MCR 2017

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Writing extensions best practices

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Writing Extensions Best Practices

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Building good quality extensions is hard

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Some of the Challenges

- Clean and code without bugs
- Compatibility with future Magento releases
- Security
- Conflicts with other extensions
- Extensibility and good API
- Support and improvements after extension is written
  - Backwards compatibility
  - Make sure all functionality works after changes

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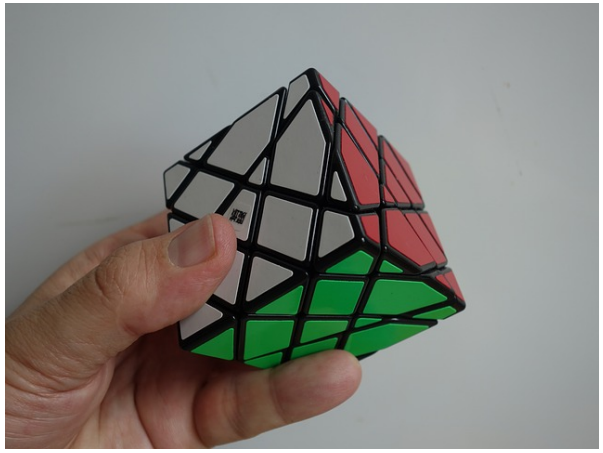
You can avoid many of the issues if you follow best practices and Magento technical guidelines



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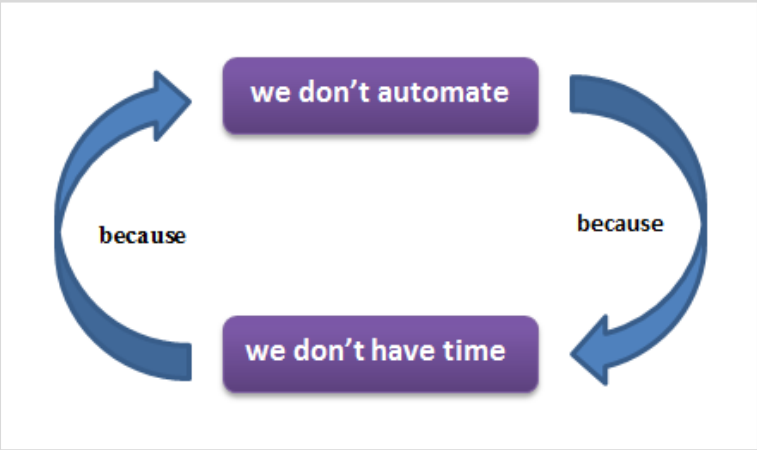
Think about testing and automate critical scenarios



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Value of Test Automation

- Every time you make a change you need to do regression
- Manual testing is too expensive and not reliable
- Unautomated scenarios are your technical debt

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Types of Tests in Magento

Quality

Functional
Integration
Web API
Unit

Most Feedback

Functional
Integration
Web API

Development

Integration
Unit
Static

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Run static tests on your code

Static Tests Help Find …

- Coding style issues
- Coupling between classes and method complexity
- Usage of obsolete classes
- Potential security vulnerabilities
- Undeclared dependencies in composer.json
- References to missing resources
- And more

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How to Run

Using command line

```
$ bin/magento dev:tests:run
```

Manually

```
$ export INCREMENTAL_BUILD=1
$ cd dev/tests/static
$ echo "app/code/MyCompany/MyModule/Model/MyEntity.php" >
    testsuite/Magento/Test/changed_files
$ ../../../vendor/bin/phpunit
```

Set variables_order in php.ini to variables_order = "EGPCS"

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Avoid unnecessary extension conflicts

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What Leads to Extension Conflicts?

- Changing preferences for classes and interfaces
- Around plugins, if the main method is not called
- Rewriting templates
- Rewriting layouts (can and must be avoided)
- Removing blocks from layout
- Depending on specific implementation instead of most generic type

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More on Plugins and Observers

- Create plugins on interfaces
- Declare observers in global area, use specific areas only for presentation layer logic

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Know and follow security best practices

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Security Best Practices

- Be aware how to protect from OWASP Top 10 vulnerabilities
- Use read-only filesystem
- Escape all HTML output (escapeHtml)
- Don’t use native PHP unserialize, use Magento serialize library to secure serialize/unserialize data
- Install latest patches and upgrade Magento

