

Python 数据分析与应用

实验一：Python 语言回顾

丁烨

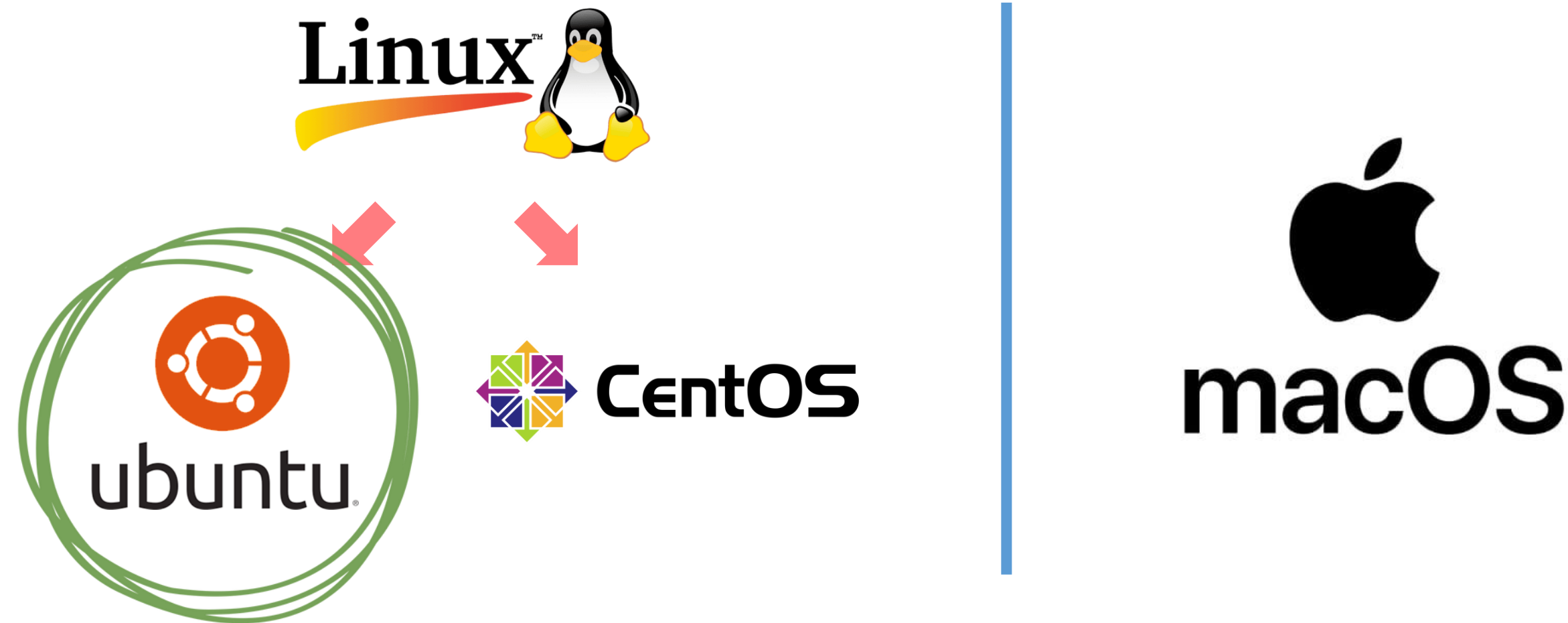
dingye@dgut.edu.cn

计算机科学与技术学院

2023-09-20



東莞理工學院
DONGGUAN UNIVERSITY OF TECHNOLOGY



❖ Ubuntu

❖ 开源免费的 Linux 操作系统

❖ 官方网站: <https://www.ubuntu.com/>

❖ 下载: <https://www.ubuntu.com/download/desktop/>

Ubuntu 22.04.1 LTS

Download the latest LTS version of Ubuntu, for desktop PCs and laptops. LTS stands for long-term support — which means five years, until April 2027, of free security and maintenance updates, guaranteed.

