



# APSSDC

Andhra Pradesh State Skill Development Corporation



**Skill AP**  
APSSDC

## Programming Using Python



**NumPy**



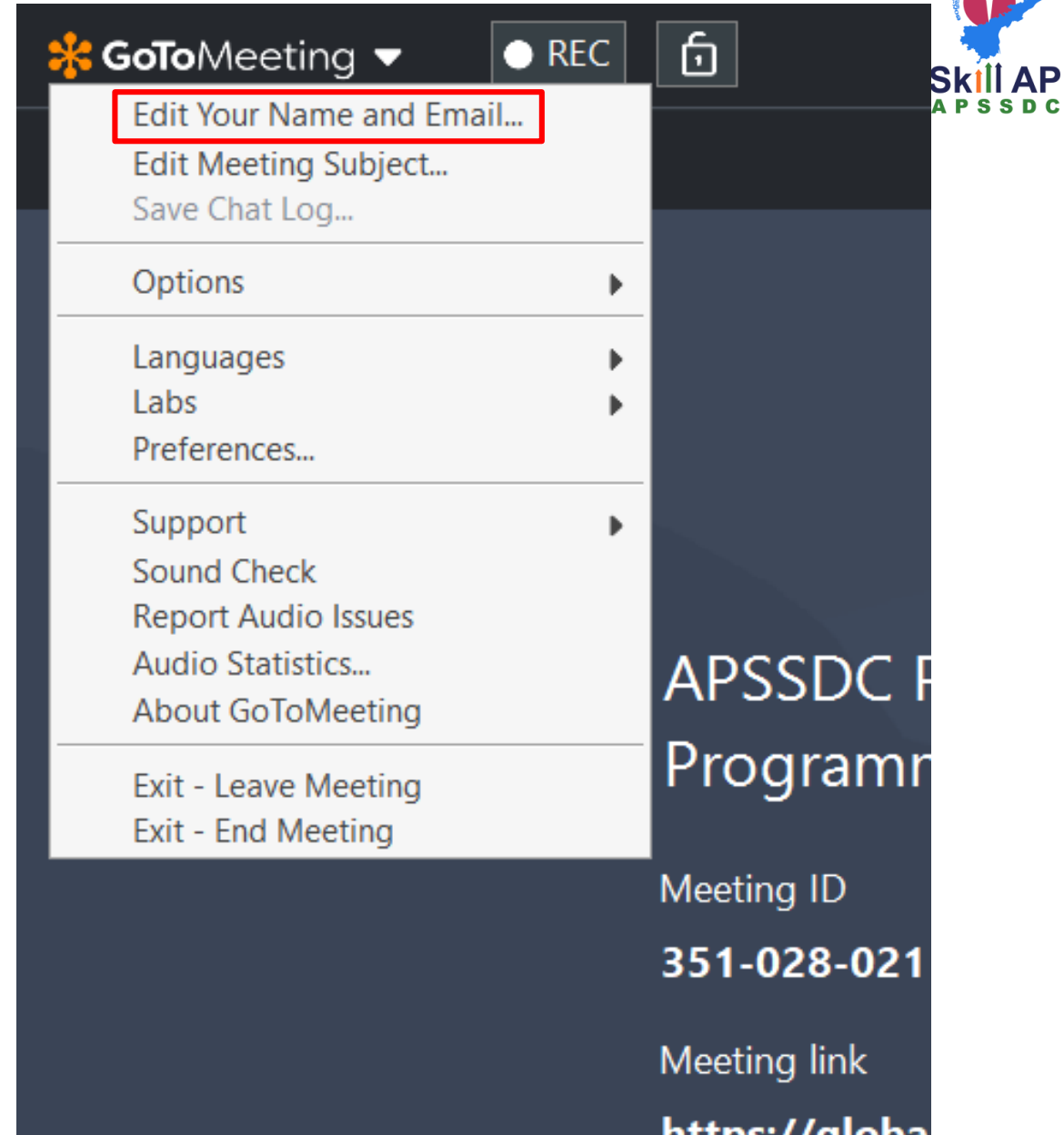
**pandas**



**matplotlib**

For Attendance and  
Verification Purpose

**RollNo-Name  
And Registermed  
Email ID**



The screenshot shows the GoToMeeting interface. At the top, the GoToMeeting logo is on the left, and 'REC' and a lock icon are on the right. A dropdown menu is open, showing options: 'Edit Your Name and Email...' (highlighted with a red box), 'Edit Meeting Subject...', 'Save Chat Log...', 'Options', 'Languages', 'Labs', 'Preferences...', 'Support', 'Sound Check', 'Report Audio Issues', 'Audio Statistics...', 'About GoToMeeting', 'Exit - Leave Meeting', and 'Exit - End Meeting'. On the right side of the interface, the text 'APSSDC R' and 'Programr' is visible. Below this, the 'Meeting ID' is '351-028-021' and the 'Meeting link' is 'https://globe'.

GoToMeeting

REC

Edit Your Name and Email...

Edit Meeting Subject...

Save Chat Log...

Options

Languages

Labs

Preferences...

Support

Sound Check

Report Audio Issues

Audio Statistics...

About GoToMeeting

Exit - Leave Meeting

Exit - End Meeting

APSSDC R

Programr

Meeting ID

351-028-021

Meeting link

https://globe

Skill AP  
APSSDC

# Session Resources

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<http://bit.ly/apssdc-python-mb10>

# Why you are attending this training

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# Why python?

