Alan Hemmings

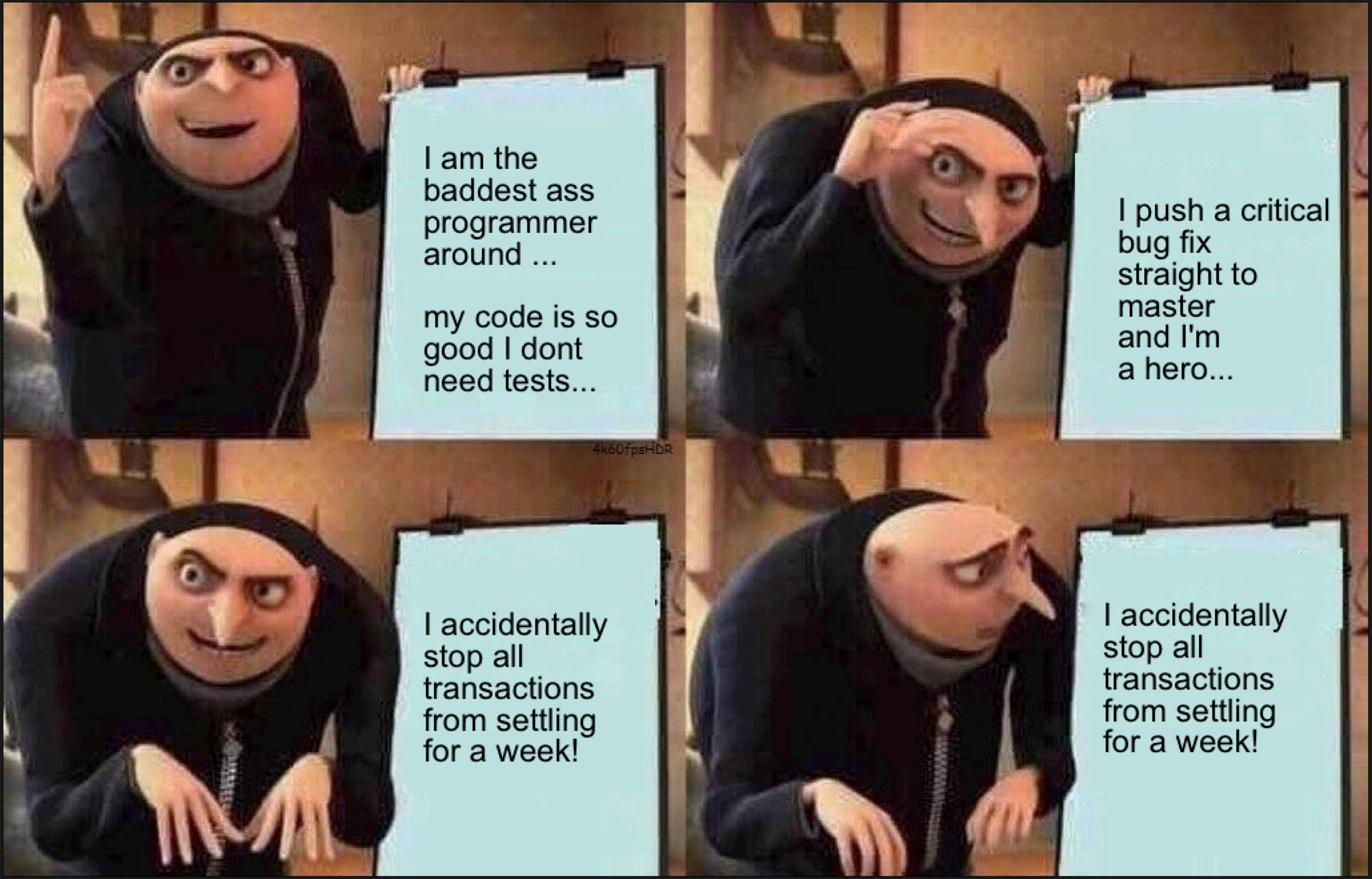
@snowcode

Selenium and Specflow

Skills Matter, London
Tue 26 March 2019

warning, strong opinions ahead.
code demonstrated should be repeatable in a number of languages using a suitable “gherkin” test runner and selenium api is available for your language. (ask the audience)

London Selenium User Group


I am the baddest ass programmer around ...
my code is so good I dont need tests...
I push a critical bug fix straight to master and I'm a hero...
4k60fpsHDR
I accidentally stop all transactions from settling for a week!
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& soon combining with taiko.js user group!

all the planz…

- Shout outs, what other testing groups are present? 10m

- what do we want from the user group? post its and stickers to create an unsorted backlog for the user group.

- **Collaboration** why are full end to ends tests of web UX not common?
  - or, if you're not already using Selenium (or similar)…why not?
  - shout outs and post it notes
  should I set up a Gitter for the group?

- What types of automation tests are there? 8m

- intro to specflow syntax 15m

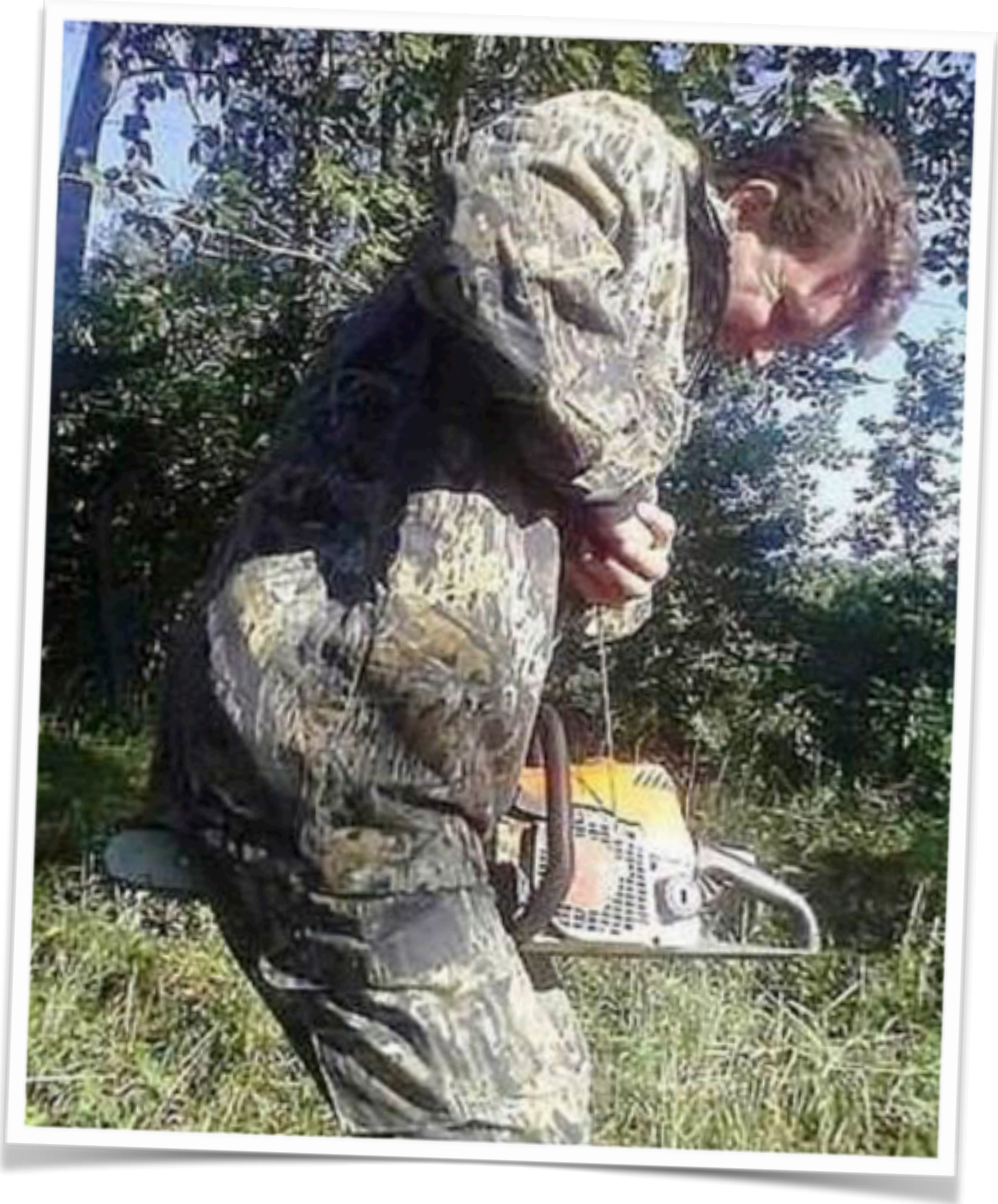
- **Selenium + Specflow**
  driving selenium from specflow in C#
  (using draki nuget package to
  simplify getting started) 25m
  (change of plan : not doing a live code walk through, rather refer to a live coding I did last night, don't want to tempt the live coding gods on my first night want to spend more time getting the group properly started. A lot of those attending are seasoned veterans.)
  All the code is available on https://github.com/goblinfactory/Draki **master** branch.

- Q&A 8m

  Vote for 3 "backlog feature" on your way out to the pub!

- If we have enough time I will demonstrate creating a specflow feature for one of the set of Draki acceptance tests.

- pub - aim to be in the pub (SkillsMatter pub if they r open?) before 8pm!   ~



types of tests?

Nurture your child's fascination with fire.
Kindex
My First Fire™
EXPLORE THE WONDERS OF FIRELIGHTING
• 18" Fire Ring
• 12" Poker
• 4 Endura™ Logs
• 8 oz. Fuel Can
(Cherry-Scented accelerant included)
Easy set-up!
AGES
2+

- UAT - User acceptance and System tests

  Full monty, can take hours to run and or even days to schedule. (**see "release trains" for bigger organisations)**
  involves manual testing and or very slow processes. Hitting real external systems.

- smoke test

  all areas of the software application are **tested** without getting into too deep.
  Simple as possible, low cost to produce, quick and easy to run so that it's run by developer before checking in code, and quicker and easier to run against a custom test environment, as an early warning system. Runs in seconds or minutes.
  External systems are optional mocked out, or hit.

- sanity test

a narrow regression **testing** with a focus on one or a small set of areas of functionality of the software application. The purpose of a sanity test is to be able to get feedback as quickly as possible without having to wait for a full UAT test. Can involve human testing. Because it's an agreed slice through the system, human testing can be focused and quite effective at providing valuable feedback before deployment to production, resulting in the biggest savings and best agile gains. Work done to create sanity tests allow you to slowly chip away at the UAT and move human tests into automated regression tests. External systems are optional mocked out, or connected to.

- regression test

  As close the real UAT as possible, automating as much as possible all the human or slow processes. Mock out external systems with option to hit real external sandboxes.
  Ideally the regression test is simply a sum of all the acceptance tests. If there's a need for something to happen, or be tested, then we need a requirement plus an acceptance test.

- acceptance

  All the tests for a single requirement or feature. (separately deliverable piece of work) that span across multiple services that may need to play well together in order to deliver the required business value.

- functional test

  this is the acceptance test with all the external services mocked out. If the system under test is a single service, and has a decent domain bounded context.
  This is where most of the problems with testing for large organisations show up. e.g. domain logic living in a database, or delivery of new multiple

- integration test

  Full end to end test run against a set of services deployed to an environment, hitting real back end systems but with external services mocked out. (Single service at a time)

- component test

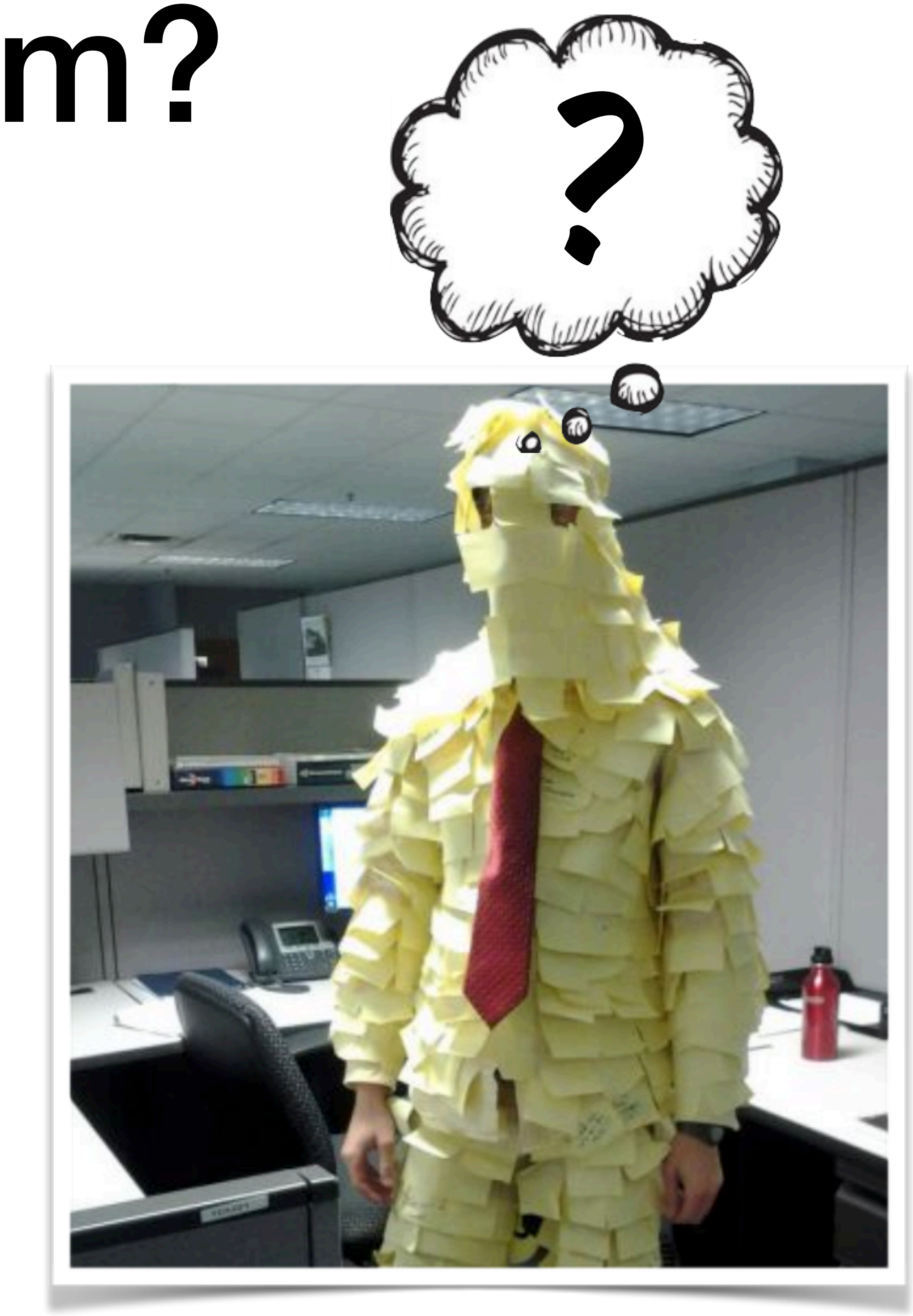
  A test covering a set of class that have to collaborate together to perform a specific business domain activity that warrants having tests that serve as documentation on how the domain delivers certain business logic.