[Ubuntu 22.04 LTS release notes](#)

Recommended system requirements:

- ✓ 2 GHz dual-core processor or better
- ✓ 4 GB system memory
- ✓ 25 GB of free hard drive space
- ✓ Internet access is helpful
- ✓ Either a DVD drive or a USB port for the installer media

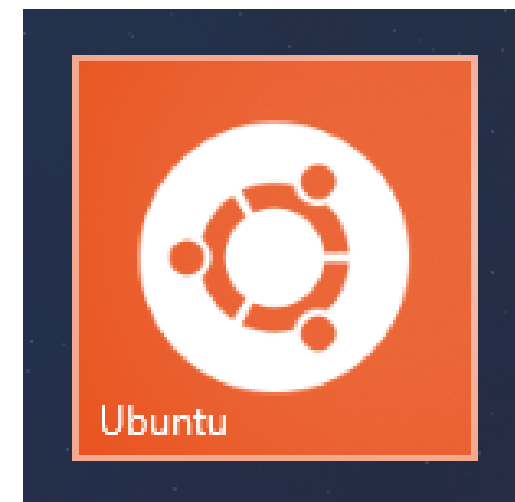
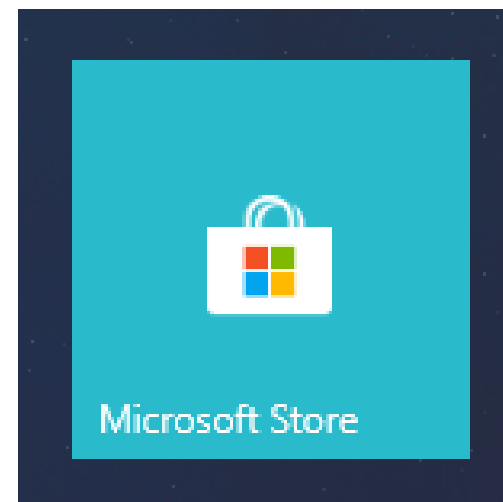
Download

For other versions of Ubuntu Desktop including torrents, the network installer, a list of local mirrors, and past releases [see our alternative downloads](#).

配置 UNIX 及 Python 开发环境

准备 UNIX 开发环境

- ❖ 安装和使用 WSL Ubuntu
- ❖ WSL 无需安装，Windows 11 自带了 WSL
- ❖ 在微软商店中安装任意一个 Linux 操作系统后，Windows 会自动帮你开启 WSL
- ❖ 微软商店中有免费的 Ubuntu 下载



The screenshot shows the Ubuntu app page in the Microsoft Store. On the left is the Ubuntu logo. The main title is "Ubuntu" by Canonical Group Limited, categorized under "Developer tools > Utilities". It has a 5-star rating from 262 reviews. A description states: "Ubuntu on Windows allows one to use Ubuntu Terminal and run Ubuntu command line utilities including bash, ssh, git, apt and many more." A note mentions that Windows 10 S does not support running this app. There is a "More" link and an ESRB rating of "EVERYONE". On the right, it says "Free" and has a blue "Get" button with a three-dot menu icon. A link for "See System Requirements" is also present.

- ❖ VMware Workstation / Fusion
- ❖ 完全隔离的虚拟机系统，收费 (¥ 500 – 1,700)
- ❖ Oracle VirtualBox
- ❖ 免费版的 VMware Workstation / Fusion



❖ 更新并升级操作系统:

❖ `sudo apt update &&`
`sudo apt upgrade`

❖ 安装 Python:

❖ `sudo apt install python3`

```
valency@sakana:~  
-----  
~ >> sudo apt install python3                                valency@sakana  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
python3 is already the newest version (3.10.4-0ubuntu2).  
0 upgraded, 0 newly installed, 0 to remove and 13 not upgraded.  
-----  
~ >> █                                                    valency@sakana
```

- ❖ 测试 Python 是否已经安装成功：
- ❖ python3

```
python3
-----
~ » sudo apt install python3                                valency@sakana
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
python3 is already the newest version (3.10.4-0ubuntu2).
0 upgraded, 0 newly installed, 0 to remove and 13 not upgraded.
-----
~ » python3                                                valency@sakana
Python 3.10.4 (main, Jun 29 2022, 12:14:53) [GCC 11.2.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> print('hello python')
hello python
>>> █
```

