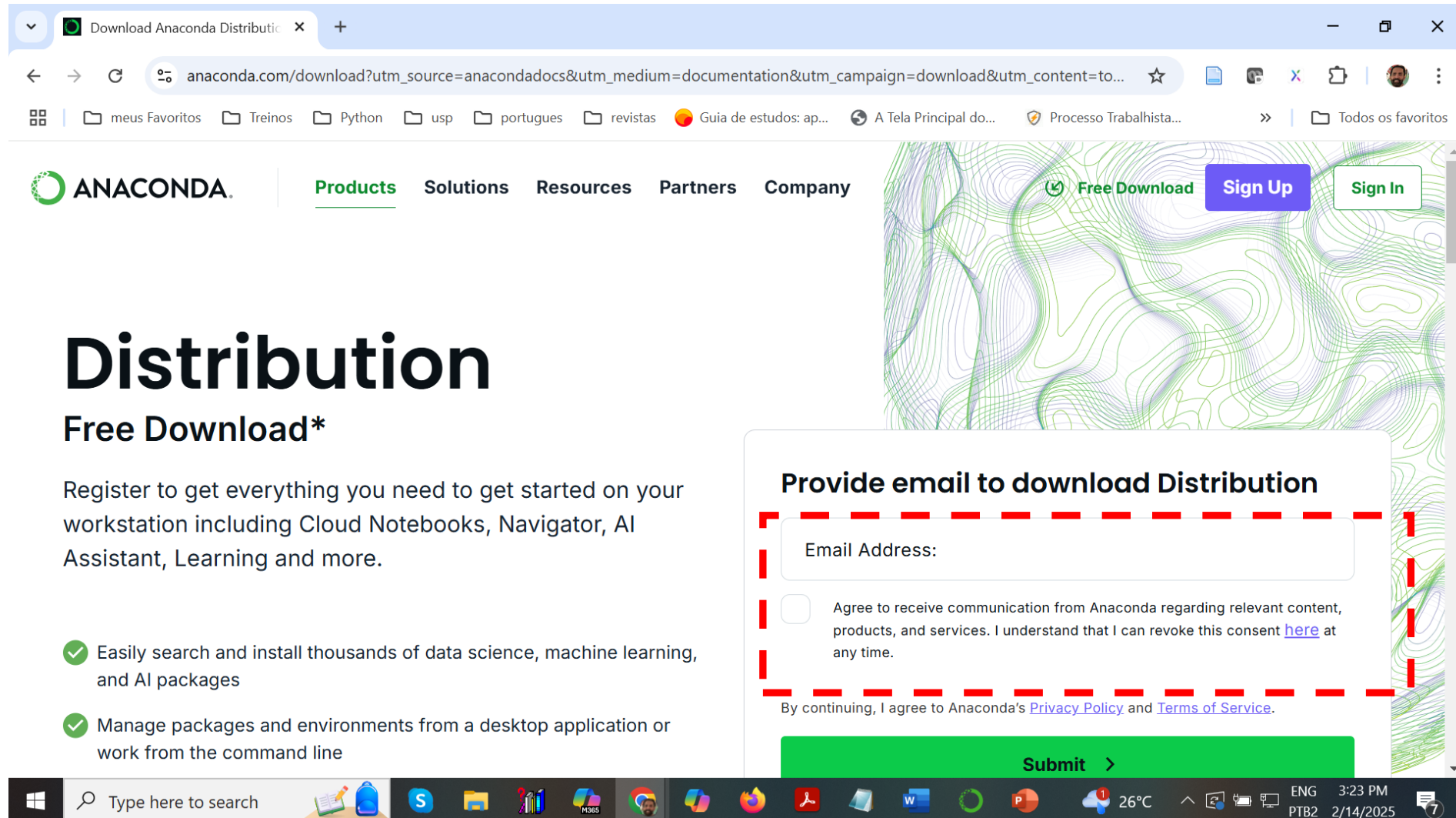
**Note**

If you prefer an installation without the extensive collection of packages included in Anaconda Distribution, [install Miniconda](#) instead.

Miniconda is a free, miniature installation of Anaconda Distribution that includes only conda, Python, the packages they both depend on, and a

# Python

Anaconda – Instalação Acesse: <https://docs.anaconda.com/anaconda/install/>



The screenshot shows the Anaconda website's 'Distribution' page. The page features the Anaconda logo, navigation links (Products, Solutions, Resources, Partners, Company), and buttons for 'Free Download', 'Sign Up', and 'Sign In'. The main heading is 'Distribution' with the subheading 'Free Download\*'. Below this, a paragraph states: 'Register to get everything you need to get started on your workstation including Cloud Notebooks, Navigator, AI Assistant, Learning and more.' Two bullet points with green checkmarks list benefits: 'Easily search and install thousands of data science, machine learning, and AI packages' and 'Manage packages and environments from a desktop application or work from the command line'. A red dashed box highlights a registration form titled 'Provide email to download Distribution'. The form includes an 'Email Address:' input field, a checkbox for agreeing to communication, and a 'Submit >' button. The bottom of the page shows a Windows taskbar with various application icons and system information.

Download Anaconda Distributic x +

anaconda.com/download?utm\_source=anacondadocs&utm\_medium=documentation&utm\_campaign=download&utm\_content=to...

meus Favoritos Treinos Python usp portugues revistas Guia de estudos: ap... A Tela Principal do... Processo Trabalhista... Todos os favoritos

ANACONDA. Products Solutions Resources Partners Company

Free Download Sign Up Sign In

# Distribution

## Free Download\*

Register to get everything you need to get started on your workstation including Cloud Notebooks, Navigator, AI Assistant, Learning and more.

- ✓ Easily search and install thousands of data science, machine learning, and AI packages
- ✓ Manage packages and environments from a desktop application or work from the command line

### Provide email to download Distribution

Email Address:

☐ Agree to receive communication from Anaconda regarding relevant content, products, and services. I understand that I can revoke this consent [here](#) at any time.

By continuing, I agree to Anaconda's [Privacy Policy](#) and [Terms of Service](#).

