Effective Programming Practices for Economists

Software engineering

When to use custom containers?

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Fixed or free fields

```python
>>> 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