# Why python

PYPL Index
10 TOP IDE
10 TOP ODE
10 TOP DB

## PYPL PopularitY of Programming Language

Worldwide, Dec 2020 compared to a year ago:

Rank	Change	Language	Share	Trend
1		Python	30.34 %	+1.2 %
2		Java	17.23 %	-1.7 %
3		JavaScript	8.65 %	+0.6 %
4		C#	6.44 %	-0.8 %
5	↑	C/C++	6.11 %	+0.1 %
6	↓	PHP	5.88 %	-0.3 %
7		R	3.84 %	+0.1 %
8		Objective-C	3.75 %	+1.2 %
9		Swift	2.17 %	-0.3 %
10	↑	Matlab	1.77 %	-0.0 %
11	↓	TypeScript	1.62 %	-0.2 %
12	↑↑↑	Go	1.52 %	+0.3 %
13	↓	Kotlin	1.44 %	-0.2 %

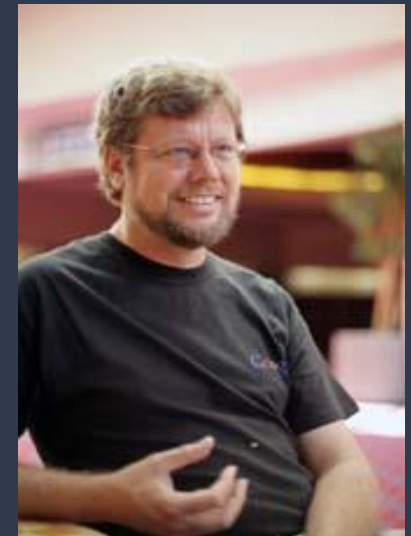
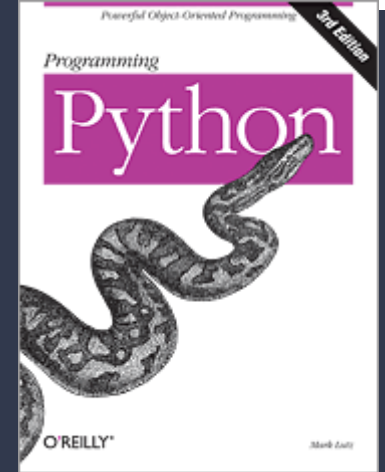
The PYPL PopularitY of Programming Language Index is created by analyzing how often language tutorials are searched on Google.

The more a language tutorial is searched, the more popular the language is assumed to be. It is a leading indicator. The raw data comes from Google Trends.

If you believe in collective wisdom, the PYPL Popularity of Programming Language index can help you decide which language to study, or which one to use in a new software project.

# Python as a Language

**Python** is the language of the Python Interpreter and those who can converse with it. An individual who can speak **Python** is known as a **Pythonista**. It is a very uncommon skill, and may be hereditary. Nearly all known **Pythonistas** use software initially developed by **Guido van Rossum**.





# History

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Python is an interpreted, high-level, general-purpose programming language.

- 1994 -----> v1.0
- 2000 -----> v2.0 – 2020 2.7
- 2008 -----> v3.0
- 2019 -----> v3.8 3.7+
- 2020 -> 3.9.0



Guido Van Rossum

# Language properties

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1. Everything is an object
2. Modules, classes, functions
3. Exception handling
4. Dynamic typing, polymorphism
5. Static scoping
6. Operator overloading
7. Indentation for block structure

# High-level data types

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1. Numbers: int, float, complex
2. Strings: immutable
3. Lists, Tuple, Sets, dictionaries: containers
4. Other types for e.g. binary data, regular expressions, introspection
5. Extension modules can define new “built-in” data types

# Comparisons

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## Java

1. Typically 3-5 times shorter than equivalent Java programs
2. Run-time works harder than Java's
3. Components can be developed in Java and combined to form applications in Python
4. Python can be used to prototype components into Java implementation

# Comparisons, cont'd

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## Perl

1. Come from similar backgrounds
2. Python is more applicable than Perl
3. Perl emphasizes support for common application-oriented tasks
4. Python emphasizes support for common programming methodologies

# Comparisons, cont'd

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## C++

1. Differences are similar to Java's
2. Often 5-10 times shorter than equivalent C++ code
3. Python shines as a glue language; used to combine components written in C++

# Features of Python

**Easy To Learn, Code  
And Read**

**Free And Open-  
source**

**High-level  
Programming  
Language**

**Portable And  
Extensible**

**Interpreted**

**Object-oriented**

**Embeddable**

**Large Range Of  
Library**

**GUI Programming**

**Dynamically Typed**

High Level → Human Understandable → Compiler, Interpreter  
Assembly/Intermediate/Middle → half humans and half machine → Embedded  
C

Assign A, #10

move 10, #10 → Assemble Programming → machine Code → Assembler  
Low Level → Machine Understandable 0101010100



# Python Programming Applications



**Python** had been developed to assimilate and work dynamically across various platforms. Here is a list of applications on its functional role:

1. Artificial Intelligence

2. Machine Learning

3. Data Analysis

4. Web Development

5. Game Development

6. Embedded Applications

7. Scripting Applications

# Softwares

- Basic python IDLE
  - from <https://www.python.org/downloads/>
  - VS Code
  - PyCharm
  - Sublime Text
  - Atom
  - Spyder
- Jupyter Notebook by Anaconda Distributions
  - From <https://www.anaconda.com/products/individual>
- Google Colab by Google cloud service
  - From <https://colab.research.google.com/>
  - DataLab
- Different online editors
  - From <https://repl.it/languages/python3>
  - Kaggle
  - Azure Jupyter notebooks

Google Colab Resources:

Here I run some test.

