WI-Project: Open source project

Introduction to Python (1)

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Project: Groups, forks and setup

- Groups formed in the issue feeds.
- Forks were created.
- Any further questions related to GitHub or the setup?

Learning objectives

- Familiarize yourself with Python syntax.
- Learn good debugging and development practices.
- Understand how to extend a Python package (CoLRev).

Information on this session

- Form groups of three to four participants to collaborate on the tasks, solve them together, and engage in meaningful discussions about your solutions.
- Over the course of two sessions, we will focus on refining a single module using the `colrev run` command, progressively enhancing it with each iteration.

Start the Codespace

Open the Notebook: Open Jupyter Notebook

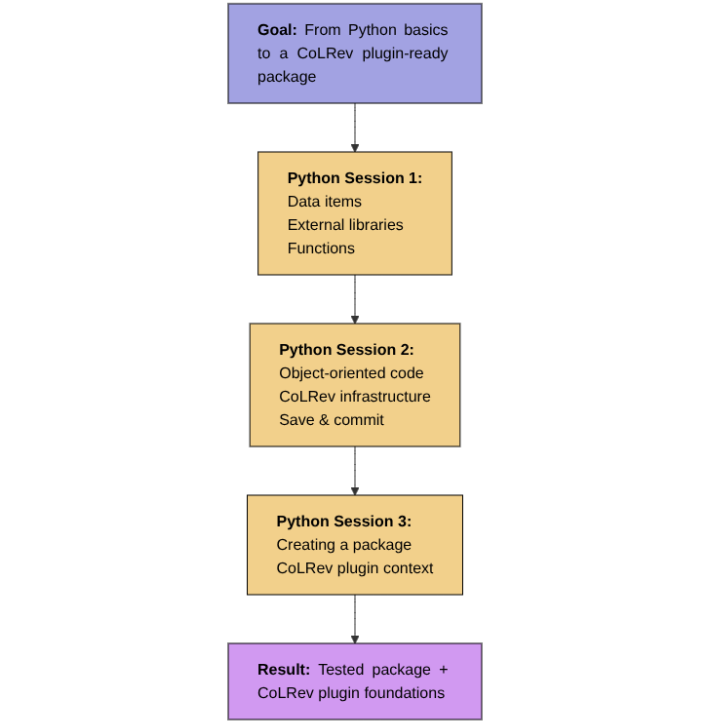
Start the Codespace in the `tutorial_python` branch of the CoLRev upstream repository.

The setup can run in the background while we focus on the concepts.