- unit

  one of more closely related classes and tests to confirm the classes work as required. Typically additional classes as a result of refactoring would not be mocked out.
  This is controversial, and some people say a unit test is one class only, **and I say, all the definitions are whatever your team agrees that they are, and what works for your culture and business challenges.**

what do we want from London Selenium?

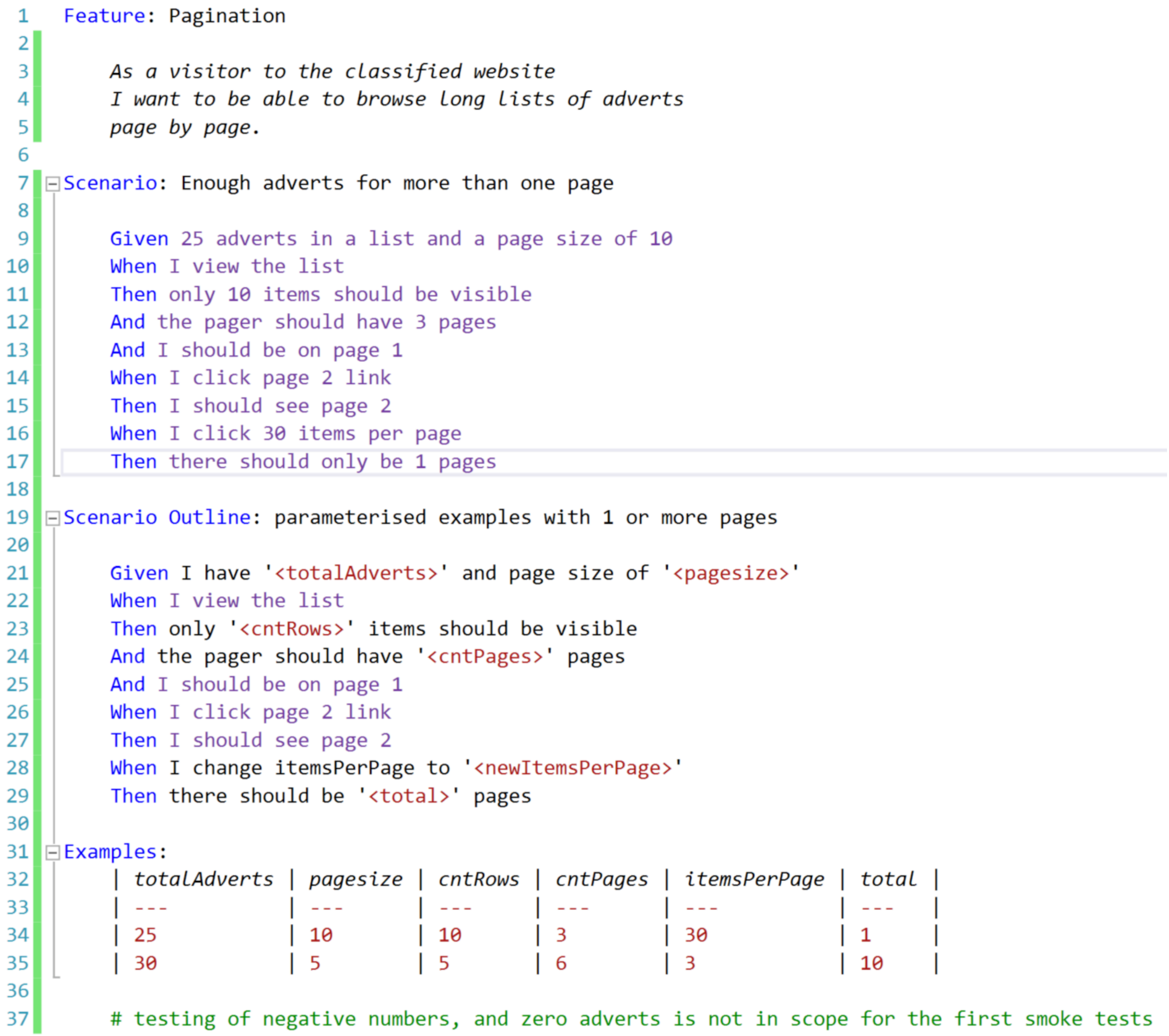
- who is not a full time tester?
  - what did you want to get out of today?
- **disclaimer - I’m not a “tester" : (packing parachutes)**
- apply sharpie to post it (shout out, cards) what do we want?
- how many people C# devs?
  - what are you using?
- Other devs ?
  - what are you using?
- dot notation voting (grab a pen and vote)



what are some of the challenges to writing web tests?…

- 1 Identifying elements
- 2 identifying page has loaded
- 3 waiting for things
- 4 unexpected responses - asserts vs expectations reporting how the test has failed, screenshots
- 5 dealing with fast changing content
- handling test data.

Anatomy of a specflow feature file



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Feature: Pagination

    As a visitor to the classified website
    I want to be able to browse long lists of adverts
    page by page.

Scenario: Enough adverts for more than one page

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Scenario Outline: parameterised examples with 1 or more pages

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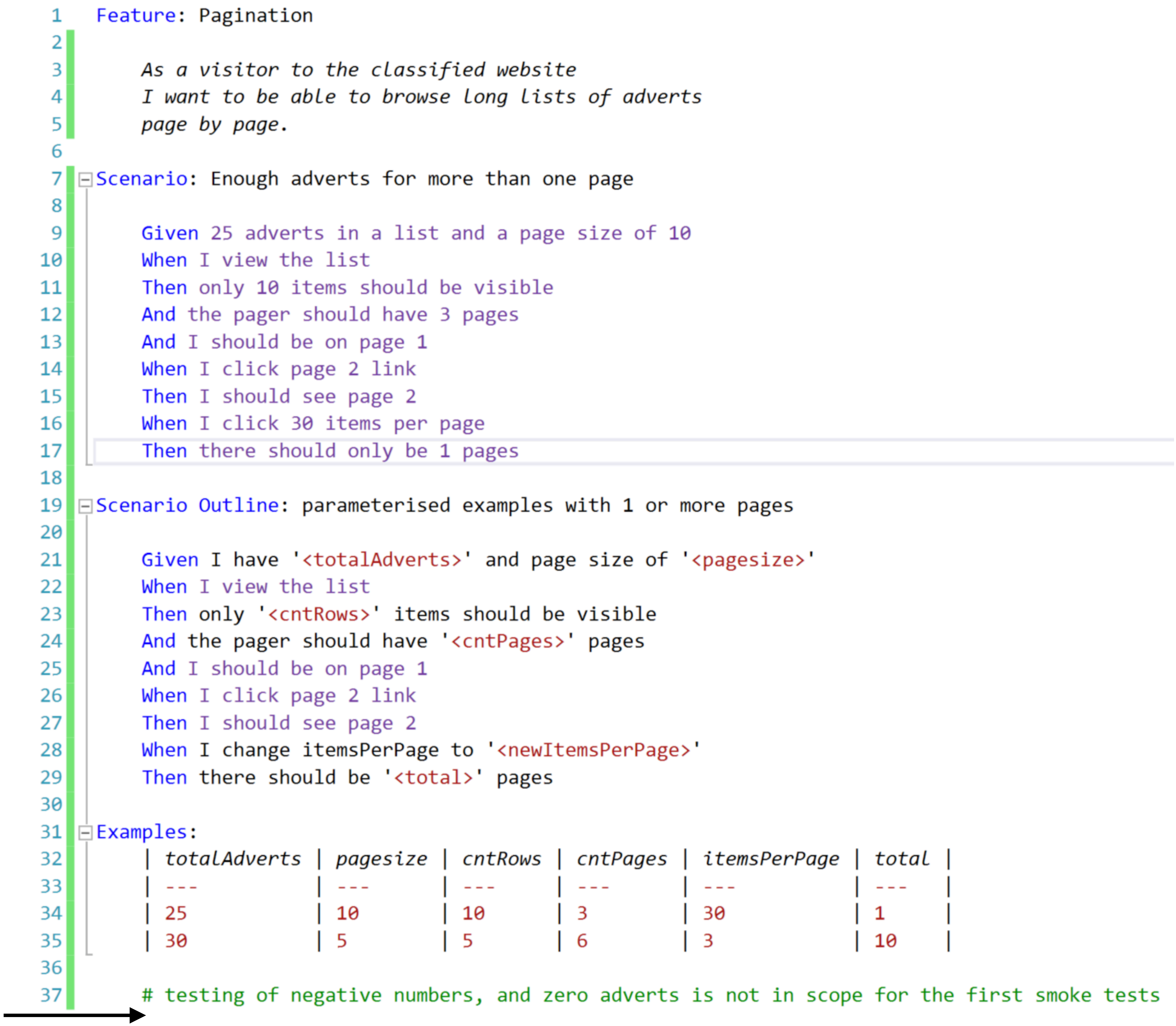

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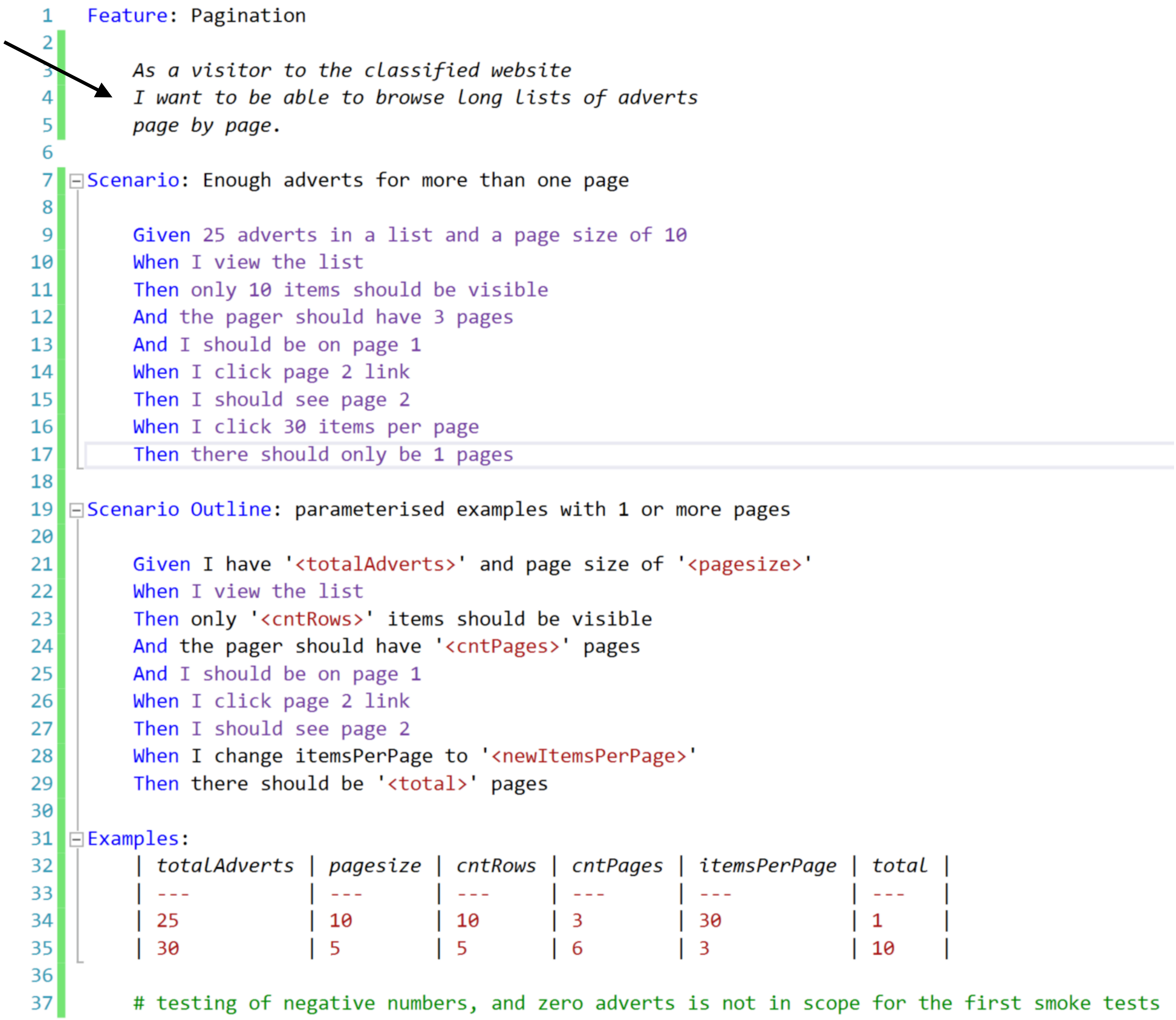