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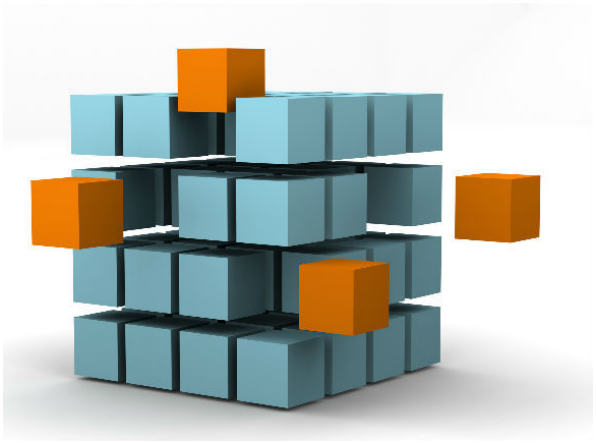
Follow the modularity



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Modularity

- Declare all dependencies in composer.json
- Reference only **`@api`** code of the modules
- Mark public API and SPI of your module with **`@api`**
- Read more about version dependencies DevDocs/extension-dev-guide/versioning/dependencies.html

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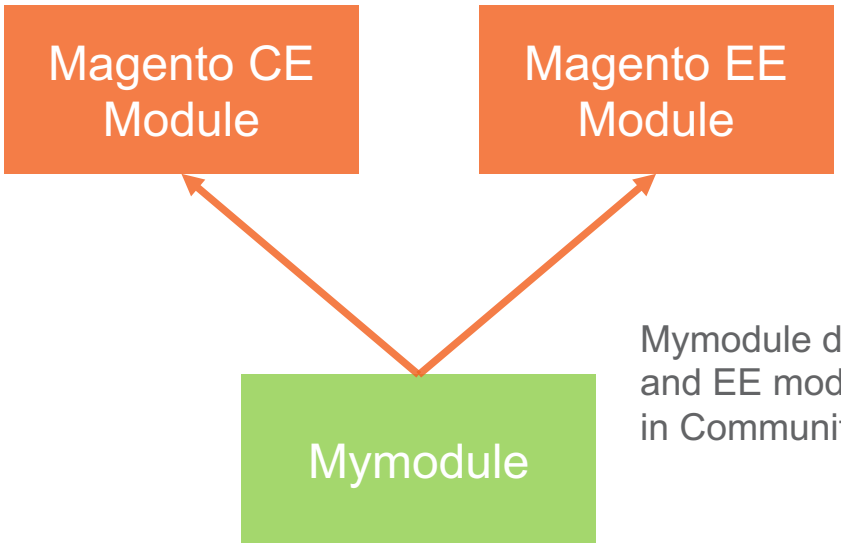
Extension for Multiple Editions



Mymodule depends on Magento CE and EE modules. How to make it work in Community and Enterprise?

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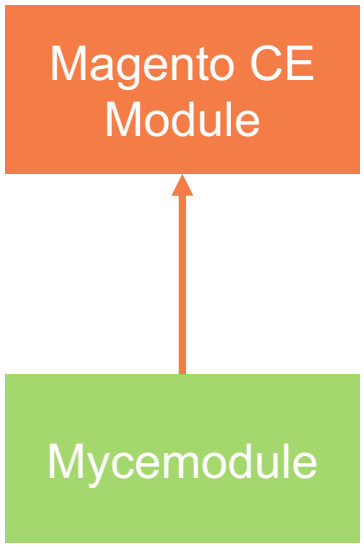
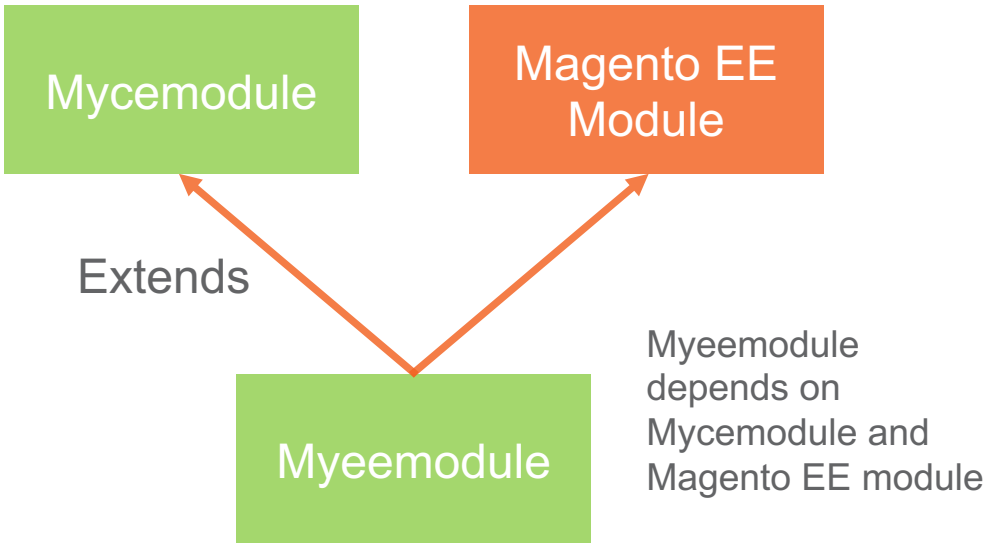
Extension for Multiple Magento Editions



