Data Science with Python Programming

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Components of Python Ecosystem

Learning outcomes:

- Components of Python Ecosystem
- Using Pre-packaged Python Distribution: Anaconda
- Jupyter Notebook

Components of Python Ecosystem

In this section, let us discuss some core Data Science libraries that form the components of Python Machine learning ecosystem. These useful components make Python an important language for Data Science. Though there are many such components, let us discuss some of the importance components of Python ecosystem here.

Using Pre-packaged Python Distribution: Anaconda

Anaconda is a packaged compilation of Python which have all the libraries widely used in Data science. Anaconda is a free and open-source distribution of the Python and R programming languages for scientific computing, that aims to simplify package management and deployment. The distribution includes data-science packages suitable for Windows, Linux, and macOS.

Using Pre-packaged Python Distribution: Anaconda

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 solo practitioners, it is the toolkit that equips you to work with thousands of open-source packages and libraries.

Using Pre-packaged Python Distribution: Anaconda

We can follow the following steps to setup Python environment using Anaconda −

Step 1 − First, we need to download the required installation package from Anaconda distribution. The link for the same is https://www.anaconda.com/products/individual You can choose from Windows, Mac and Linux OS as per your requirement.

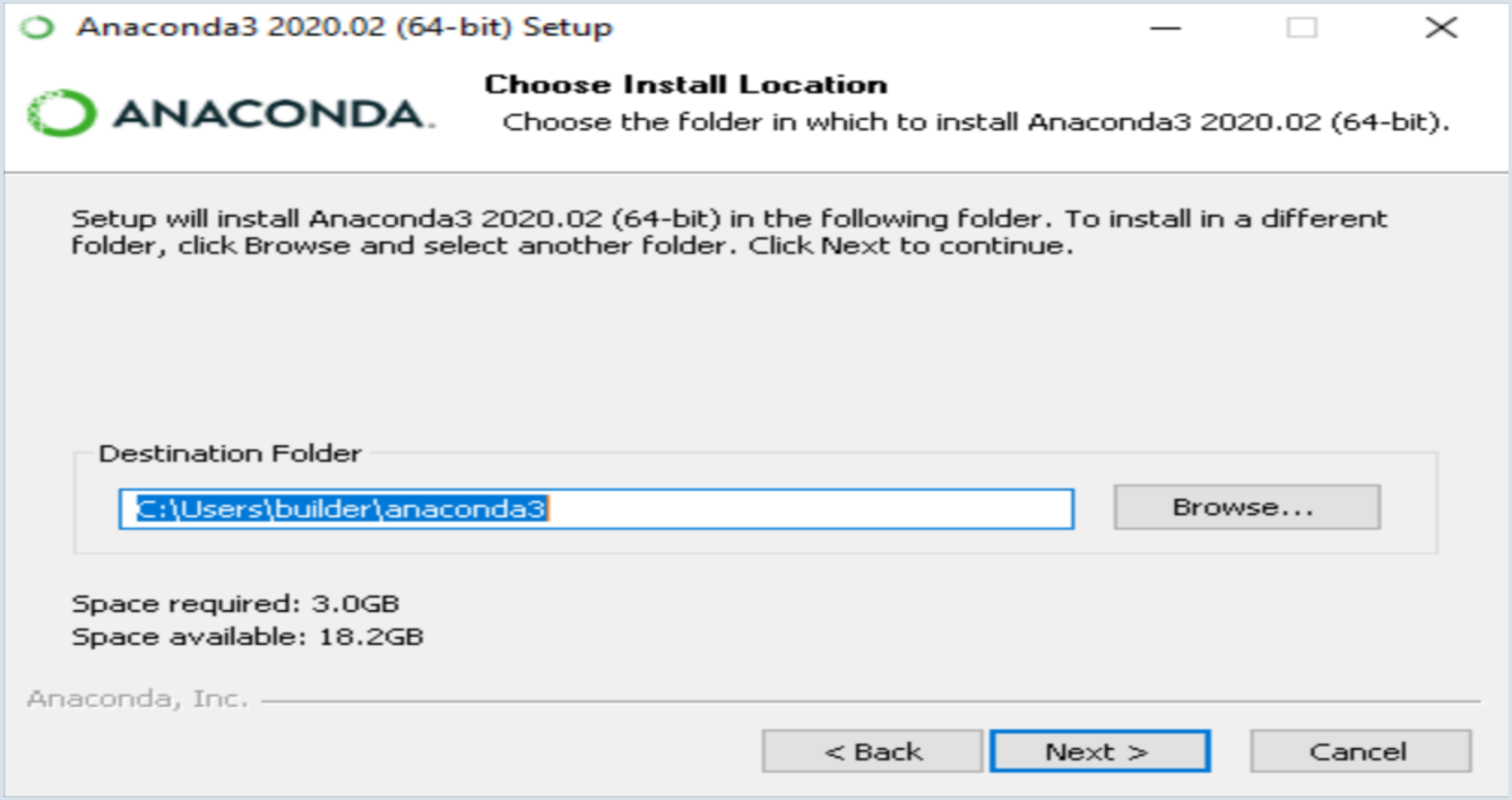
Using Pre-packaged Python Distribution: Anaconda

