

# Refactoring PdfTools

- Written without any design
- Some pdf and qrcode features
- Download of files
- Concatenate files

# Issues in PdfTools

- Duplicate code
- Un-testable
- No [SRP]
- Hard to extend
- Hard to reuse components

# Demo "PdfTools"

# Challenge

- How do I clean up brownfield projects?
- Without rewriting them?
- Without breaking them?
- Where do I start?

# Extract code [SRP]

1. Extract code to method
2. Extract code to class

## Demo: Barcode Code

💡 Tip: Create a documentation of the class without "and"

# [Zero Impact Injection]

1. Add interface to class
2. Inject as interface into class
3. Use `??` for default implementation

**Demo: Barcode class**

# [Null-Object Pattern]

- "Identity Element" for an interface
- Empty implementation
- Returns `default`
- `IFooBar --> EmptyFooBar`
- Implemented along with Interface

**Demo: Empty barcode class**

# Organise code

- Per feature
- Per interface
- Per tier

💡 Tip: Separating projects help on cleaning the dependencies