Mycemodule does not depend on EE



Myeemodule depends on Mycemodule and Magento EE module

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Avoid temporal coupling

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Bad Example #1

```
$url = new Url();
$url->setBaseUrl($baseUrl);
echo $url->get('custom/path'); // prints full URL
```

Developer forgot or didn’t know that you need to call setBaseUrl

```
$url = new Url();
echo $url->get('custom/path'); // throws exception
```

Method with out parameters that doesn’t return anything could be sign of temporal coupling

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Good Example #1

```php
$url = new Url($baseUrl);
echo $url->get('custom/path');
```

Or

```php
$url = new Url();
echo $url->get($baseUrl, 'custom/path');
```

Only one way to use API
No temporal coupling

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Bad Example #2

```
class Edit extends Action
{
    public function execute()
    {
        …
        $product = $productResource->load($product, $productSku, 'sku');
        $this->registry->register('product', $product);
    }
}

class View extends Template
{
    public function getProductName()
    {
        $product = $this->registry->get('product');
        return $product->getName();
    }
}
```

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Good Example #2

```
class Edit extends Action
{
     public function execute()
     {
          …
          $product = $productRepository->get($productSku);
     }
}

class View extends Template
{
     public function getProductName()
     {
          …
          $product = $productRepository->get($productSku);
          return $product->getName();
     }
}
```

More flexible
No dependencies between classes
No temporal coupling

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Favor composition over inheritance

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Bad Example

```
class AbstractController
    extends Action
{
    …
    protected function validate(
        $request
    ) {}

    protected function generateHash(
        $request
    ) {}
}
```

```
class Edit extends
AbstractController
{
    public function execute()
    {
        $errors = $this->validate(
            $request
        );
        …
        $hash = $this->generateHash(
            $request
        );
        …
    }
}
```

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Good Example

```
class Edit extends Action
{
    public function __constructor(
        ValidatorInterface $validator,
        HashGeneratorInterface $hashGenerator
    ) {}

    public function execute()
    {
        $errors = $this->validator->validate($request);
    }
}
```

- Smaller classes
- One responsibility
- More flexible
- Easy to understand
- More testable

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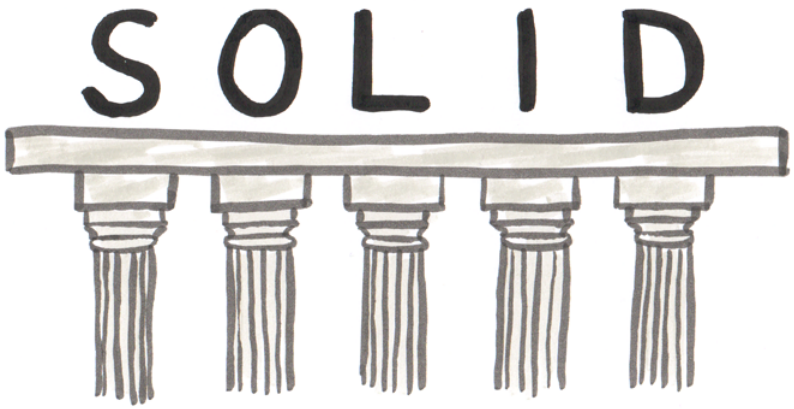
Follow SOLID principles



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SOLID Principles

- **S**ingle responsibility
- **O**pen closed
- **L**iskov substitution principle
- **I**nterface segregation
- **D**ependency inversion

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Hey, did you just edit the core?
No!
Ok, follow technical guidelines!

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Technical Guidelines

Describes principles and best practices on

- Class design
- Exceptions handling
- Following application layering
- Modularity
- Browser-server interaction
- And more

/Technical Guidelines

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Resources

Resources

Magento technical guidelines
http://devdocs.magento.com/guides/v2.2/coding-standards/technical-guidelines/technical-guidelines.html

Module version dependencies
http://devdocs.magento.com/guides/v2.1/extension-dev-guide/versioning/dependencies.html

SOLID principles
http://www.butunclebob.com/ArticleS.UncleBob.PrinciplesOfOod

Top 10 things which makes your code hard to test
http://misko.hevery.com/2008/07/30/top-10-things-which-make-your-code-hard-to-test/

Effective Java

Pragmatic Programmer

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Q&A

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Thank You