Effective Programming Practices for Economists

Version Control and collaboration with Git and Github

Pre-commit hooks

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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

- Open a terminal
- Install the `pre_commit` python package
  - `pixi global install pre-commit`
- Change directory to the root of your repository
- Execute `pre-commit install`

Just needs to be done once after cloning the repository

Configuring pre-commit hooks

```yaml
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!

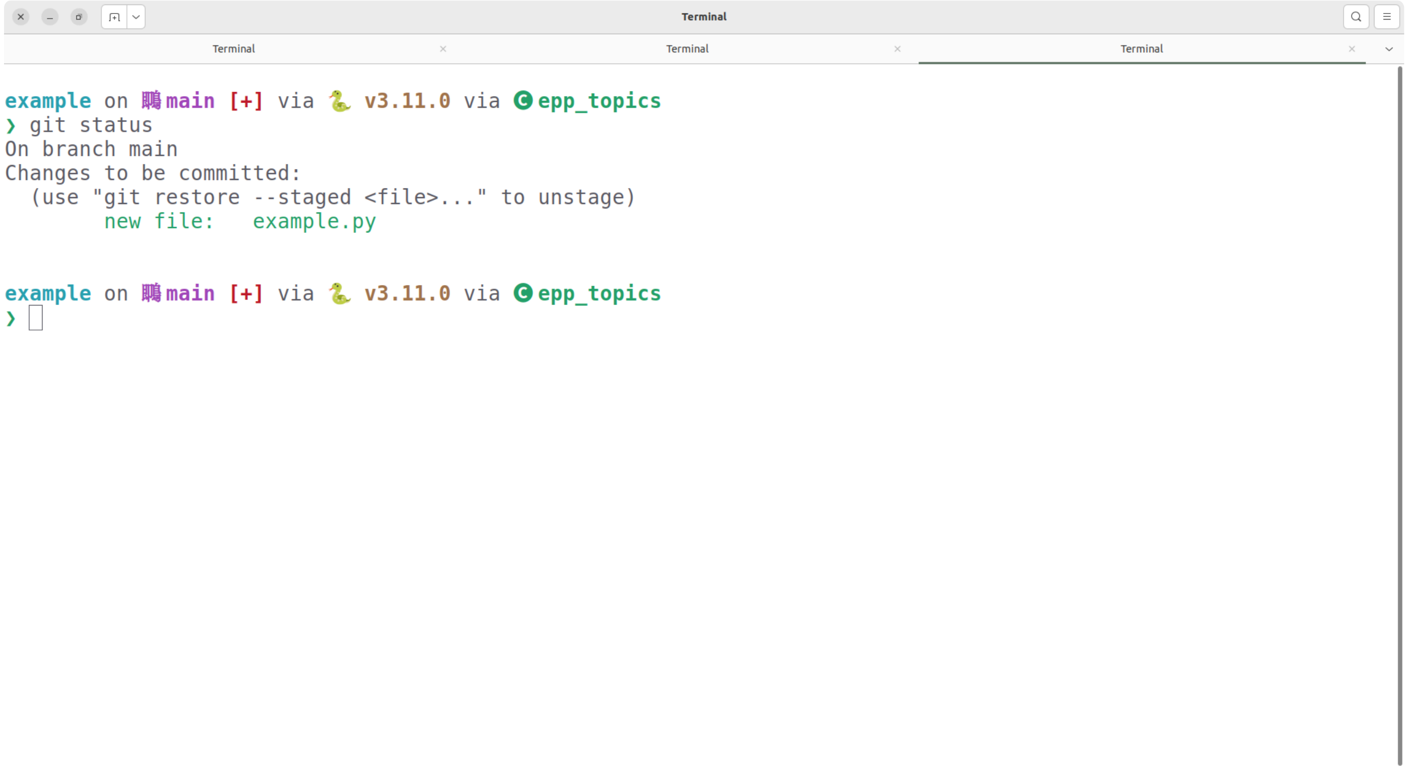
A badly formatted python file