[https://colab.research.google.com/notebook#fileId=1dint4ly-7h8Trw0XRJ1uhC\\_VKe\\_wDJfY](https://colab.research.google.com/notebook#fileId=1dint4ly-7h8Trw0XRJ1uhC_VKe_wDJfY)

**In short:**

n1-highmem-2 instance

2vCPU @ 2.2GHz

13GB RAM

100GB Free Space

idle cut-off 90 minutes

maximum 12 hours

**2020 Update:**

GPU instance downgraded to 64GB disk space.

# Anaconda for Python

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It is a platform/navigator to run python

## Why should we use Anaconda for Python?

Many **scientific packages require a specific version of Python** to run. It's difficult to keep various Python installations on one computer from interacting and breaking, and harder to keep them up-to-date.

Anaconda Distribution makes management of multiple Python versions on one computer easier, and provides a large collection of highly optimized, commonly used data science libraries to get you started faster. Link for installation of Anaconda Software: <https://www.anaconda.com/distribution/>

# Jupyter



- Jupyter is a web - application
- Jupyter name is a reference to the three core programming languages supported by Jupyter, which are Julia, Python and R

**Jupyter Notebook:** The Jupyter Notebook is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text.

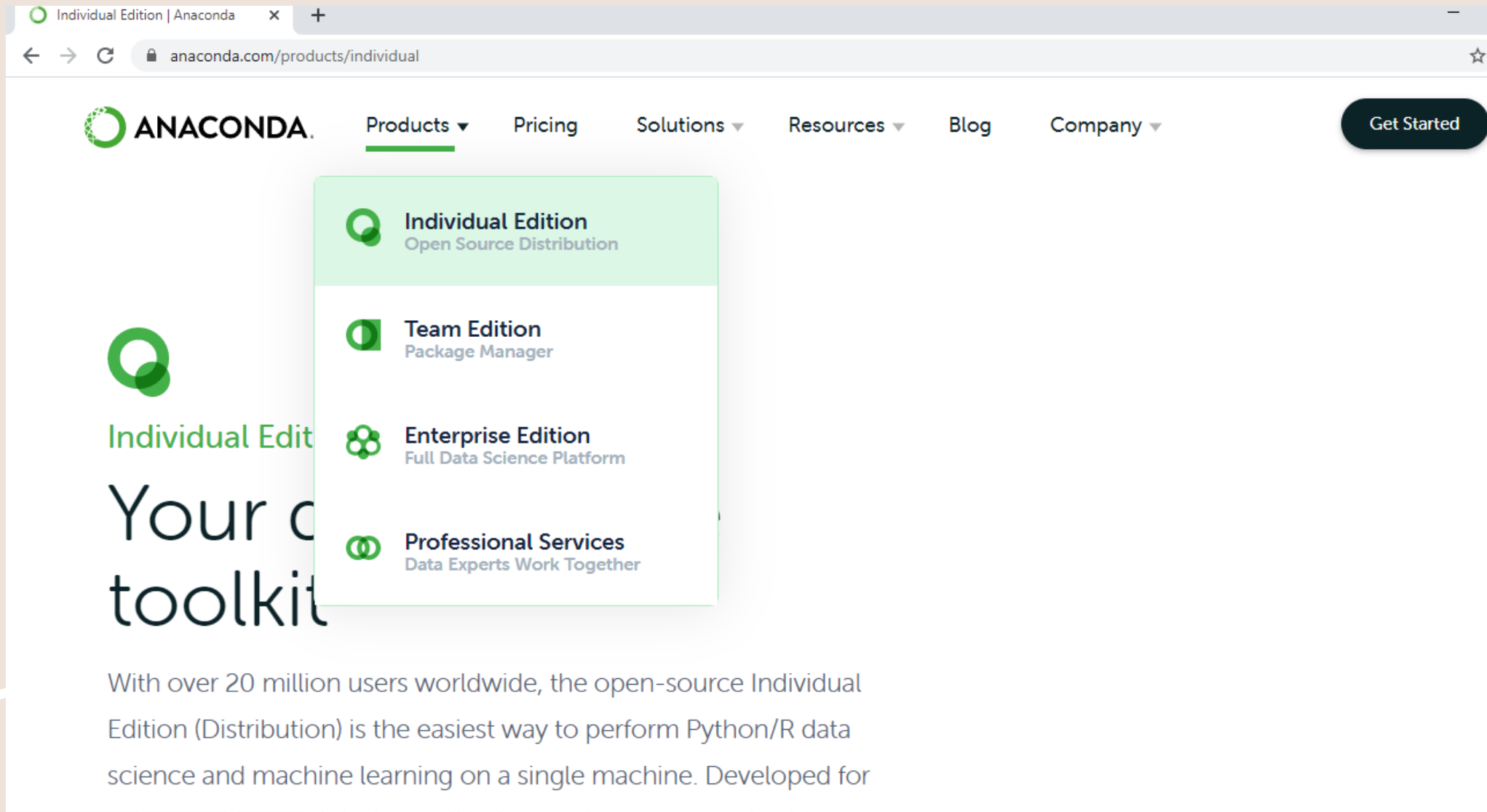
**Uses include:** data cleaning and transformation, numerical simulation, statistical modelling, data visualization, machine learning, and much more.

**Advantages:** Best for data exploration, data preparation, data validation, ....

# Anaconda Installation



# Installation



The screenshot shows the Anaconda website's 'Individual Edition' product page. The browser's address bar displays 'anaconda.com/products/individual'. The navigation bar includes the Anaconda logo, a 'Products' dropdown menu (which is open), and links for 'Pricing', 'Solutions', 'Resources', 'Blog', and 'Company'. A 'Get Started' button is located in the top right corner. The 'Products' dropdown menu lists four options: 'Individual Edition' (Open Source Distribution), 'Team Edition' (Package Manager), 'Enterprise Edition' (Full Data Science Platform), and 'Professional Services' (Data Experts Work Together). The main content area features the Anaconda logo, the text 'Individual Edition', and 'Your data toolkit'. Below this, a paragraph states: 'With over 20 million users worldwide, the open-source Individual Edition (Distribution) is the easiest way to perform Python/R data science and machine learning on a single machine. Developed for'.