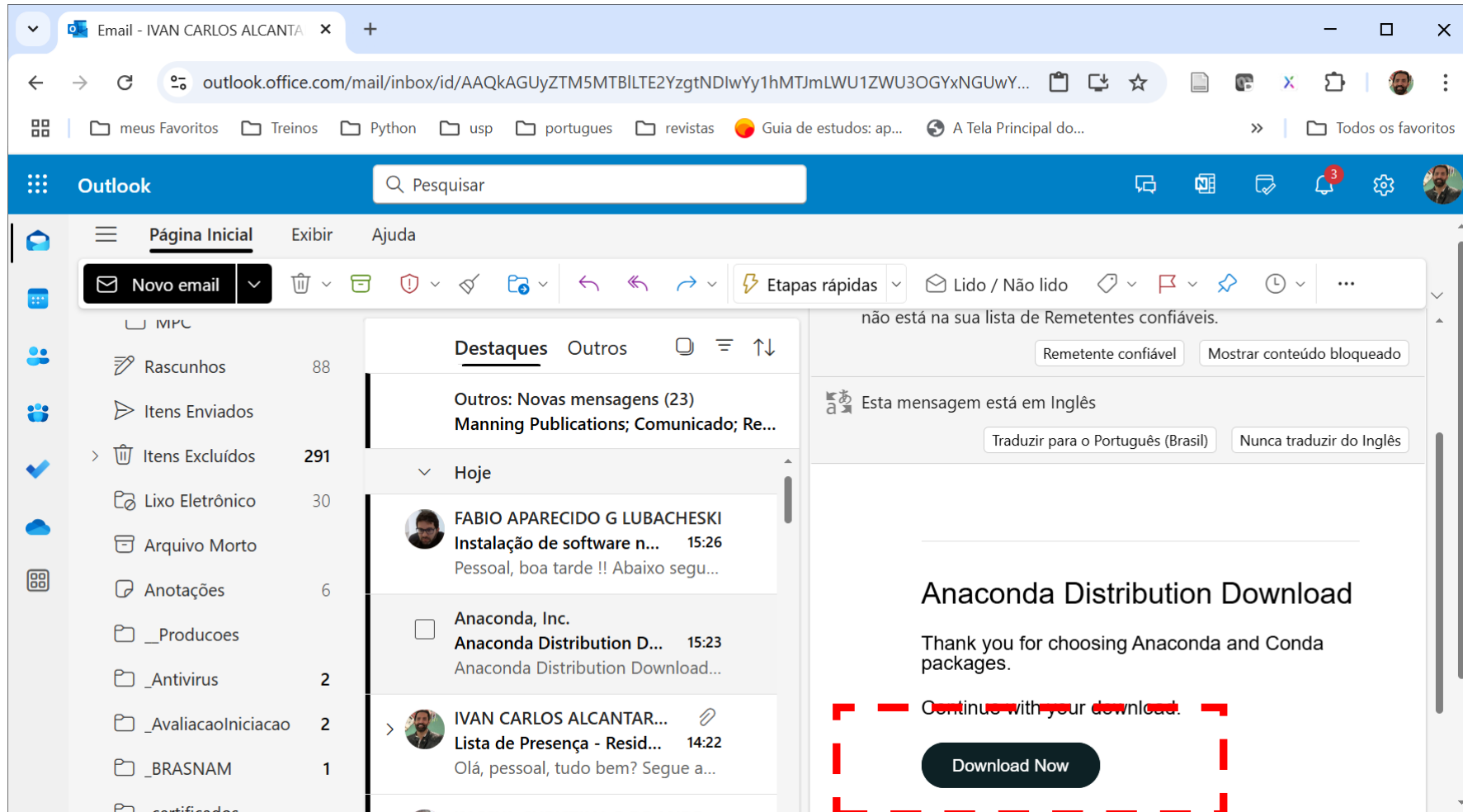
Submit >

Type here to search

26°C 3:23 PM ENG PTB2 2/14/2025

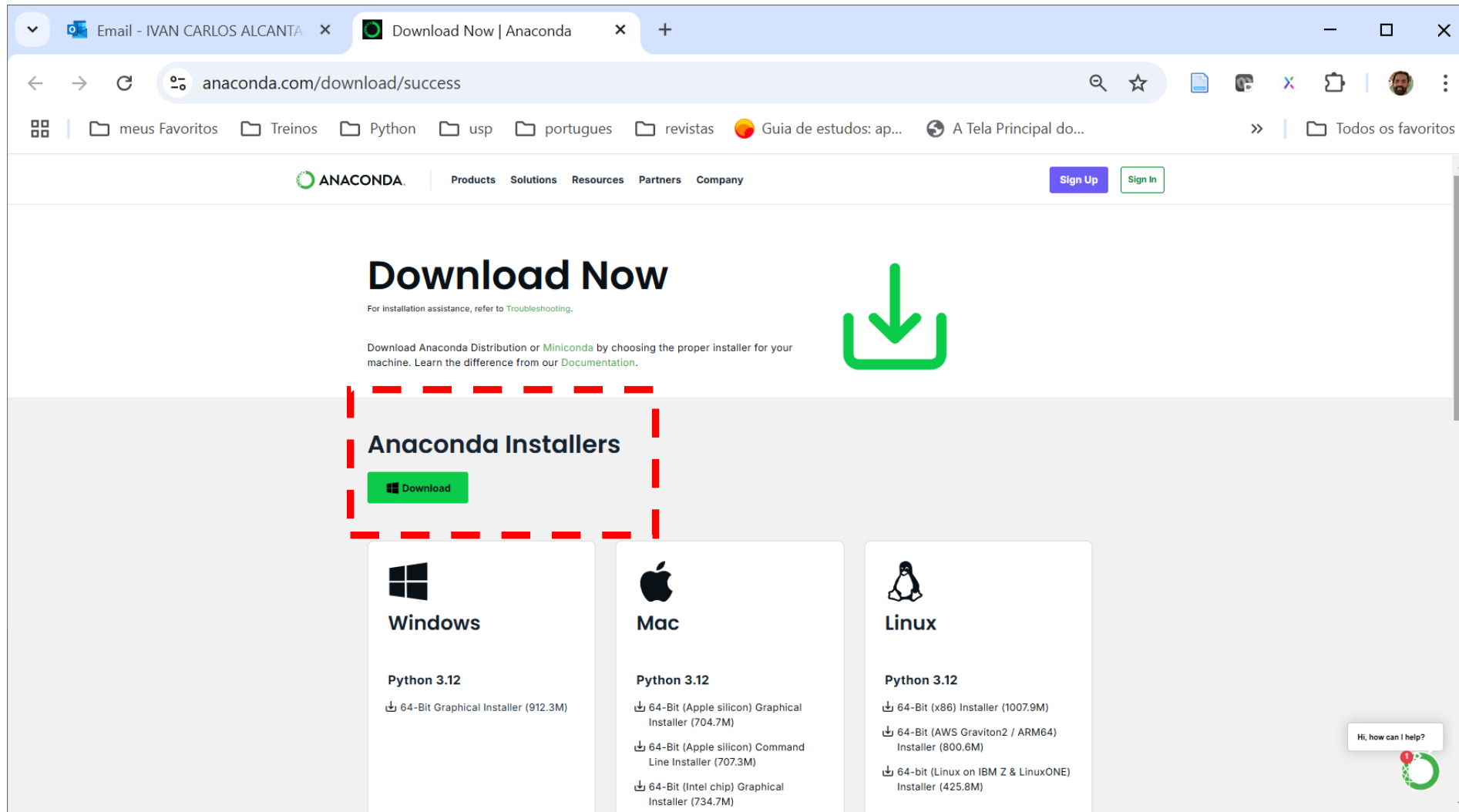
# Python

Anaconda – Instalação Acesse: <https://docs.anaconda.com/anaconda/install/>



# Python

Anaconda – Instalação Acesse: <https://docs.anaconda.com/anaconda/install/>



The screenshot shows the Anaconda website's 'Download Now' page. The browser's address bar displays 'anaconda.com/download/success'. The page has a navigation bar with links for Products, Solutions, Resources, Partners, and Company, along with 'Sign Up' and 'Sign In' buttons. The main heading is 'Download Now', followed by a green download arrow icon. Below this, a section titled 'Anaconda Installers' is highlighted with a red dashed box and contains a 'Download' button. Underneath, there are three columns for different operating systems: Windows, Mac, and Linux. Each column lists Python 3.12 installers with their file sizes.

Operating System	Python Version	Installer Type	File Size
Windows	Python 3.12	64-Bit Graphical Installer	912.3M
		64-Bit (x86) Installer	1007.9M
		64-Bit (AWS Graviton2 / ARM64) Installer	800.6M
		64-bit (Linux on IBM Z & LinuxONE) Installer	425.8M
Mac	Python 3.12	64-Bit (Apple silicon) Graphical Installer	704.7M
		64-Bit (Apple silicon) Command Line Installer	707.3M
		64-Bit (Intel chip) Graphical Installer	734.7M
		64-Bit (x86) Installer	1007.9M
Linux	Python 3.12	64-Bit (x86) Installer	1007.9M
		64-Bit (AWS Graviton2 / ARM64) Installer	800.6M
		64-bit (Linux on IBM Z & LinuxONE) Installer	425.8M
		64-Bit (Apple silicon) Graphical Installer	704.7M



