

Testing ../modules/override_node_options

....

Time: 2.54 minutes, Memory: 6.00MB

OK (4 tests, 65 assertions)

docker@cli:/var/www/core\$

DRUPAL TESTING WORKSHOP

SEPTEMBER 2018

WHY WRITE TESTS?

WHY WRITE TESTS?

- ▶ **Catch bugs earlier**
- ▶ **Piece of mind**
- ▶ **Prevent regressions**
- ▶ **Write less code**
- ▶ **Documentation**
- ▶ **Drupal core requirement - <https://www.drupal.org/core/gates#testing>**
- ▶ **More important with regular D8 releases**

**HAVING TESTS DOES NOT MEAN
THERE WILL BE NO BUGS**

**TESTING MAY ADD TIME NOW
BUT SAVE MORE TIME IN THE FUTURE**

TESTING IN DRUPAL

- ▶ **Drupal 7** - Simpletest (testing) module provided as part of core
- ▶ **Drupal 8** - PHPUnit added as a core dependency
- ▶ **PHPUnit Initiative** - Simpletest to be deprecated and removed

EXERCISE 1

LOCAL SITE SETUP

DOCKSAL

- ▶ **Docker based local development environment**
- ▶ **Microserve standard**
- ▶ **Open source**
- ▶ **Per site configuration and customisation**
- ▶ **fin CLI, Apache, MySQL, Solr, Varnish, Mailhog, PHPMyAdmin etc**
- ▶ **Virtualbox or native Docker**
- ▶ **Can slow down tests**
- ▶ **Provides consistency**

- ▶ <https://github.com/opdavies/drupal-testing-workshop>
- ▶ <https://docksal.io/installation>
- ▶ `git clone`
- ▶ `fin init`
- ▶ <http://drupaltest.docksal>

EXERCISE 2

RUNNING TESTS

OPTION 1

SIMPLETEST MODULE (UI)

<input type="checkbox"/>	▶ ParamConverter
<input type="checkbox"/>	▶ path
<input type="checkbox"/>	▶ Path
<input type="checkbox"/>	▶ PathProcessor
<input type="checkbox"/>	▶ PhpStorage
<input type="checkbox"/>	▶ PHPUnit
<input checked="" type="checkbox"/>	▶ phpunit_example
<input type="checkbox"/>	▶ Plugin
<input type="checkbox"/>	▶ plugin_type_example
<input type="checkbox"/>	▶ PrivateKeyTest
<input type="checkbox"/>	▶ proxy_builder
<input type="checkbox"/>	▶ Queue
<input type="checkbox"/>	▶ queue_example
<input type="checkbox"/>	▶ quickedit
<input type="checkbox"/>	▶ rdf

- utility
- Uuid
- validation
- Validation
- Variable
- views
- Views
- views_ui
- workflows

Run tests

CLEAN TEST ENVIRONMENT
[Clean environment](#)
Remove tables with the prefix "test" followed by digits and temporary directories that are left over from tests that crashed. This is intended for developers when creating tests.

Running tests



Running tests ☆

Processed test 1 of 4 - *Drupal\Tests\phpunit_example\Functional\PHPUnitExampleMenuTest.*

Overall results: 2 passes, 0 fails, 0 exceptions

- *Drupal\Tests\phpunit_example\Functional\PHPUnitExampleMenuTest*: 2 passes, 0 fails, 0 exceptions



25%

Running tests ☆

Processed test 4 of 4 - *Drupal\Tests\phpunit_example\Unit\ProtectedPrivatesTest*.

Overall results: 34 passes, 0 fails, 0 exceptions

- *Drupal\Tests\phpunit_example\Unit\ProtectedPrivatesTest*: 4 passes, 0 fails, 0 exceptions
- *Drupal\Tests\phpunit_example\Unit\DisplayManagerTest*: 1 pass, 0 fails, 0 exceptions
- *Drupal\Tests\phpunit_example\Unit\AddClassTest*: 27 passes, 0 fails, 0 exceptions
- *Drupal\Tests\phpunit_example\Functional\PHPUnitExampleMenuTest*: 2 passes, 0 fails, 0 exceptions



Test result

[Home](#) » [Administration](#) » [Configuration](#) » [Development](#) » [Testing](#)

✓ The test run finished in 1 min 19 sec.

ACTIONS
Filter: All (4) ▾ Run tests [Return to list](#)

RESULTS
34 passes, 0 fails, 0 exceptions

- ▶ `Drupal\Tests\phpunit_example\Functional\PHPUnitExampleMenuTest`
- ▶ `Drupal\Tests\phpunit_example\Unit\AddClassTest`
- ▶ `Drupal\Tests\phpunit_example\Unit\DisplayManagerTest`
- ▶ `Drupal\Tests\phpunit_example\Unit\ProtectedPrivatesTest`

▼ Drupal\Tests\phpunit_example\Unit\AddClassTest

AddClass units tests.
27 passes, 0 fails, 0 exceptions

MESSAGE	GROUP	FILENAME	LINE	FUNCTION	STATUS
	Other	AddClassTest.php	46	Drupal\Tests\phpunit_example\Unit\AddClassTest->testAdd()	✓
	Other	AddClassTest.php	87	Drupal\Tests\phpunit_example\Unit\AddClassTest->testAddWithDataProvider with data set #0()	✓
	Other	AddClassTest.php	87	Drupal\Tests\phpunit_example\Unit\AddClassTest->testAddWithDataProvider with data set #1()	✓
	Other	AddClassTest.php	114	Drupal\Tests\phpunit_example\Unit\AddClassTest->testAddWithBadDataProvider with data set #0()	✓
	Other	AddClassTest.php	114	Drupal\Tests\phpunit_example\Unit\AddClassTest->testAddWithBadDataProvider with data set #1()	✓
	Other	AddClassTest.php	114	Drupal\Tests\phpunit_example\Unit\AddClassTest->testAddWithBadDataProvider with data set #2()	✓
	Other	AddClassTest.php	114	Drupal\Tests\phpunit_example\Unit\AddClassTest->testAddWithBadDataProvider with data set #3()	✓
	Other	AddClassTest.php	114	Drupal\Tests\phpunit_example\Unit\AddClassTest->testAddWithBadDataProvider with data set #4()	✓
	Other	AddClassTest.php	114	Drupal\Tests\phpunit_example\Unit\AddClassTest->testAddWithBadDataProvider with data set #5()	✓
	Other	AddClassTest.php	114	Drupal\Tests\phpunit_example\Unit\AddClassTest->testAddWithBadDataProvider with data set #6()	✓
	Other	AddClassTest.php	114	Drupal\Tests\phpunit_example\Unit\AddClassTest->testAddWithBadDataProvider with data set #7()	✓
	Other	AddClassTest.php	114	Drupal\Tests\phpunit_example\Unit\AddClassTest->testAddWithBadDataProvider with data set #8()	✓