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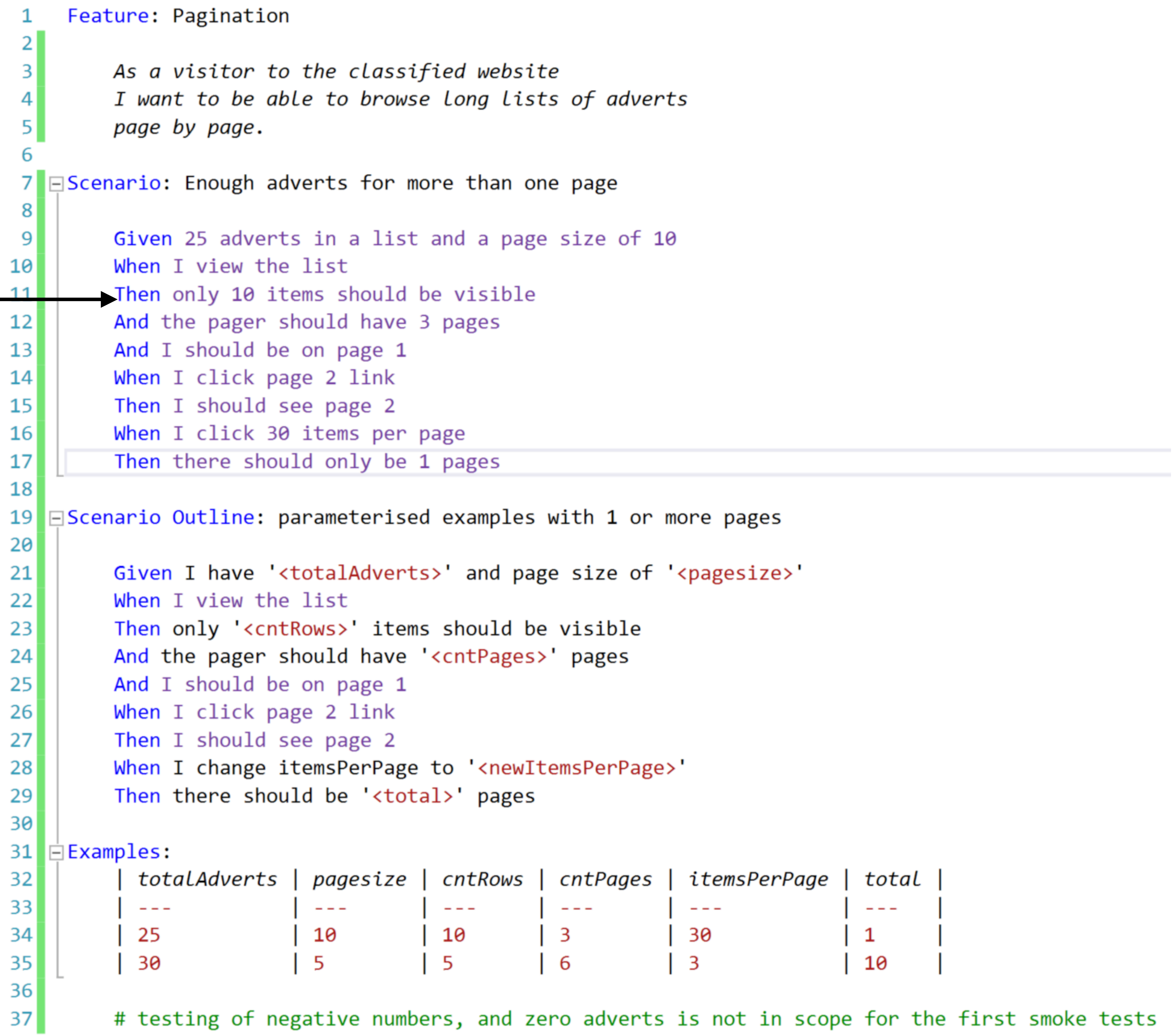

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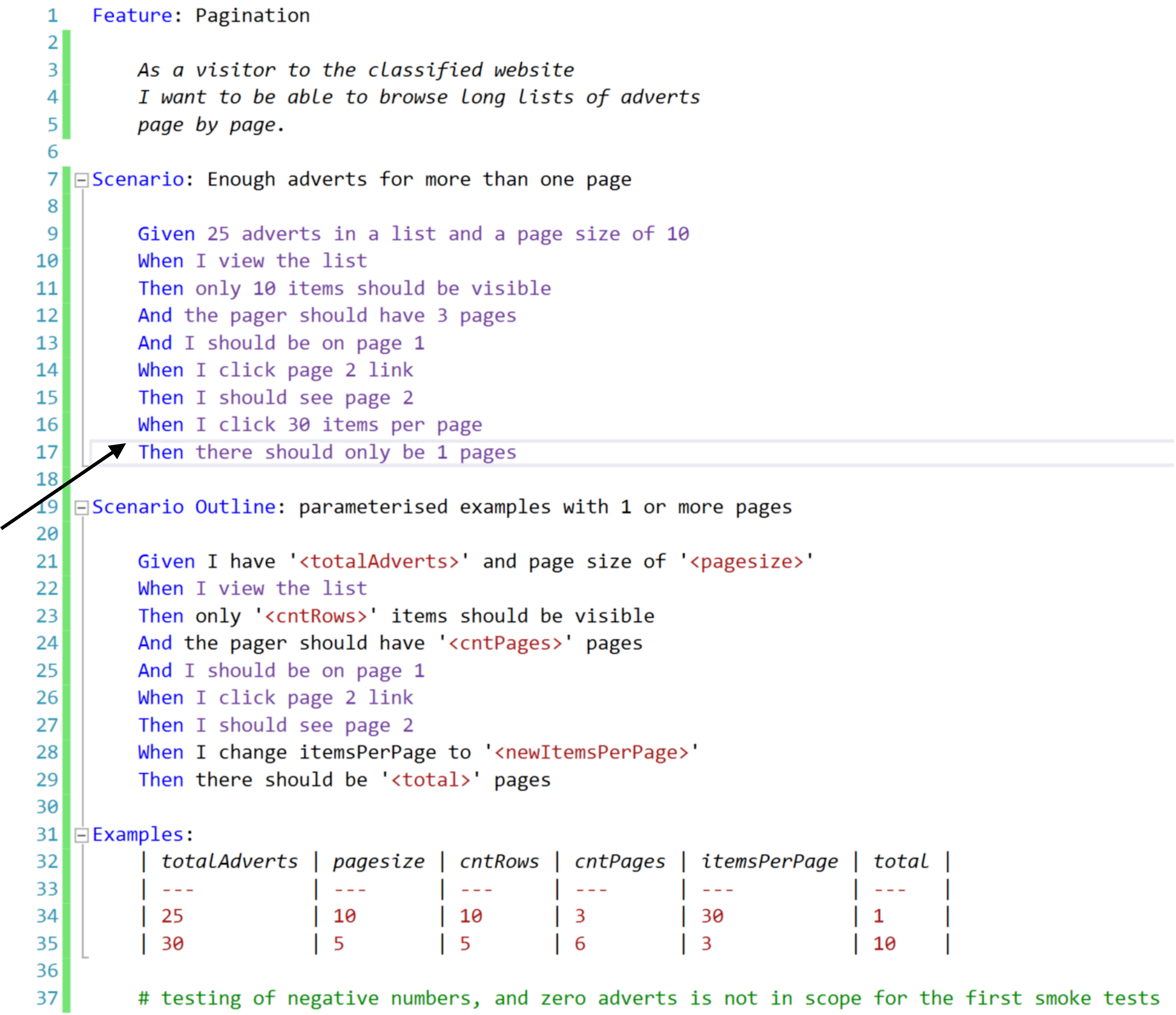

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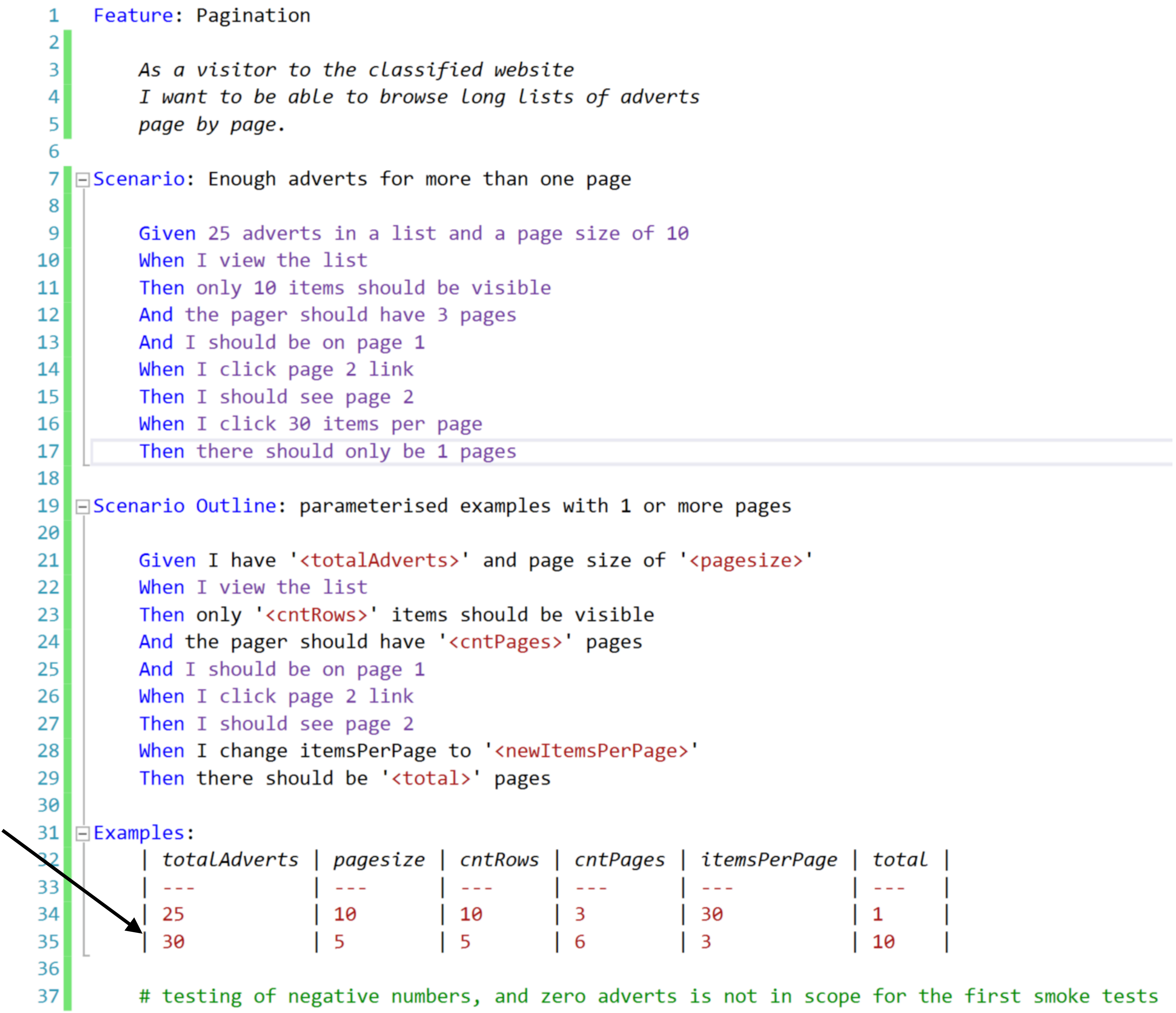