# Python

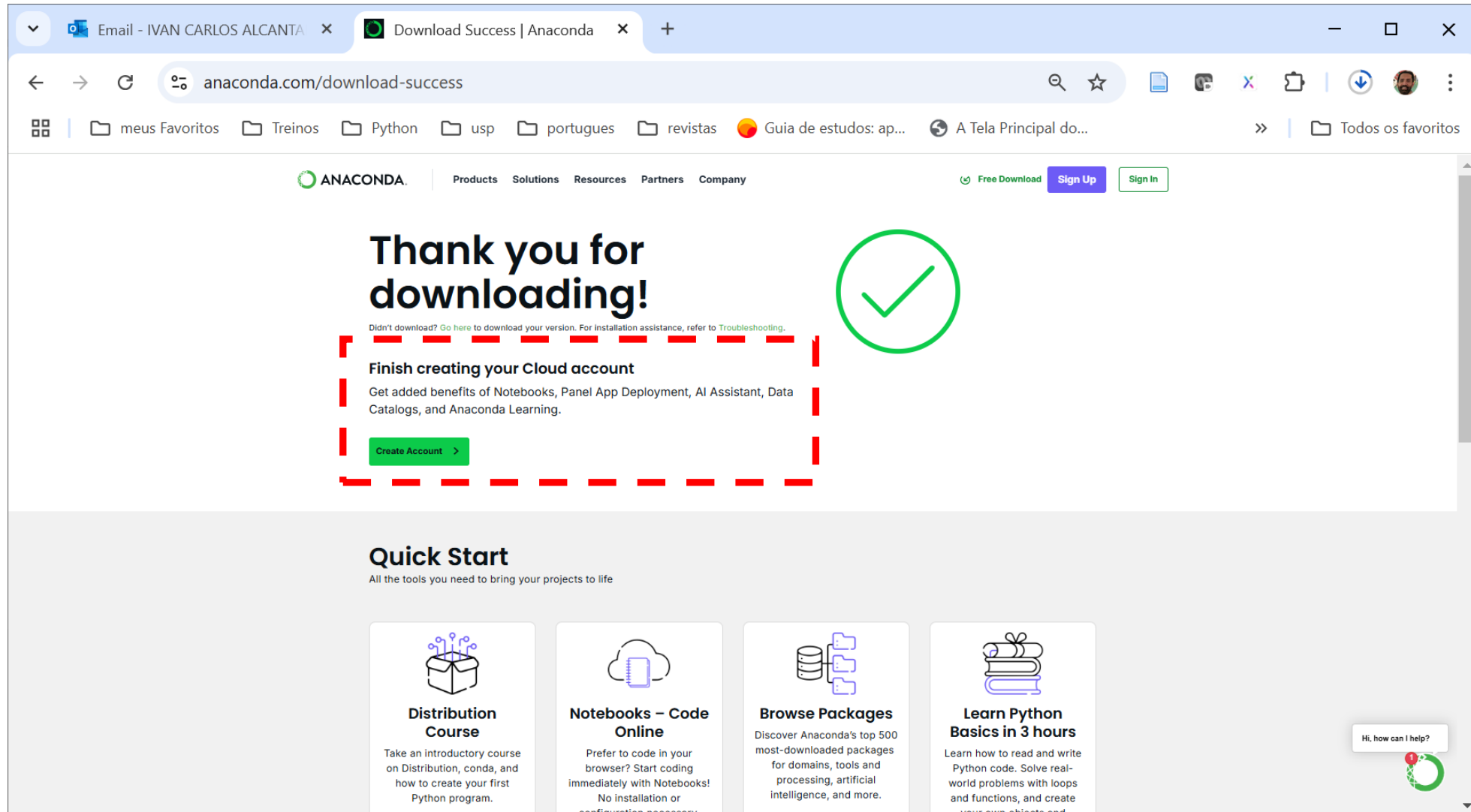
Anaconda – Instalação Acesse: <https://docs.anaconda.com/anaconda/install/>

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		64-Bit (Intel chip) Graphical Installer	734.7M

# Python

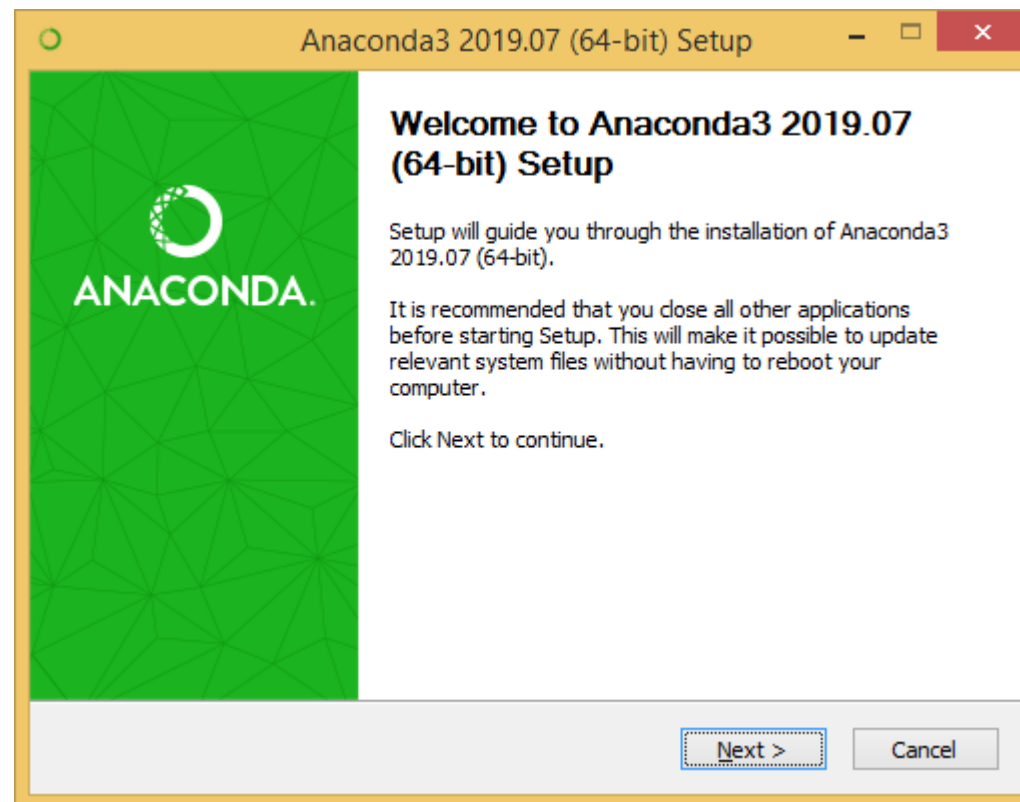
Anaconda – Instalação Acesse: <https://docs.anaconda.com/anaconda/install/>



# Python

## Anaconda - Instalação

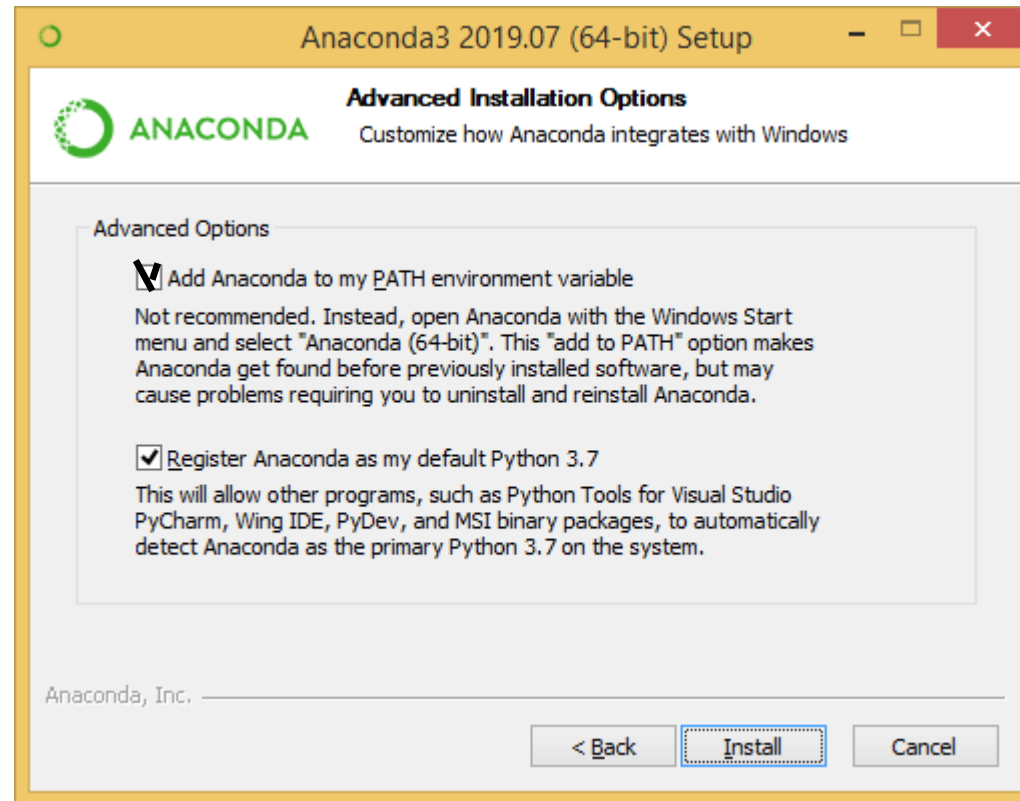
- Execute o arquivo de download. Por exemplo, suponha a versão: Anaconda3-2019.07-Windows-x86\_64.exe



