16 – Code quality

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Scientific Programming in Python (2024)

https://atticlectures.net/scipro/python-2024/

Prerequisites

- pylint
- mypy
- black

```
conda install mypy pylint black
```

Code analysis with pylint and mypy

Pylint

- checks for possible convention breaches, inconsistencies and errors
- It produces a score for “code quality” (how much code aligns to pylint’s guidelines)

```
pylint mymath.py
```

```
--------------------------
Your code has been rated
at 10.00/10
(previous run: 10.00/10, +0.00)
```

Mypy

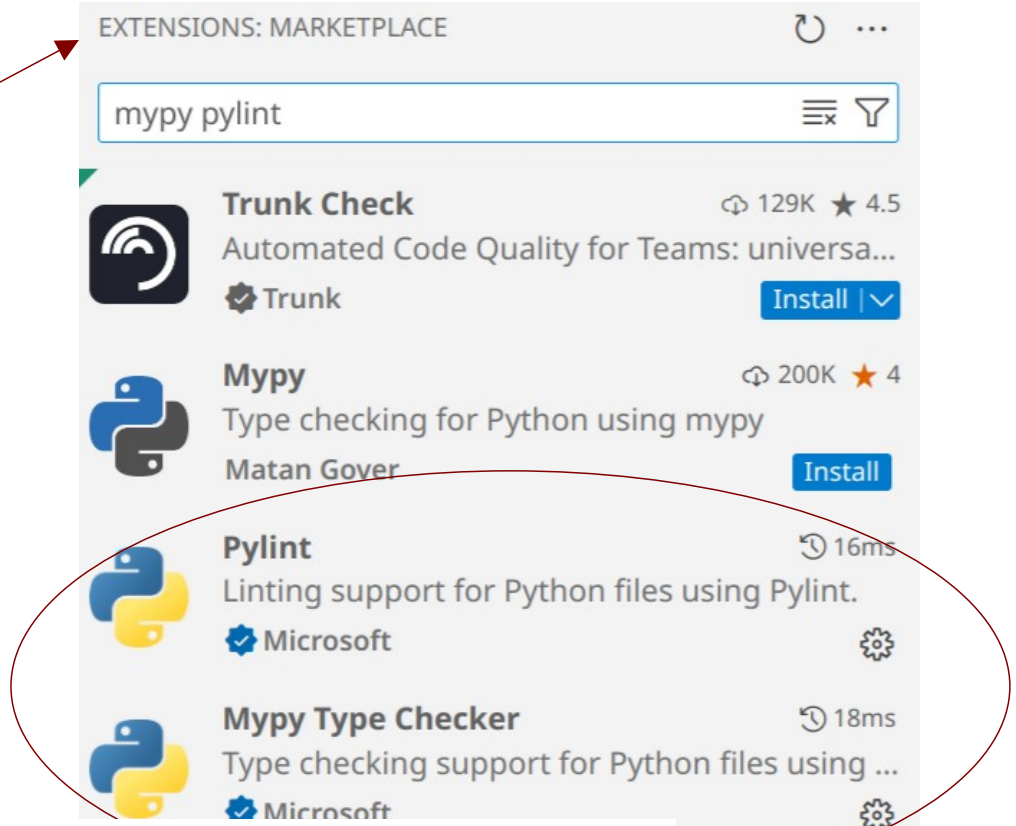
- checks for type inconsistencies and type hinting correctness

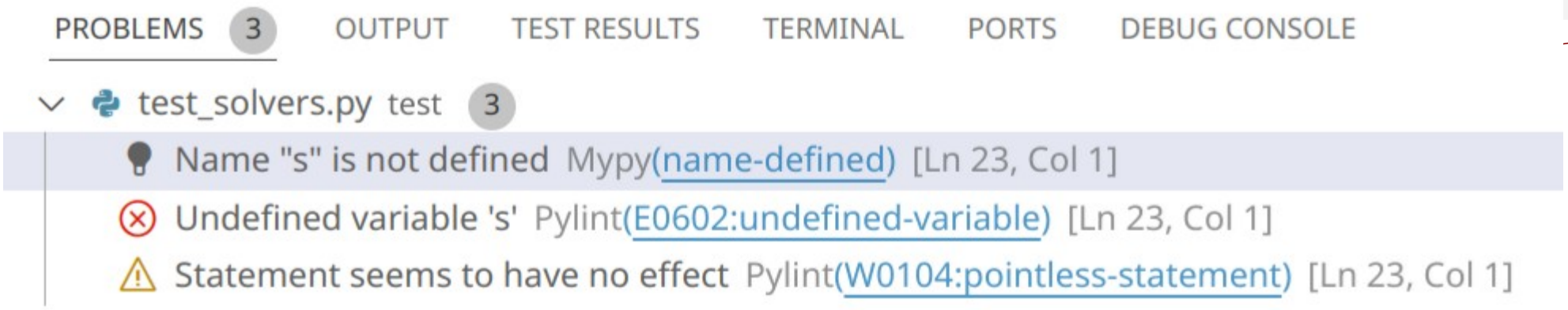
```
mypy mymath.py
```

```
Success: no issues
found in 1 source file
```

Adding linters to Visual Studio Code

- Visual Studio Code invokes **Pyright** by default
- Further linters (mypy, pylint) can be added via **Extensions Marketplace** (**Ctrl-Shift-X**)
- All installed linters will be run (disable extension to exclude one)
- **Ctrl-Shift-M**: Opens **Problems window** with linter messages





Python coding standard (PEP 8) & Black formatter

PEP 8 coding standard

- Python has a widely accepted coding style guide
- It has been documented in the **Python Enhancement Proposal 8** (PEP 8)
- Most Python projects stick to that standard
- Do not deviate from it without very-very good reasons
  (maybe except for default line length) 

Black formatter

- Reformats code to be PEP 8 compatible (and makes some stylistic choices)

```
black -l 100 mymath.py
```

Custom line length
(default: 88)

```
reformatted mymath.py
All done!
1 file reformatted.
```

- Best time for reformatting: Before adding the file to the stage (git add)