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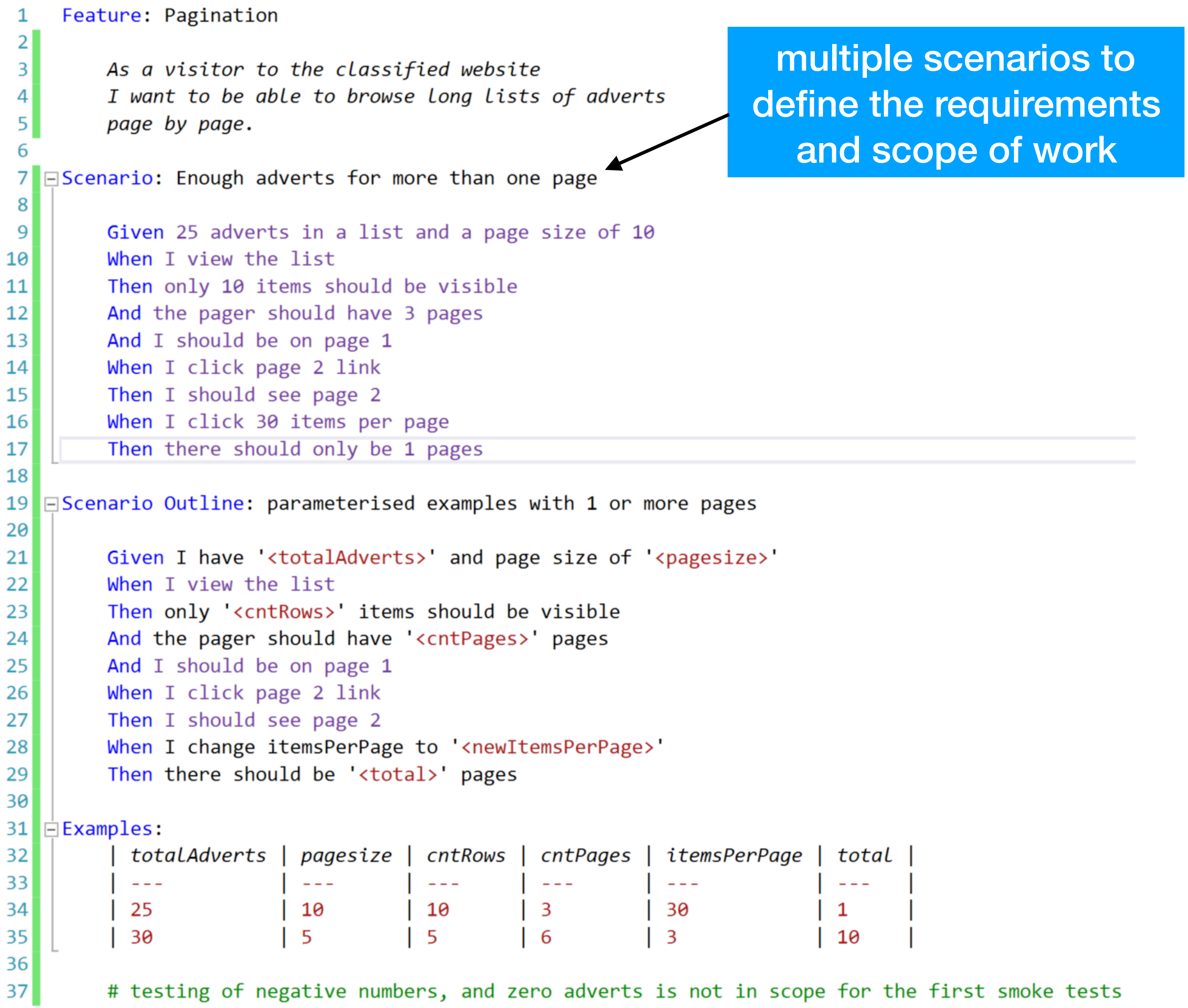

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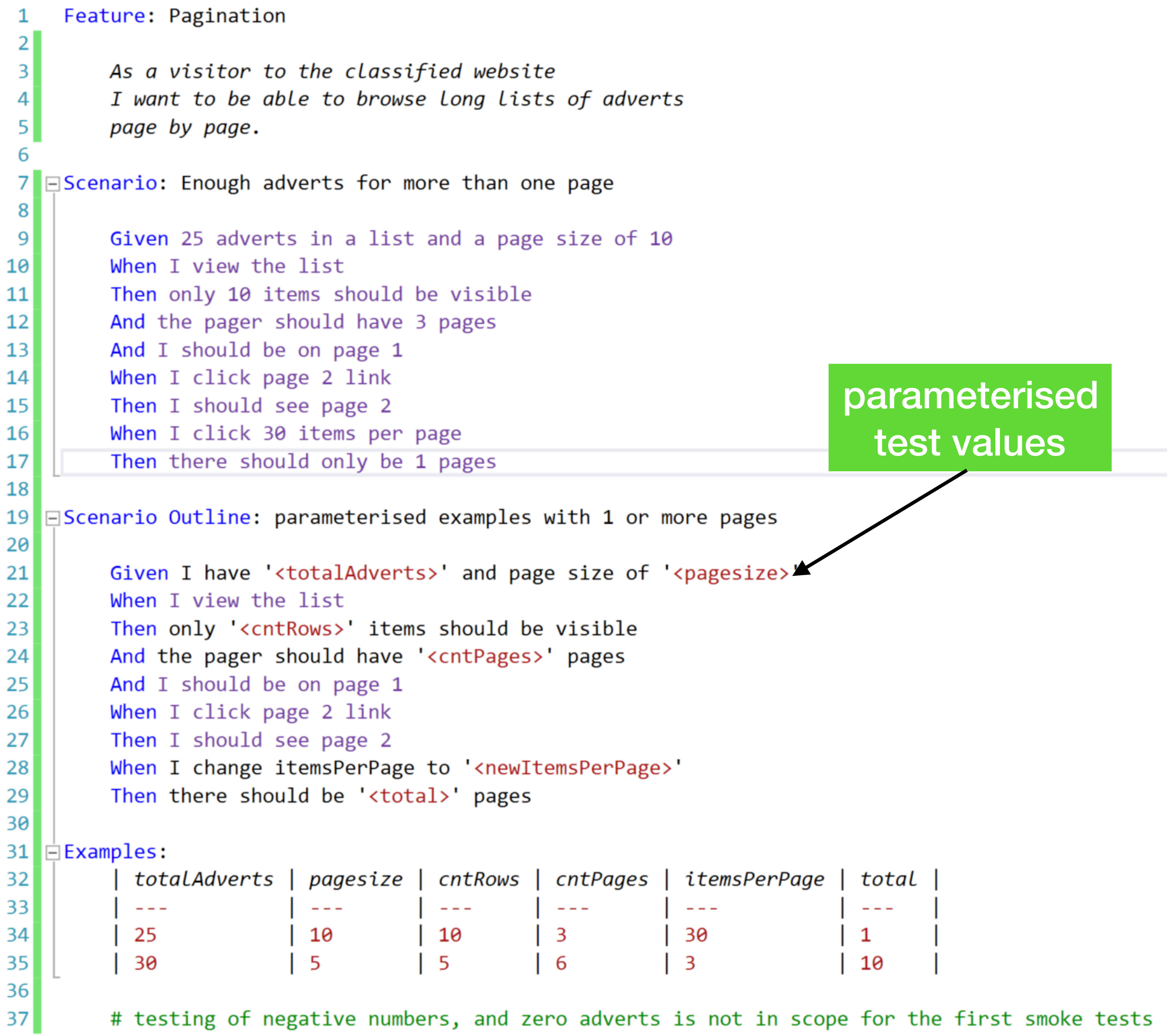

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parameterised test values

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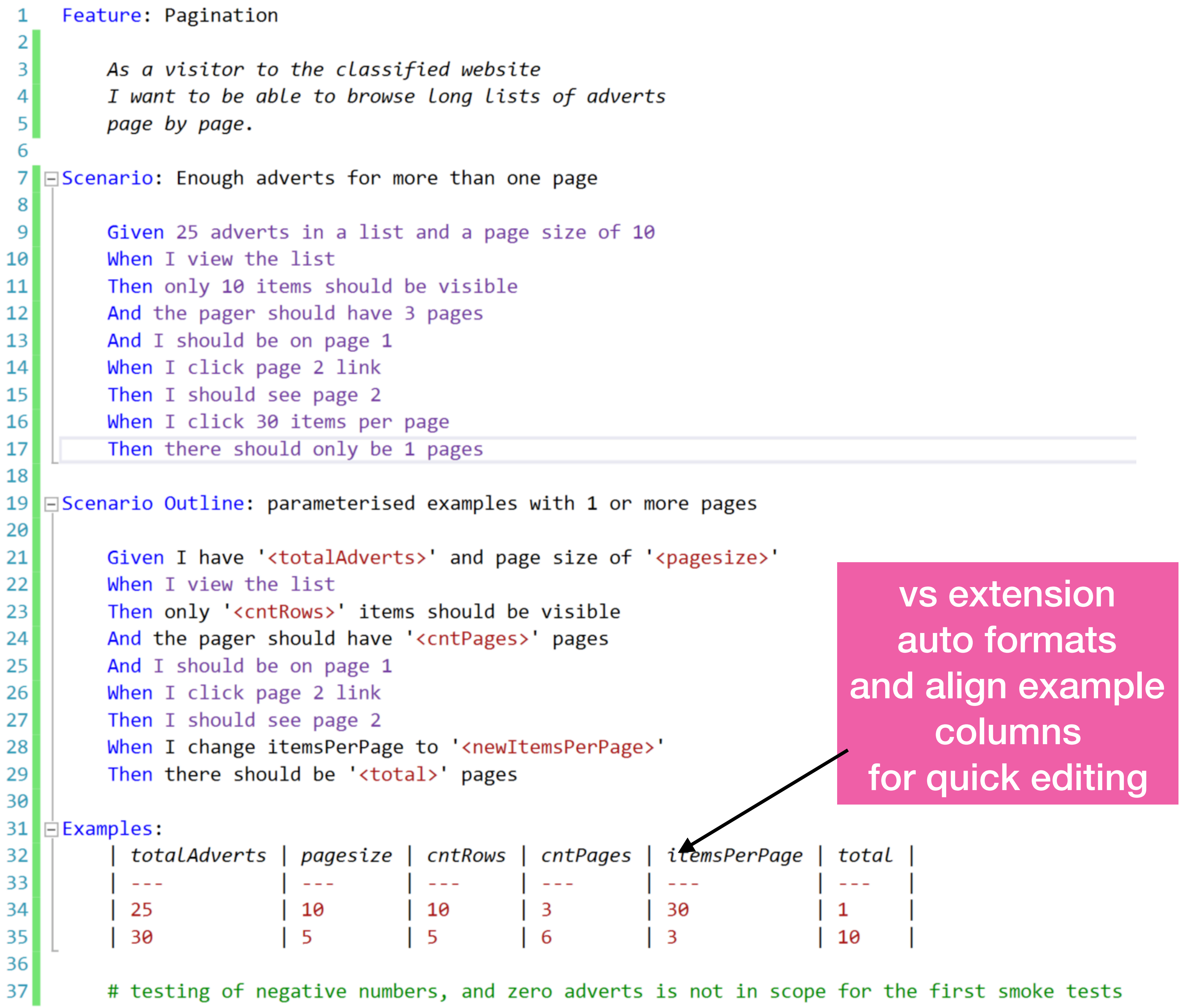

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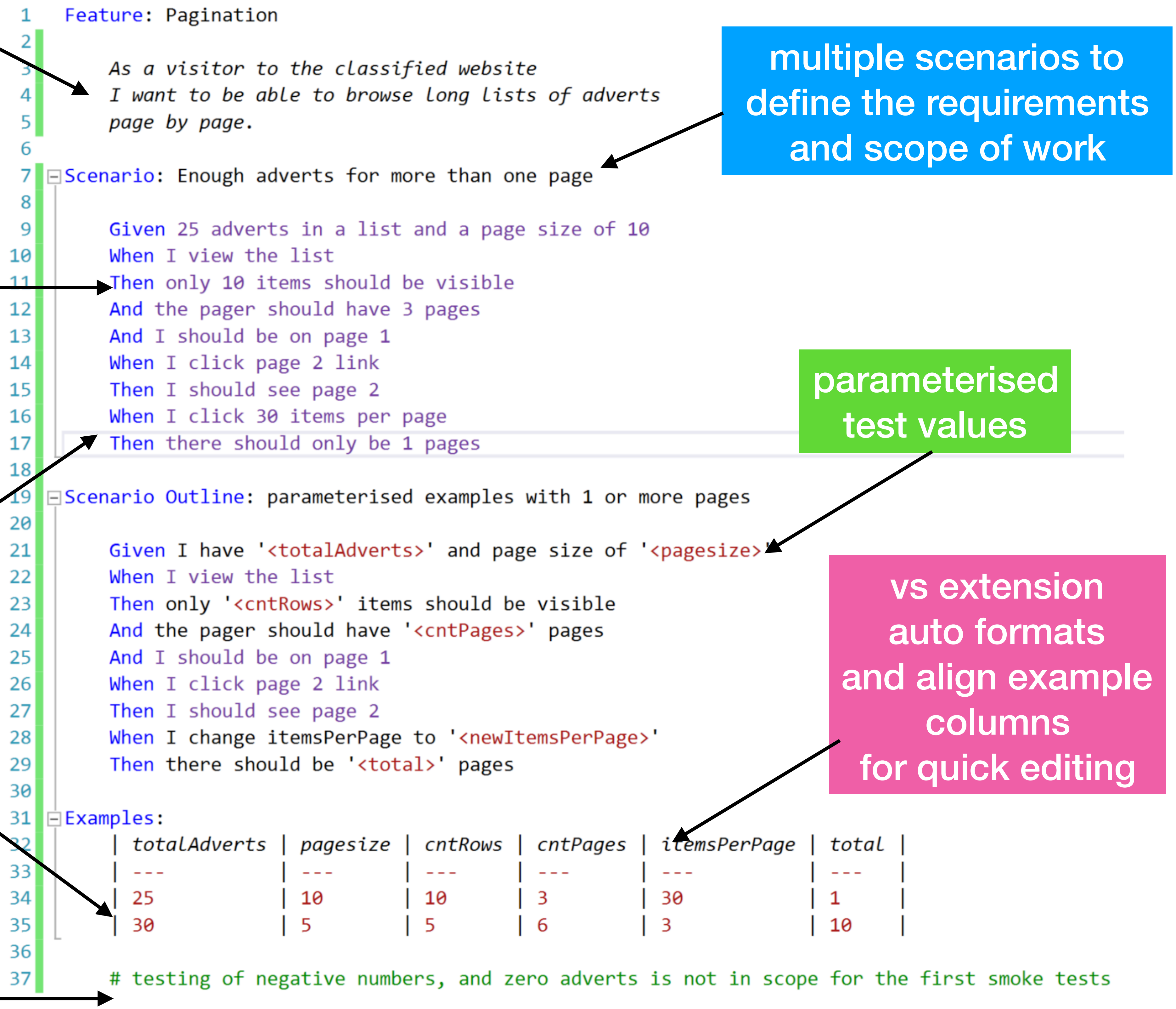

