Coding in Python

Class 1: How to Think Like a Coder

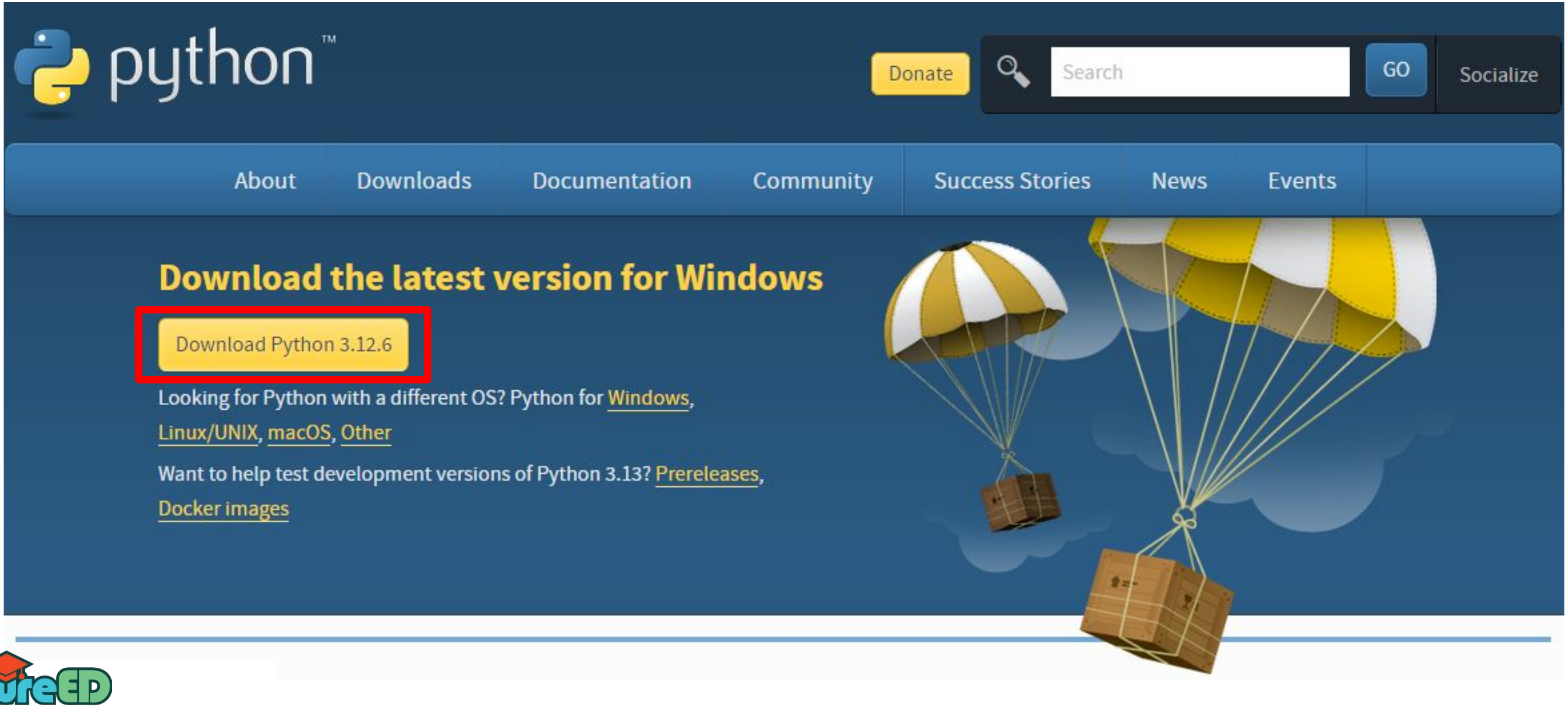
```
        check_db()
        all_books = db.session.query(Book).all()
        return render_template("index.html", books=all_books)

@app.route("/edit", methods=["GET","POST"])
def edit():

        if request.method == "POST":
```

