

Things to consider for testable code

Frank Kleine, 27.10.2009



The Speaker: Frank Kleine

- 1&1 Internet AG
(Head of Web Infrastructure)
- PHP since 2000
- Lead Developer
 - Stubbles
 - XJConf for PHP
 - vfsStream
- Technical editor "PHP Design Patterns"



Separation of Concerns

- Typical concerns in applications





Business logic

Error handling



Environment handling



Didn't we forget something really important?



Construction of Objects!



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- new is a very powerful keyword



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- Golden rule of `new`:
 - OK for domain classes, but not for services



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- `new` is a very powerful keyword
- Binds usage to a concrete implementation
- Golden rule of `new`:
 - OK for domain classes, but not for services
 - OK in tests and specialised construction classes, but not in business logic



Construction of objects II

- Bad:

```
class Car {  
    public function __construct() {  
        $this->engine = new Engine();  
        $this->tire    = TireFactory::createTire();  
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- **Good:**

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Dependency
Injection



Dependency Injection

- Pile of new (startup phase)
 - Create objects and stack them together
 - "Boilerplate", but automatable with DI framework
- Pile of objects (runtime phase)
 - Business logic, error handling, etc.
- Factories or DI instances for runtime object creation





Dependency Injection is viral

Law of Demeter

- Bad:

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class Driver {  
    public function drive($miles) {  
        $this->vehicle->engine->start();  
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Less prone
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Global state

- Same operation with same inputs should yield same results.
- Not necessarily true with global state.



Global state

- Same operation with same inputs should yield same results.
- Not necessarily true with global state.
- Hidden global state
 - Singleton
 - static methods
 - `$_GET`, `$_POST`, `$_SESSION`, `$_...`
 - Registry



Global state: Singletons

- Never implement any
- Required most likely due to bad design of your framework



Global state: Singletons

- Never implement any
- Required most likely due to bad design of your framework
- Use a DI framework with support for Singleton scope
 - Gives full power of Singletons
 - Code using the Singleton stays simple



Singleton with DI framework

```
$binder->bind('Session')  
    ->to('PhpSession')
```



Singleton with network

Configure
the binding

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Singleton with DI

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```
$binder->bind('Session')  
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->in(stubBindingScopes::$SINGLETON);
```

Enforce
singletonness: DI
framework will only
create one instance
of PhpSession and
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    protected $session;  
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Dependency Injection



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Tell DI framework to inject required parameters on creation of Processor

Dependency Injection

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```

Piece of cake to test:
independent of
PhpSession



Global state: `static` methods

- Not always bad
 - Simple operations without dependencies
- Always bad if state is involved
 - Might return different results with same input.



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- Ugly to test



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- Even better: interfaces



Global state: \$_GET, \$_POST, ...

- Ugly to test
- Rule: never access those vars directly in business logic
- Abstract access to globals with classes
 - Remember: Singleton is evil
- Even better: interfaces
- Security: use a Request class which enforces filtering/validating input



Global state: Registry

- Using a DI framework: no registry required



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- Without DI framework: use Registry for config values only



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- Did I already mentioned that Singletons are evil?



Global state: Registry

- Using a DI framework: no registry required
- Without DI framework: use Registry for config values only
- Did I already mentioned that Singletons are evil?
 - static methods are enough





Change is coming.

A close-up photograph of a large pile of golden-brown, triangular samosas. The samosas are piled together, with some showing their characteristic three-pointed shape and others partially obscured. A small, light-colored rectangular sign is placed among the samosas, tilted slightly. The sign has the text "Change is coming." written on it in a dark, sans-serif font. The background is a plain, light-colored surface.

Modify

Change is coming.

A close-up photograph of a large pile of golden-brown, triangular samosas. The samosas are scattered across a light-colored surface, with some showing signs of being broken or crushed. In the center of the pile, a small, rectangular, light-colored sign is placed at an angle. The sign has the text "Change is coming." written on it in a simple, black, sans-serif font. The overall lighting is warm, highlighting the texture of the fried dough.

Simplify

Modify

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A close-up photograph of a large pile of golden-brown, triangular samosas. The samosas are scattered across a light-colored surface, with some showing signs of being broken or crushed. In the center of the pile, a small, light-colored rectangular sign is placed, tilted slightly. The sign has the text "Change is coming." written on it in a simple, black, sans-serif font. The background is a soft, out-of-focus light color, emphasizing the texture and color of the samosas.

**Simplify
Improve
Modify**

Change is coming.

Finally...

- If you remember only one little thing of this presentation it should be...





**Singletons are really, really
(and I mean really)**



**Singletons are really, really
(and I mean really)**

DANGER

EXTREMELY FLAMMABLE
VAPORIZATION OF SPRAY MAY BE HARMFUL
CONTAINER MAY EXPLODE IF HEATED

The End

- Questions and comments?



The End

- Questions and comments?
- Thank you.



Commercial break

- Stephan Schmidt: PHP Design Patterns



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- Clean code talks: http://www.youtube.com/view_play_list?p=79645C72EA595A91



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