❖ pip

- ❖ 最常用的 Python 软件包管理软件之一
- ❖ 官方网站: <https://pip.pypa.io/en/stable/>
- ❖ 安装指南: <https://pip.pypa.io/en/stable/installation/>

❖ 安装 pip:

❖ `sudo apt install python3-pip`

```
valency@sakana:~  
-----  
~ >> sudo apt install python3-pip                                valency@sakana  
  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
python3-pip is already the newest version (22.0.2+dfsg-1).  
0 upgraded, 0 newly installed, 0 to remove and 13 not upgraded.  
-----  
~ >> █                                                         valency@sakana
```

- ❖ JetBrains PyCharm
- ❖ 官方网站: <https://www.jetbrains.com/pycharm/>
- ❖ 下载: <https://www.jetbrains.com/pycharm/download/>



Version: 2022.2
Build: 222.3345.131
28 July 2022

[System requirements](#)

[Installation instructions](#)

[Other versions](#)

[Third-party software](#)

Download PyCharm

Windows macOS Linux

Professional

For both Scientific and Web Python development. With HTML, JS, and SQL support.

Download .dmg (Intel) ▼

Free 30-day trial available

Community

For pure Python development

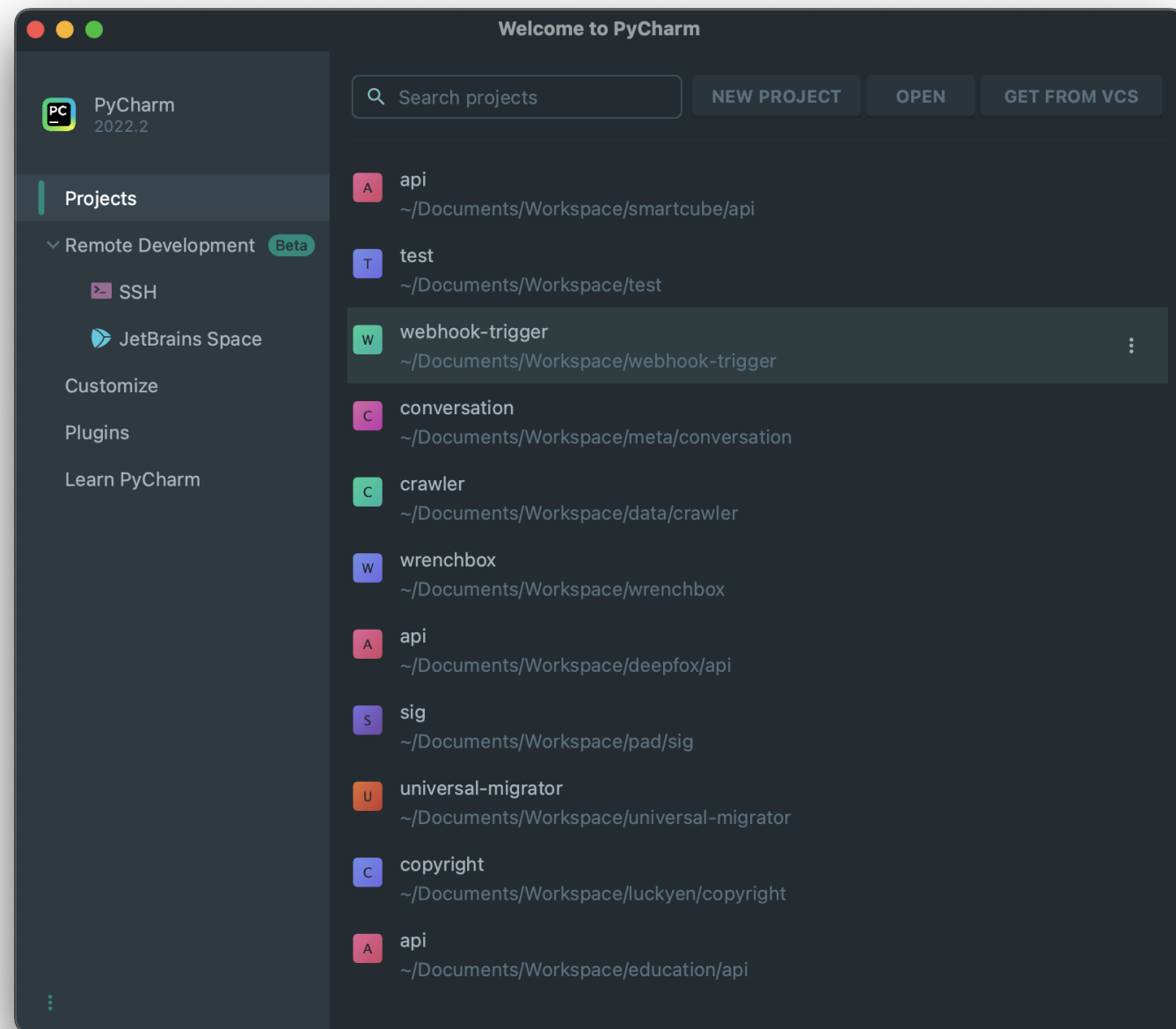
Download .dmg (Intel) ▼

Free, open-source

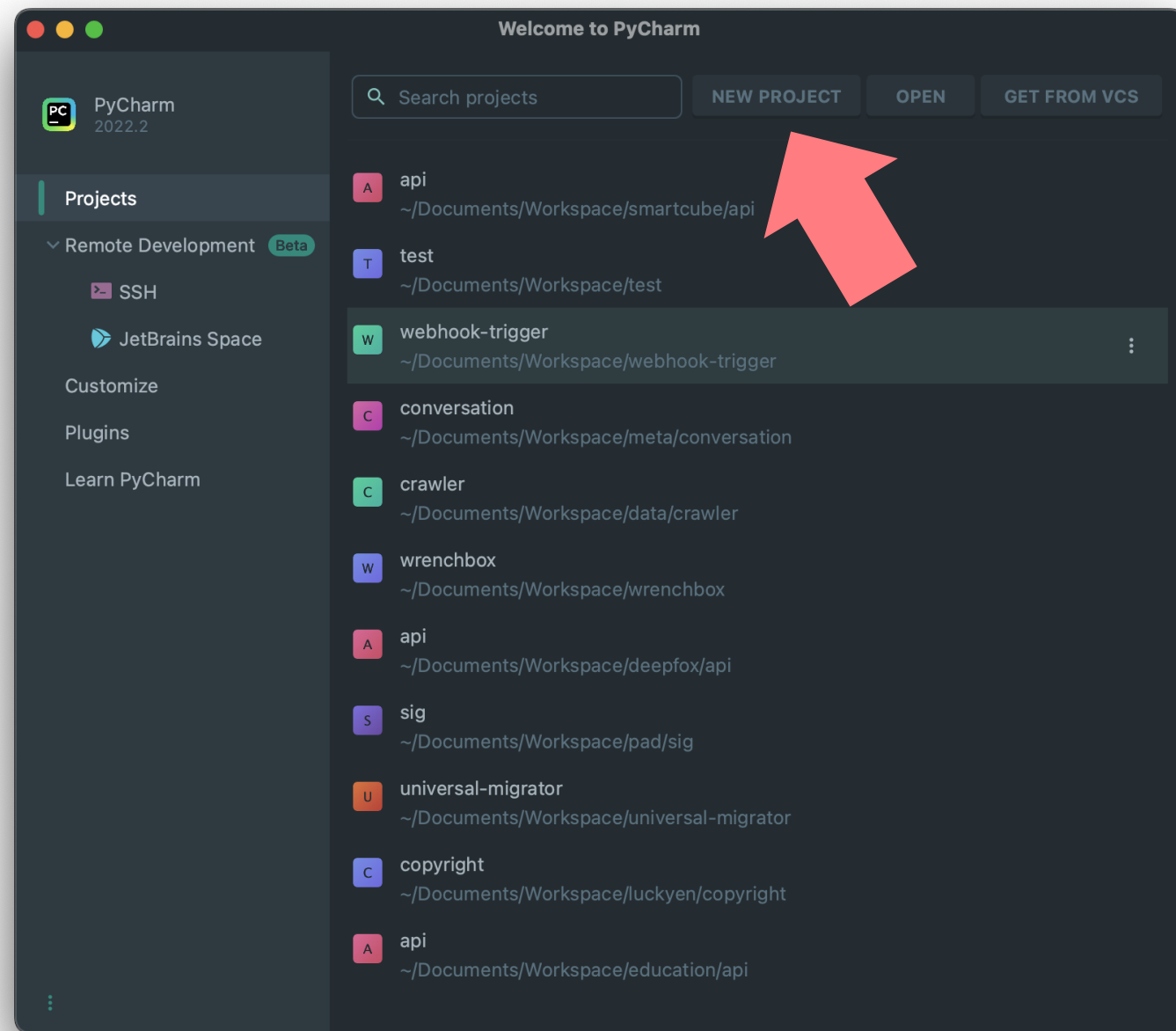
i Select an installer for Intel or Apple Silicon