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Anatomy of a typical selenium test

boot strap web driver

navigations

expectations

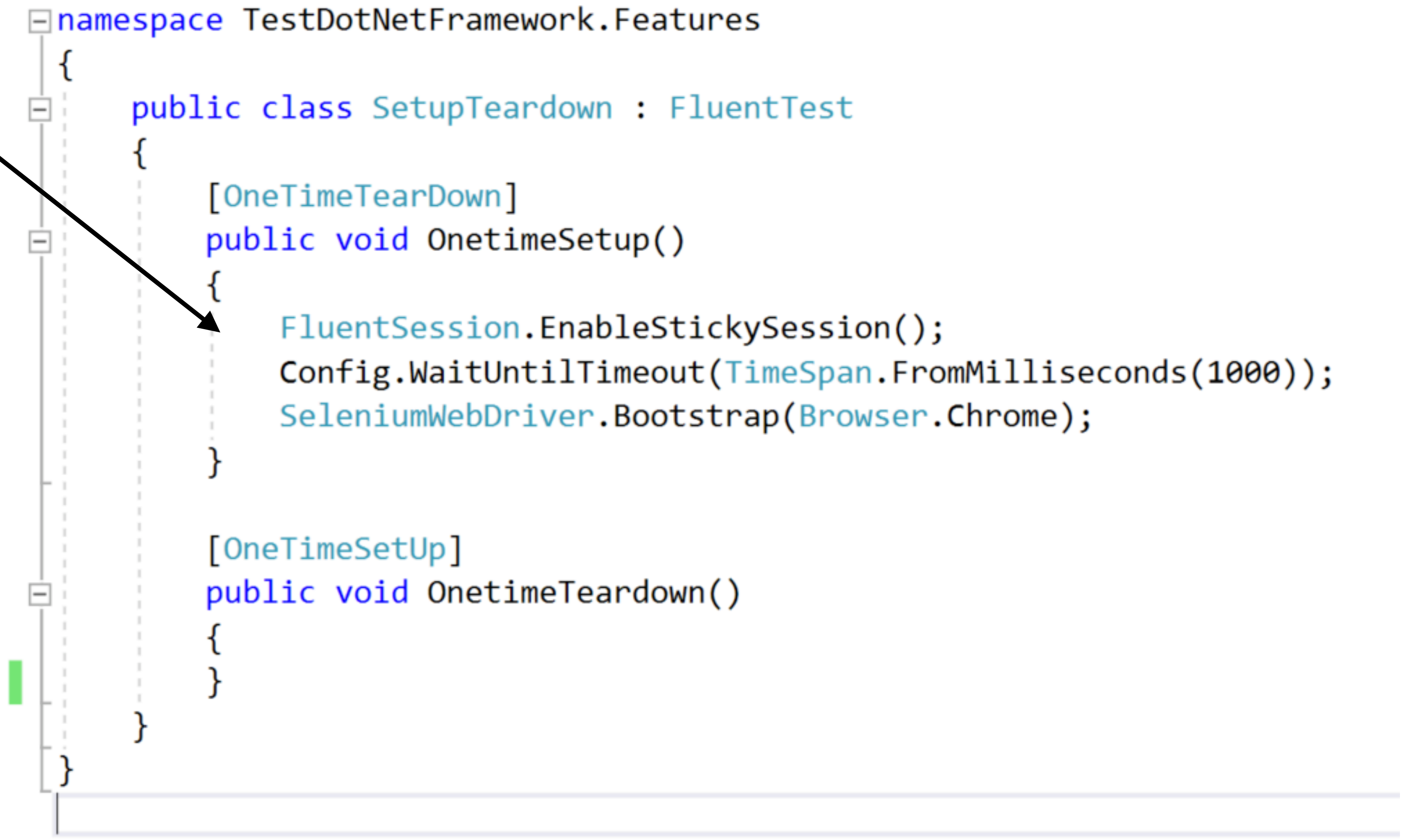
expectations

expectations

locating elements

interacting with elements

page abstractions



```
namespace TestDotNetFramework.Features
{
    public class SetupTeardown : FluentTest
    {
        [OneTimeTearDown]
        public void OnetimeSetup()
        {
            FluentSession.EnableStickySession();
            Config.WaitUntilTimeout(TimeSpan.FromMilliseconds(1000));
            SeleniumWebDriver.Bootstrap(Browser.Chrome);
        }

        [OneTimeSetUp]
        public void OnetimeTeardown()
        {
        }
    }
}
```

Anatomy of a typical selenium test

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navigations

I.Open(url)

expectations

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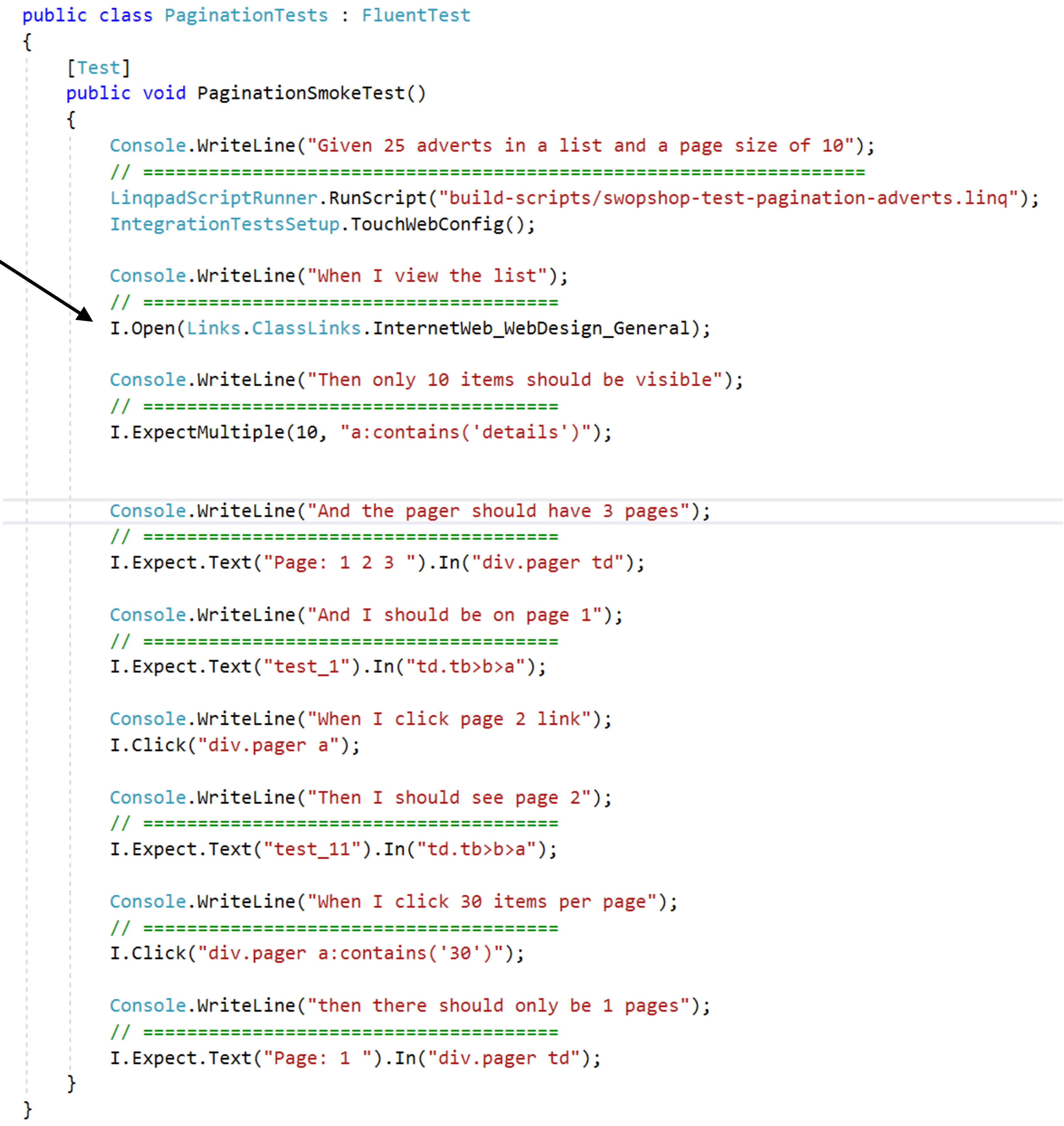


```
public class PaginationTests : FluentTest
{
    [Test]
    public void PaginationSmokeTest()
    {
        Console.WriteLine("Given 25 adverts in a list and a page size of 10");
        // ==================================================================
        LinqpadScriptRunner.RunScript("build-scripts/swopshop-test-pagination-adverts.linq");
        IntegrationTestsSetup.TouchWebConfig();

        Console.WriteLine("When I view the list");
        // ======================================
        I.Open(Links.ClassLinks.InternetWeb_WebDesign_General);

        Console.WriteLine("Then only 10 items should be visible");
        // ======================================
        I.ExpectMultiple(10, "a:contains('details')");


        Console.WriteLine("And the pager should have 3 pages");
        // ======================================
        I.Expect.Text("Page: 1 2 3 ").In("div.pager td");

        Console.WriteLine("And I should be on page 1");
        // ======================================
        I.Expect.Text("test_1").In("td.tb>b>a");

        Console.WriteLine("When I click page 2 link");
        I.Click("div.pager a");

        Console.WriteLine("Then I should see page 2");
        // ======================================
        I.Expect.Text("test_11").In("td.tb>b>a");

        Console.WriteLine("When I click 30 items per page");
        // ======================================
        I.Click("div.pager a:contains('30')");

        Console.WriteLine("then there should only be 1 pages");
        // ======================================
        I.Expect.Text("Page: 1 ").In("div.pager td");
    }
}
```

Anatomy of a typical selenium test

boot strap web driver

navigations

expectations

expectations

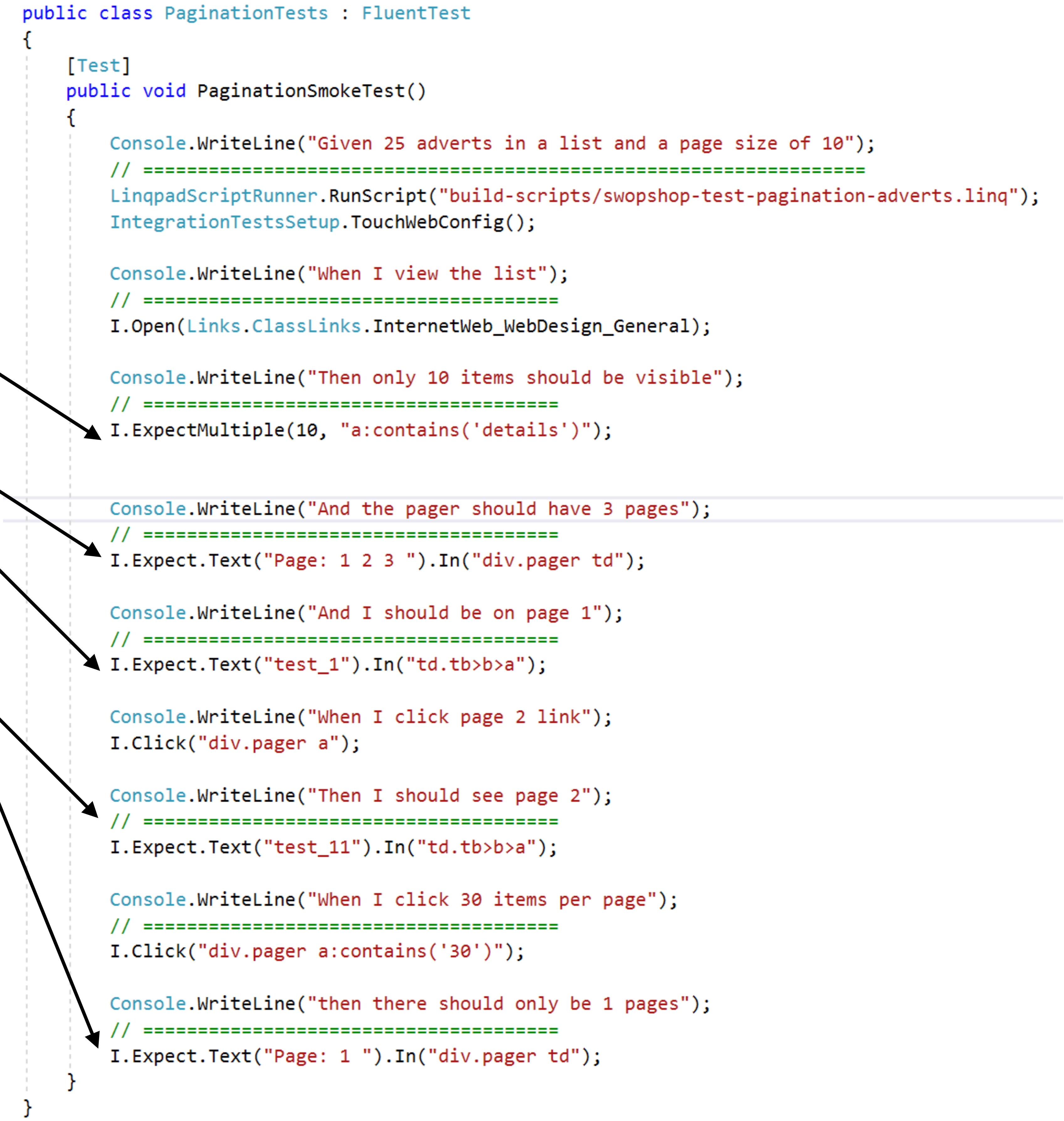
**I.Expect.Text(text)
.In(selector)**

expectations

locating elements

interacting with elements

page abstractions



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{
    [Test]
    public void PaginationSmokeTest()
    {
        Console.WriteLine("Given 25 adverts in a list and a page size of 10");
        // ================================================================
        LinqpadScriptRunner.RunScript("build-scripts/swopshop-test-pagination-adverts.linq");
        IntegrationTestsSetup.TouchWebConfig();