Step 2 – Next, select the Python version you want to install on your machine. The latest Python version is 3.9.0. There you will get the options for 64-bit and 32-bit Graphical installer both. You can click either on "**64-Bit Graphical Installer**" or "**32-Bit Graphical Installer".** Once you click, you will see the file with**.exe** extension will start to download.
Step 3 – Double click the installer or the downloaded file with **.exe** extension to **launch**.

Using Pre-packaged Python Distribution: Anaconda

Step 4 – Click **Next**.
Step 5 – Read the licensing terms and click on **"I Agree".**
Step 6 – Select an install for "**Just Me**" unless you're installing for all users (which requires Windows Administrator privileges) and click **Next**.
Step 7 – Select a destination folder to install Anaconda and click the **Next** button.

Using Pre-packaged Python Distribution: Anaconda



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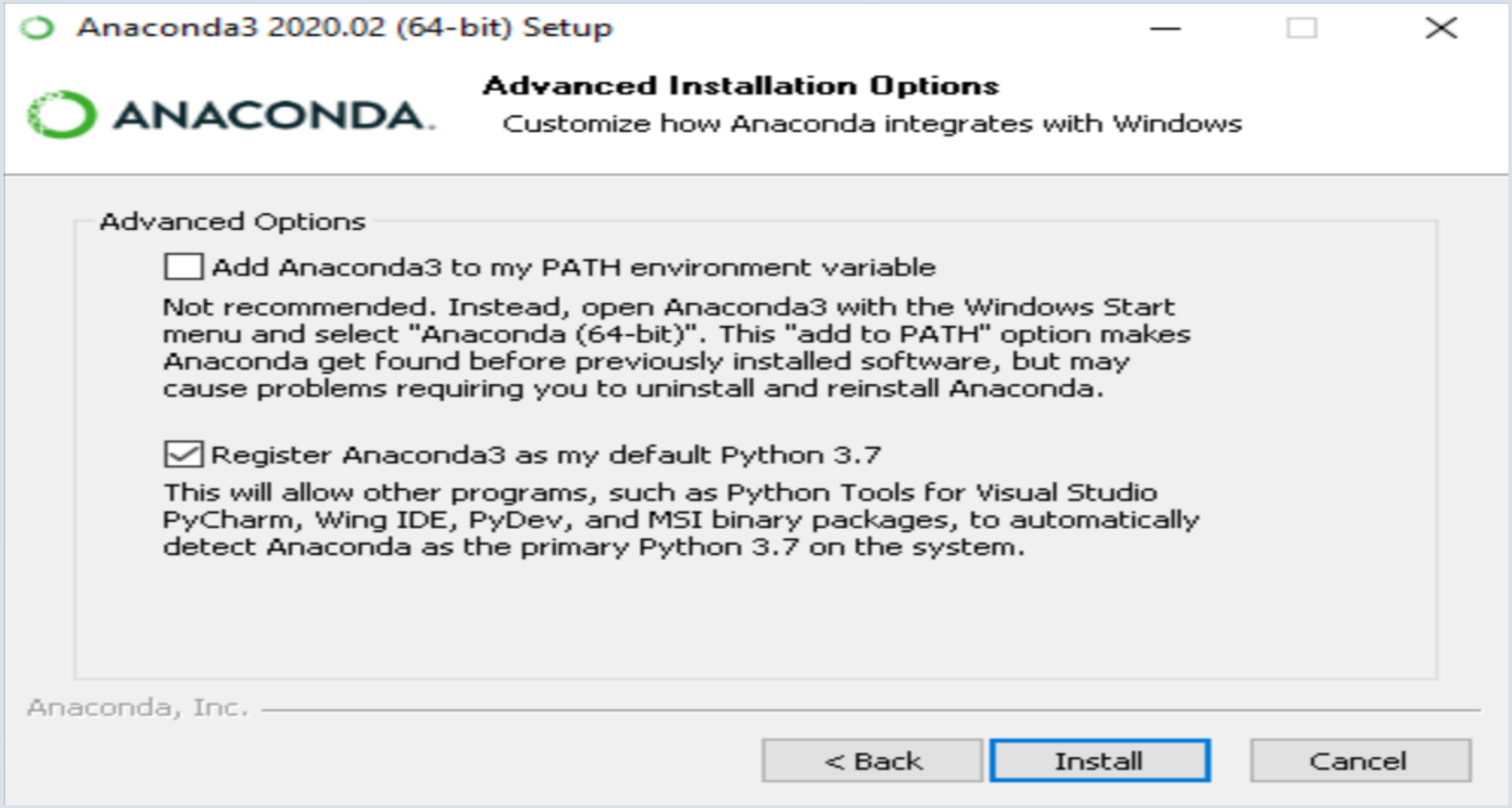
Using Pre-packaged Python Distribution: Anaconda