Downloading Python

https://www.python.org/downloads/

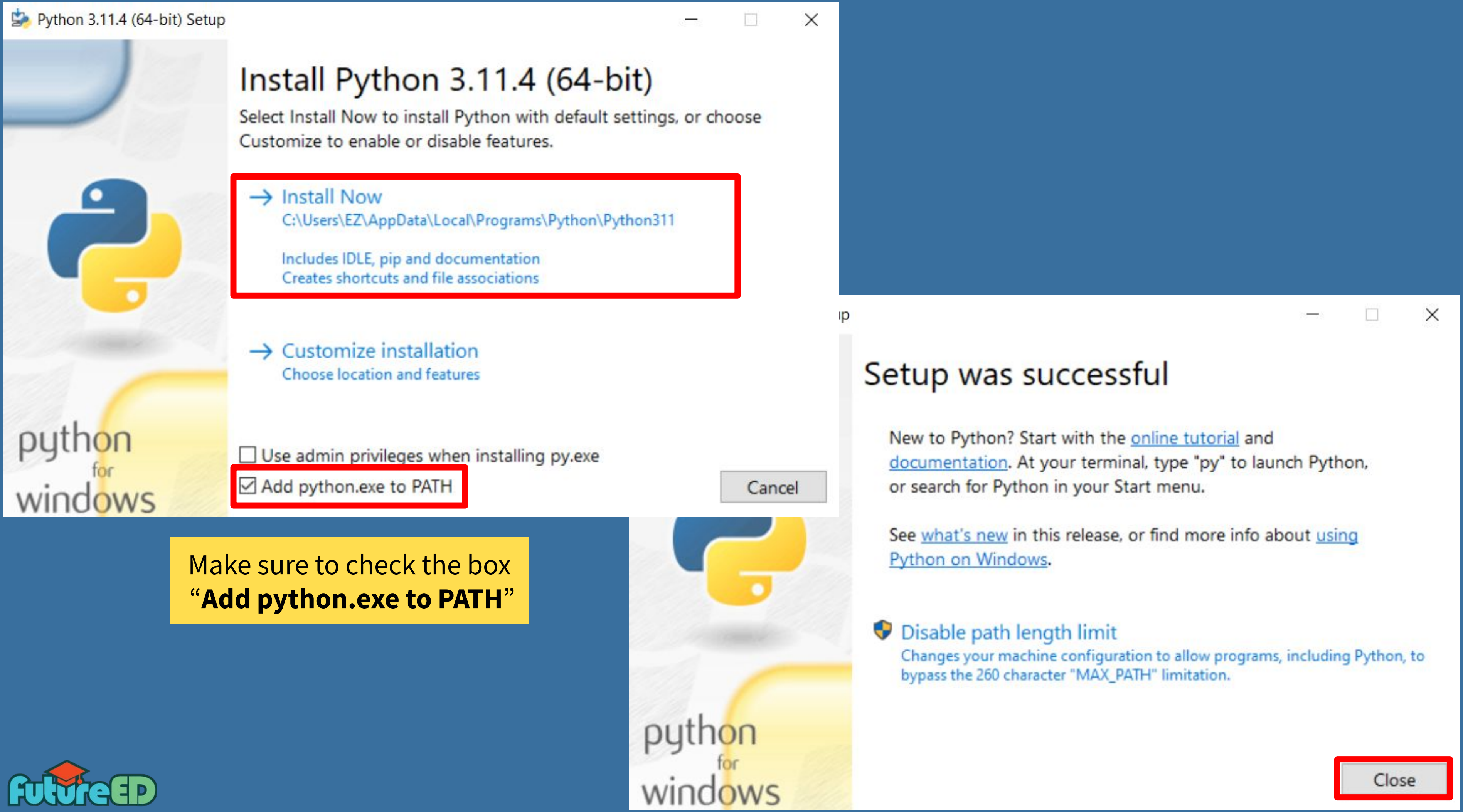


Download the latest version for Windows

Download Python 3.12.6

Looking for Python with a different OS? Python for Windows, Linux/UNIX, macOS, Other

Want to help test development versions of Python 3.13? Prereleases, Docker images



Install Python 3.11.4 (64-bit)

Select Install Now to install Python with default settings, or choose Customize to enable or disable features.