```
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)
```

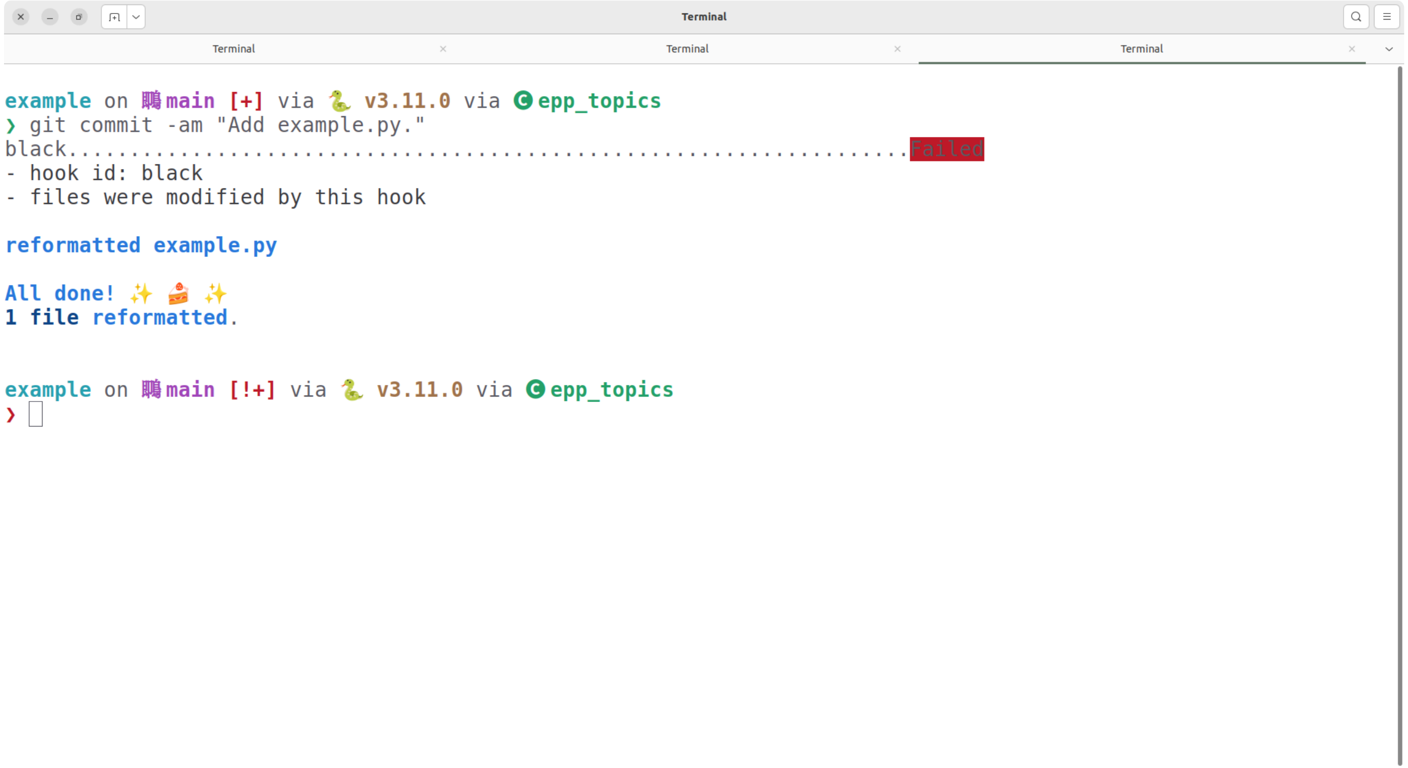
Git status



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


example on 鵬main [+] via 🐍 v3.11.0 via Ⓒepp_topics
❯ 
```