Step 8 – Choose whether to add Anaconda to your PATH environment variable. We recommend not adding Anaconda to the PATH environment variable, since this can interfere with other software. Instead, use Anaconda software by opening Anaconda Navigator or the Anaconda Prompt from the Start Menu.

Using Pre-packaged Python Distribution: Anaconda



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Using Pre-packaged Python Distribution: Anaconda

Step 9 – Choose whether to register Anaconda as your default Python. Unless you plan on installing and running multiple versions of Anaconda or multiple versions of Python, accept the default and leave this box checked.

Step 10 – Click the Install button. If you want to watch the packages Anaconda is installing, click Show Details.

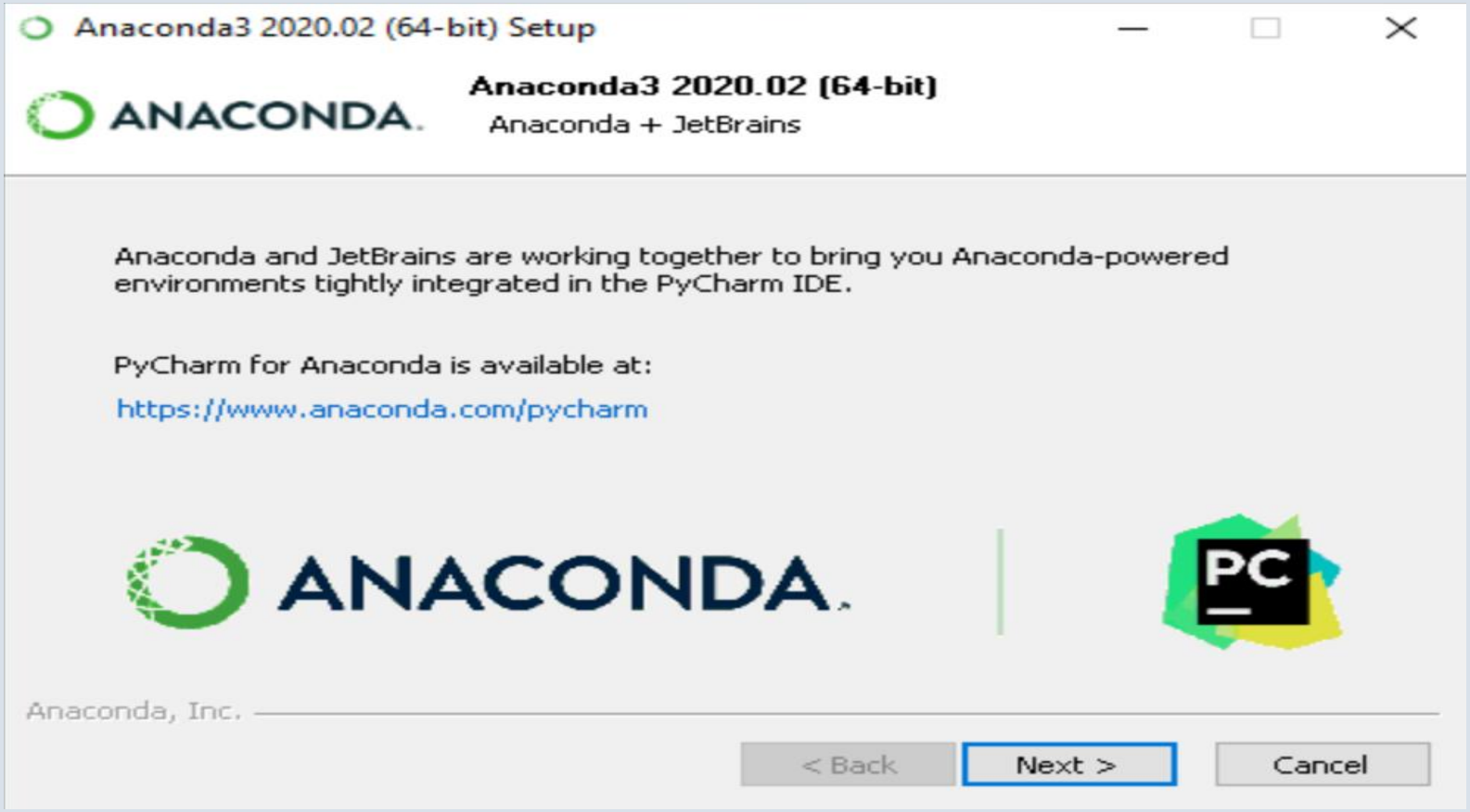
Step 11 – Click the **Next** button.

Using Pre-packaged Python Distribution: Anaconda

Step 12 – Optional: To install **PyCharm** for Anaconda, click on the link to https://www.anaconda.com/pycharm.

Or to install Anaconda without PyCharm, click the **Next** button.