→ Install Now
C:\Users\EZ\AppData\Local\Programs\Python\Python311

Includes IDLE, pip and documentation
Creates shortcuts and file associations

→ Customize installation
Choose location and features

☐ Use admin privileges when installing py.exe
☑ Add python.exe to PATH

Setup was successful

New to Python? Start with the online tutorial and documentation. At your terminal, type "py" to launch Python, or search for Python in your Start menu.

See what's new in this release, or find more info about using Python on Windows.

Disable path length limit
Changes your machine configuration to allow programs, including Python, to bypass the 260 character "MAX_PATH" limitation.

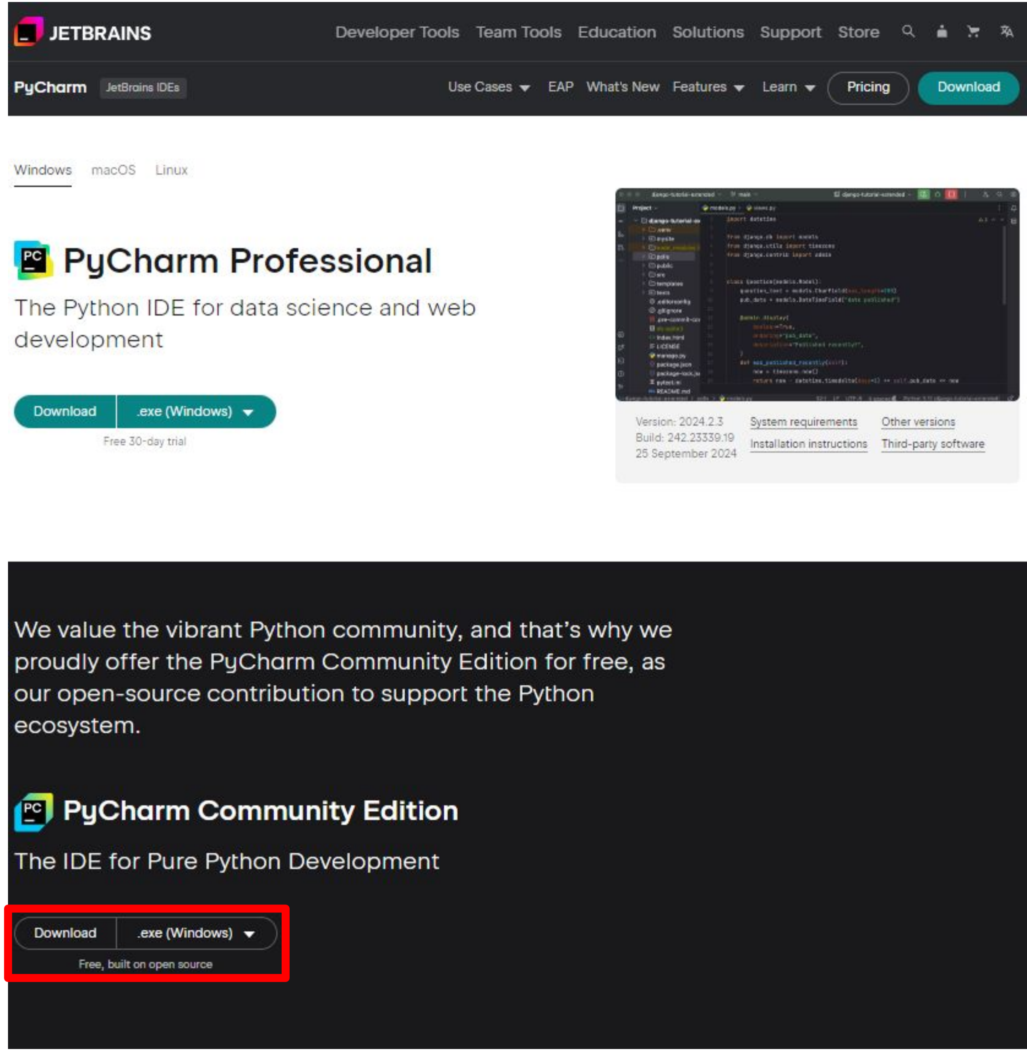
Make sure to check the box “**Add python.exe to PATH**”

