

System Setup



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System Setup

Programs and Environment



1. Install Python



Visual Studio Code

or



Cursor

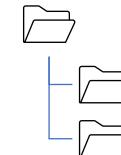
2. Install IDE



3. Install git



4. Config &
Get Course Material



5. Set up Environment



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System Setup

Programs and Environment: Cloud



Allows coding in the browser

The screenshot shows the Firebase Studio interface for a project named 'mypoetrytest'. The left sidebar displays the project structure:

- myPOETRYTEST
 - idx
 - devnx
 - env
 - vscode
 - GenerativeKitPython_Material
 - scripts
 - M01_Einführung
 - 10_model_chat_openai.py
 - 15_model_img_openai.py
 - 20_model_chat_groq.py
 - 30_prompt_templates.py
 - 40_simple_chain.py
 - 50_parallel_chain.py
 - 60_multimodal.py
 - 70_structured_output.py
 - FT_structured_output_exercise.py
 - voicew2http.py
 - M03_PretrainedNetworks
 - M05_PromptEngineering
 - M07_VectorDB_RAG
 - M09_Agents
 - slides
 - ghignore
 - ImageToUpscale.png
 - pyproject.toml
 - README.md
 - requirements.txt
 - test_project.py
 - uv.lock
 - src
 - .env
 - .gitignore
 - devserver.sh
 - mv testov
 - OUTLINE
 - TIMELINE

The main area contains a code editor with Python code for generating poetry using HuggingFace models:

```
1 #%% packages
2 import os
3 from langchain_groq import ChatGroq
4 from dotenv import load_dotenv, find_dotenv
5 load_dotenv(find_dotenv(usecwd=True))
6 #%% Model overview: https://console.groq.com/docs/models
7 MODEL_NAME = "llama-3-7b-versatile"
8 model = ChatGroq(model_name=MODEL_NAME,
9                   temperature=0.5, # controls creativity
10                  api_key=os.getenv("GROQ_API_KEY"))
11
12 Run Cell | Run Above | Debug Cell | Go to [1]
13 #%% Run the model
14 res = model.invoke("What is a HuggingFace?")
15 #%% find out what is in the result
16 res.model_dump()
17 #%% only print content
18 print(res.content)
19 #%%
```

The terminal below shows the command to install the 'langchain-groq' package:

```
(.venv) mypoetrytest-73499963:~/mypoetrytest$ poetry add langchain-groq
- Installing langchain-groq (0.5.2)

Writing lock file
(.venv) mypoetrytest-73499963:~/mypoetrytest$ poetry add python-dotenv
Using version *1.1.0 for python-dotenv

Updating dependencies
Resolving dependencies... (0.8s)

Package operations: 1 install, 0 updates, 0 removals
- Installing python-dotenv (1.1.0)

Writing lock file
(.venv) mypoetrytest-73499963:~/mypoetrytest$
```

URL: <https://studio.firebaseio.google.com/mypoetrytest-73499963>



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Python Installation

The screenshot shows the Python.org website's download page. At the top, there are navigation links for Python, PSF, Docs, PyPI, Jobs, and Community. Below the header is a search bar with a magnifying glass icon and a 'GO' button. A yellow 'Donate' button is also present. The main content area features a large illustration of two parachutes descending towards a ground with boxes, symbolizing the Python software being delivered. A prominent yellow button says 'Download Python 3.13.1'. Below it, text mentions Python for Windows, Linux/UNIX, macOS, and Other. It also links to pre-releases and Docker images. A yellow banner at the bottom encourages donations to the Python Software Foundation.

This screenshot shows the 'Active Python Releases' section of the Python.org website. It includes a table with columns for Python version, maintenance status, first released date, end of support date, and release schedule. The table lists three versions: 3.14 (pre-release), 3.13 (bugfix), and 3.12 (bugfix). A blue arrow points from this section down to the 'Release by version number' table below.

Python version	Maintenance status	First released	End of support	Release schedule
3.14	pre-release	2025-10-01 (planned)	2030-10	PEP 745
3.13	bugfix	2024-10-07	2029-10	PEP 719
3.12	bugfix	2023-10-02	2028-10	PEP 693

This screenshot shows the 'Release by version number' section of the Python.org website. It displays a table with columns for release version, release date, download link, and release notes. The table shows two rows: Python 3.12.8 (Dec. 3, 2024) and Python 3.13.1 (Dec. 3, 2024). A blue arrow points from the 'Active Python Releases' table above down to this section.