Using Pre-packaged Python Distribution: Anaconda



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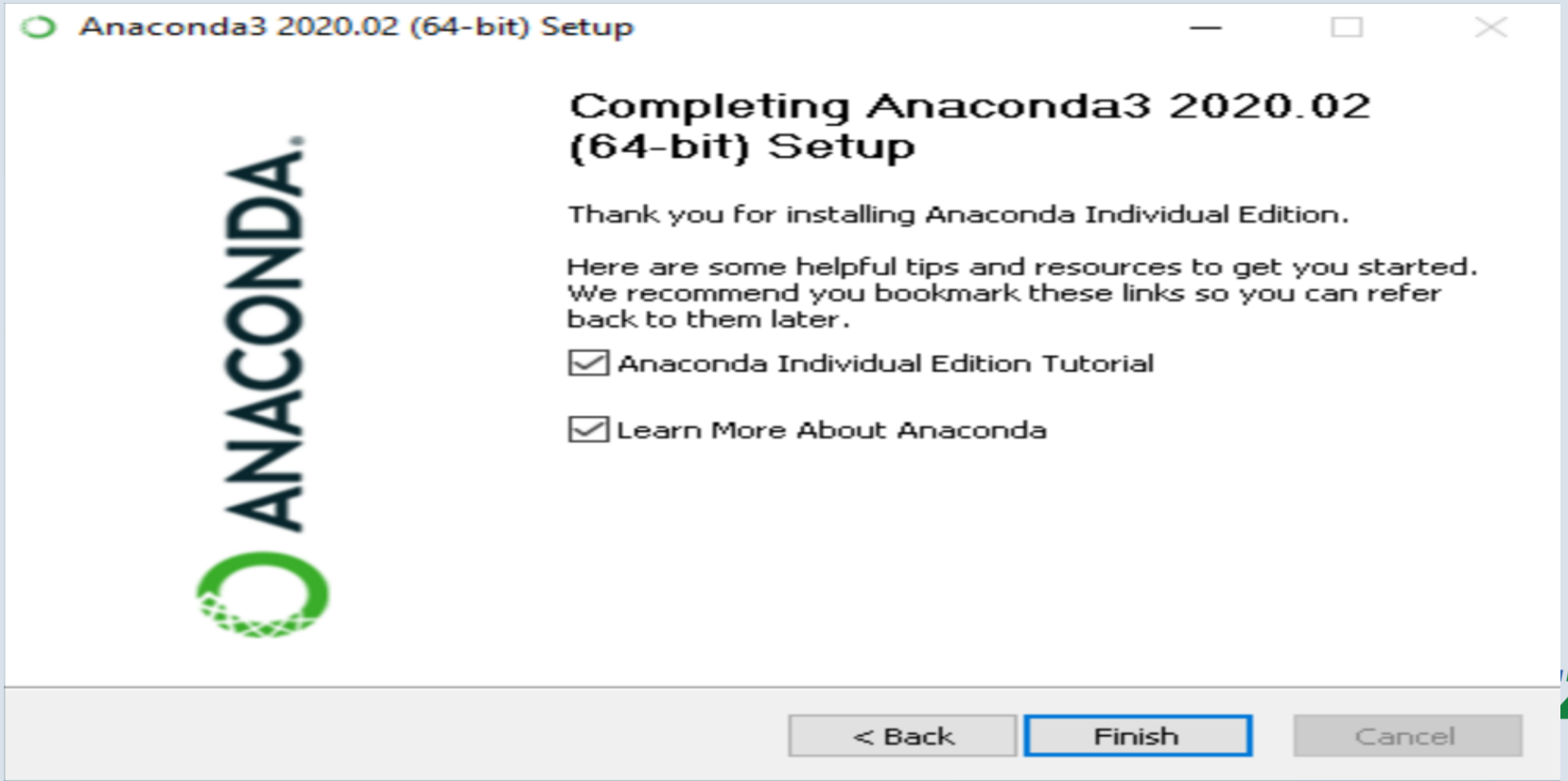
Using Pre-packaged Python Distribution: Anaconda

Step 12 – Optional: To install **PyCharm** for Anaconda, click on the link to https://www.anaconda.com/pycharm.

Or to install Anaconda without PyCharm, click the **Next** button.

Using Pre-packaged Python Distribution: Anaconda

Step 13 – After a successful installation you will see the "**Thanks for installing Anaconda**" dialog box:



Using Pre-packaged Python Distribution: Anaconda

Step 14 – If you wish to read more about Anaconda Cloud and how to get started with Anaconda, check the boxes “Learn more about Anaconda Cloud” and “Learn how to get started with Anaconda”. Click the **Finish** button.

Jupyter Notebook

Jupyter notebooks basically provides an interactive computational environment for developing Python based Data Science applications. They are formerly known as ipython notebooks. The following are some of the features of Jupyter notebooks that makes it one of the best components of Python ML ecosystem.

- Jupyter notebooks can illustrate the analysis process step by step by arranging the stuff like code, images, text, output etc. in a step by step manner.

Jupyter Notebook

- It helps a data scientist to document the thought process while developing the analysis process.
- One can also capture the result as the part of the notebook.
- With the help of Jupyter notebooks, we can share our work with a peer also.

Jupyter Notebook

Installation and Execution:

If you are using Anaconda distribution, then you need not install jupyter notebook separately as it is already installed with it.

On the other hand, if you are using standard Python distribution then jupyter notebook can be installed using popular python package installer, pip.

Jupyter Notebook

Installation and Execution:

Open the command prompt and change the directory to your current working directory and then type any one of the following command.

pip3 install jupyter OR
python -m pip install jupyter OR
pip install --user jupyter