# Python

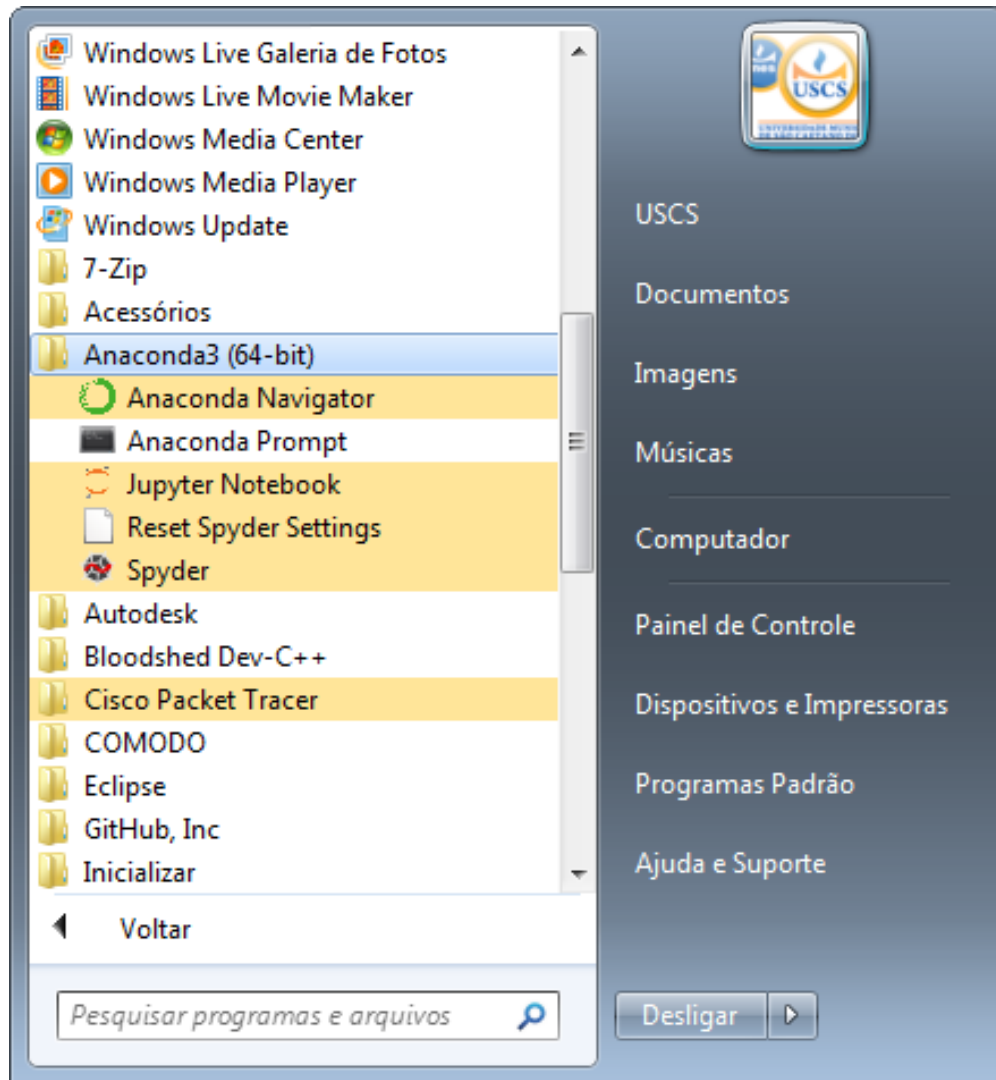
## Anaconda - Instalação

- Marque as duas caixas de seleção.