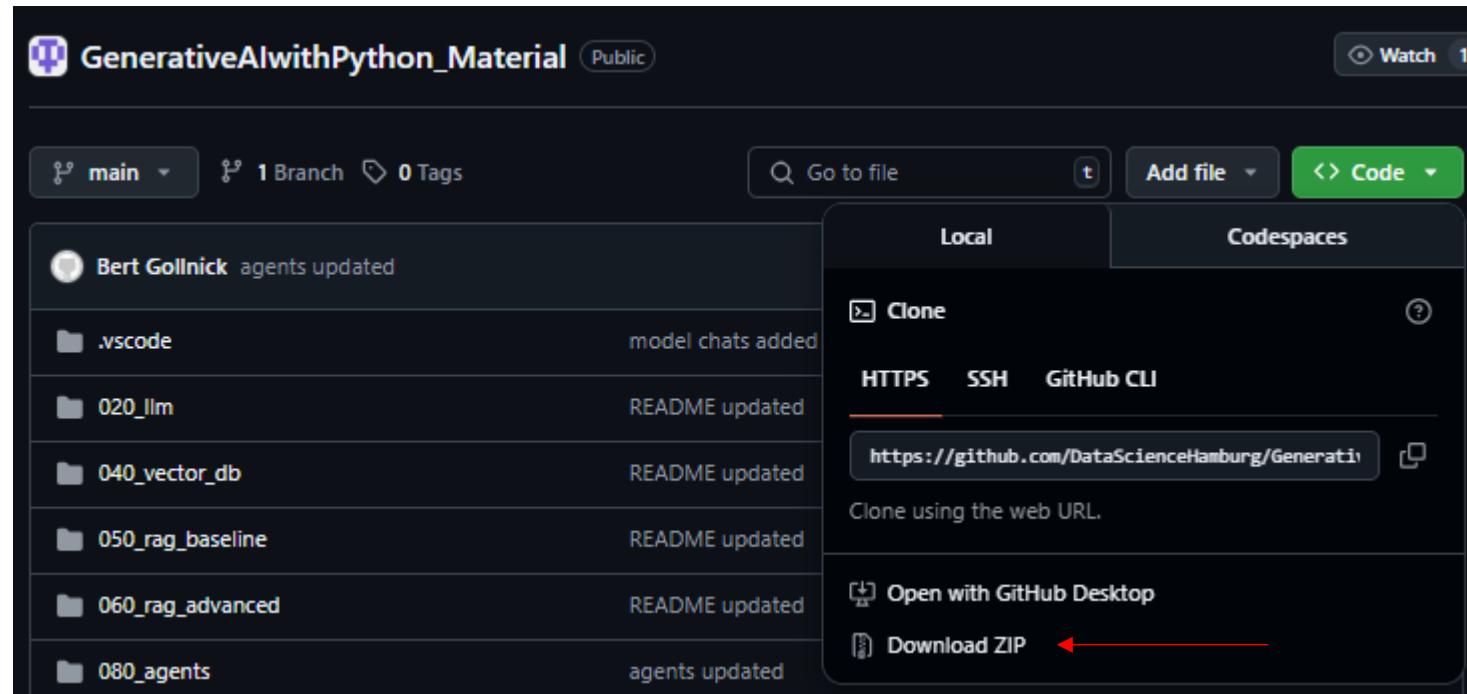
Release version	Release date	Click for more
Python 3.12.8	Dec. 3, 2024	Download Release Notes
Python 3.13.1	Dec. 3, 2024	Download Release Notes

Source: <https://www.python.org/downloads/>



System Setup

Git – Option 1 (beginner)



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System Setup

Git – Option 2 (advanced)

1. Download Git and Install: <https://git-scm.com/downloads>

2. Configure git

```
git config --global user.name "John Doe"
```

```
git config --global user.email johndoe@example.com
```