❖ 注意:

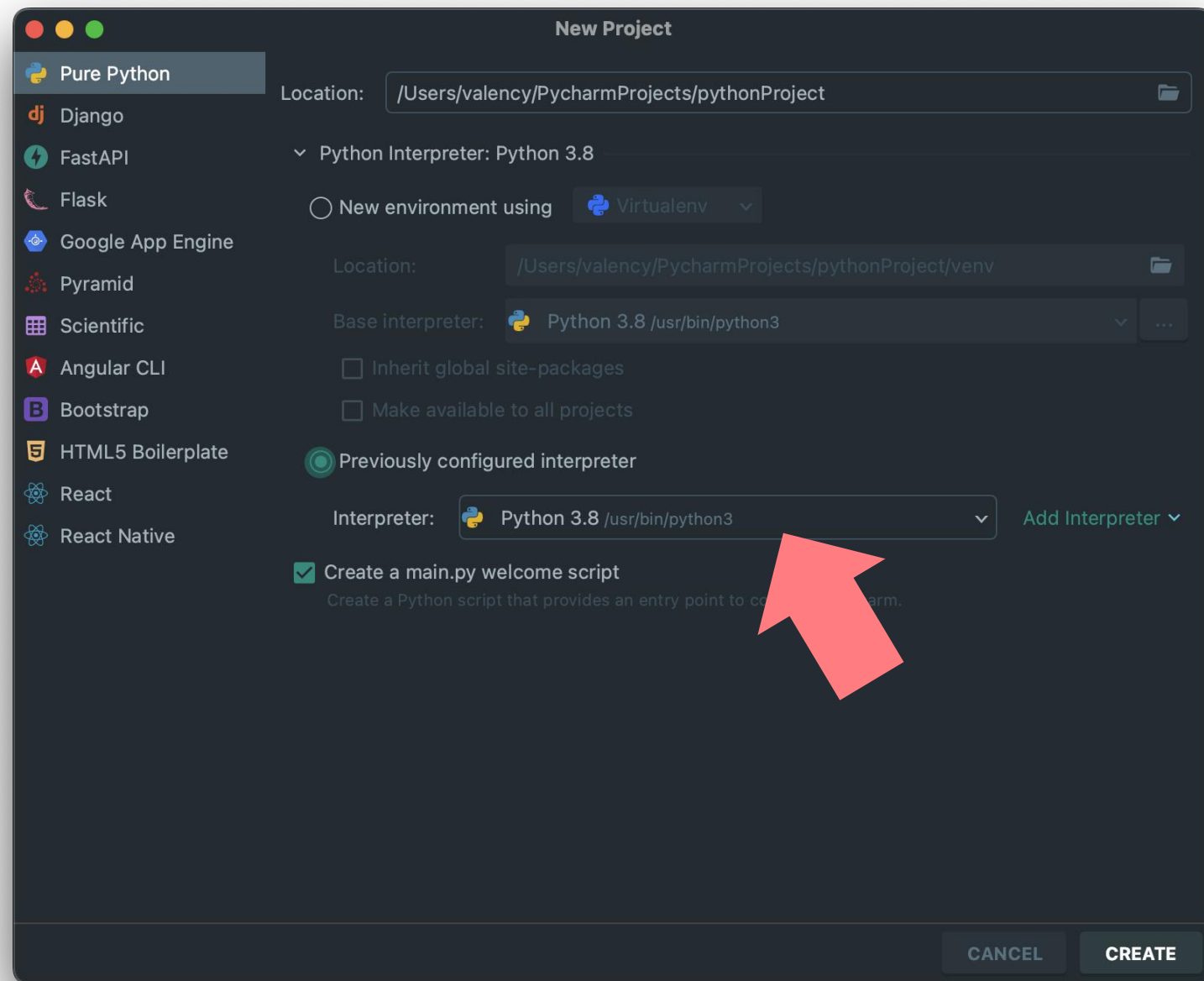
- ❖ 如果你用了 WSL，无需在 WSL 的 Ubuntu 中安装 PyCharm
- ❖ 只要在 Windows 中安装 PyCharm 即可
- ❖ PyCharm 提供了 WSL 的支持，可以直接访问 WSL 中的 Python 环境