OPTION 2

COMMAND LINE

PREREQUISITE (CREATING A PHPUNIT.XML FILE)

- ▶ **Configures PHPUnit**
- ▶ **Needed to run some types of tests**
- ▶ **Ignored by Git by default**
- ▶ **Copy `core/phpunit.xml.dist` to `core/phpunit.xml`**
- ▶ **Add and change as needed**
 - ▶ `SIMPLETEST_BASE_URL, SIMPLETEST_DB, BROWSERTEST_OUTPUT_DIRECTORY`
 - ▶ `stopOnFailure="true"`

```
cd web
```

```
../vendor/bin/phpunit -c core \  
modules/contrib/examples/phpunit_example
```

```
cd web/core
```

```
../../../../vendor/bin/phpunit \
```

```
../../../../modules/contrib/examples/phpunit_example
```

PRO-TIP: ADD PATHS TO \$PATH

```
# ~/.zshrc
```

```
export PATH=$HOME/bin:/usr/local/bin:$PATH
```

```
export PATH=vendor/bin:$PATH
```

```
export PATH=./vendor/bin:$PATH
```

```
export PATH=node_modules/.bin:$PATH
```

OPTION 2

CLI WITH DOCKSAL


```
fin bash
```

```
cd web
```

```
../vendor/bin/phpunit -c core \  
modules/contrib/examples/phpunit_example
```

```
fin bash
```

```
cd web/core
```

```
../../../../vendor/bin/phpunit \
```

```
../../../../modules/contrib/examples/phpunit_example
```

OPTION 3

DOCKSAL PHPUNIT ADDON

- ▶ **Custom Docksal command**
- ▶ **Submitted to the Docksal addons repo**
- ▶ **fin addon install phpunit**
- ▶ **Wrapper around phpunit command**
- ▶ **Copies a stub phpunit.xml file if exists, or duplicates phpunit.xml.dist**
- ▶ **Shorter command, combines two actions**

```
fin phpunit web/modules/contrib/examples/phpunit_example
```

Copying stubs from /var/www/.docksa1/addons/phpunit/stubs

PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing web/modules/contrib/examples/phpunit_example

.....

34 / 34 (100%)

Time: 46.8 seconds, Memory: 6.00MB

OK (34 tests, 41 assertions)

```
fin phpunit web/modules/contrib/examples/phpunit_example
```

Copying /var/www/web/core/phpunit.xml.dist to /var/www/web/core/phpunit.xml.
Please edit it's values as needed and re-run 'fin phpunit'.


```
fin phpunit web/modules/contrib/examples/phpunit_example
```

```
PHPUnit 6.5.8 by Sebastian Bergmann and contributors.
```

```
Testing web/modules/contrib/examples/phpunit_example
```

```
..... 34 / 34 (100%)
```

```
Time: 48.62 seconds, Memory: 6.00MB
```

```
OK (34 tests, 41 assertions)
```

OPTION 4

IDE/TEXT EDITOR

INTEGRATION

```
drupal-testing-workshop [~/Code/os/drupal-testing-workshop] - .../web/modules/contrib/examples/phpunit_example/tests/src/Functional/PHPUnitExampleMenuTest.php [drupal-testing-workshop]

Project
├── js_example
├── menu_example
├── node_type_example
├── page_example
├── pager_example
├── phpunit_example
│   ├── src
│   └── templates
├── tests
│   └── src
│       ├── Functional
│       │   └── PHPUnitExampleMenuTest.php
│       └── Unit
│           ├── Subclasses
│           │   ├── AddClassTest.php
│           │   ├── DisplayManagerTest.php
│           │   └── ProtectedPrivatesTest.php
│           ├── phpunit_example.info.yml
│           ├── phpunit_example.links.menu.yml
│           ├── phpunit_example.module
│           └── phpunit_example.routing.yml
└── plugin_type_example

57     $this->drupalGet($page);
58     $this->assertLinkByHref($path);
59     }
60 }
61
62 /**
63  * Tests phpunit_example menus.
64  */
65 public function testPhpUnitExampleMenu() {
66     $this->drupalGet('/examples/phpunit-example');
67     $this->assertResponse(200, 'Description page exists.');
```

Run: tests x

Tests passed: 34 of 34 tests – 29 s 240 ms

Time: 46.62 seconds, Memory: 6.00MB

OK (34 tests, 41 assertions)

Process finished with exit code 0

- ✓ /var/www/web/modules/contrib/exa 29 s 240 ms
 - ✓ Drupal\Tests\phpunit_example\Fu 29 s 60 ms
 - ✓ testPhpUnitExampleLink 15 s 570 ms
 - ✓ testPhpUnitExampleMenu 13 s 490 ms
 - ▶ ✓ Drupal\Tests\phpunit_example\Unit\A 40 ms
 - ✓ Drupal\Tests\phpunit_example\Unit\I 120 ms
 - ✓ testSimpleMockDisplayManager 120 ms
 - ✓ Drupal\Tests\phpunit_example\Unit\P 20 ms
 - ▶ ✓ testPrivateAdd 10 ms
 - ▶ ✓ testPrivateAddBadData 0 ms
 - ✓ testProtectedAdd 10 ms
 - ✓ with data set #0 10 ms
 - ✓ testProtectedAddBadData 0 ms
 - ✓ with data set #0 0 ms

TYPES OF TESTS

FUNCTIONAL TESTS

- ▶ **Tests functionality**
- ▶ **Interacts with database**
- ▶ **Full Drupal installation**
- ▶ **With/without JavaScript**

FUNCTIONAL TESTS

- ▶ **Slower to run**
- ▶ **Easiest to start with**
- ▶ **Provide most value**

EXERCISE

**LET'S WRITE A
FUNCTIONAL TEST**

- ▶ Create a `web/modules/custom/workshop` directory
- ▶ Create a `workshop.info.yml` file


```
# workshop.info.yml
```

```
name: Drupal Testing Workshop
```

```
core: 8.x
```

```
type: module
```