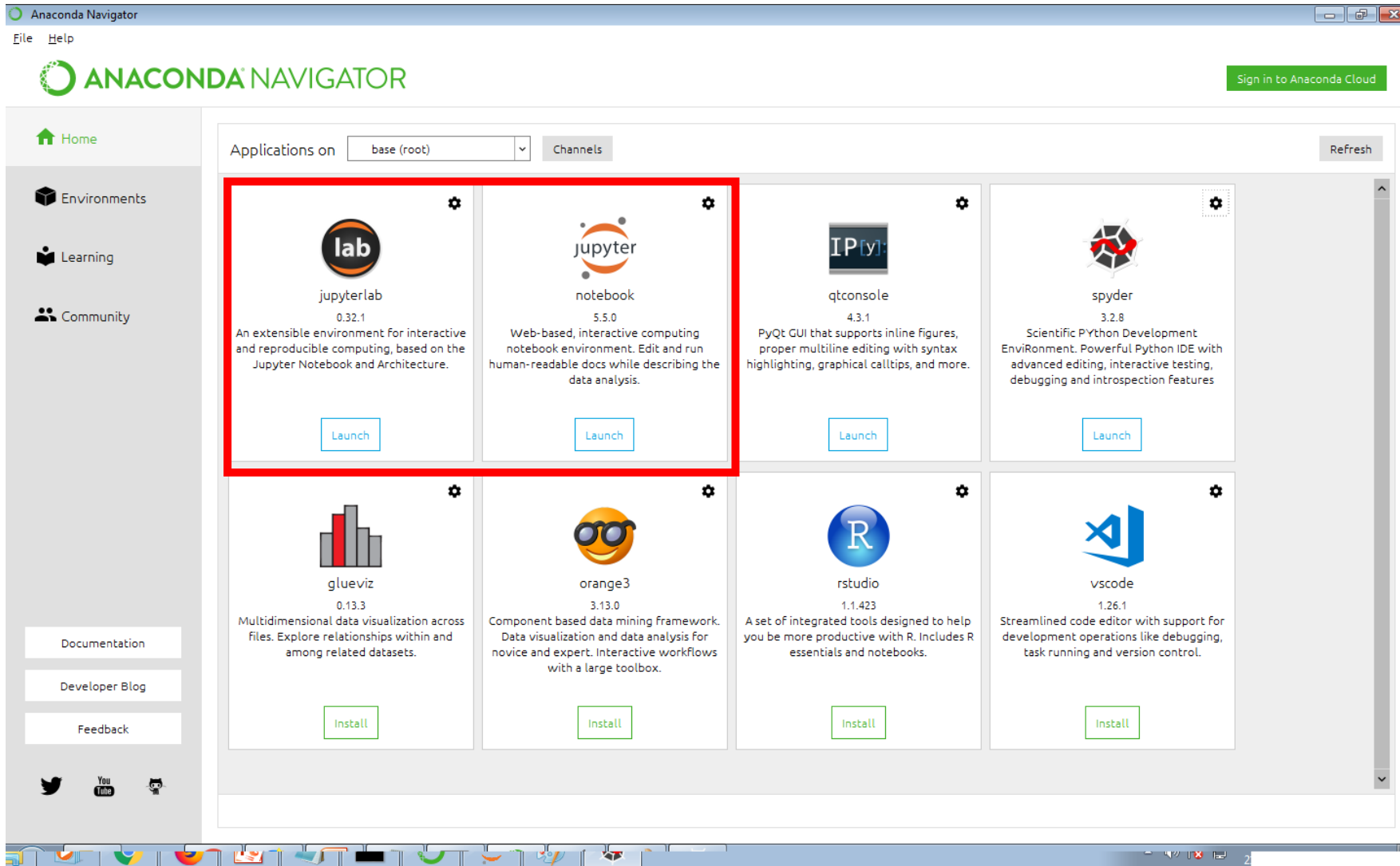
# Python

Anaconda – Instalação Finalizada



# Python

## Anaconda – Navigator



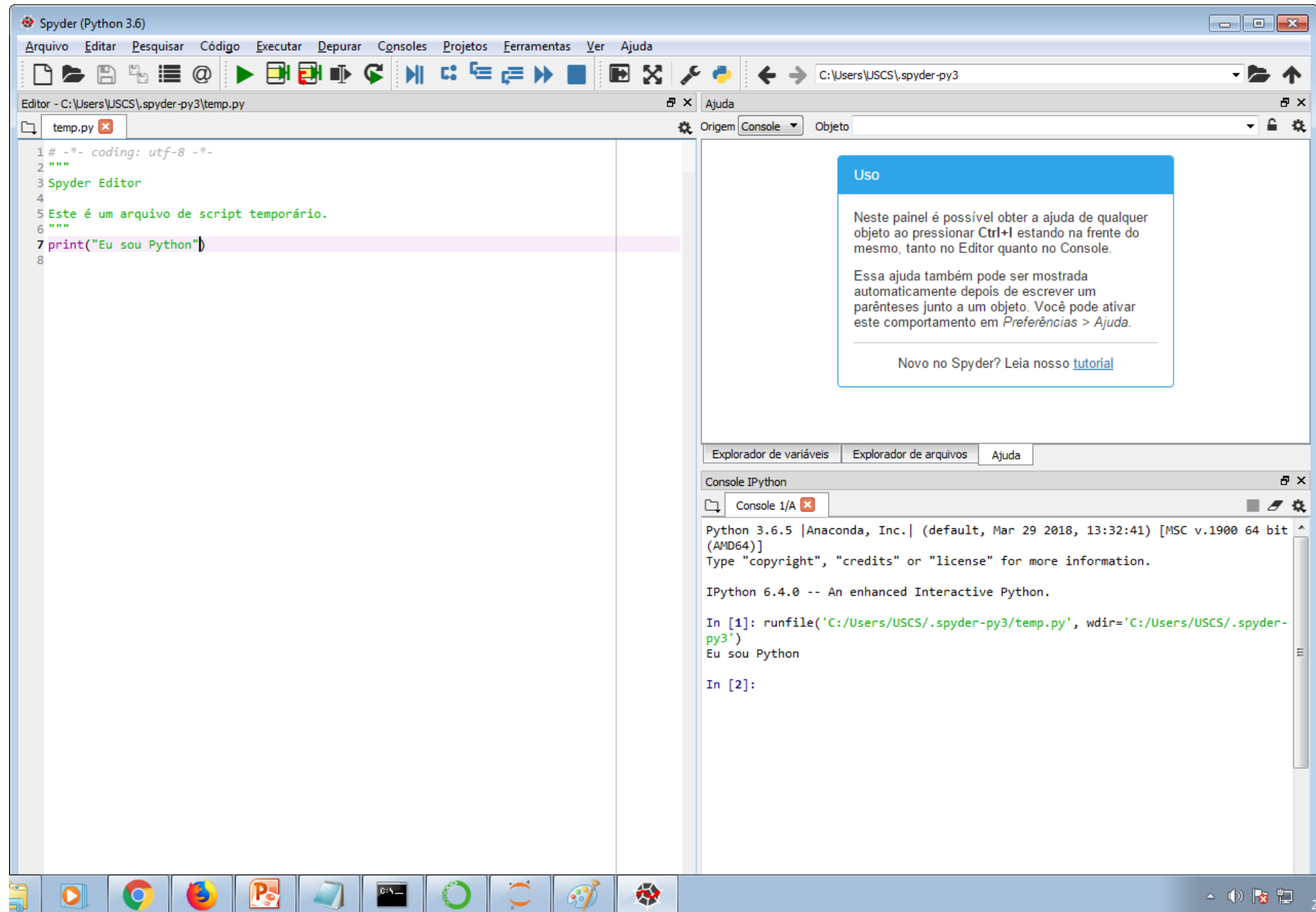
# Python

Anaconda – Spyder

Ao salvar um arquivo em python a extensão deve ser “.py”.

Similar ao abaixo:

testePython.py



# Python

Anaconda – Documentação

The screenshot shows a web browser window with the URL `https://docs.anaconda.com/anaconda/user-guide/getting-started`. The page title is "Getting started with Anaconda". The left sidebar contains a navigation menu with the following items: Home, Anaconda Enterprise 5, Anaconda Enterprise 4, Anaconda and Top Packages, Anaconda Distribution (selected), Installation, Packages, User guide, Getting started with Anaconda (highlighted), Tasks, Cheatsheet, Troubleshooting, Anaconda Navigator, Frequently asked questions, Help and support, Release notes, Glossary, and Anaconda End User License. A green button at the bottom of the sidebar asks "Was this page helpful?". The main content area has a breadcrumb trail: Home > Anaconda Distribution > Getting started. The title "Getting started with Anaconda" is prominently displayed. Below the title, a paragraph explains that Anaconda Distribution contains **conda** and **Anaconda Navigator**, along with Python and scientific **packages**. It suggests trying both conda and Navigator to see which is right for the user. Another paragraph encourages trying a simple programming exercise two ways: with Navigator and a terminal. The section "Your first Python program: Hello, Anaconda!" follows, with instructions to write and run a Python program using Anaconda Navigator. Under the heading "1. Open Navigator", it says to choose instructions for the operating system. A list of operating systems is provided: Windows, macOS, and Linux. The "Windows" section is expanded, showing instructions to click the Anaconda Navigator desktop app from the Start menu. An image of a Windows Start menu is shown, with the Anaconda Navigator app icon highlighted. The taskbar at the bottom of the image shows various application icons, including the Start button, taskbar, and system tray.

Getting started with Anaconda

Home

Anaconda Enterprise 5

Anaconda Enterprise 4

Anaconda and Top Packages

Anaconda Distribution

Installation

Packages

User guide

Getting started with Anaconda

Tasks

Cheatsheet

Troubleshooting

Anaconda Navigator

Frequently asked questions

Help and support

Release notes

Glossary

Anaconda End User License

Was this page helpful?

Home > Anaconda Distribution > Getting started

## Getting started with Anaconda

Anaconda Distribution contains **conda** and **Anaconda Navigator**, as well as Python and hundreds of scientific **packages**. When you installed Anaconda, you installed all these too. You can try both conda and Navigator to see which is right for you to manage your packages and environments. You can even switch between them, and the work you do with one can be viewed in the other.

Now, try this simple programming exercise two ways, with Navigator and a terminal, to help you decide which approach is right for you.

### Your first Python program: Hello, Anaconda!

Write and run a Python program using Anaconda Navigator.

#### 1. Open Navigator

Choose the instructions for your operating system.

- Windows
- macOS
- Linux

#### Windows

From the Start menu, click the Anaconda Navigator desktop app.