FutureED

Downloading PyCharm

https://www.jetbrains.com/pycharm/download

Make sure you download the **Community Edition**. The Professional edition costs money!



PyCharm Professional

The Python IDE for data science and web development

Free 30-day trial

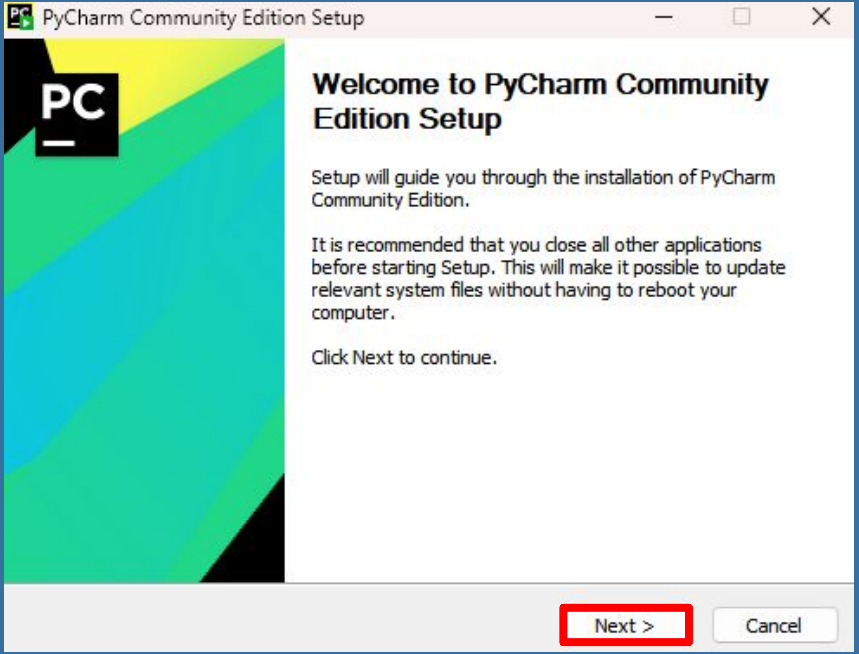
Version: 2024.2.3
Build: 242.23339.19
25 September 2024

We value the vibrant Python community, and that's why we proudly offer the PyCharm Community Edition for free, as our open-source contribution to support the Python ecosystem.

