

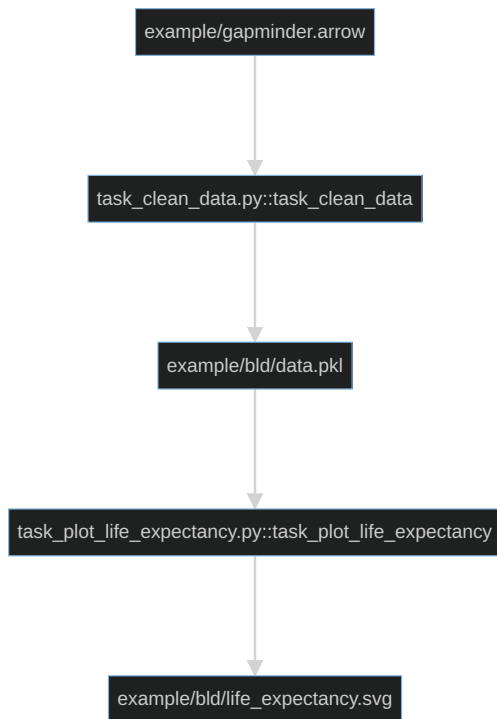
Effective Programming Practices for Economists

Reproducible Research

Writing simple (py)tasks

Janoš Gabler and Hans-Martin von Gaudecker

Back to the tiny example



- How do we actually write these tasks?
- How do we tell pytask what is a dependency and what is a product?
- Remember:
 - pytask looks for modules called ``task_XXX.py``
 - Inside these modules, pytask looks for functions called ``task_XXX``

Contents of task_clean_data.py

```
from pathlib import Path

import pandas as pd

BLD = Path(__file__).parent / "bld"

def task_clean_data(raw_file=Path("gapminder.arrow"), produces=BLD / "data.pkl"):
    raw = pd.read_feather(raw_file)
    clean = _clean_data(raw)
    clean.to_pickle(produces)

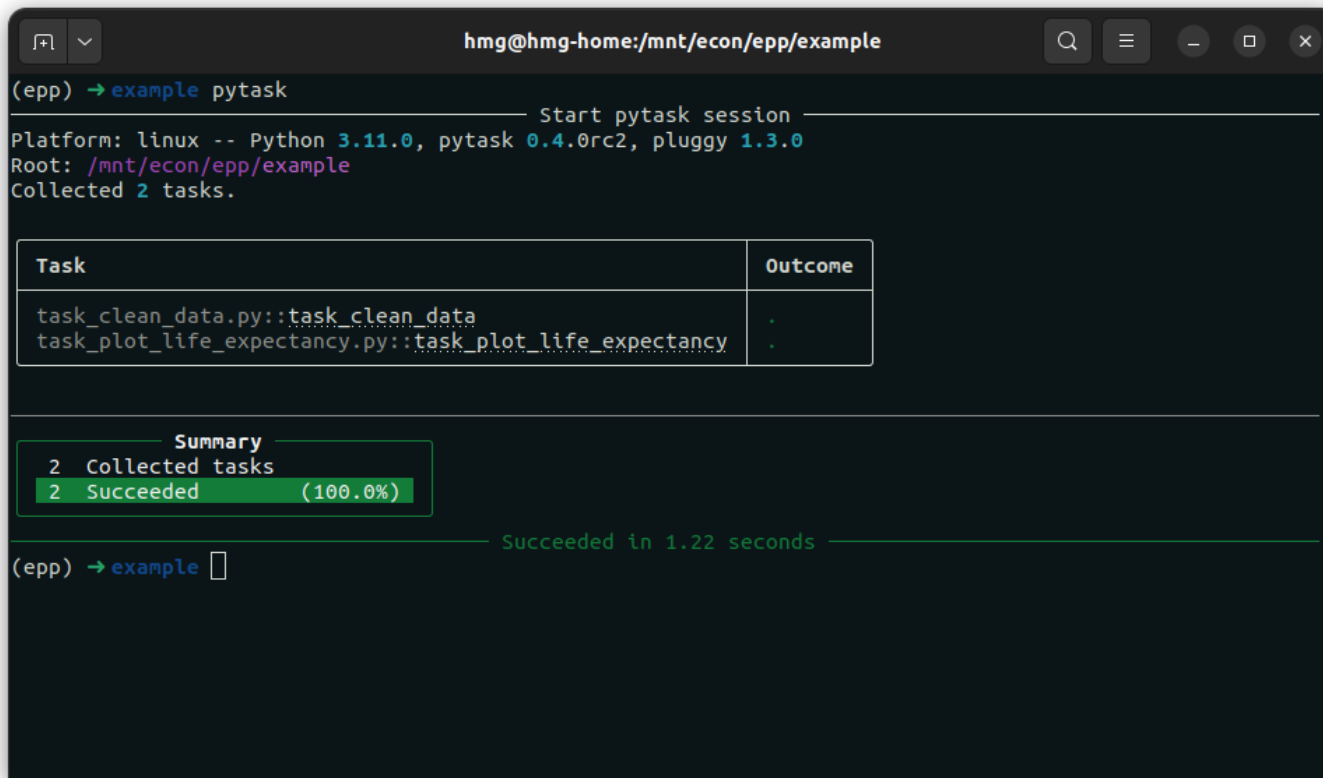
def _clean_data(raw):
    df = raw.rename(
        columns={
            "lifeExp": "life_exp",
            "gdpPercap": "gdp_per_cap",
        },
    )
    return df.query("continent == 'Asia'")
```

Contents of task_plot_life_expectancy.py

```
def task_plot_life_expectancy(  
    data_file=BLD / "data.pkl",  
    produces=BLD / "life_expectancy.svg",  
):  
    df = pd.read_pickle(data_file)  
    fig = _plot_life_expectancy(df)  
    fig.write_image(produces)
```

```
def _plot_life_expectancy(df):  
    return df.plot(  
        x="year",  
        y="life_exp",  
        color="country",  
        title="Life Expectancy",  
    )
```

Run pytask

A terminal window with a dark background. The title bar shows the user 'hmg' at 'hmg-home' in the directory '/mnt/econ/epp/example'. The prompt is '(epp)'. The user has entered 'example pytask'. The output shows the start of a pytask session with platform, python, and plugin versions. It lists two collected tasks. A table shows both tasks succeeded. A summary box highlights that 2 tasks succeeded (100.0%). The session ended with a success message and a time of 1.22 seconds. The prompt is now '(epp) → example' with a cursor.

```
(epp) → example pytask
```

Start pytask session

Platform: linux -- Python 3.11.0, pytask 0.4.0rc2, pluggy 1.3.0
Root: /mnt/econ/epp/example
Collected 2 tasks.

Task	Outcome
task_clean_data.py::task_clean_data	.
task_plot_life_expectancy.py::task_plot_life_expectancy	.

Summary

2 Collected tasks

2 Succeeded (100.0%)

Succeeded in 1.22 seconds

```
(epp) → example
```

Basic rules

- Put tasks in modules called `task_XXX.py`, with functions `task_YYY`
- For these functions, set `pathlib.Path` objects as default arguments:
 - Default of reserved keyword `produces` for products
 - Any other default arguments become dependencies
- Inside these functions, keep structure clear:
 - Read input (usually some data)
 - Execute task (usually in a different function, potentially calling other functions)
 - Write output