Effective Programming Practices for Economists

Software engineering

Partialling arguments to functions

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Example

```
>>> from functools import partial

>>> def f(x, y):
...     return x + y

>>> f(x=3)

---------------------------------------------------------
TypeError                 Traceback (most recent call last)
/home/janos/file.ipynb Cell 26 line 6
----> 6 f(x=3)

TypeError: f() missing 1 required positional argument: 'y'

>>> f_of_x = partial(f, y=3)
>>> f_of_x(x=3)
6
```

- `partial` is a higher order function
  - takes a function as argument
  - returns a new function
- Returned function has fewer arguments than original function

Mental models

- `partial` lets you add or overwrite default values to arguments
- `partial` lets you inject data into functions (closure)
- `partial` lets you partially evaluate a function

Useful applications

- Plotting a mathematical function against one of its arguments
- Creating a function that only depends on a parameter vector
  - For numerical optimization
  - For numerical differentiation
- Keep it in mind as a problem solver!
- Do not over-use it for every function call!