- ▶ Create a **tests/src/Functional** directory
- ▶ Create an **ExampleFunctionalTest.php** file

```
// ExampleFunctionalTest.php

namespace Drupal\Tests\workshop\Functional;

use Drupal\Tests\BrowserTestBase;

class ExampleFunctionalTest extends BrowserTestBase {

}
```

```
// ExampleFunctionalTest.php
```

```
public function testExamplePageExists() {
```

```
}
```

```
// ExampleFunctionalTest.php
```

```
public function test_example_page_exists() {
```

```
}
```

```
// ExampleFunctionalTest.php
```

```
/** @test */
```

```
public function example_page_exists() {
```

```
}
```

```
// ExampleFunctionalTest.php

/** @test */
public function example_page_exists() {
    // Arrange

    // Act

    // Assert
}
```

```
// ExampleFunctionalTest.php

/** @test */
public function example_page_exists() {
    // Given that I am an anonymous user.

    // When I to go /blog.

    // I should see the blog page.
}
```



```
// ExampleFunctionalTest.php

/** @test */
public function example_page_exists() {
    $this->drupalGet('/example-one');

    $this->assertSession()->statusCodeEquals(200);
}
```

PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing Drupal\Tests\workshop\Functional\ExampleFunctionalTest

Behat\Mink\Exception\ExpectationException : Current response status code is 404, but 200 expected.

/var/www/vendor/behat/mink/src/WebAssert.php:768

/var/www/vendor/behat/mink/src/WebAssert.php:130

/var/www/web/modules/custom/workshop/tests/src/Functional/ExampleFunctionalTest.php:14

Time: 18.2 seconds, Memory: 6.00MB

ERRORS!

Tests: 1, Assertions: 2, Errors: 1.

- ▶ Create a **drupaltest.routing.yml** file
- ▶ Create a Controller

```
# workshop.routing.yml
```

```
workshop.example:
```

```
  path: '/example-one'
```

```
  defaults:
```

```
    _controller: 'Drupal\workshop\Controller\ExampleController::index'
```

```
  requirements:
```

```
    _access: 'TRUE'
```

```
// src/Controller/ExampleController.php

namespace Drupal\workshop\Controller;

use Drupal\Core\Controller\ControllerBase;

class ExampleController extends ControllerBase {

    public function index() {
        return ['#markup' => $this->t('Drupal Testing Workshop')];
    }

}
```

```
class ExampleFunctionalTest extends BrowserTestBase {  
    protected static $modules = ['workshop'];  
  
    ...  
}
```

KERNEL TESTS

- ▶ **Integration tests**
- ▶ **Can install modules, interact with services, container, database**
- ▶ **Minimal Drupal bootstrap**
- ▶ **Faster than functional tests**
- ▶ **More setup required**

EXERCISE

**LET'S WRITE A
KERNEL TEST**

- ▶ Create a `tests/src/Kernel` directory
- ▶ Create an `ExampleKernelTest.php` file
- ▶ Create a Service
- ▶ Use the service within the test to perform an action

```
// tests/src/Kernel/ExampleKernelTest.php

namespace Drupal\Tests\workshop\Kernel;

use Drupal\KernelTests\Core\Entity\EntityKernelTestBase;
use Drupal\user\Entity\User;

class ExampleKernelTest extends EntityKernelTestBase {

    public static $modules = ['workshop'];

    public function testUserDeleter() {

    }

}
```

```
// tests/src/Kernel/ExampleKernelTest.php
```

```
public function testUserDeleter {  
    $user = $this->createUser();  
  
    $user_deleter = \Drupal::service(UserDeleter::class);  
    $user_deleter->delete($user);  
  
    $user = $this->reloadEntity($user);  
  
    $this->assertNull($user);  
}
```

```
# workshop.services.yml
```

```
services:
```

```
  Drupal\workshop\Services\UserDeleter: ~
```

PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing Drupal\Tests\workshop\Kernel\ExampleKernelTest

Symfony\Component\DependencyInjection\Exception\ServiceNotFoundException : You have requested a non-existent service "Drupal\Tests\workshop\Kernel\UserDeleter".
/var/www/vendor/symfony/dependency-injection/ContainerBuilder.php:1043
/var/www/vendor/symfony/dependency-injection/ContainerBuilder.php:610
/var/www/vendor/symfony/dependency-injection/ContainerBuilder.php:588
/var/www/web/core/lib/Drupal.php:159
/var/www/web/modules/custom/workshop/tests/src/Kernel/ExampleKernelTest.php:24

Time: 7.06 seconds, Memory: 6.00MB

ERRORS!

Tests: 1, Assertions: 3, Errors: 1.

Process finished with exit code 2

```
// src/Services/UserDeleter.php

namespace Drupal\workshop\Services;

use Drupal\Core\Session\AccountInterface;

class UserDeleter {

    public function delete(AccountInterface $user) {
        user_delete($user->id());
    }

}
```

```
// tests/src/Kernel/ExampleKernelTest.php
```

```
namespace Drupal\Tests\workshop\Kernel;
```

```
use Drupal\workshop\Service\UserDeleter;
```

```
use Drupal\KernelTests\Core\Entity\EntityKernelTestBase;
```

```
use Drupal\user\Entity\User;
```

```
...
```

PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing Drupal\Tests\workshop\Kernel\ExampleKernelTest

```
Drupal\Core\Entity\EntityStorageException : SQLSTATE[HY000]: General error: 1 no such table: test89378988.users_data: DELETE FROM {users_data}
WHERE uid IN (:db_condition_placeholder_0); Array
```

```
(
  [:db_condition_placeholder_0] => 1
)
```

```
/var/www/web/core/lib/Drupal/Core/Entity/Sql/SqlContentEntityStorage.php:777
/var/www/web/core/includes/entity.inc:281
/var/www/web/core/modules/user/user.module:878
/var/www/web/core/modules/user/user.module:865
/var/www/web/modules/custom/workshop/src/Services/UserDeleter.php:10
/var/www/web/modules/custom/workshop/tests/src/Kernel/ExampleKernelTest.php:25
```

Caused by

```
Drupal\Core\Database\DatabaseExceptionWrapper: SQLSTATE[HY000]: General error: 1 no such table: test89378988.users_data: DELETE FROM {users_data}
WHERE uid IN (:db_condition_placeholder_0); Array
```

```
(
  [:db_condition_placeholder_0] => 1
)
```

Time: 6.55 seconds, Memory: 6.00MB

ERRORS!

Tests: 1, Assertions: 3, Errors: 1.

