Effective Programming Practices for Economists

## Software engineering

When to use custom containers?

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## Fixed or free fields

>>> from typing import NamedTuple

```
>>> class Student(NamedTuple):
```

- ... first\_name: str
- ... last\_name: str
- ... email: str

```
>>> students = {
```

```
"janosg": Student(
. . .
           first_name="Janos",
. . .
          last_name="Gabler",
. . .
           email="janos@uni-bonn.de",
. . .
. . .
         "timmens": Student(
. . .
          first_name="Tim",
. . .
          last_name="Mensinger",
. . .
           email="tim@uni-bonn.de",
. . .
. . .
```

- Student has the same fixed fields every year
  - Use a NamedTuple or dataclass
- `students` has variable length and keys each year
  - Use a dictionary
- Fixed vs. free fields is the most important aspect when deciding about data structures

## Immutable or mutable?

Immutability changes everything (Pat Helland)

Where it is not necessary to change, it is necessary not to change (Lucius Cary)

- Immutable objects can avoid many bugs
- Your team members might not be trained in avoiding side-effects
- Unless you have reason to make something mutable, prefer immutable objects