        Console.WriteLine("When I view the list");
        // ========================================
        I.Open(Links.ClassLinks.InternetWeb_WebDesign_General);

        Console.WriteLine("Then only 10 items should be visible");
        // ========================================
        I.ExpectMultiple(10, "a:contains('details')");


        Console.WriteLine("And the pager should have 3 pages");
        // ========================================
        I.Expect.Text("Page: 1 2 3 ").In("div.pager td");

        Console.WriteLine("And I should be on page 1");
        // ========================================
        I.Expect.Text("test_1").In("td.tb>b>a");

        Console.WriteLine("When I click page 2 link");
        I.Click("div.pager a");

        Console.WriteLine("Then I should see page 2");
        // ========================================
        I.Expect.Text("test_11").In("td.tb>b>a");

        Console.WriteLine("When I click 30 items per page");
        // ========================================
        I.Click("div.pager a:contains('30')");

        Console.WriteLine("then there should only be 1 pages");
        // ========================================
        I.Expect.Text("Page: 1 ").In("div.pager td");
    }
}
```

Anatomy of a typical selenium test

boot strap web driver

navigations

expectations

expectations

expectations

locating elements

programatic / more idiomatic

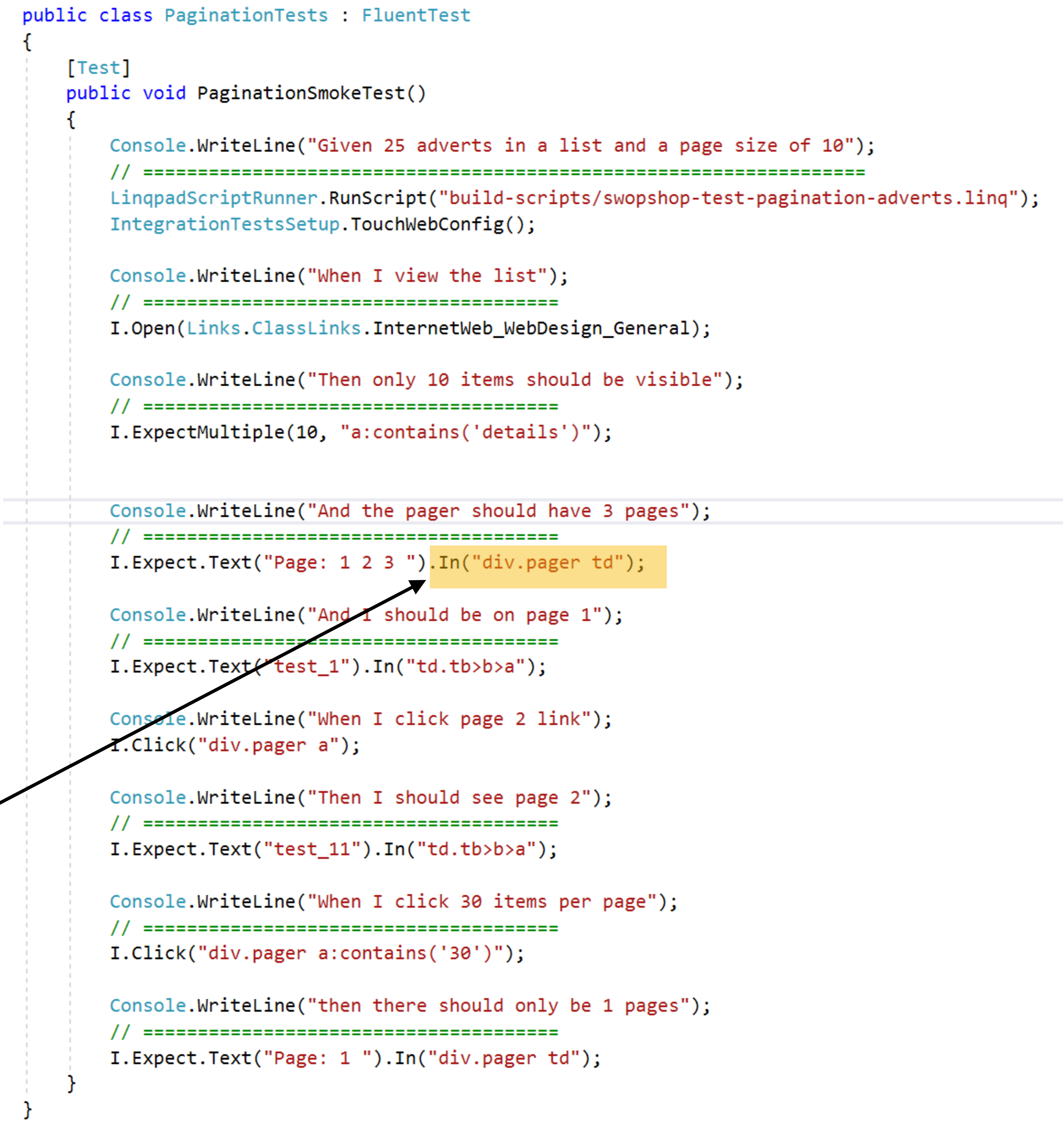
**I.Find(selector)
.Click()**

fluent using
builder patterns

**I.Expect.Text(text)
.In(selector)**

interacting with elements

page abstractions



```
public class PaginationTests : FluentTest
{
    [Test]
    public void PaginationSmokeTest()
    {
        Console.WriteLine("Given 25 adverts in a list and a page size of 10");
        // ==================================================================
        LinqpadScriptRunner.RunScript("build-scripts/swopshop-test-pagination-adverts.linq");
        IntegrationTestsSetup.TouchWebConfig();

        Console.WriteLine("When I view the list");
        // ======================================
        I.Open(Links.ClassLinks.InternetWeb_WebDesign_General);

        Console.WriteLine("Then only 10 items should be visible");
        // ======================================
        I.ExpectMultiple(10, "a:contains('details')");


        Console.WriteLine("And the pager should have 3 pages");
        // ======================================
        I.Expect.Text("Page: 1 2 3 ").In("div.pager td");

        Console.WriteLine("And I should be on page 1");
        // ======================================
        I.Expect.Text("test_1").In("td.tb>b>a");

        Console.WriteLine("When I click page 2 link");
        I.Click("div.pager a");

        Console.WriteLine("Then I should see page 2");
        // ======================================
        I.Expect.Text("test_11").In("td.tb>b>a");

        Console.WriteLine("When I click 30 items per page");
        // ======================================
        I.Click("div.pager a:contains('30')");

        Console.WriteLine("then there should only be 1 pages");
        // ======================================
        I.Expect.Text("Page: 1 ").In("div.pager td");
    }
}
```

Anatomy of a typical selenium test

boot strap web driver

navigations

expectations

expectations

expectations

locating elements

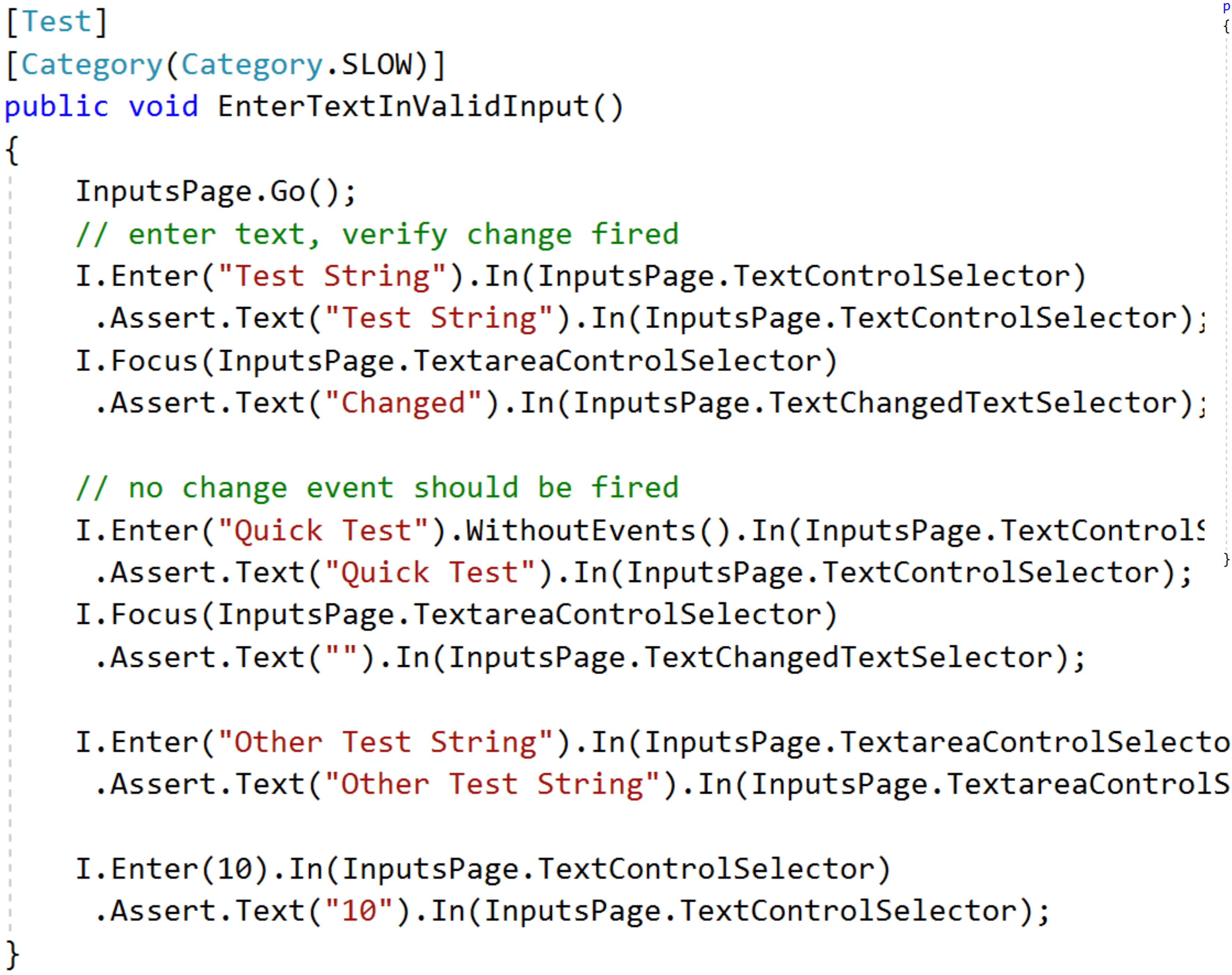
interacting with elements

page abstractions

I
.Click
.Switch
.Upload
.Wait
.Drag
.Enter
.Find
.Focus
.Hover
.Select
.TakeScreenShot

page abstractions

helper class per page

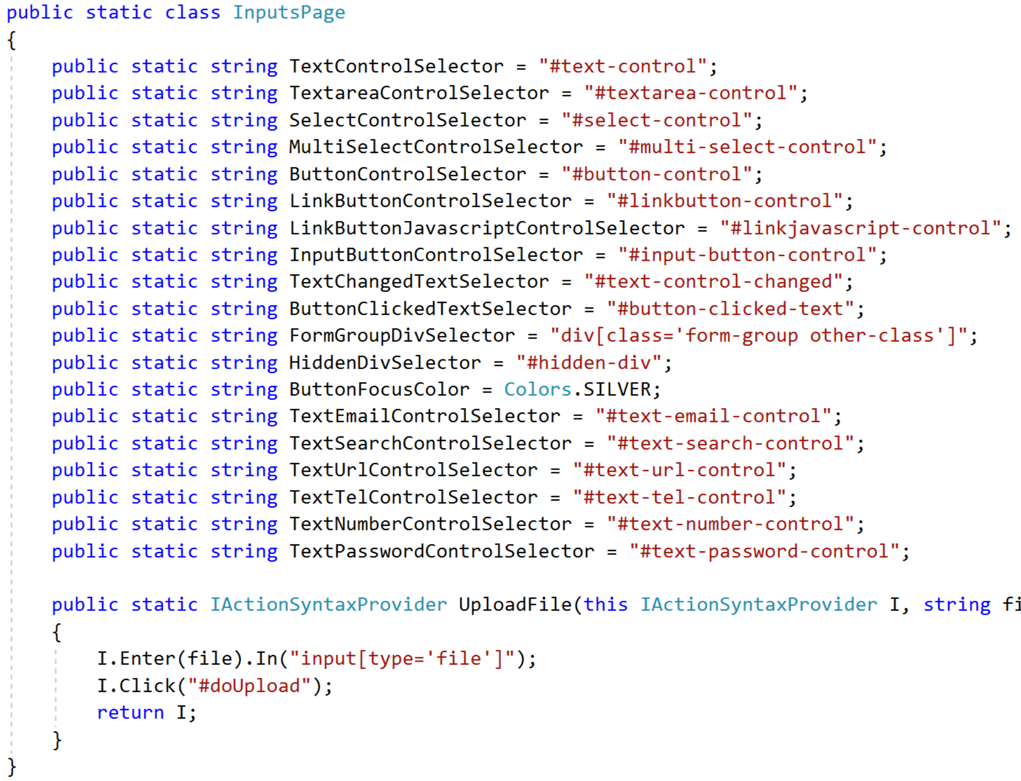


