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

```
x = ø Fl ~
                                                        Terminal
                                                                                                               Q =
                 Terminal
                                                       Terminal
                                                                                            Terminal
example on 鵙main [+] via & v3.11.0 via Gepp_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

```
x = 0 F
                                                        Terminal
                                                                                                               Q =
                 Terminal
                                                       Terminal
                                                                                             Terminal
example on 鵬 main [+] via & v3.11.0 via Gepp_topics
> git commit -am "Add example.py."
- hook id: black
- files were modified by this hook
reformatted example.py
All done! 🦊 🍰 🧦
1 file reformatted.
example on 鴫main [!+] via & v3.11.0 via Gepp_topics
```

Second commit works

```
x - ø F
                                                  Terminal
                                                                                                   Q =
               Terminal
                                                 Terminal
                                                                                   Terminal
example on main [+] via & v3.11.0 via Gepp topics
> git commit -am "Add example.py."
black.....
- 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."
[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
>
```