Process finished with exit code 2


```
// tests/src/Kernel/ExampleKernelTest.php
```

```
protected function setUp() {
```

```
    parent::setUp();
```

```
    $this->installSchema('user', ['users_data']);
```

```
}
```

PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing Drupal\Tests\workshop\Kernel\ExampleKernelTest

Time: 7.38 seconds, Memory: 6.00MB

OK (1 test, 5 assertions)

Process finished with exit code 0

UNIT TESTS

- ▶ **Tests PHP logic**
- ▶ **No database interaction**
- ▶ **Fast to run**
- ▶ **Tightly coupled**
- ▶ **Mocking dependencies**
- ▶ **Hard to refactor**

EXERCISE

**LET'S WRITE A
UNIT TEST**

```
// tests/src/Unit/Services/ExampleUnitTest.php

namespace Drupal\Tests\workshop\Unit;

use Drupal\Tests\UnitTestCase;

class ExampleUnitTest extends UnitTestCase {

    public function testAdd() {
        $this->assertEquals(5, (new Calculator(3))->add(2)->calculate());
    }
}
```

PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing Drupal\Tests\workshop\Unit\ExampleUnitTest

Error : Class 'Drupal\Tests\workshop\Unit\Calculator' not found
/var/www/web/modules/custom/workshop/tests/src/Unit/Services/ExampleUnitTest.php:10

Time: 5.13 seconds, Memory: 6.00MB

ERRORS!

Tests: 1, Assertions: 0, Errors: 1.

```
// src/Services/Calculator.php

namespace Drupal\workshop\Services;

class Calculator {

    private $total;

    public function __construct($value) {
        $this->total = $value;
    }

    public function add($value) {
        $this->total += $value;

        return $this;
    }

    public function calculate() {
        return $this->total;
    }

}
```

```
// tests/src/Unit/Services/ExampleUnitTest.php
```

```
namespace Drupal\Tests\workshop\Unit;
```

```
use Drupal\workshop\Services\Calculator;
```

```
use Drupal\Tests\UnitTestCase;
```

```
...
```


PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing Drupal\Tests\workshop\Unit\ExampleUnitTest

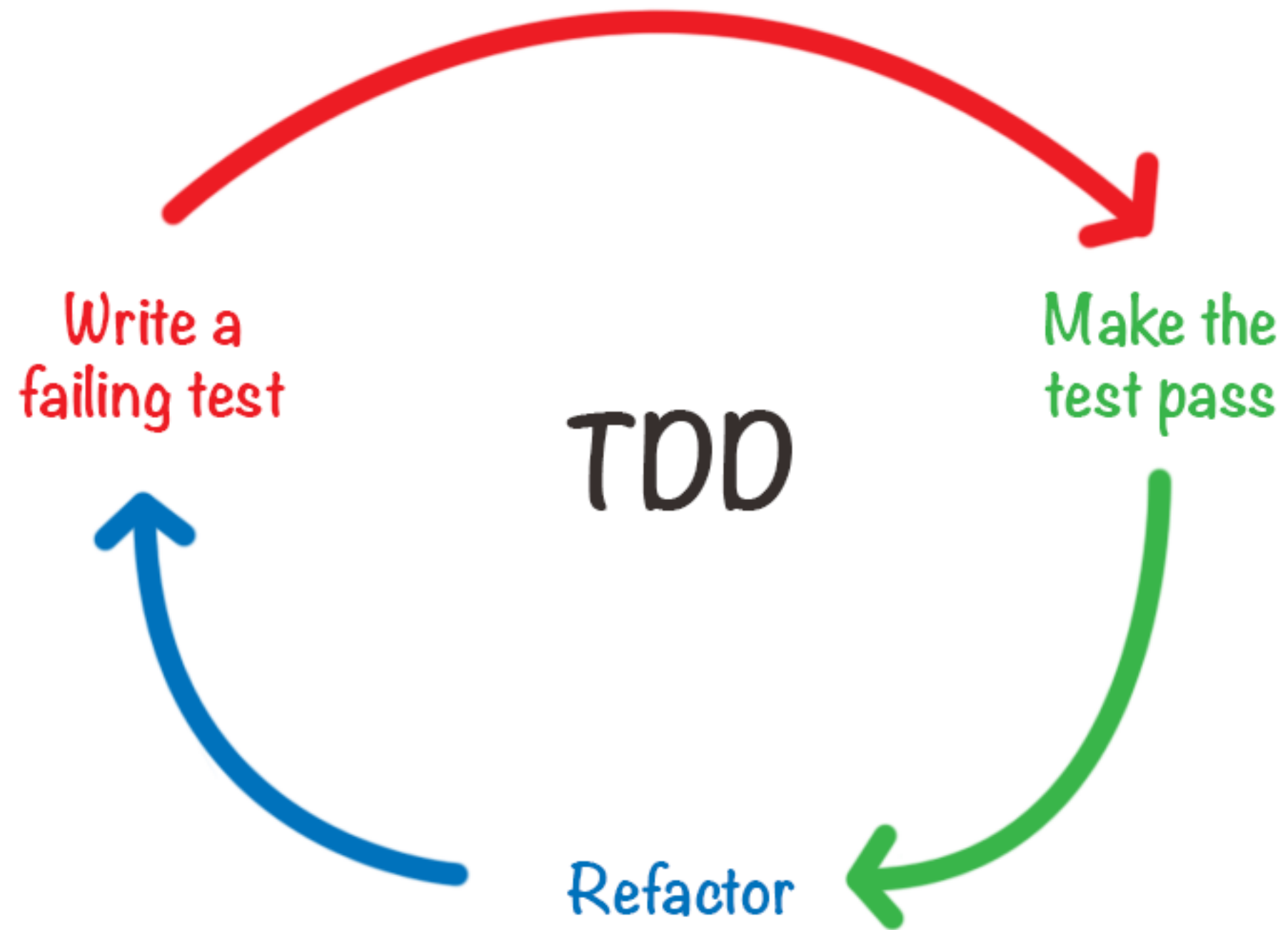
Time: 4.55 seconds, Memory: 4.00MB

OK (1 test, 1 assertion)

TEST DRIVEN DEVELOPMENT (TDD)

TEST DRIVEN DEVELOPMENT

- ▶ **Write a failing test**
- ▶ **Write code until passes**
- ▶ **Refactor**
- ▶ **Repeat**



HOW I WRITE TESTS - "OUTSIDE IN"

- ▶ **Start with functional tests**
- ▶ **Drop down to kernel or unit tests where needed**
- ▶ **Programming by wishful thinking**
- ▶ **Write comments first, then fill in the code**
- ▶ **Sometimes write assertions first**

EXERCISE

**LET'S BUILD A BLOG USING
TEST DRIVEN DEVELOPMENT**

ACCEPTANCE CRITERIA

- ▶ **As a site visitor**
- ▶ **I want to see a list of published articles at /blog**
- ▶ **Ordered by post date**