PyCharm Community Edition

The IDE for Pure Python Development

Free, built on open source



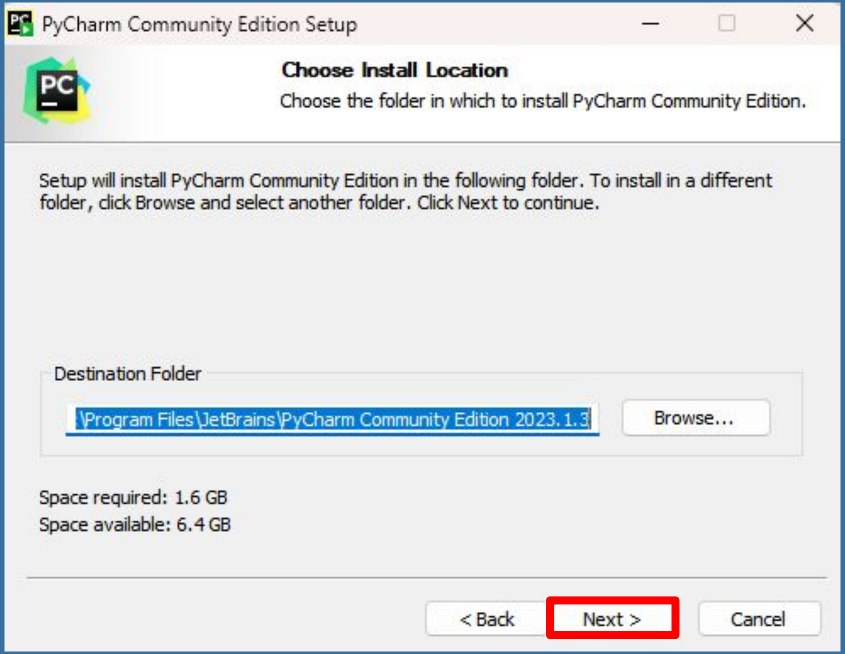
PyCharm Community Edition Setup

Welcome to PyCharm Community Edition Setup

Setup will guide you through the installation of PyCharm Community Edition.

It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.

Click Next to continue.



PyCharm Community Edition Setup

Choose Install Location

Choose the folder in which to install PyCharm Community Edition.

Setup will install PyCharm Community Edition in the following folder. To install in a different folder, click Browse and select another folder. Click Next to continue.

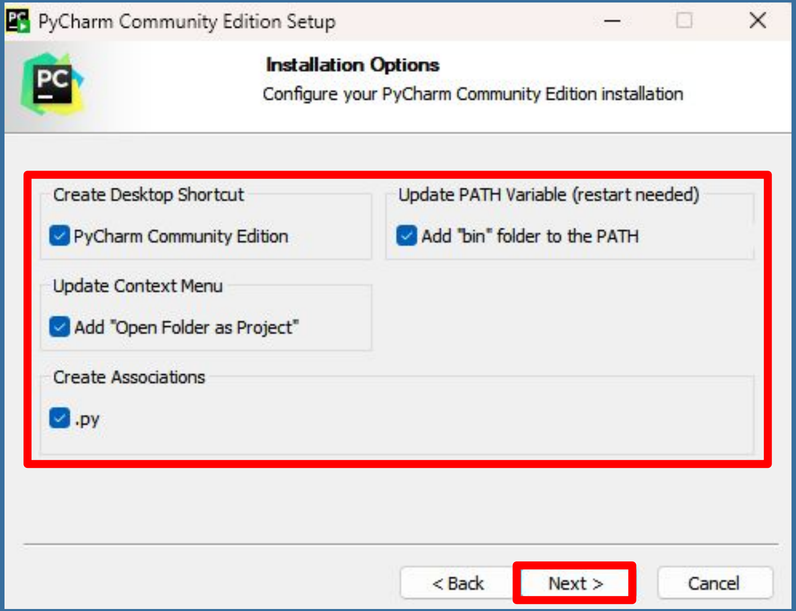
Destination Folder

\Program Files\JetBrains\PyCharm Community Edition 2023.1.3

Space required: 1.6 GB

Space available: 6.4 GB

FutureED



PyCharm Community Edition Setup

Installation Options

Configure your PyCharm Community Edition installation

Create Desktop Shortcut

☑ PyCharm Community Edition

Update PATH Variable (restart needed)