Individual Edition | Anaconda

anaconda.com/products/individual

ANACONDA

Products ▾ Pricing Solutions ▾ Resources ▾ Blog Company ▾ Get Started

- Individual Edition  
Open Source Distribution
- Team Edition  
Package Manager
- Enterprise Edition  
Full Data Science Platform
- Professional Services  
Data Experts Work Together

Individual Edition

Your data toolkit

With over 20 million users worldwide, the open-source Individual Edition (Distribution) is the easiest way to perform Python/R data science and machine learning on a single machine. Developed for

# Downloading Anaconda Software

## Windows

### Python 3.7

64-Bit Graphical Installer (466 MB)

32-Bit Graphical Installer (423 MB)

### Python 2.7

64-Bit Graphical Installer (413 MB)

32-Bit Graphical Installer (356 MB)

## MacOS

### Python 3.7

64-Bit Graphical Installer (442 MB)

64-Bit Command Line Installer (430 MB)

### Python 2.7

64-Bit Graphical Installer (637 MB)

64-Bit Command Line Installer (409 MB)

## Linux

### Python 3.7

64-Bit (x86) Installer (522 MB)

64-Bit (Power8 and Power9) Installer (276 MB)

### Python 2.7

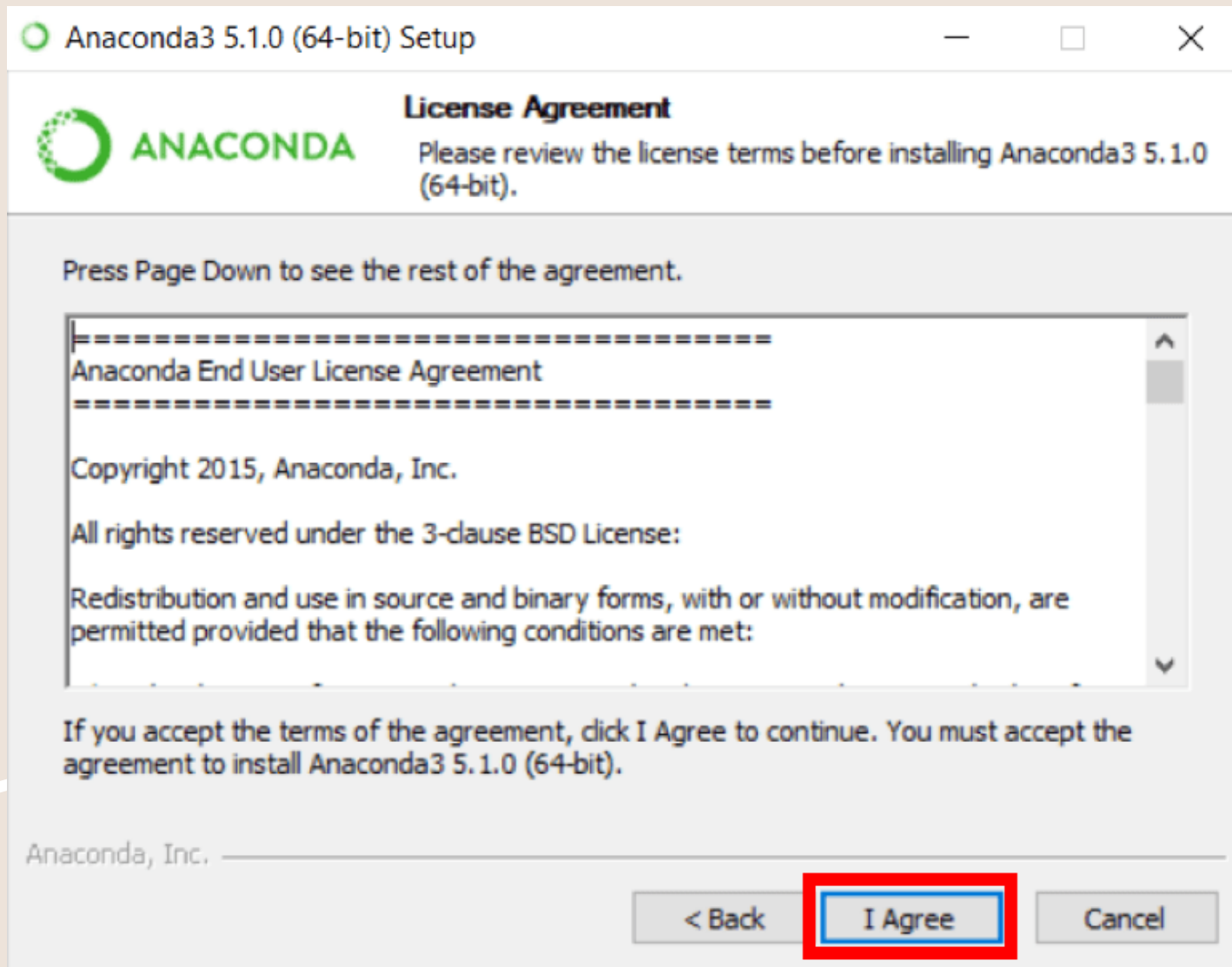
64-Bit (x86) Installer (477 MB)

64-Bit (Power8 and Power9) Installer (295 MB)