TASKS

- ▶ **Ensure the blog page exists**
- ▶ **Ensure only published articles are shown**
- ▶ **Ensure the articles are shown in the correct order**

IMPLEMENTATION

- ▶ **Use views module**
- ▶ **Do the minimum amount at each step, make no assumptions, let the tests guide us**
- ▶ **Start with functional test**

STEP 1

CREATE THE MODULE

```
# tdd_blog.info.yml
```

```
name: 'TDD Blog'
```

```
core: '8.x'
```

```
type: 'module'
```

STEP 2

**ENSURE THE BLOG PAGE
EXISTS**

```
<?php
```

```
// tests/src/Functional/BlogPageTest.php
```

```
namespace Drupal\Tests\tdd_blog\Functional;
```

```
use Drupal\Tests\BrowserTestBase;
```

```
class BlogPageTest extends BrowserTestBase {
```

```
    protected static $modules = ['tdd_blog'];
```

```
    public function testBlogPageExists() {
```

```
        $this->drupalGet('/blog');
```

```
        $this->assertSession()->statusCodeEquals(200);
```

```
    }
```

```
}
```



```
<?php

// tests/src/Functional/BlogPageTest.php

namespace Drupal\Tests\tdd_blog\Functional;

use Drupal\Tests\BrowserTestBase;

class BlogPageTest extends BrowserTestBase {

    protected static $modules = ['tdd_blog'];

    public function testBlogPageExists() {
        $this->drupalGet('/blog');

        $this->assertSession()->statusCodeEquals(200);
    }
}
```



```
<?php

// tests/src/Functional/BlogPageTest.php

namespace Drupal\Tests\tdd_blog\Functional;

use Drupal\Tests\BrowserTestBase;

class BlogPageTest extends BrowserTestBase {

    protected static $modules = ['tdd_blog'];

    public function testBlogPageExists() {
        $this->drupalGet('/blog');

        $this->assertSession()->statusCodeEquals(200);
    }

}
```

```
docker@cli:/var/www/web$ ../vendor/bin/phpunit -c core modules/custom/tdd_blog
PHPUnit 6.5.8 by Sebastian Bergmann and contributors.
```

```
Testing modules/custom/tdd_blog
```

```
E                                                                    1 / 1 (100%)
```

```
Time: 19.31 seconds, Memory: 6.00MB
```

```
There was 1 error:
```

```
1) Drupal\Tests\tdd_blog\Functional\BlogPageTest::testBlogPageExists
Behat\Mink\Exception\ExpectationException: Current response status code is 404, but 200 expected.
```

```
/var/www/vendor/behat/mink/src/WebAssert.php:768
```

```
/var/www/vendor/behat/mink/src/WebAssert.php:130
```

```
/var/www/web/modules/custom/tdd_blog/tests/src/Functional/BlogPageTest.php:13
```

```
ERRORS!
```

```
Tests: 1, Assertions: 3, Errors: 1.
```

```
docker@cli:/var/www/web$ ../vendor/bin/phpunit -c core modules/custom/tdd_blog
PHPUnit 6.5.8 by Sebastian Bergmann and contributors.
```

```
Testing modules/custom/tdd_blog
```

```
E                                                                    1 / 1 (100%)
```

```
Time: 19.31 seconds, Memory: 6.00MB
```

```
There was 1 error:
```

```
1) Drupal\Tests\tdd_blog\Functional\BlogPageTest::testBlogPageExists
Behat\Mink\Exception\ExpectationException: Current response status code is 404, but 200 expected.
```

```
/var/www/vendor/behat/mink/src/WebAssert.php:768
```

```
/var/www/vendor/behat/mink/src/WebAssert.php:130
```

```
/var/www/web/modules/custom/tdd_blog/tests/src/Functional/BlogPageTest.php:13
```

```
ERRORS!
```

```
Tests: 1, Assertions: 3, Errors: 1.
```

```
docker@cli:/var/www/web$ ../vendor/bin/phpunit -c core modules/custom/tdd_blog
PHPUnit 6.5.8 by Sebastian Bergmann and contributors.
```

```
Testing modules/custom/tdd_blog
```

```
E 1 / 1 (100%)
```

```
Time: 19.31 seconds, Memory: 6.00MB
```

```
There was 1 error:
```

```
1) Drupal\Tests\tdd_blog\Functional\BlogPageTest::testBlogPageExists
Behat\Mink\Exception\ExpectationException: Current response status code is 404, but 200 expected.
```

```
/var/www/vendor/behat/mink/src/WebAssert.php:768
```

```
/var/www/vendor/behat/mink/src/WebAssert.php:130
```

```
/var/www/web/modules/custom/tdd_blog/tests/src/Functional/BlogPageTest.php:13
```

```
ERRORS!
```

```
Tests: 1, Assertions: 3, Errors: 1.
```

```
docker@cli:/var/www/web$ ../vendor/bin/phpunit -c core modules/custom/tdd_blog
PHPUnit 6.5.8 by Sebastian Bergmann and contributors.
```

```
Testing modules/custom/tdd_blog
```

```
E                                                                    1 / 1 (100%)
```

```
Time: 19.31 seconds, Memory: 6.00MB
```

```
There was 1 error:
```

```
1) Drupal\Tests\tdd_blog\Functional\BlogPageTest::testBlogPageExists
Behat\Mink\Exception\ExpectationException: Current response status code is 404, but 200 expected.
```

```
/var/www/vendor/behat/mink/src/WebAssert.php:768
```

```
/var/www/vendor/behat/mink/src/WebAssert.php:130
```

```
/var/www/web/modules/custom/tdd_blog/tests/src/Functional/BlogPageTest.php:13
```

```
ERRORS!
```

```
Tests: 1, Assertions: 3, Errors: 1.
```

```
docker@cli:/var/www/web$ ../vendor/bin/phpunit -c core/modules/custom/tdd_blog
PHPUnit 6.5.8 by Sebastian Bergmann and contributors.
```

```
Testing modules/custom/tdd_blog
```

```
E                                                                    1 / 1 (100%)
```

```
Time: 19.31 seconds, Memory: 6.00MB
```

```
There was 1 error:
```

```
1) Drupal\Tests\tdd_blog\Functional\BlogPageTest::testBlogPageExists
Behat\Mink\Exception\ExpectationException: Current response status code is 404, but 200 expected.
```

```
/var/www/vendor/behat/mink/src/WebAssert.php:768
```

```
/var/www/vendor/behat/mink/src/WebAssert.php:130
```

```
/var/www/web/modules/custom/tdd_blog/tests/src/Functional/BlogPageTest.php:13
```

```
ERRORS!
```

```
Tests: 1, Assertions: 3, Errors: 1.
```