```
[Test]
[Category(Category.SLOW)]
public void EnterTextInValidInput()
{
    InputsPage.Go();
    // enter text, verify change fired
    I.Enter("Test String").In(InputsPage.TextControlSelector)
     .Assert.Text("Test String").In(InputsPage.TextControlSelector);
    I.Focus(InputsPage.TextareaControlSelector)
     .Assert.Text("Changed").In(InputsPage.TextChangedTextSelector);

    // no change event should be fired
    I.Enter("Quick Test").WithoutEvents().In(InputsPage.TextControlS
     .Assert.Text("Quick Test").In(InputsPage.TextControlSelector);
    I.Focus(InputsPage.TextareaControlSelector)
     .Assert.Text("").In(InputsPage.TextChangedTextSelector);

    I.Enter("Other Test String").In(InputsPage.TextareaControlSelector)
     .Assert.Text("Other Test String").In(InputsPage.TextareaControlSelector);

    I.Enter(10).In(InputsPage.TextControlSelector)
     .Assert.Text("10").In(InputsPage.TextControlSelector);
}
```

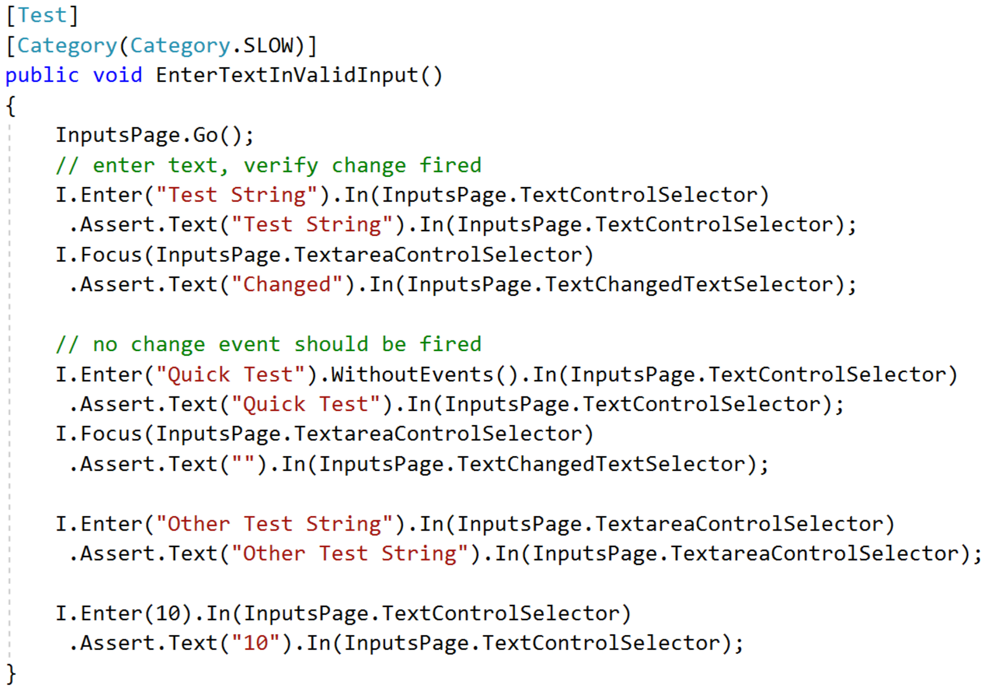


```
public static class InputsPage
{
    public static string TextControlSelector = "#text-control";
    public static string TextareaControlSelector = "#textarea-control";
    public static string SelectControlSelector = "#select-control";
    public static string MultiSelectControlSelector = "#multi-select-control";
    public static string ButtonControlSelector = "#button-control";
    public static string LinkButtonControlSelector = "#linkbutton-control";
    public static string LinkButtonJavascriptControlSelector = "#linkjavascript-control";
    public static string InputButtonControlSelector = "#input-button-control";
    public static string TextChangedTextSelector = "#text-control-changed";
    public static string ButtonClickedTextSelector = "#button-clicked-text";
    public static string FormGroupDivSelector = "div[class='form-group other-class']";
    public static string HiddenDivSelector = "#hidden-div";
    public static string ButtonFocusColor = Colors.SILVER;
    public static string TextEmailControlSelector = "#text-email-control";
    public static string TextSearchControlSelector = "#text-search-control";
    public static string TextUrlControlSelector = "#text-url-control";
    public static string TextTelControlSelector = "#text-tel-control";
    public static string TextNumberControlSelector = "#text-number-control";
    public static string TextPasswordControlSelector = "#text-password-control";

    public static IActionSyntaxProvider UploadFile(this IActionSyntaxProvider I, string fi
    {
        I.Enter(file).In("input[type='file']");
        I.Click("#doUpload");
        return I;
    }
}
```

page abstractions

helper class per page

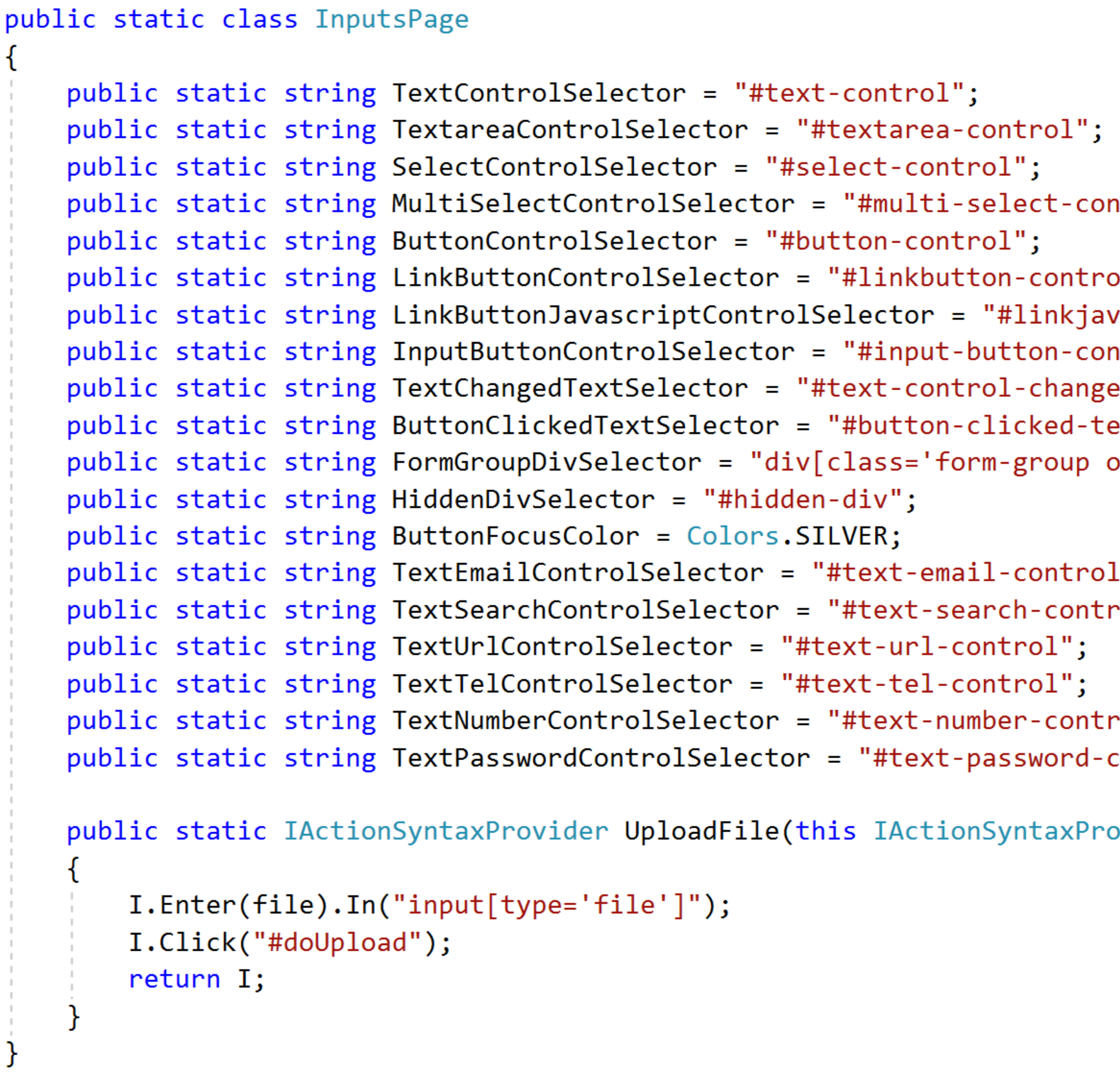


```
[Test]
[Category(Category.SLOW)]
public void EnterTextInValidInput()
{
    InputsPage.Go();
    // enter text, verify change fired
    I.Enter("Test String").In(InputsPage.TextControlSelector)
     .Assert.Text("Test String").In(InputsPage.TextControlSelector);
    I.Focus(InputsPage.TextareaControlSelector)
     .Assert.Text("Changed").In(InputsPage.TextChangedTextSelector);

    // no change event should be fired
    I.Enter("Quick Test").WithoutEvents().In(InputsPage.TextControlSelector)
     .Assert.Text("Quick Test").In(InputsPage.TextControlSelector);
    I.Focus(InputsPage.TextareaControlSelector)
     .Assert.Text("").In(InputsPage.TextChangedTextSelector);

    I.Enter("Other Test String").In(InputsPage.TextareaControlSelector)
     .Assert.Text("Other Test String").In(InputsPage.TextareaControlSelector);

    I.Enter(10).In(InputsPage.TextControlSelector)
     .Assert.Text("10").In(InputsPage.TextControlSelector);
}
```



```
public static class InputsPage
{
    public static string TextControlSelector = "#text-control";
    public static string TextareaControlSelector = "#textarea-control";
    public static string SelectControlSelector = "#select-control";
    public static string MultiSelectControlSelector = "#multi-select-con
    public static string ButtonControlSelector = "#button-control";
    public static string LinkButtonControlSelector = "#linkbutton-contro
    public static string LinkButtonJavascriptControlSelector = "#linkjav
    public static string InputButtonControlSelector = "#input-button-con
    public static string TextChangedTextSelector = "#text-control-change
    public static string ButtonClickedTextSelector = "#button-clicked-te
    public static string FormGroupDivSelector = "div[class='form-group o
    public static string HiddenDivSelector = "#hidden-div";
    public static string ButtonFocusColor = Colors.SILVER;
    public static string TextEmailControlSelector = "#text-email-control
    public static string TextSearchControlSelector = "#text-search-contr
    public static string TextUrlControlSelector = "#text-url-control";
    public static string TextTelControlSelector = "#text-tel-control";
    public static string TextNumberControlSelector = "#text-number-contr
    public static string TextPasswordControlSelector = "#text-password-c