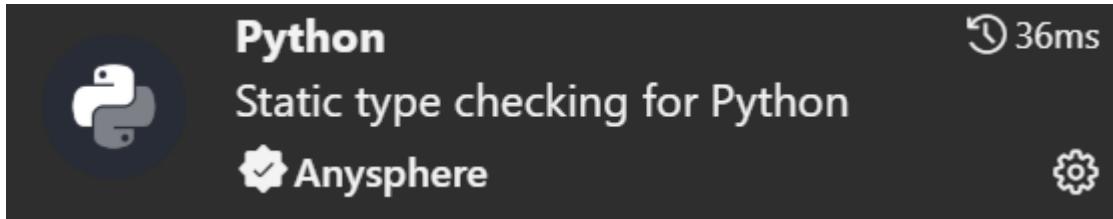
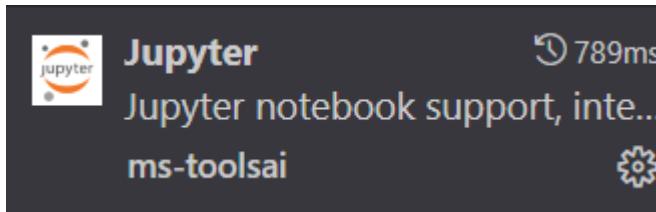
3. Clone Repo:

```
git clone https://github.com/DataScienceHamburg/GenerativeKImitPython\_Material.git
```



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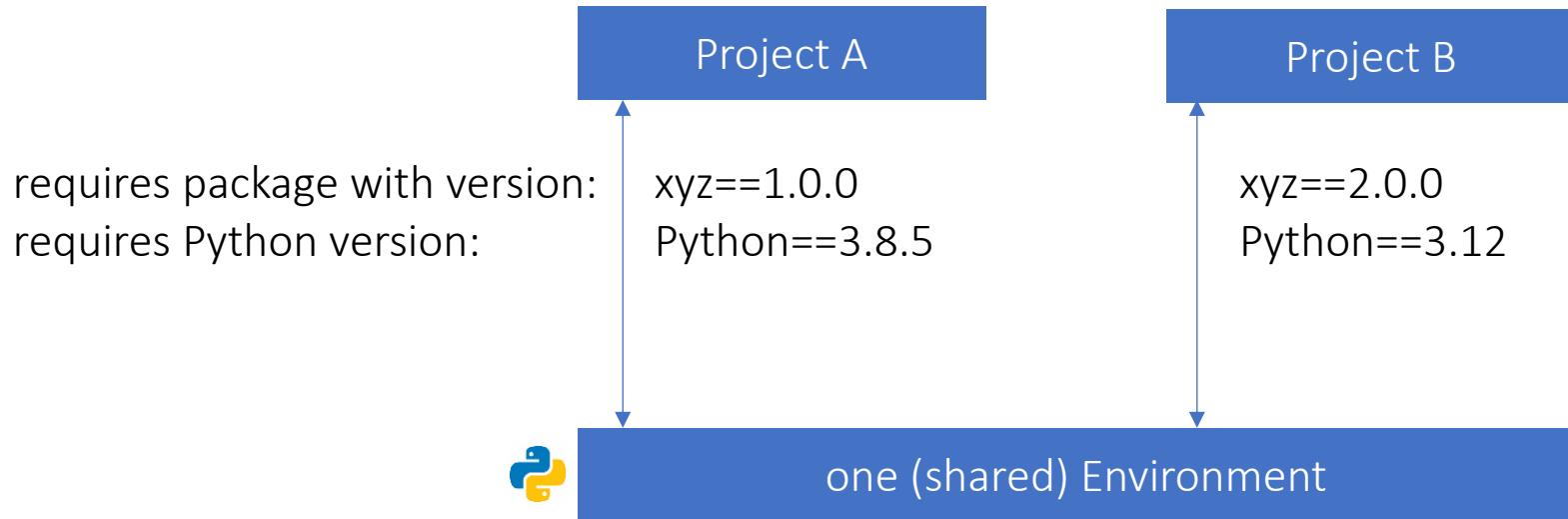
VS Code Extension