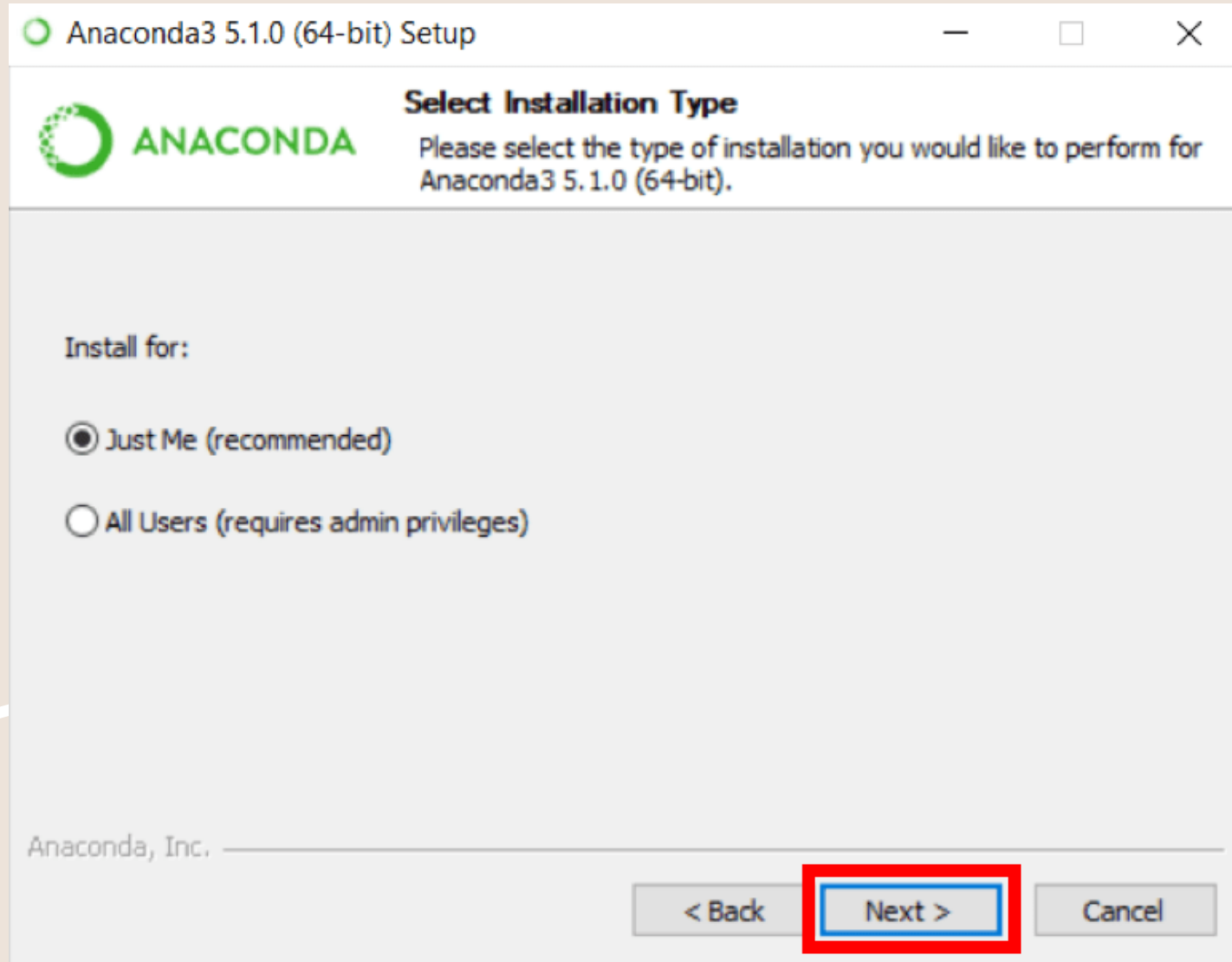
# Installation



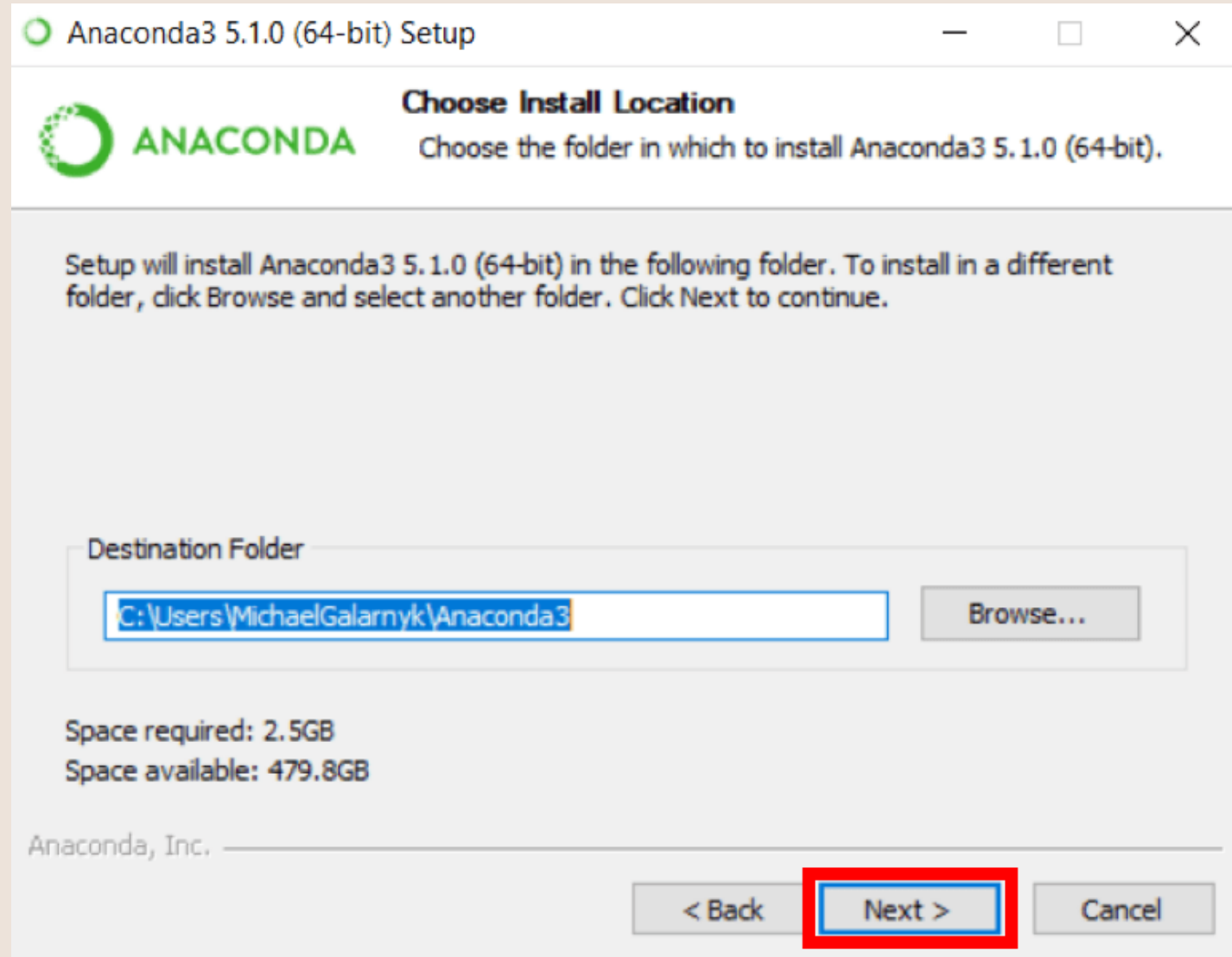