Default Programs

Desktop Gadget Gallery

Internet Explorer

Windows Anytime Upgrade

Windows Fax and Scan

Windows Update

XPS Viewer

builder

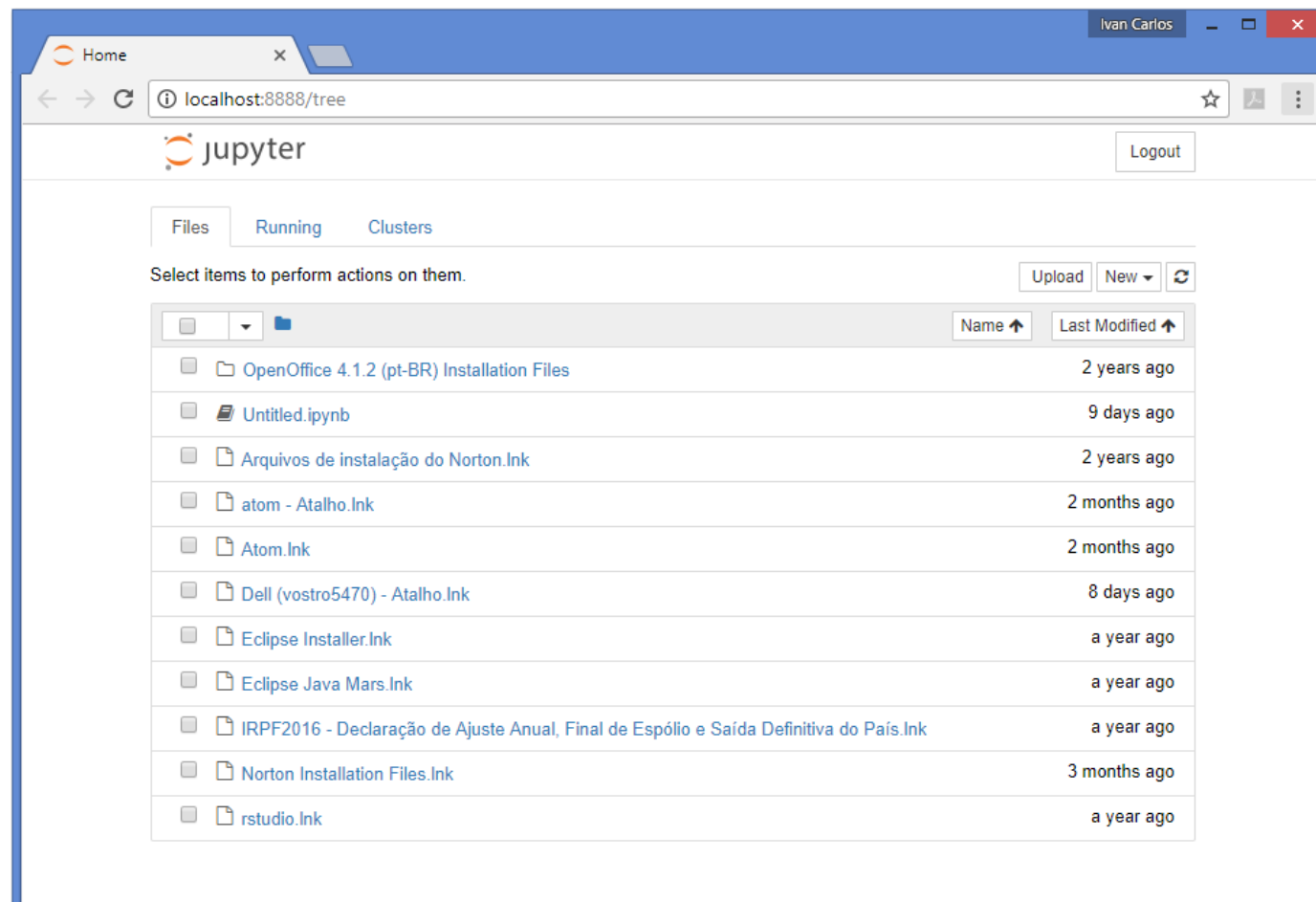
Documents



# Python

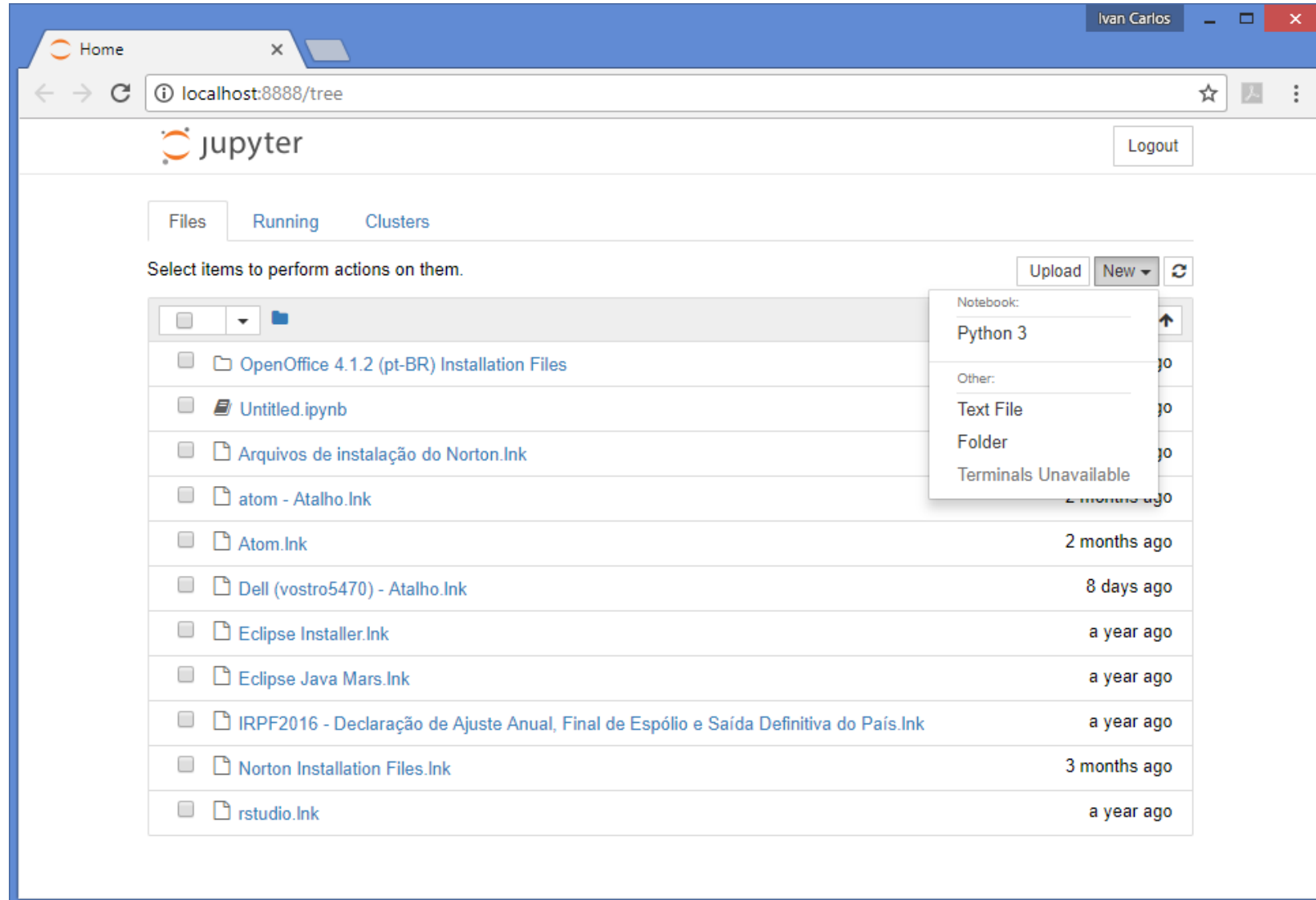
Anaconda – Execução do servidor notebook – roda no endereço: `http://localhost:8888`

O jupyter Notebook pode ser utilizado para desenvolvimento dos códigos em Python.



# Python

Anaconda – Execução do servidor notebook – Selecionando Novo Notebook Python



# Python

Anaconda – Execução do Jupyterlab – roda no endereço: <http://localhost:8888/lab>

Vamos utilizar o jupyterlab para desenvolvimento dos códigos em Python (inclui abas do Jupyter notebook).

The screenshot displays the JupyterLab environment. On the left, a sidebar shows a file browser with notebooks like 'Data.ipynb', 'Fasta.ipynb', 'Julia.ipynb', and 'Lorenz.ipynb' (selected). Below it are 'Commands' and 'Cell Tools' sections. The main area is divided into three panes:

- Code View:** Contains the text 'In this Notebook we explore the Lorenz system of differential equations:' followed by the equations:
$$\begin{aligned}\dot{x} &= \sigma(y - x) \\ \dot{y} &= \rho x - y - xz \\ \dot{z} &= -\beta z + xy\end{aligned}$$
Below this, it says 'Let's call the function once to view the solutions. For this set of parameters, we see the trajectories swirling around two points, called attractors.' The code cell shows:

```
In [4]: from lorenz import solve_lorenz
t, x_t = solve_lorenz(N=10)
```
- Output View:** Displays a 3D plot of the Lorenz attractor, showing two distinct swirling trajectories in green and blue.
- lorenz.py:** A code editor showing the implementation of the Lorenz system. It includes a `solve_lorenz` function that plots the solution and a `lorenz_deriv` function that computes the time-derivative. Parameters like `sigma=10.0`, `beta=8./3`, and `rho=28.0` are defined.

At the bottom of the 'Output View' pane, there are sliders for adjusting the parameters: `sigma` (set to 10.00), `beta` (set to 2.67), and `rho` (set to 28.00).

# Python

Anaconda – Execução do Jupyterlab – roda no endereço: <http://localhost:8888/lab>