- ▶ **The view has not been created**
- ▶ **Create a new view**
- ▶ **Set the path**
- ▶ **Export the config**
- ▶ **Copy it into the module's `config/install` directory**

```
docker@cli:/var/www/web$ ../vendor/bin/phpunit -c core modules/custom/tdd_blog
PHPUnit 6.5.8 by Sebastian Bergmann and contributors.
```

```
Testing modules/custom/tdd_blog
```

```
E                                                                    1 / 1 (100%)
```

```
Time: 16.02 seconds, Memory: 6.00MB
```

```
There was 1 error:
```

```
1) Drupal\Tests\tdd_blog\Functional\BlogPageTest::testBlogPageExists
```

```
Drupal\Core\Config\UnmetDependenciesException: Configuration objects provided by <em class="placeholder">tdd_blog</em>
have unmet dependencies: <em class="placeholder">views.view.blog (node.type.article, node, views)</em>
```

```
/var/www/web/core/lib/Drupal/Core/Config/UnmetDependenciesException.php:98
```

```
/var/www/web/core/lib/Drupal/Core/Config/ConfigInstaller.php:469
```

```
/var/www/web/core/lib/Drupal/Core/ProxyClass/Config/ConfigInstaller.php:132
```

```
/var/www/web/core/lib/Drupal/Core/Extension/ModuleInstaller.php:145
```

```
/var/www/web/core/lib/Drupal/Core/ProxyClass/Extension/ModuleInstaller.php:83
```

```
/var/www/web/core/lib/Drupal/Core/Test/FunctionalTestSetupTrait.php:437
```

```
/var/www/web/core/tests/Drupal/Tests/BrowserTestBase.php:1055
```

```
/var/www/web/core/tests/Drupal/Tests/BrowserTestBase.php:490
```

```
ERRORS!
```

```
Tests: 1, Assertions: 0, Errors: 1.
```



```
# tdd_blog.info.yml
```

```
name: 'TDD Dublin'
```

```
description: 'A demo module to show test driven module development.'
```

```
core: 8.x
```

```
type: module
```

```
dependencies:
```

- 'drupal:node'
- 'drupal:views'

```
docker@cli:/var/www/web$ ../vendor/bin/phpunit -c core modules/custom/tdd_blog
PHPUnit 6.5.8 by Sebastian Bergmann and contributors.
```

```
Testing modules/custom/tdd_blog
```

```
E                                                                    1 / 1 (100%)
```

```
Time: 20 seconds, Memory: 6.00MB
```

```
There was 1 error:
```

```
1) Drupal\Tests\tdd_blog\Functional\BlogPageTest::testBlogPageExists
```

```
Drupal\Core\Config\UnmetDependenciesException: Configuration objects provided by <em class="placeholder">tdd_blog</em>
have unmet dependencies: <em class="placeholder">views.view.blog (node.type.article)</em>
```

```
/var/www/web/core/lib/Drupal/Core/Config/UnmetDependenciesException.php:98
```

```
/var/www/web/core/lib/Drupal/Core/Config/ConfigInstaller.php:469
```

```
/var/www/web/core/lib/Drupal/Core/ProxyClass/Config/ConfigInstaller.php:132
```

```
/var/www/web/core/lib/Drupal/Core/Extension/ModuleInstaller.php:145
```

```
/var/www/web/core/lib/Drupal/Core/ProxyClass/Extension/ModuleInstaller.php:83
```

```
/var/www/web/core/lib/Drupal/Core/Test/FunctionalTestSetupTrait.php:437
```

```
/var/www/web/core/tests/Drupal/Tests/BrowserTestBase.php:1055
```

```
/var/www/web/core/tests/Drupal/Tests/BrowserTestBase.php:490
```

```
ERRORS!
```

```
Tests: 1, Assertions: 0, Errors: 1.
```

▶ **Add the article content type**

```
docker@cli:/var/www/web$ ../vendor/bin/phpunit -c core modules/custom/tdd_blog
PHPUnit 6.5.8 by Sebastian Bergmann and contributors.
```

```
Testing modules/custom/tdd_blog
```

```
. 1 / 1 (100%)
```

```
Time: 23.36 seconds, Memory: 6.00MB
```

```
OK (1 test, 3 assertions)
```

TASKS

- ▶ ~~Ensure the blog page exists~~
- ▶ Ensure only published articles are shown
- ▶ Ensure the articles are shown in the correct order

STEP 3

**ENSURE ONLY PUBLISHED
ARTICLES ARE SHOWN**

```
public function testOnlyPublishedArticlesAreShown() {  
    // Given I have a mixture of published and unpublished articles,  
    // as well as other types of content.  
  
    // When I view the blog page.  
  
    // I should only see the published articles.  
}
```

OPTION 1

FUNCTIONAL TESTS


```
// modules/custom/tdd_blog/tests/src/Functional/BlogPageTest.php

public function testOnlyPublishedArticlesAreShown() {
    // Given I have a mixture of published and unpublished articles,
    // as well as other types of content.
    $node1 = $this->drupalCreateNode(['type' => 'page', 'status' => 1]);
    $node2 = $this->drupalCreateNode(['type' => 'article', 'status' => 1]);
    $node3 = $this->drupalCreateNode(['type' => 'article', 'status' => 0]);

    // When I view the blog page.
    $this->drupalGet('/blog');

    // I should only see the published articles.
    $assert = $this->assertSession();
    $assert->pageTextContains($node2->label());
    $assert->pageTextNotContains($node1->label());
    $assert->pageTextNotContains($node3->label());
}
```

```
// modules/custom/tdd_blog/tests/src/Functional/BlogPageTest.php

public function testOnlyPublishedArticlesAreShown() {
    // Given I have a mixture of published and unpublished articles,
    // as well as other types of content.
    $node1 = $this->drupalCreateNode(['type' => 'page', 'status' => 1]);
    $node2 = $this->drupalCreateNode(['type' => 'article', 'status' => 1]);
    $node3 = $this->drupalCreateNode(['type' => 'article', 'status' => 0]);

    // When I view the blog page.
    $this->drupalGet('/blog');

    // I should only see the published articles.
    $assert = $this->assertSession();
    $assert->pageTextContains($node2->label());
    $assert->pageTextNotContains($node1->label());
    $assert->pageTextNotContains($node3->label());
}
```

```
// modules/custom/tdd_blog/tests/src/Functional/BlogPageTest.php

public function testOnlyPublishedArticlesAreShown() {
    // Given I have a mixture of published and unpublished articles,
    // as well as other types of content.
    $node1 = $this->drupalCreateNode(['type' => 'page', 'status' => 1]);
    $node2 = $this->drupalCreateNode(['type' => 'article', 'status' => 1]);
    $node3 = $this->drupalCreateNode(['type' => 'article', 'status' => 0]);

    // When I view the blog page.
    $this->drupalGet('/blog');

    // I should only see the published articles.
    $assert = $this->assertSession();
    $assert->pageTextContains($node2->label());
    $assert->pageTextNotContains($node1->label());
    $assert->pageTextNotContains($node3->label());
}
```

