Effective Programming Practices for Economists

Reproducible Research

Re-using pytask functions

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1 tasks, 2 products

2 tasks, 1 product each

Contents of task_plot_life_expectancy.py

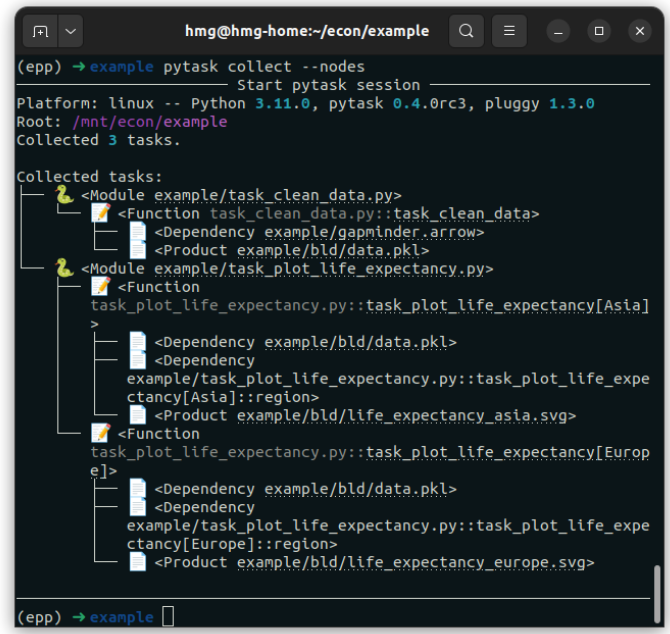
```
BLD = Path(__file__).parent / "bld"

products = {
    "Asia": BLD / "life_expectancy_asia.svg",
    "Europe": BLD / "life_expectancy_europe.svg"
}

def task_plot_life_expectancy(
    data_file=BLD / "data.pkl",
    produces=products,
):
    df = pd.read_pickle(data_file)
    for region, fig_file in produces.items():
        fig = _plot_life_expectancy(df[df["continent"] == region])
        fig.write_image(fig_file)
```

Contents of task_plot_life_expectancy.py

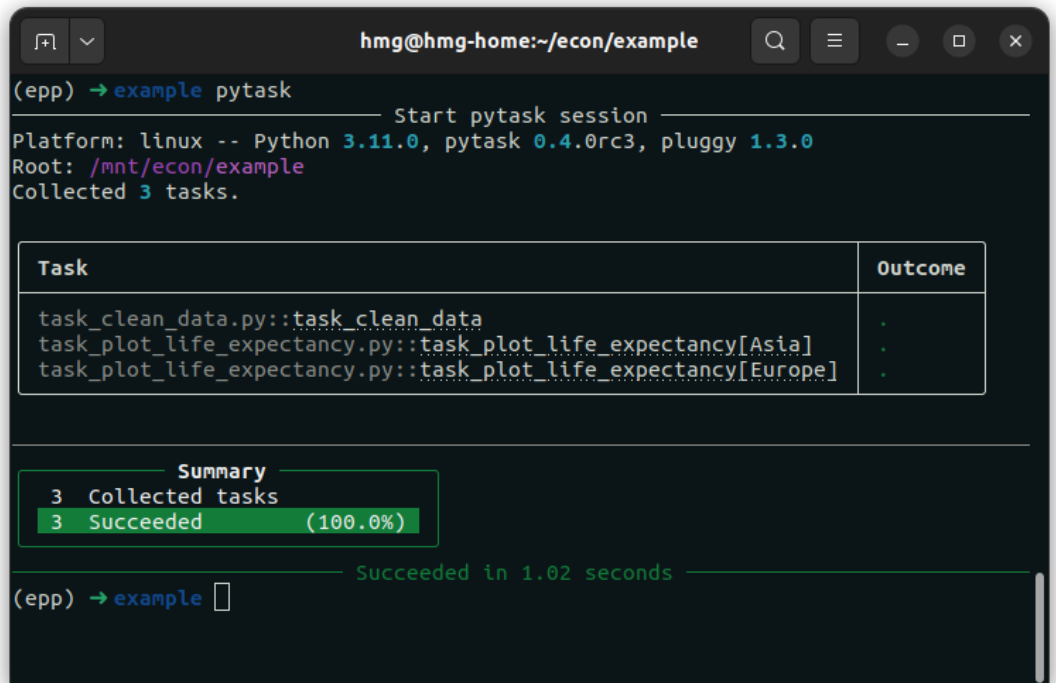
```
from pytask import task


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

for region in ("Asia", "Europe"):

    @task(id=region)
    def task_plot_life_expectancy(
        data_file=BLD / "data.pkl",
        produces=BLD / f"life_expectancy_{region.lower()}.svg",
        region=region,
    ):
        df = pd.read_pickle(data_file)
        fig = _plot_life_expectancy(df[df["continent"] == region])
        fig.write_image(produces)
```

Verify Dependency graph (DAG, tree)

- Inspect function signatures to build a dependency graph
- Tasks for each region appear
- Additional dependency: `region` variable (ignore for now)



Run pytask


hmg@hmg-home:~/econ/example
(epp) ➜ example pytask
Start pytask session
Platform: linux -- Python 3.11.0, pytask 0.4.0rc3, pluggy 1.3.0
Root: /mnt/econ/example
Collected 3 tasks.
Task
Outcome
task_clean_data.py::task_clean_data .
task_plot_life_expectancy.py::task_plot_life_expectancy[Asia] .
task_plot_life_expectancy.py::task_plot_life_expectancy[Europe] .
Summary
3 Collected tasks
3 Succeeded (100.0%)
Succeeded in 1.02 seconds
(epp) ➜ example

Delete plot and run again

Looping over tasks

- Define your function as usual, but within a loop body
- Set an id based on the running variable(s) via `` `@task(id=running_var)` ``
- Set path arguments based on running variable
- Could pass other Python objects, like running variable itself

Looping over tasks or over products?

- Whatever makes your project structure clearer!
- Same style of graphs based on the same dataset: Probably loop over products
- Model specifications: Loop over tasks
- Long running tasks: Loop over tasks
- Looping over tasks yields more granular structure