

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!