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Environment: Problem



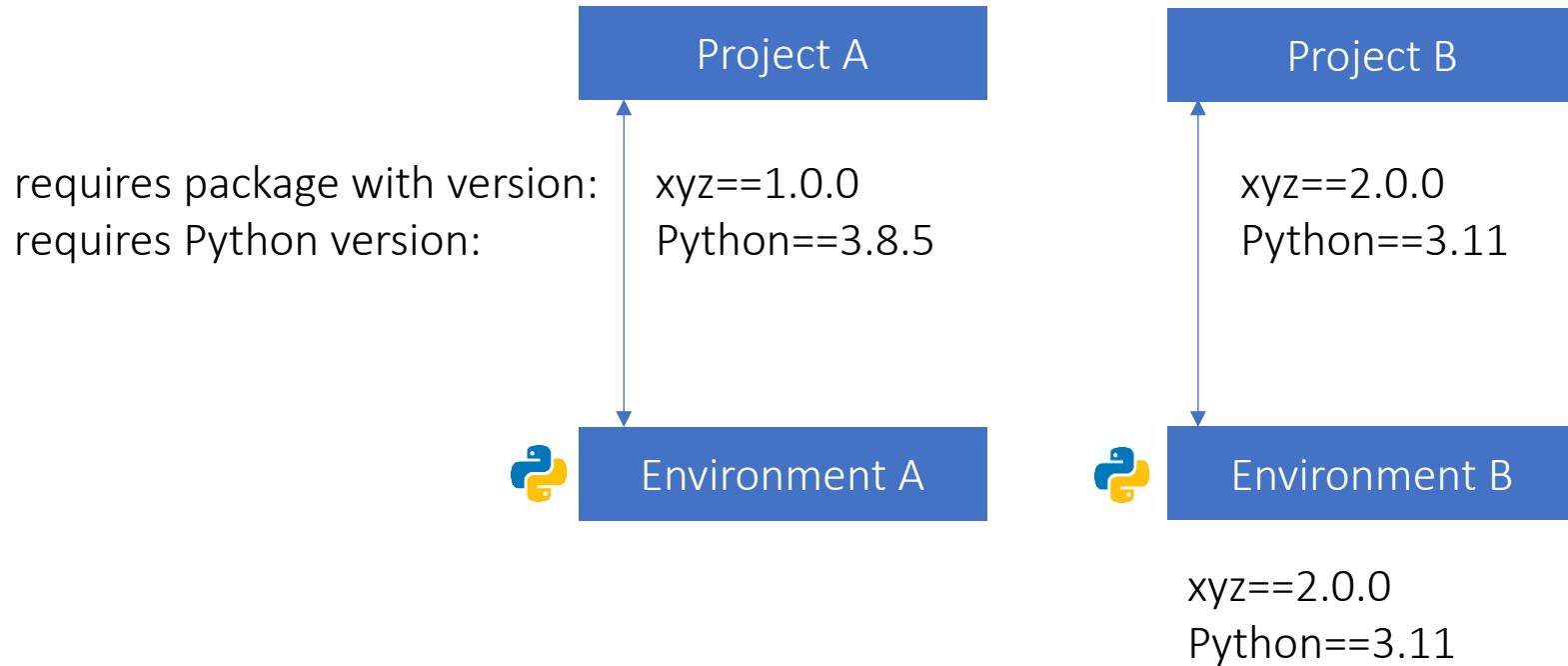
package xyz can be available only in one version
Python only available in one version



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Environment: Solution



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Python Environment

An Environment is an isolated bundle of packages and Python versions.

It allows to

- avoid conflicts of packages
- easy setup for a project on another computer
- Available Environments:

Conda
(requires Anaconda
installation)

venv

Poetry

uv



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System Setup

Python Environment – venv

Windows: install C++ Build Tools

Mac: use faiss-cpu



How you can use the Build Tools

<https://visualstudio.microsoft.com/visual-cpp-build-tools/>



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System Setup

OpenAI API Key

The screenshot shows the 'Billing' section of the 'Personal' settings for a project named 'Course_VectorDbRagAgents'. The 'Billing' tab is selected in the sidebar. A modal window titled 'Create new secret key' is open, prompting for a name ('My Test Key') and a project ('Select project'). The 'All' permission level is selected.

Billing

Overview Payment methods Billing history Preferences

Pay as you go

Credit balance ⓘ \$7.75

Auto recharge is off
When your credit balance reaches \$0, your API requests will stop working. Enable automatic recharge to automatically keep your balance topped up.
[Enable auto recharge](#)

Add to credit balance Cancel plan

Payment methods Add or change payment method

Billing history View past and current invoices

Preferences Manage billing information

Usage limits Set monthly spend limits

Pricing View pricing and FAQs

Create new secret key

Owned by You Service account

This API key is tied to your user and can make requests against the selected project. If you are removed from the organization or project, this key will be disabled.

Name Optional
My Test Key

Project Select project

Permissions All Restricted Read Only

Cancel Create secret key



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