☑ Add "bin" folder to the PATH

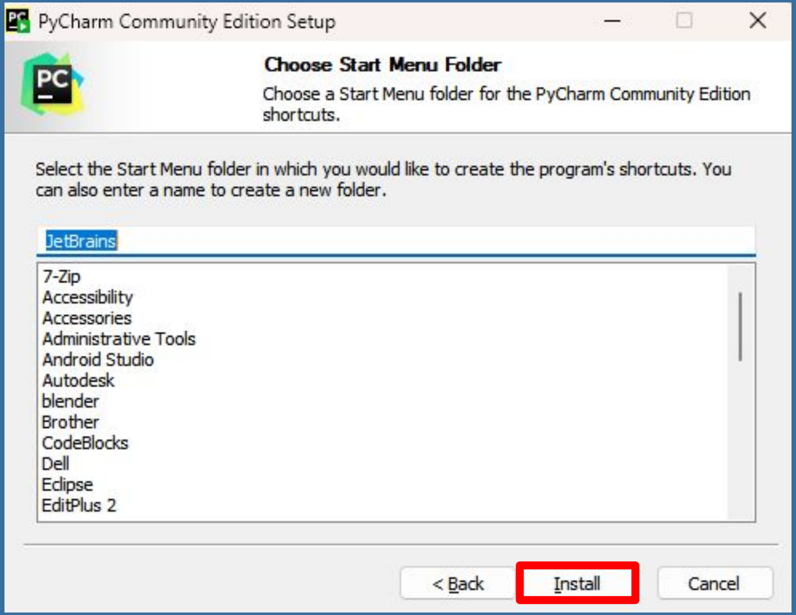
Update Context Menu

☑ Add "Open Folder as Project"

Create Associations

☑ .py

Check all the boxes here.



PyCharm Community Edition Setup

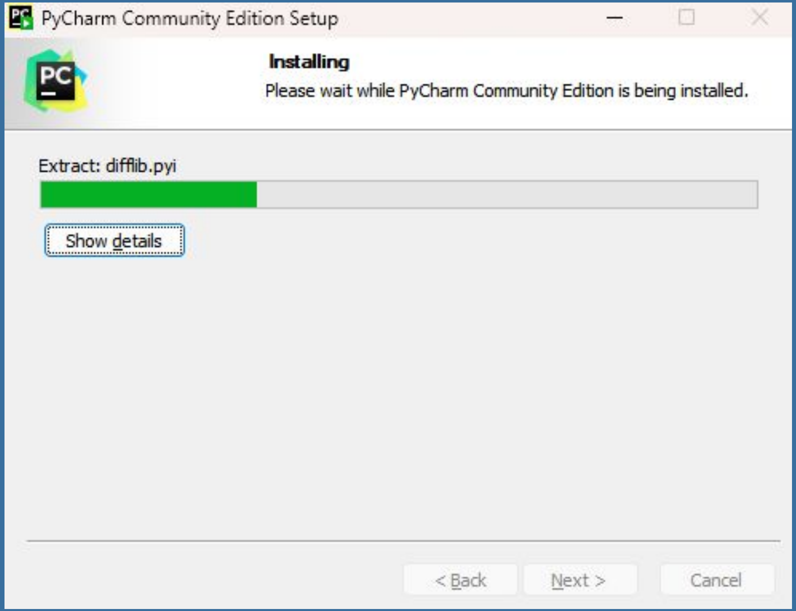
Choose Start Menu Folder

Choose a Start Menu folder for the PyCharm Community Edition shortcuts.

Select the Start Menu folder in which you would like to create the program's shortcuts. You can also enter a name to create a new folder.