First commit fails



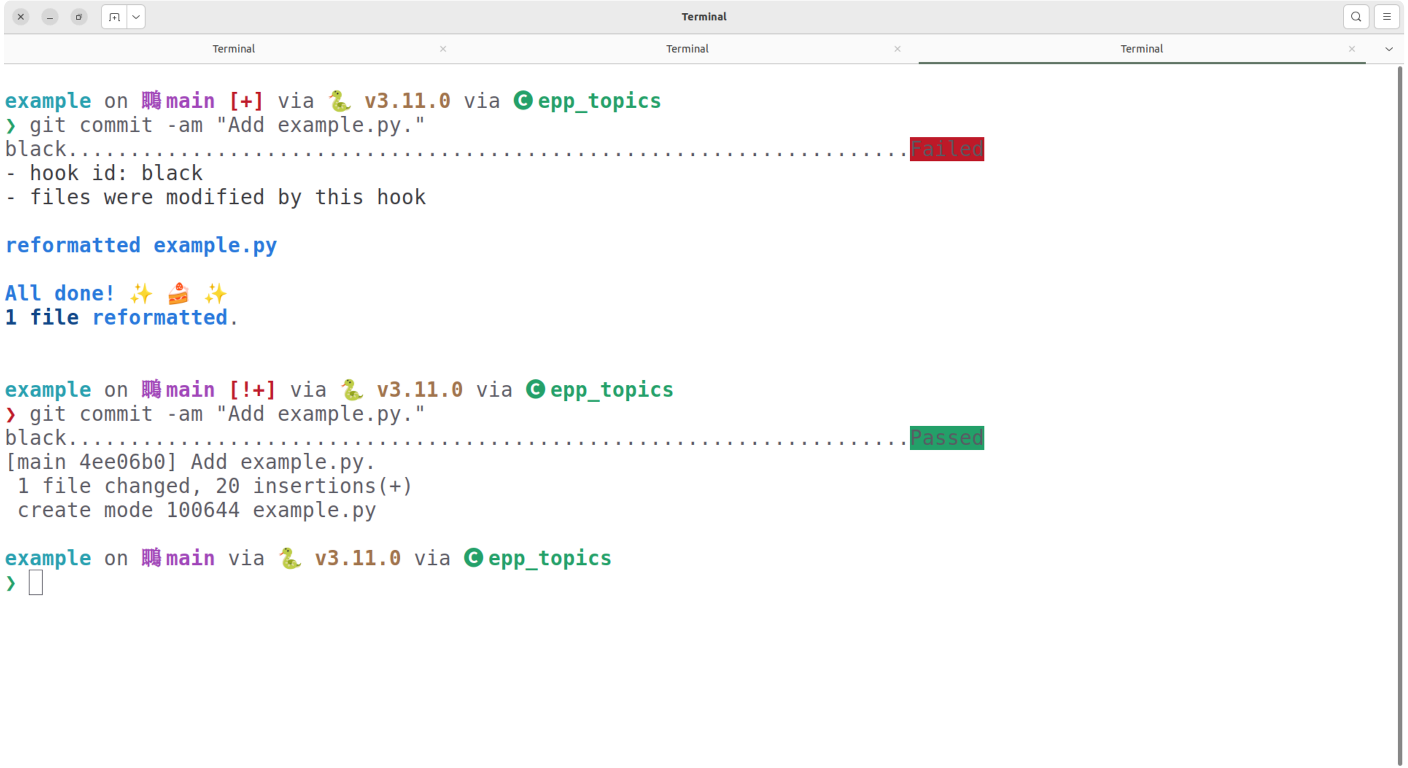
```
example on 鵬main [+] via 🐍 v3.11.0 via Ⓒepp_topics
❯ git commit -am "Add example.py."
black....................................................................Failed
- hook id: black
- files were modified by this hook

reformatted example.py

All done! ✨ 🍰 ✨
1 file reformatted.


example on 鵬main [!+] via 🐍 v3.11.0 via Ⓒepp_topics
❯ 
```

Second commit works



```
example on 鵬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 鵬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 鵬main via 🐍 v3.11.0 via 🅒epp_topics
❯ 
```