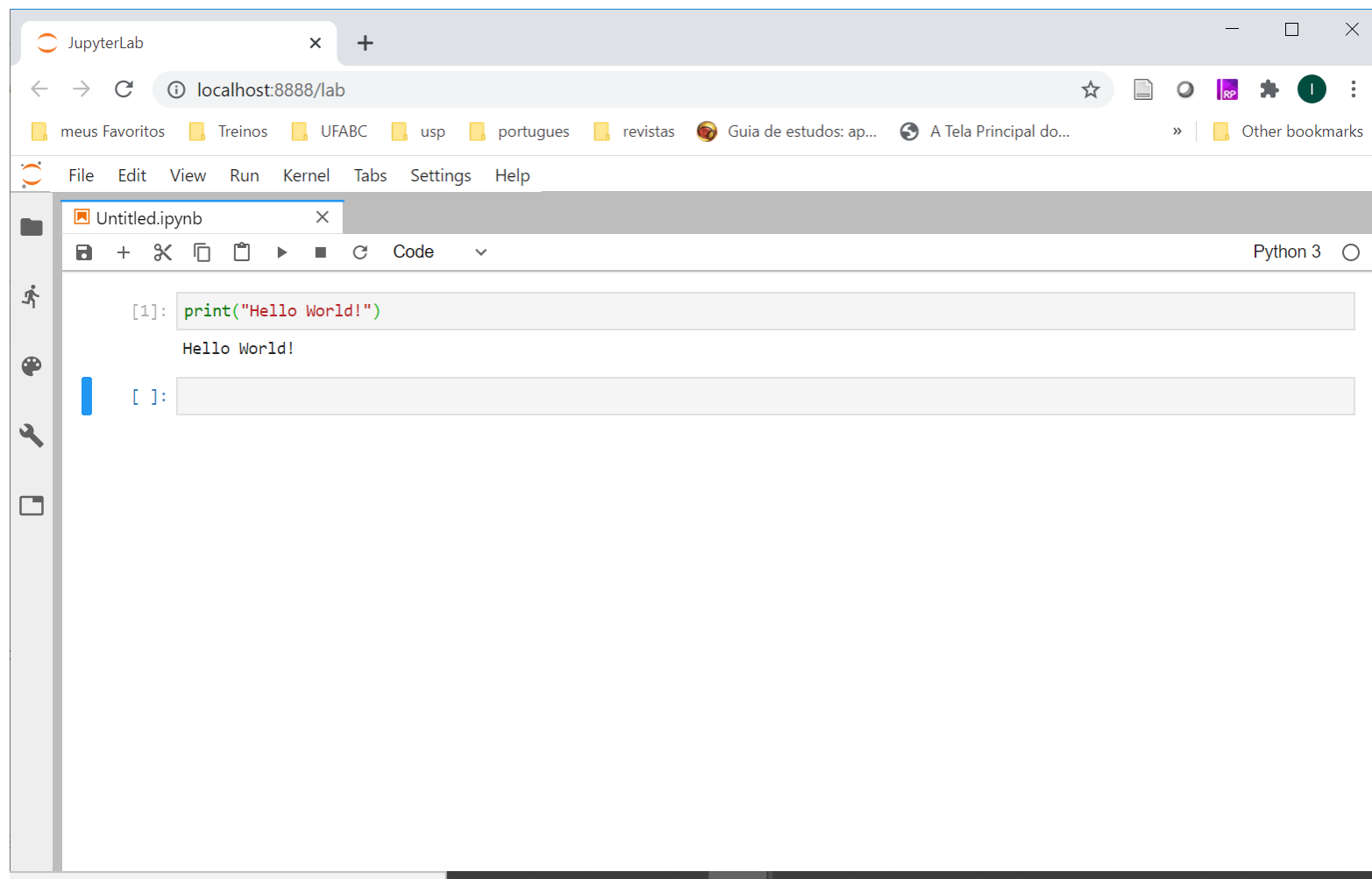
Digite o código abaixo e faça um teste para ver se está funcionando corretamente.

Código fonte em Python:

```
print("Hello World!")
```

Depois, aperte <Shift>+<Enter>

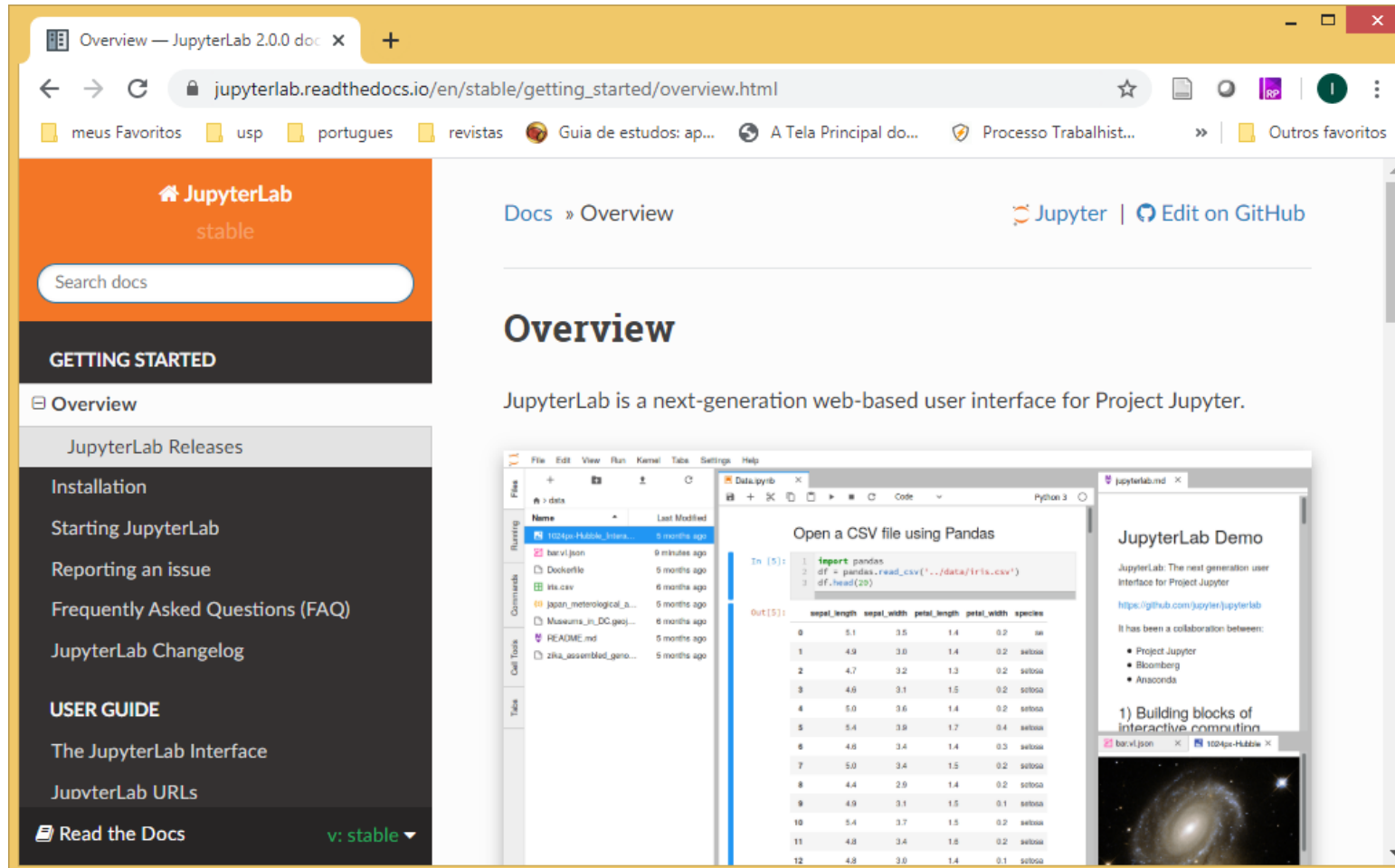
Ou aperte o sinal de play para executar.



# Python

Anaconda –Jupyterlab – Documentação:

[https://jupyterlab.readthedocs.io/en/stable/getting\\_started/overview.html](https://jupyterlab.readthedocs.io/en/stable/getting_started/overview.html)



The screenshot displays the JupyterLab documentation website. The browser's address bar shows the URL `jupyterlab.readthedocs.io/en/stable/getting_started/overview.html`. The page features a sidebar on the left with navigation links for 'JupyterLab stable', 'GETTING STARTED', 'Overview', 'JupyterLab Releases', and 'USER GUIDE'. The main content area is titled 'Overview' and includes the text: 'JupyterLab is a next-generation web-based user interface for Project Jupyter.' Below this text is a preview of the JupyterLab interface. The preview shows a file browser on the left with a list of files including '1024px-Hubble\_Spiral...', 'barvi.json', 'Dockerfile', 'iris.csv', 'japan\_meteorological\_h...', 'Museums\_in\_DC.geoj...', 'README.md', and 'zika\_assembled\_geno...'. The central code editor displays a Python script titled 'Open a CSV file using Pandas' with the following code:

```
In [5]: 1 import pandas
2 df = pandas.read_csv('../data/iris.csv')
3 df.head(20)
```

The output of the code is a table with 12 rows and 5 columns: 'sepal\_length', 'sepal\_width', 'petal\_length', 'petal\_width', and 'species'. The data is as follows:

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
3	4.6	3.1	1.5	0.2	setosa
4	5.0	3.6	1.4	0.2	setosa
5	5.4	3.9	1.7	0.4	setosa
6	4.8	3.4	1.4	0.3	setosa
7	5.0	3.4	1.5	0.2	setosa
8	4.4	2.9	1.4	0.2	setosa
9	4.9	3.1	1.5	0.1	setosa
10	5.4	3.7	1.5	0.2	setosa
11	4.8	3.4	1.6	0.2	setosa
12	4.8	3.0	1.4	0.1	setosa

The right sidebar of the preview shows a 'JupyterLab Demo' section with a description of JupyterLab as a next-generation user interface for Project Jupyter, a link to the GitHub repository, and a list of collaborators: Project Jupyter, Bloomberg, and Anaconda. It also mentions '1) Building blocks of interactive computing' and shows a small image of a galaxy.