OPTION 2

KERNEL TESTS

```
<?php
```

```
namespace Drupal\Tests\tdd_blog\Kernel;
```

```
use Drupal\KernelTests\Core\Entity\EntityKernelTestBase;
```

```
use Drupal\Tests\node\Traits\NodeCreationTrait;
```

```
class BlogPageTest extends EntityKernelTestBase {
```

```
    use NodeCreationTrait;
```

```
    public static $modules = ['node'];
```

```
    public function testOnlyPublishedArticlesAreShown() {
```

```
        $this->createNode(['type' => 'page', 'status' => 1]);
```

```
        $this->createNode(['type' => 'article', 'status' => 1]);
```

```
        $this->createNode(['type' => 'article', 'status' => 0]);
```

```
    }
```

```
}
```

```
<?php
```

```
namespace Drupal\Tests\tdd_blog\Kernel;
```

```
use Drupal\KernelTests\Core\Entity\EntityKernelTestBase;
```

```
use Drupal\Tests\node\Traits\NodeCreationTrait;
```

```
class BlogPageTest extends EntityKernelTestBase {
```

```
    use NodeCreationTrait;
```

```
    public static $modules = ['node'];
```

```
    public function testOnlyPublishedArticlesAreShown() {
```

```
        $this->createNode(['type' => 'page', 'status' => 1]);
```

```
        $this->createNode(['type' => 'article', 'status' => 1]);
```

```
        $this->createNode(['type' => 'article', 'status' => 0]);
```

```
    }
```

```
}
```



```
<?php
```

```
namespace Drupal\Tests\tdd_blog\Kernel;
```

```
use Drupal\KernelTests\Core\Entity\EntityKernelTestBase;
```

```
use Drupal\Tests\node\Traits\NodeCreationTrait;
```

```
class BlogPageTest extends EntityKernelTestBase {
```

```
    use NodeCreationTrait;
```

```
    public static $modules = ['node'];
```

```
    public function testOnlyPublishedArticlesAreShown() {
```

```
        $this->createNode(['type' => 'page', 'status' => 1]);
```

```
        $this->createNode(['type' => 'article', 'status' => 1]);
```

```
        $this->createNode(['type' => 'article', 'status' => 0]);
```

```
    }
```

```
}
```



```
docker@cli:/var/www/web$ ../vendor/bin/phpunit -c core/modules/custom/tdd_blog/tests/src/Kernel/
PHPUnit 6.5.8 by Sebastian Bergmann and contributors.
```

```
Testing modules/custom/tdd_blog/tests/src/Kernel/
E                                                    1 / 1 (100%)
```

```
Time: 6.22 seconds, Memory: 6.00MB
```

There was 1 error:

1) Drupal\Tests\tdd_blog\Kernel\BlogPageTest::testOnlyPublishedArticlesAreShown
Error: Call to a member function id() on boolean

```
/var/www/web/core/modules/filter/filter.module:212
```

```
/var/www/web/core/modules/node/tests/src/Traits/NodeCreationTrait.php:73
```

```
/var/www/web/modules/custom/tdd_blog/tests/src/Kernel/BlogPageTest.php:13
```

ERRORS!

```
Tests: 1, Assertions: 2, Errors: 1.
```

```
public function testOnlyPublishedArticlesAreShown() {  
    $this->installConfig(['filter']);  
  
    $this->createNode(['type' => 'page', 'status' => 1]);  
    $this->createNode(['type' => 'article', 'status' => 1]);  
    $this->createNode(['type' => 'article', 'status' => 0]);  
}
```

```
public function testOnlyPublishedArticlesAreShown() {
    $this->installConfig(['filter']);

    $this->createNode(['type' => 'page', 'status' => 1]);
    $this->createNode(['type' => 'article', 'status' => 1]);
    $this->createNode(['type' => 'article', 'status' => 0]);

    $results = views_get_view_result('blog');
}
```

...

```
public static $modules = ['node', 'tdd_blog', 'views'];

public function testOnlyPublishedArticlesAreShown() {
    $this->installConfig(['filter', 'tdd_blog']);

    $this->createNode(['type' => 'page', 'status' => 1]);
    $this->createNode(['type' => 'article', 'status' => 1]);
    $this->createNode(['type' => 'article', 'status' => 0]);

    $results = views_get_view_result('blog');

    $this->assertCount(1, $results);
    $this->assertEquals(2, $results[0]->_entity->id());
}
```

...

```
public static $modules = ['node', 'tdd_blog', 'views'];

public function testOnlyPublishedArticlesAreShown() {
    $this->installConfig(['filter', 'tdd_blog']);

    $this->createNode(['type' => 'page', 'status' => 1]);
    $this->createNode(['type' => 'article', 'status' => 1]);
    $this->createNode(['type' => 'article', 'status' => 0]);

    $results = views_get_view_result('blog');

    $this->assertCount(1, $results);
    $this->assertEquals(2, $results[0]->_entity->id());
}
```

...

```
public static $modules = ['node', 'tdd_blog', 'views'];

public function testOnlyPublishedArticlesAreShown() {
    $this->installConfig(['filter', 'tdd_blog']);

    $this->createNode(['type' => 'page', 'status' => 1]);
    $this->createNode(['type' => 'article', 'status' => 1]);
    $this->createNode(['type' => 'article', 'status' => 0]);

    $results = views_get_view_result('blog');

    $this->assertCount(1, $results);
    $this->assertEquals(2, $results[0]->_entity->id());
}
```

PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing web/modules/custom/tdd_blog/tests/src/Kernel

F

1 / 1 (100%)

Time: 2.16 seconds, Memory: 6.00MB

There was 1 failure:

1) Drupal\Tests\tdd_blog\Kernel\BlogPageTest::testOnlyPublishedArticlesAreShown

Failed asserting that actual size 3 matches expected size 1.