# Installation



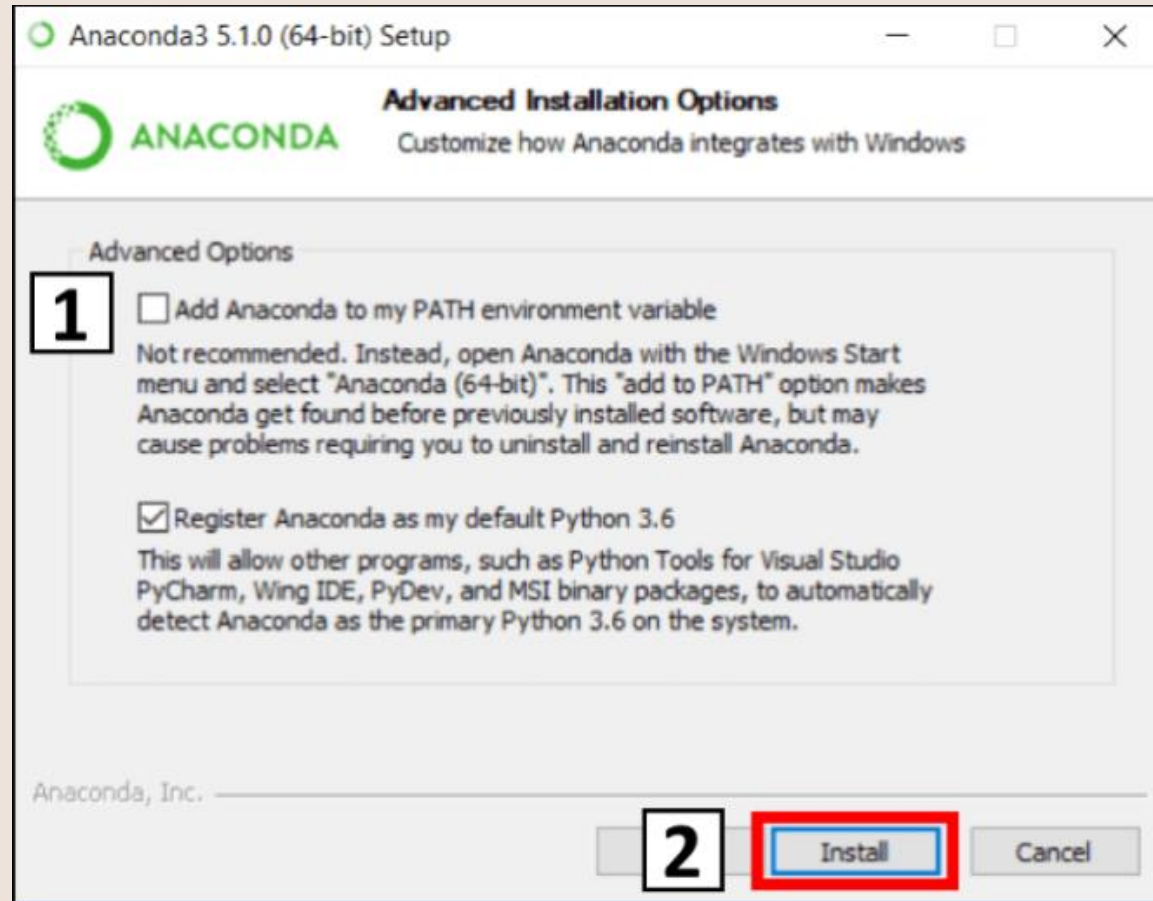
# Installation



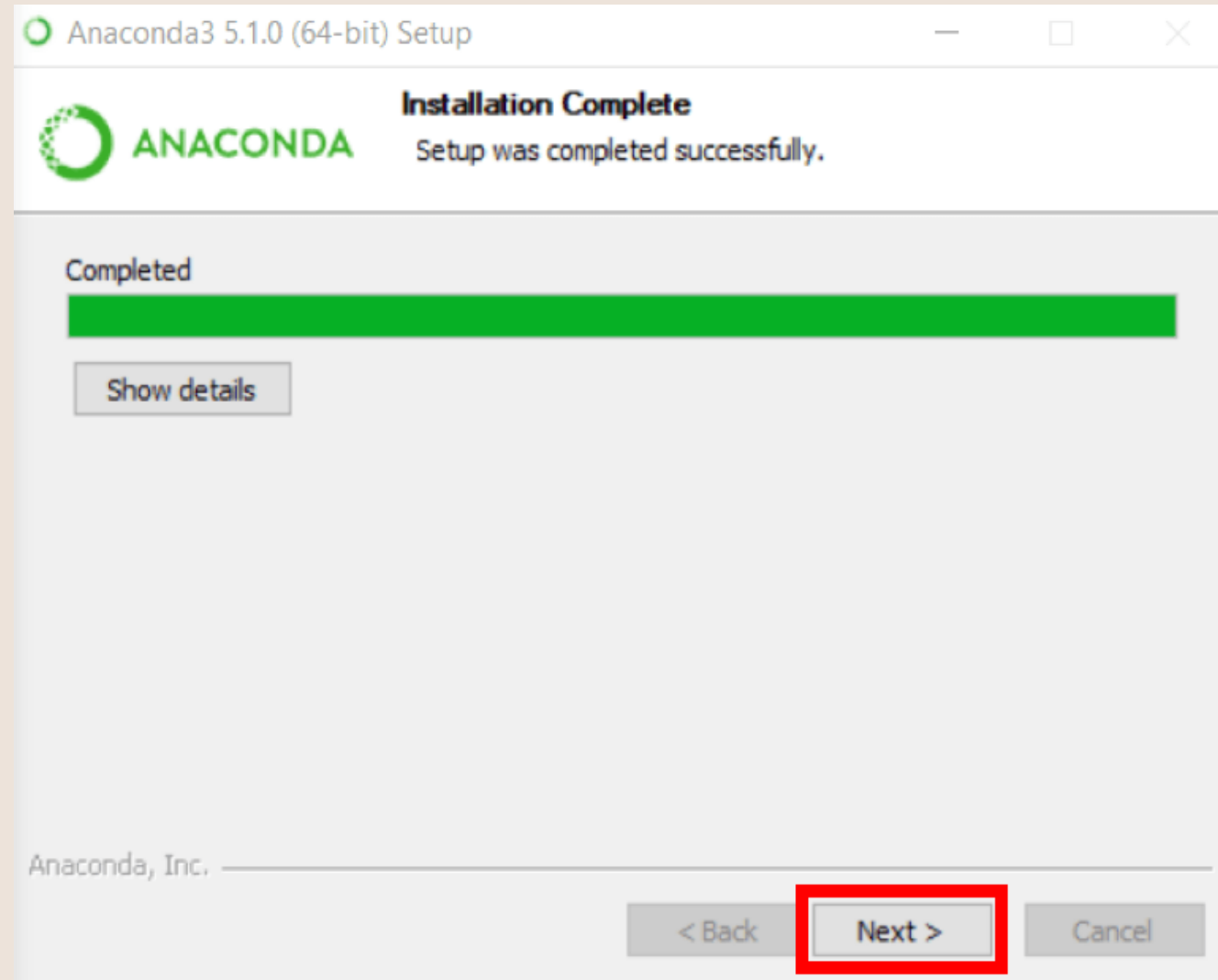
