

Effective Programming Practices for Economists

Version Control and collaboration with Git and Github

Pre-commit hooks

Janoś Gabler and Hans-Martin von Gaudecker

What are pre-commit hooks

- We saw the importance of following style guides
- Pre-commit hooks are tools to help you automate style guides
- Examples of pre-commit hooks are:
 - The black formatter that automatically formats your code
 - The ruff linter that tells you about problems and fixes some of them
 - Line-ending fixers for better compatibility across platforms
- Save a lot of time but have a learning curve

Activating pre-commit hooks

- Install the `pre_commit` python package
 - `conda install pre_commit`
- Open a terminal in the root of your repository
- Execute `pre-commit install`

Just needs to be done once after cloning the repository

Configuring pre-commit hooks

```
repos:  
  - repo: https://github.com/psf/black  
    rev: 23.9.1  
    hooks:  
      - id: black  
        language_version: python3.11
```

- Pre-commit hooks are configured in `.pre-commit-config.yaml`
- Typically inherited from the project templates or copy it from another project
- Example shows just the black formatter

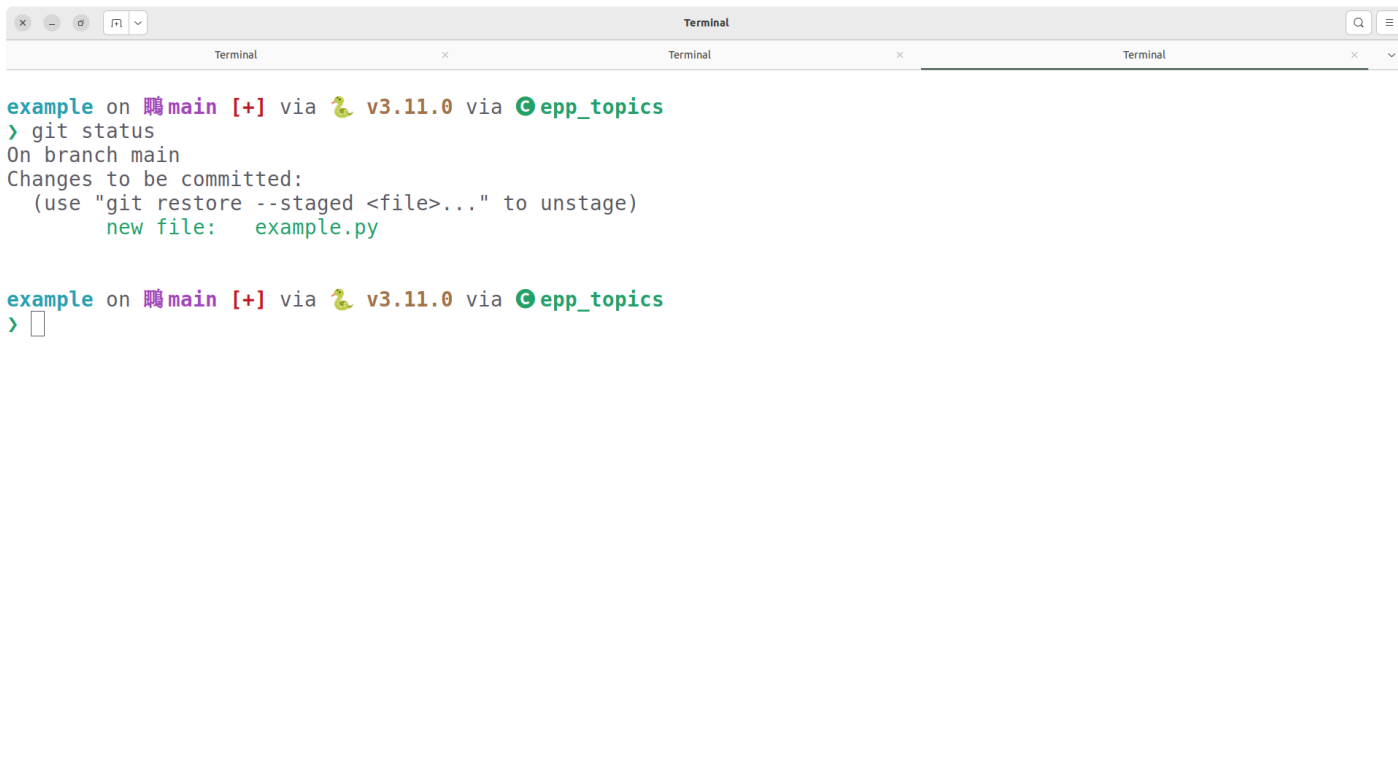
A useful git command

- `git commit -am "Your message."` stages and commits all modified files
- Does not work for untracked files
- Important because pre-commit hooks run over staged files!