- ❖ 点击 New Project
- ❖ 即可新建一个项目



- ❖ 选择正确的解释器
- ❖ PyCharm 提供了 WSL 的支持，可以直接访问 WSL 中的 Python 环境



Python 基本语法案例

创建项目

The screenshot shows an IDE interface with a project named 'test' open. A context menu is displayed over the project view, which includes a sub-menu for 'New'. The 'New' sub-menu is open, showing various file types. A red arrow points to the 'Python File' option, which is highlighted. The 'Python File' option is located in the 'New' sub-menu, which is open over the 'test' project. The 'Python File' option is highlighted in blue. A red arrow points to the 'Python File' option.

Project View:

- Project
- test ~/Document
- a
- main.py
- External Libraries
- Scratches and Co

Context Menu:

- New
 - Cut ⌘X
 - Copy ⌘C
 - Copy Path/Reference...
 - Paste ⌘V
 - Find Usages ⌘F7
 - Find in Files... ⌘⇧F
 - Replace in Files... ⌘⇧R
 - Inspect Code...
 - Refactor
 - Clean Python Compiled Files
 - Bookmarks
 - Reformat Code ⌘⇧L
 - Optimize Imports ⌘⇧O
 - Run 'Python tests in test...' ⌘⇧R
 - Debug 'Python tests in test...' ⌘⇧D
 - More Run/Debug
- File
- New Scratch File ⌘⇧N
- Directory
- Python Package
- Python File**
- Jupyter Notebook
- HTML File
- Stylesheet
- JavaScript File
- TypeScript File
- package.json File
- Gherkin feature file
- Edit File Templates...
- Resource Bundle
- EditorConfig File
- HTTP Request
- .i* .ignore File
- Data Source in Path

Search Everywhere Double ⇧

Go to File ⌘⇧O

- ❖ 猜数字小游戏
- ❖ 给定一个随机数范围
- ❖ 系统生成随机数
- ❖ 用户输入猜测
- ❖ 程序会反馈数字过大还是过小
- ❖ 若干次之内需要猜中

```
-----  
~/Downloads » python3 guess.py  
Enter Lower bound: 1  
Enter Upper bound: 20  
You have only 4 chances to guess the integer!  
Guess a number: 10  
You guessed too small!  
Guess a number: 15  
You guessed too small!  
Guess a number: 17  
You guessed too small!  
Guess a number: 19  
Congratulations! You did it in 4 tries!  
-----
```

- ❖ 安装好 Python 环境
- ❖ 安装好 IDE，例如 PyCharm 或 VS Code
- ❖ 编写猜数字小游戏代码
- ❖ 正确运行猜数字小游戏

- ❖ 在作业系统中下载并完成本实验课对应实验报告
- ❖ <https://hw.dgut.edu.cn/>
- ❖ **注意：**所有标识为 * 的地方都需要填写
- ❖ **截止日期：**2023-09-27 23:59:59

课程名称：Python 数据分析与应用

学期：20

实验名称	Python 语言回顾			实验序号	
姓名	***	学号	***	班级	
实验地点	***	实验日期	***	指导老师	
教师评语	-			实验成绩	
				百分制	
同组同学	无				

四、 实验作业及分析

4.1 实验过程

1) *** 请将详细实验过程填写在此处 ***

4.2 实验结果

*** 请将实验结果截图填写在此处 ***

五、 实验总结

*** 请撰写一段 200 字左右的实验总结 ***

GOOD LUCK!