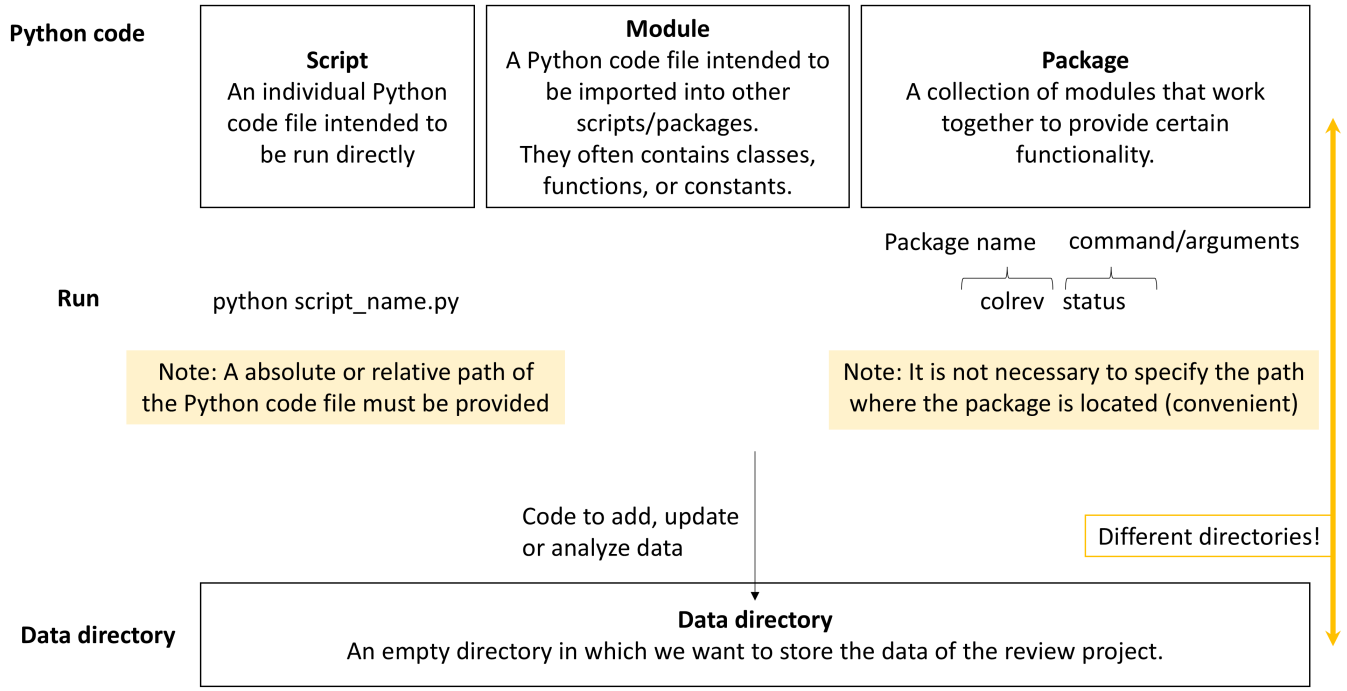
Python

- Supports multiple paradigms: object-oriented, procedural, or functional.
- Python is an interpreted language: no need to compile (build jars) before running.
- Uses indentation instead of brackets to separate blocks (such as if statements).
- Is strongly and dynamically typed.
- Provides access to many packages on PyPI, covering machine learning, data science, web scraping, etc.
- Python is actively developed, with new versions introducing changes in functionality and old versions no longer receiving security updates:
  - Python 3.6 (2016): Introduction of f-strings
  - Python 3.7 (2018): Dictionaries are now ordered
  - ...

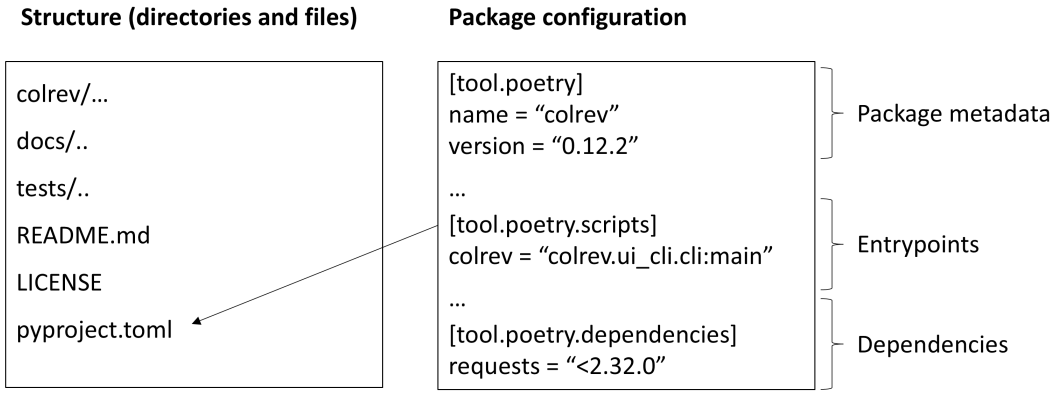
What we will learn in the Python session(s)



Writing and running Python code



Python packages

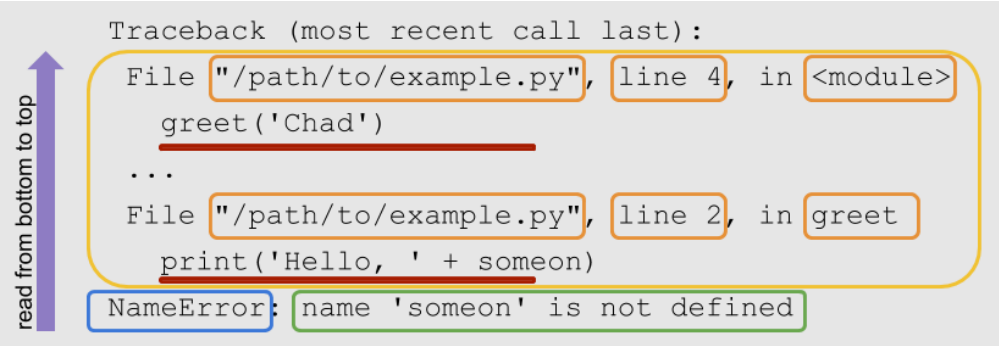


Package management with pip

pip install colrev	Install the colrev package from PyPI to **use** the package
pip install -e .	Install the package in the current local directory („.“) to **edit** the package (changes are available instantly without installation)
pip install –e .[dev,docs]	Install the package with the extra dependencies
pip list	List all packages installed via pip
pip show colrev	Show details on the colrev installation

Best practices

- Carefully read tutorials, vignettes, and code examples (e.g., on GitHub).
- Start with small code segments, test whether they work, and extend them.
- Add or commit working code frequently.
- Use code linters to ensure high code quality (run `pre-commit run --all`).
- To debug code, check whether variables have the expected values (use assert or print statements).
- When exceptions are thrown, read the traceback:



Next steps

- Read the package development documentation.
- Study the code of related CoLRev packages.
- Take notes on the CoLRev objects or libraries that will be needed.
- Remember to **stop the Codespace** (Codespaces overview).

Note: These tutorials may be helpful to continue practicing Python.