/Users/opdavies/Code/drupal-testing-workshop/web/modules/custom/tdd_blog/tests/src/Kernel/BlogPageTest.php:23

FAILURES!

Tests: 1, Assertions: 4, Failures: 1.

PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing web/modules/custom/tdd_blog/tests/src/Kernel

F

1 / 1 (100%)

Time: 2.16 seconds, Memory: 6.00MB

There was 1 failure:

1) Drupal\Tests\tdd_blog\Kernel\BlogPageTest::testOnlyPublishedArticlesAreShown

Failed asserting that actual size 3 matches expected size 1.

/Users/opdavies/Code/drupal-testing-workshop/web/modules/custom/tdd_blog/tests/src/Kernel/BlogPageTest.php:23

FAILURES!

Tests: 1, Assertions: 4, Failures: 1.

- ▶ **There are no filters on the view**
- ▶ **Add the filters**
- ▶ **Export and save the view**

PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing web/modules/custom/tdd_blog/tests/src/Kernel

.

1 / 1 (100%)

Time: 2.02 seconds, Memory: 6.00MB

OK (1 test, 6 assertions)

TASKS

- ▶ ~~Ensure the blog page exists~~
- ▶ ~~Ensure only published articles are shown~~
- ▶ Ensure the articles are shown in the correct order

STEP 4

**ENSURE THE ARTICLES ARE
ORDERED BY DATE**

```
// modules/custom/tdd_blog/tests/src/Kernel/BlogPageTest.php

public function testArticlesAreOrderedByDate() {
    // Given that I have numerous articles with different post dates.

    // When I go to the blog page.

    // The articles are ordered by post date.
}
```

```
// modules/custom/tdd_blog/tests/src/Kernel/BlogPageTest.php
```

```
public function testArticlesAreOrderedByDate() {  
    // Given that I have numerous articles with different post dates.  
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+1 day')->getTimestamp()]);  
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+1 month')->getTimestamp()]);  
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+3 days')->getTimestamp()]);  
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+1 hour')->getTimestamp()]);  
  
    // When I go to the blog page.  
  
    // The articles are ordered by post date.  
}
```

```
$this->createNode([  
    'type' => 'article',  
    'created' => (new \DateTime())->modify('+1 day')->getTimestamp(),  
]);
```

```
// modules/custom/tdd_blog/tests/src/Kernel/BlogPageTest.php
```

```
public function testArticlesAreOrderedByDate() {  
    // Given that I have numerous articles with different post dates.  
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+1 day')->getTimestamp()]);  
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+1 month')->getTimestamp()]);  
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+3 days')->getTimestamp()]);  
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+1 hour')->getTimestamp()]);  
  
    // When I go to the blog page.  
    $results = views_get_view_result('blog');  
  
    // The articles are ordered by post date.  
}
```



```
// modules/custom/tdd_blog/tests/src/Kernel/BlogPageTest.php

public function testArticlesAreOrderedByDate() {
    // Given that I have numerous articles with different post dates.
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+1 day')->getTimestamp()]);
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+1 month')->getTimestamp()]);
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+3 days')->getTimestamp()]);
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+1 hour')->getTimestamp()]);

    // When I go to the blog page.
    $results = views_get_view_result('blog');

    $nids = array_map(function(ResultRow $result) {
        return $result->_entity->id();
    }, $results);

    // The articles are ordered by post date.
}
```

```
// modules/custom/tdd_blog/tests/src/Kernel/BlogPageTest.php

public function testArticlesAreOrderedByDate() {
    // Given that I have numerous articles with different post dates.
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+1 day')->getTimestamp()]);
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+1 month')->getTimestamp()]);
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+3 days')->getTimestamp()]);
    $this->createNode(['type' => 'article', 'created' => (new \DateTime())->modify('+1 hour')->getTimestamp()]);

    // When I go to the blog page.
    $results = views_get_view_result('blog');

    $nids = array_map(function(ResultRow $result) {
        return $result->_entity->id();
    }, $results);

    // The articles are ordered by post date.
    $this->assertEquals([4, 1, 3, 2], $nids);
}
```

PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing web/modules/custom/tdd_blog/tests/src/Kernel

F

1 / 1 (100%)

Time: 1.42 seconds, Memory: 6.00MB

There was 1 failure:

1) Drupal\Tests\tdd_blog\Kernel\BlogPageTest::testArticlesAreOrderedByDate

Failed asserting that two arrays are equal.

--- Expected

+++ Actual

@@ @@

```
Array (
-   0 => 4
-   1 => 1
-   2 => 3
-   3 => 2
+   0 => '3'
+   1 => '2'
+   2 => '4'
+   3 => '1'
```

/Users/opdavies/Code/drupal-testing-workshop/web/core/tests/Drupal/KernelTests/KernelTestBase.php:1114

/Users/opdavies/Code/drupal-testing-workshop/web/modules/custom/tdd_blog/tests/src/Kernel/BlogPageTest.php:43

FAILURES!

Tests: 1, Assertions: 4, Failures: 1.

PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing web/modules/custom/tdd_blog/tests/src/Kernel

F

1 / 1 (100%)

Time: 1.42 seconds, Memory: 6.00MB

There was 1 failure:

1) Drupal\Tests\tdd_blog\Kernel\BlogPageTest::testArticlesAreOrderedByDate

Failed asserting that two arrays are equal.

--- Expected

+++ Actual

@@ @@

```
Array (
-   0 => 4
-   1 => 1
-   2 => 3
-   3 => 2
+   0 => '3'
+   1 => '2'
+   2 => '4'
+   3 => '1'
```

/Users/opdavies/Code/drupal-testing-workshop/web/core/tests/Drupal/KernelTests/KernelTestBase.php:1114

/Users/opdavies/Code/drupal-testing-workshop/web/modules/custom/tdd_blog/tests/src/Kernel/BlogPageTest.php:43

FAILURES!

Tests: 1, Assertions: 4, Failures: 1.

- ▶ **There is no sort order defined on the view**
- ▶ **Add the sort order**
- ▶ **Re-export the view**

PHPUnit 6.5.8 by Sebastian Bergmann and contributors.

Testing web/modules/custom/tdd_blog/tests/src/Kernel

.

1 / 1 (100%)

Time: 1.74 seconds, Memory: 6.00MB

OK (1 test, 5 assertions)

TASKS

- ▶ ~~Ensure the blog page exists~~
- ▶ ~~Ensure only published articles are shown~~
- ▶ ~~Ensure the articles are shown in the correct order~~

QUESTIONS?

THANKS