# Python

Google Colab - <https://research.google.com/colaboratory/intl/pt-BR/faq.html>

- **O que é o Colaboratory?**
- O Colaboratory ou “Colab” é um produto do Google Research, área de pesquisas científicas do Google.
- O Colab permite que qualquer pessoa escreva e execute código Python arbitrário pelo navegador e é especialmente adequado para aprendizado de máquina, análise de dados e educação.
- Mais tecnicamente, o Colab é um serviço de notebooks hospedados do Jupyter que não requer nenhuma configuração para usar e oferece acesso sem custo financeiro a recursos de computação como GPUs.

# Python

Google Colab - <https://research.google.com/colaboratory/intl/pt-BR/faq.html>

## **É realmente sem custo financeiro?**

- Sim. Não há custos financeiros para usar o Colab.

## **Qual é a diferença entre o Jupyter e o Colab?**

- [O Jupyter](#) é o projeto de código aberto em que o Colab se baseia.
- O Colab permite que você use e compartilhe notebooks do Jupyter com outras pessoas, sem precisar fazer nenhum download, instalação nem executar nada.

# Python

Google Colab - <https://research.google.com/colaboratory/intl/pt-BR/faq.html>

The screenshot shows a web browser window with the Google Colab FAQ page. The browser's address bar shows the URL `research.google.com/colaboratory/intl/pt-BR/faq.html`. The page content includes the Google logo, the word "Colaboratory", and the heading "Perguntas frequentes". Under the "Noções básicas" section, there is a link "O que é o Colaboratory?" followed by a paragraph explaining that Colab is a Google Research product for running Python code in the browser, often used for machine learning and data analysis. The footer of the page includes links for "Google", "Sobre o Google", "Privacidade", and "Termos", along with a language selector set to "Português (Brasil)". The Windows taskbar at the bottom shows various application icons and the system clock indicating 6:58 PM on 3/5/2024.

Google Colab

research.google.com/colaboratory/intl/pt-BR/faq.html

meus Favoritos Treinos UFABC Python usp portugues revistas Guia de estudos: ap... A Tela Principal do... Processo Trabalhista... Todos os favoritos

Google

Colaboratory

Perguntas frequentes

Noções básicas

O que é o Colaboratory? [🔗](#)

O Colaboratory ou "Colab" é um produto do Google Research, área de pesquisas científicas do Google. O Colab permite que qualquer pessoa escreva e execute código Python arbitrário pelo navegador e é especialmente adequado para aprendizado de máquina, análise de dados e educação. Mais tecnicamente, o Colab é um serviço de notebooks hospedados do Jupyter que não requer nenhuma configuração para usar e oferece acesso sem custo financeiro a recursos de computação como GPUs.

Google · Sobre o Google · Privacidade · Termos

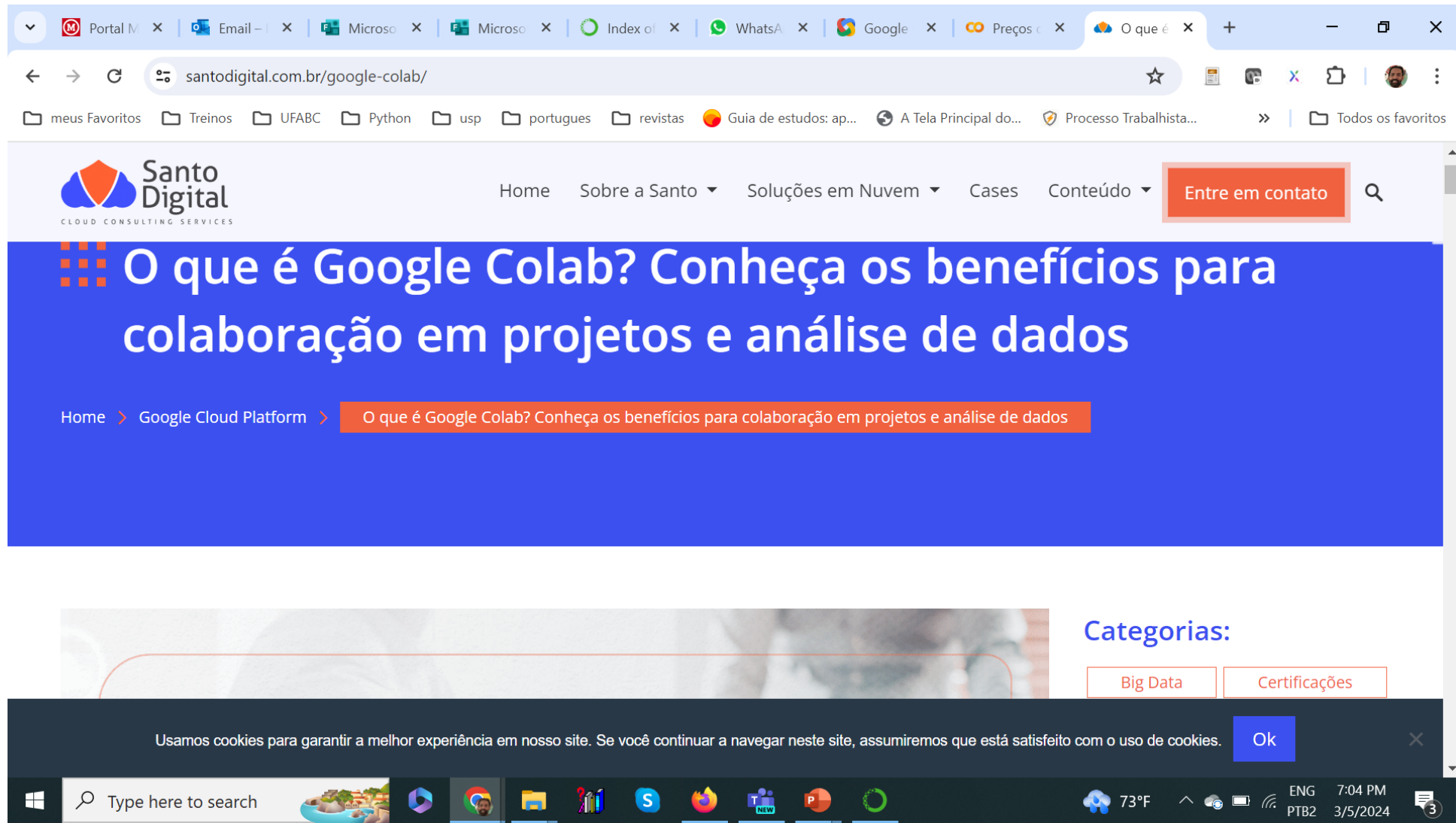
Alterar o idioma: Português (Brasil) ▼

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73°F 6:58 PM 3/5/2024



Google Colab – Informações: <https://santodigital.com.br/google-colab/>



# Python

## Google Colab

IA\_Python\_Aula\_conceitosBasic

colab.research.google.com/drive/1t6cVnKzVai4vLth6zcbT3y6\_uw0oBIN#scrollTo=WZGs7nVmlMiK

meus FavoritosTreinosUFABCPythonuspportuguesrevistasGuia de estudos: ap...A Tela Principal do...Processo Trabalhista...Todos os favoritos

IA\_Python\_Aula\_conceitosBasicos.ipynb

ComentárioCompartilhar

ArquivoEditarVerInserirAmbiente de execuçãoFerramentasAjudaTodas as alterações foram salvas

+ Código+ Texto

RAMDiscoColab AI

Disciplina: Inteligência Artificial

Conceitos Básicos de Python

Neste Notebook você encontrará alguns exemplos de comandos básicos em Python envolvendo: tipos de dados e Strings, estruturas de controle, funções, execuções, números aleatórios e listas.

nome = "Marcelo da Silva Rovierio"

cont, preco, estaChovendo = 0, 5.2, False

+ Código+ Texto

[2] print("Nome: {}, Cont: {}, Preço: {}, Está Chovendo: {}".format(nome, cont, preco, estaChovendo))

Nome: Marcelo da Silva Rovierio, Cont: 0, Preço: 5.2, Está Chovendo: False

[3] type(cont), type(nome), type(preco), type(estaChovendo)

0s conclusão: 18:47

Type here to search

73°F Heavy rain

ENG PTB2 6:50 PM 3/5/2024

# Bibliografia

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- CHOLLET, François. **Deep Learning with Python, 2ed**. Shelter Island: Manning, 2021.
- GÉRON, Aurélien. **Hands-On Machine Learning with Scikit-Learn and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems**, 2 ed. Sebastopol: O'Reilly, 2019.

## COMPLEMENTAR:

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## ADICIONAIS:

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