JetBrains

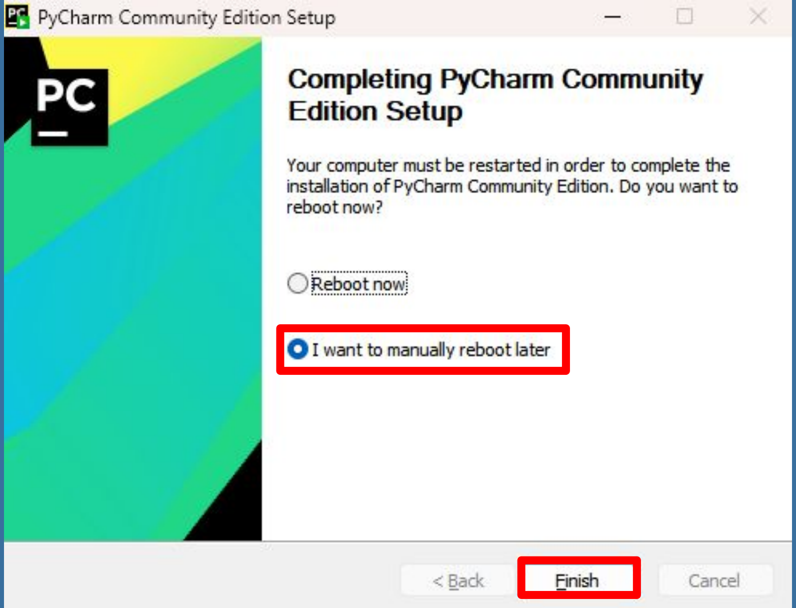
7-Zip
Accessibility
Accessories
Administrative Tools
Android Studio
Autodesk
blender
Brother
CodeBlocks
Dell
Eclipse
EditPlus 2


PyCharm Community Edition Setup

Installing

Please wait while PyCharm Community Edition is being installed.

Extract: difflib.pyi


PyCharm Community Edition Setup

Completing PyCharm Community Edition Setup

Your computer must be restarted in order to complete the installation of PyCharm Community Edition. Do you want to reboot now?

○ Reboot now

● I want to manually reboot later

If you are in class, please check "**I want to manually reboot later**" and reboot your computer after class.

Google Classroom

We will be posting our class notes on Google Classroom. Please join using a private email (i.e. do NOT use your school email.)

Code:

pll6jbv

FutureED

Thinking Like a Coder

How to think like a coder and what to do when faced with a problem

[1]
Break it Down

Break down the issue into smaller pieces. This makes it easier to apply the fundamentals!

Ex: **What are the parts of a car?**

- **Body** (protects passengers)
- **Wheels** (help the car move)
- **Engine** (“heart” of the car)
- **Seats** (where people sit in the car)
- **Steering wheel** (helps driver control direction)
- **Pedals** (helps driver control speed)

What are some other components of a car?

______

[2]
Look for Patterns

There are patterns everywhere, even in coding!

Ex: **What are some patterns in our daily lives?**

- Days of the week, days in a month, days in a year, etc.
- Pattern in words
- Cycles in nature
  - Water cycle
- Traffic Signals

Can you think of some others?

[3]
Critical Thinking

Your solutions should look like an instructions manual or a recipe.
Think: is every step necessary?

Ex: **How would you open a jar?**

1. Drink some water
2. Pick up jar with left hand
3. Put right hand over the lid
4. Tighten both hands
5. Rotate right hand and rotate left hand other way until lid comes off
6. Rotate until lid comes off
7. Loosen both hands

Are there any steps that aren't needed?

Things to Know

Your code should be…

1. **Organized**: your code should be structured in a way such that it is easily readable
2. **Simple**: complicated is not necessarily better; if your code is too complicated, it's going to confuse you.
3. **Short**: no one wants to look through hundreds of lines of code; make sure to use different strategies to make it shorter!

Coder Mindset

How **should** you approach a coding problem?

- Do not memorize pieces of code! Understanding what goes on behind is much more valuable
- Break down the problem into smaller pieces.
- If you don’t know something, don’t be afraid to ask others.

Coder Mindset

What **shouldn't** you do when you encounter a problem?

- **Blame the computer**: the computer is only following your instructions; if something's not working, there must be something wrong with your instructions
- **Think you are dumb**: a typo or a missing line can be the reason a piece of code isn't running; don't make assumptions too soon!