A badly formatted python file

```
def clean_data(raw):  
    df = pd.DataFrame(index=raw.index)  
    df["coding_genius"]=clean_agreement_scale(raw['Q001'])  
    df['learned_a_lot']=clean_agreement_scale(  
  
        raw['Q002'])  
    df['favorite_language'] = clean_favorite_language(raw['Q003'])  
    return df  
  
def clean_agreement_scale(sr):  
    sr = sr.replace({'-77': pd.NA, '-99':pd.NA})  
    categories = ['strongly disagree',  
        'disagree',  
        'neutral', 'agree',  
        'strongly agree'  
    ]  
    dtype = pd.CategoricalDtype(categories=categories,  
        ordered=True)  
    return sr.astype(dtype)
```

Git status

A screenshot of a macOS-style terminal window with three tabs, all labeled 'Terminal'. The active tab shows the output of a 'git status' command. The prompt is 'example on 主 main [+] via 2 v3.11.0 via ④ epp_topics'. The output indicates the current branch is 'main' and lists a new file 'example.py' that has been staged for commit. The prompt is followed by a cursor.

```
example on 主 main [+] via 2 v3.11.0 via ④ epp_topics
> git status
On branch main
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   example.py

example on 主 main [+] via 2 v3.11.0 via ④ epp_topics
> 
```

First commit fails



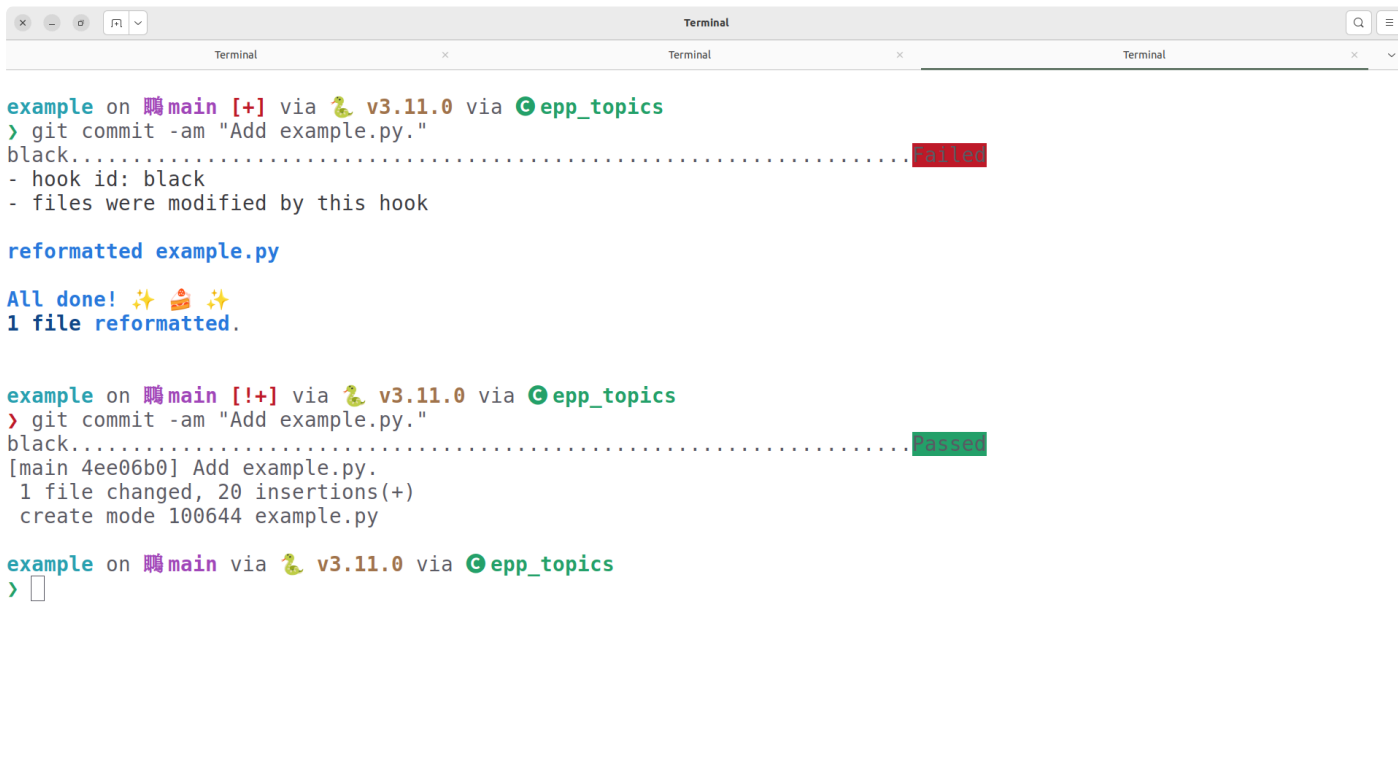
```
example on 主 main [+] via v3.11.0 via epp_topics
> git commit -am "Add example.py."
black..... failed
- hook id: black
- files were modified by this hook

reformatted example.py

All done! ✨ 🍰 ✨
1 file reformatted.

example on 主 main [!+] via v3.11.0 via epp_topics
> 
```


Second commit works



```
example on 鸚 main [+] via 🐍 v3.11.0 via 🍷 epp_topics
> git commit -am "Add example.py."
black..... Failed
- hook id: black
- files were modified by this hook

reformatted example.py

All done! ✨ 🍰 ✨
1 file reformatted.

example on 鸚 main [!+] via 🐍 v3.11.0 via 🍷 epp_topics
> git commit -am "Add example.py."
black..... Passed
[main 4ee06b0] Add example.py.
1 file changed, 20 insertions(+)
create mode 100644 example.py

example on 鸚 main via 🐍 v3.11.0 via 🍷 epp_topics
> 
```