# Installation



# Installation

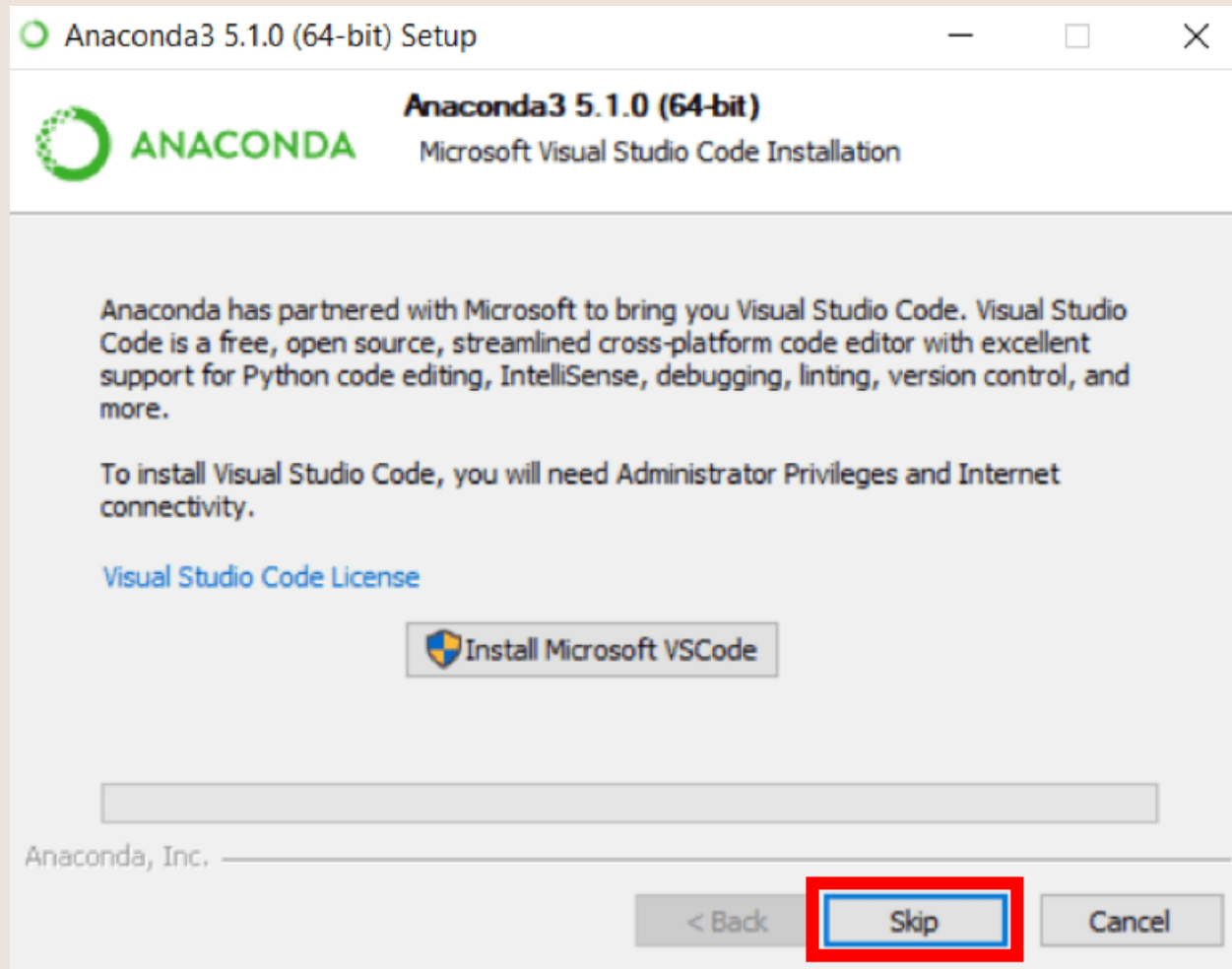


# Installation

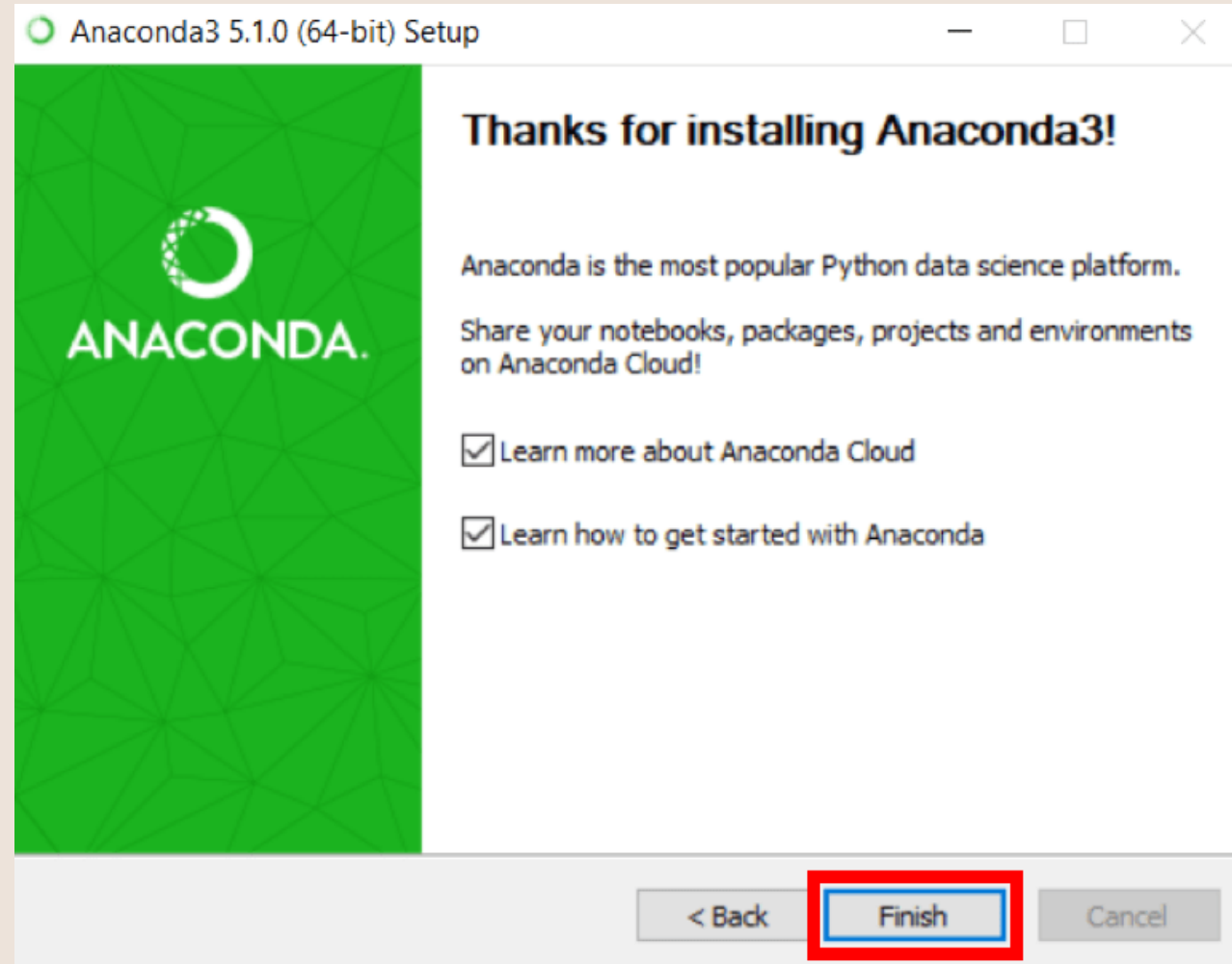




# Installation



# Installation



# Let us start Jupyter Notebook

# Launch Jupyter Notebook