    public static IActionSyntaxProvider UploadFile(this IActionSyntaxPro
    {
        I.Enter(file).In("input[type='file']");
        I.Click("#doUpload");
        return I;
    }
}
```

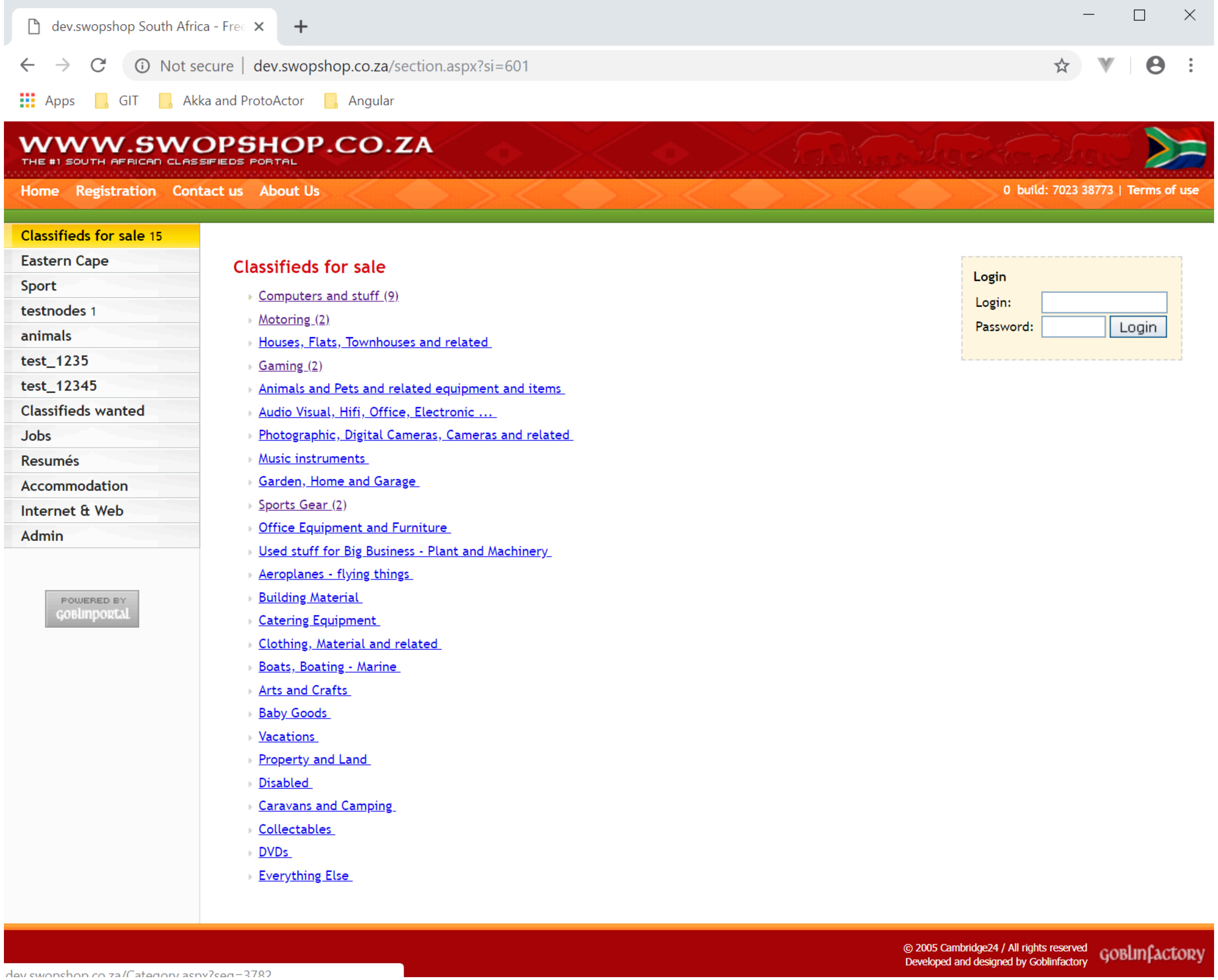
the purpose of this is to keep the bindings easy to read and scan.

creating .NET framework project using new pkg manager and slimline project structure

If you need to write your tests as .net framework tests

- create a new dotnet core project
- delete the properties, debug and obj folders
- edit csproj set <TargetFramework>net472</TargetFramework>
- follow the .NET Core instructions

dev.swopshop.co.za
legacy testing requirements


dev.swopshop South Africa - Free
Not secure
dev.swopshop.co.za/section.aspx?si=601
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GIT
Akka and ProtoActor
Angular
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- Classifieds for sale 15
- Eastern Cape
- Sport
- testnodes 1
- animals
- test_1235
- test_12345
- Classifieds wanted
- Jobs
- Resumés
- Accommodation
- Internet & Web
- Admin

Classifieds for sale

- Computers and stuff (9)
- Motoring (2)
- Houses, Flats, Townhouses and related
- Gaming (2)
- Animals and Pets and related equipment and items
- Audio Visual, Hifi, Office, Electronic ...
- Photographic, Digital Cameras, Cameras and related
- Music instruments
- Garden, Home and Garage
- Sports Gear (2)
- Office Equipment and Furniture
- Used stuff for Big Business - Plant and Machinery
- Aeroplanes - flying things
- Building Material
- Catering Equipment
- Clothing, Material and related
- Boats, Boating - Marine
- Arts and Crafts
- Baby Goods
- Vacations
- Property and Land
- Disabled
- Caravans and Camping
- Collectables
- DVDs
- Everything Else

Login

Login:

Password: Login

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dev.swopshop.co.za/Category.aspx?seq=3782

dev.swopshop.co.za
legacy testing requirements

The tickets I’ve picked up to work on are some urgent smoke tests for a legacy classified website that we need to make some changes to the backend. Before we can do that, we need to put in place some integration tests.

the tickets we’re working on are the smoke tests for the …

pagination, **navigation** and **place new advert** features.

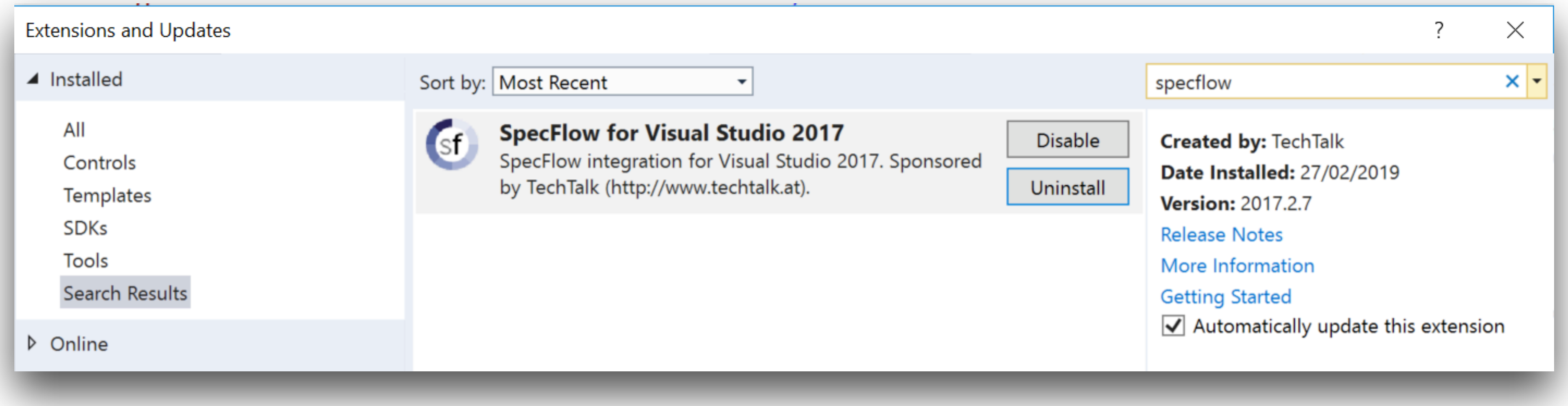
getting started
.NET Core & .NET Framework

- file new .NET core library
- add packages, Nunit, Draki, Specflow, Specflow.Nunit, Specflow.Nunit.Runners

  (latest stable, 2.4.1 as of 26.3.19)

.NET core not tested yet!
busy with tests for
my recent migration (alpha spike)
to .NET core. 26.3.19

- write hello world, smoke test, make sure draki works
- Install specflow visual studio extension



Sort by: Most Recent

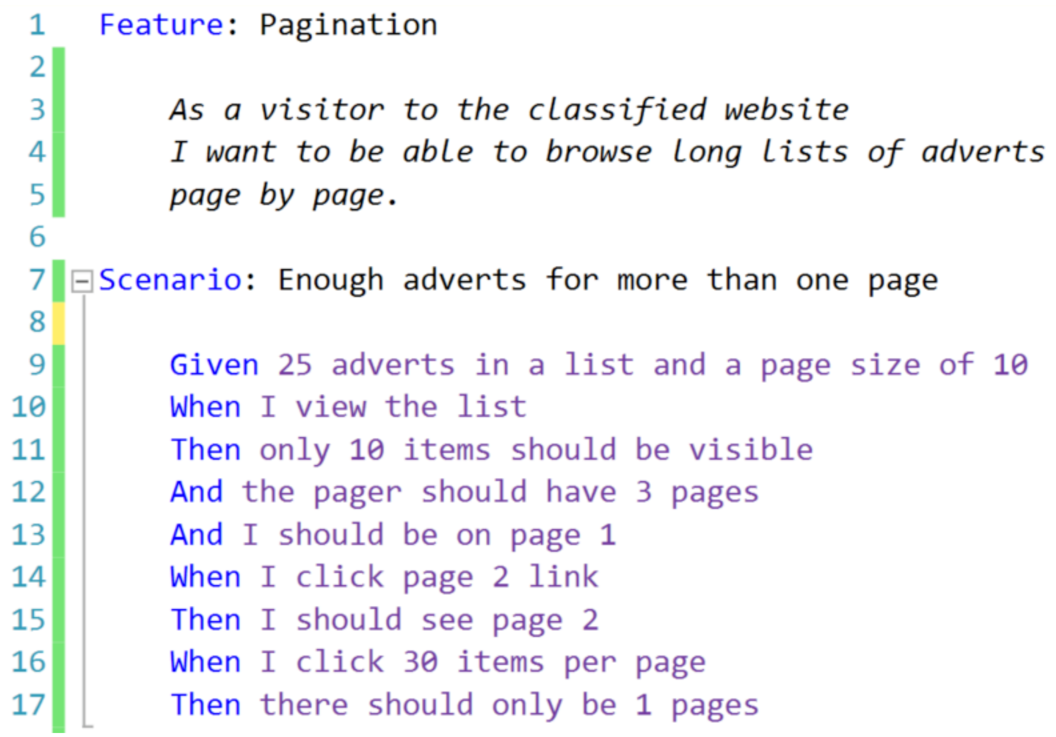
specflow

SpecFlow for Visual Studio 2017
SpecFlow integration for Visual Studio 2017. Sponsored by TechTalk (http://www.techtalk.at).

Created by: TechTalk
Date Installed: 27/02/2019
Version: 2017.2.7
Release Notes
More Information
Getting Started
☑ Automatically update this extension

- write your first specflow feature file,
- write the bindings calling out to selenium to drive the website (the system under test)

Pagination.feature



```
Feature: Pagination

    As a visitor to the classified website
    I want to be able to browse long lists of adverts
    page by page.

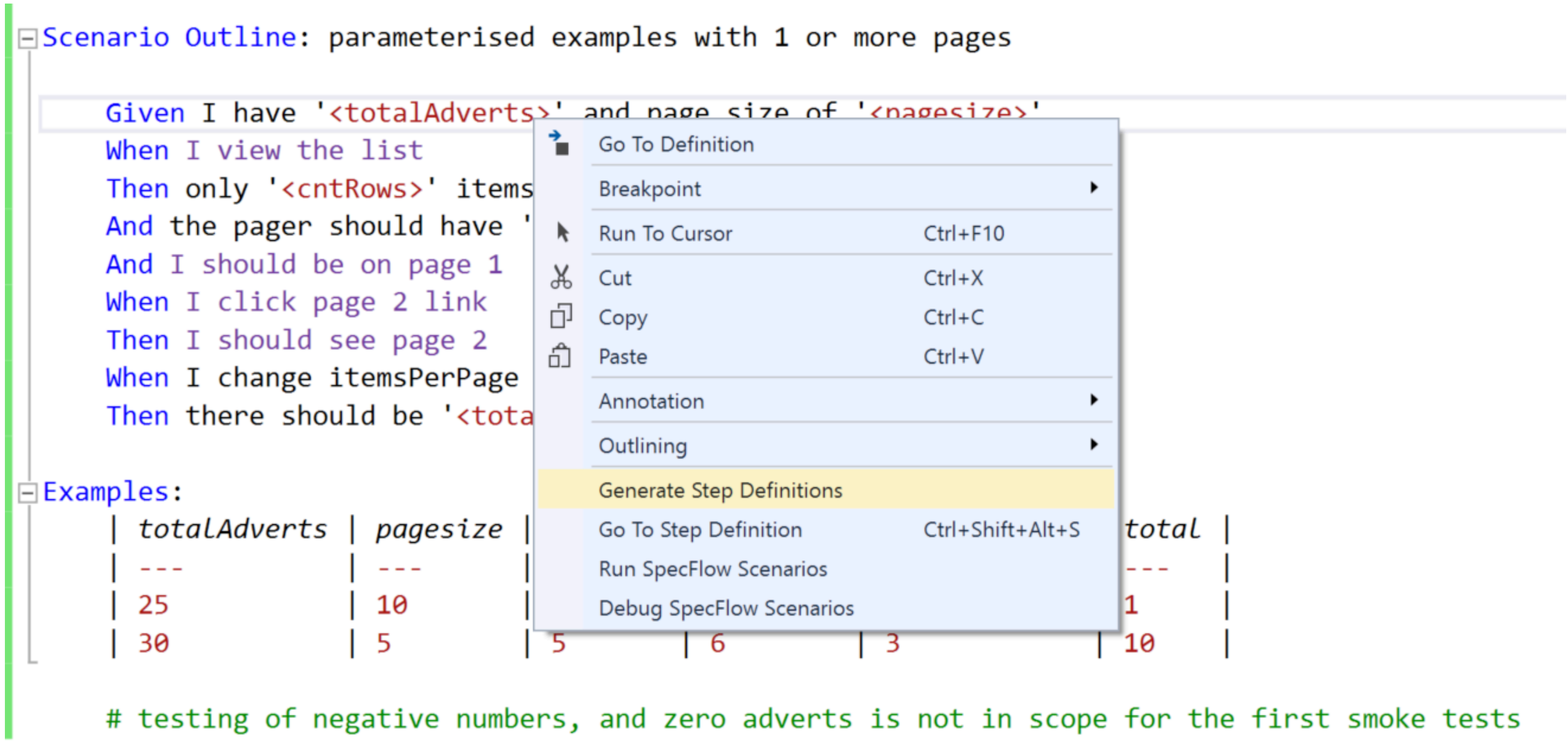
Scenario: Enough adverts for more than one page

    Given 25 adverts in a list and a page size of 10
    When I view the list
    Then only 10 items should be visible
    And the pager should have 3 pages
    And I should be on page 1
    When I click page 2 link
    Then I should see page 2
    When I click 30 items per page
    Then there should only be 1 pages
```

- add new item, “specflow feature”
- enter the text of the feature using specflow and gherkin syntax
- right click a scenario step, select goto step definition (select copy to clipboard)

writing the specflow test
after you’ve written the .feature
in gherkin

generate step definitions



```
Scenario Outline: parameterised examples with 1 or more pages

    Given I have '<totalAdverts>' and page size of '<pagesize>'
    When I view the list
    Then only '<cntRows>' items
    And the pager should have '
    And I should be on page 1
    When I click page 2 link
    Then I should see page 2
    When I change itemsPerPage
    Then there should be '<tota

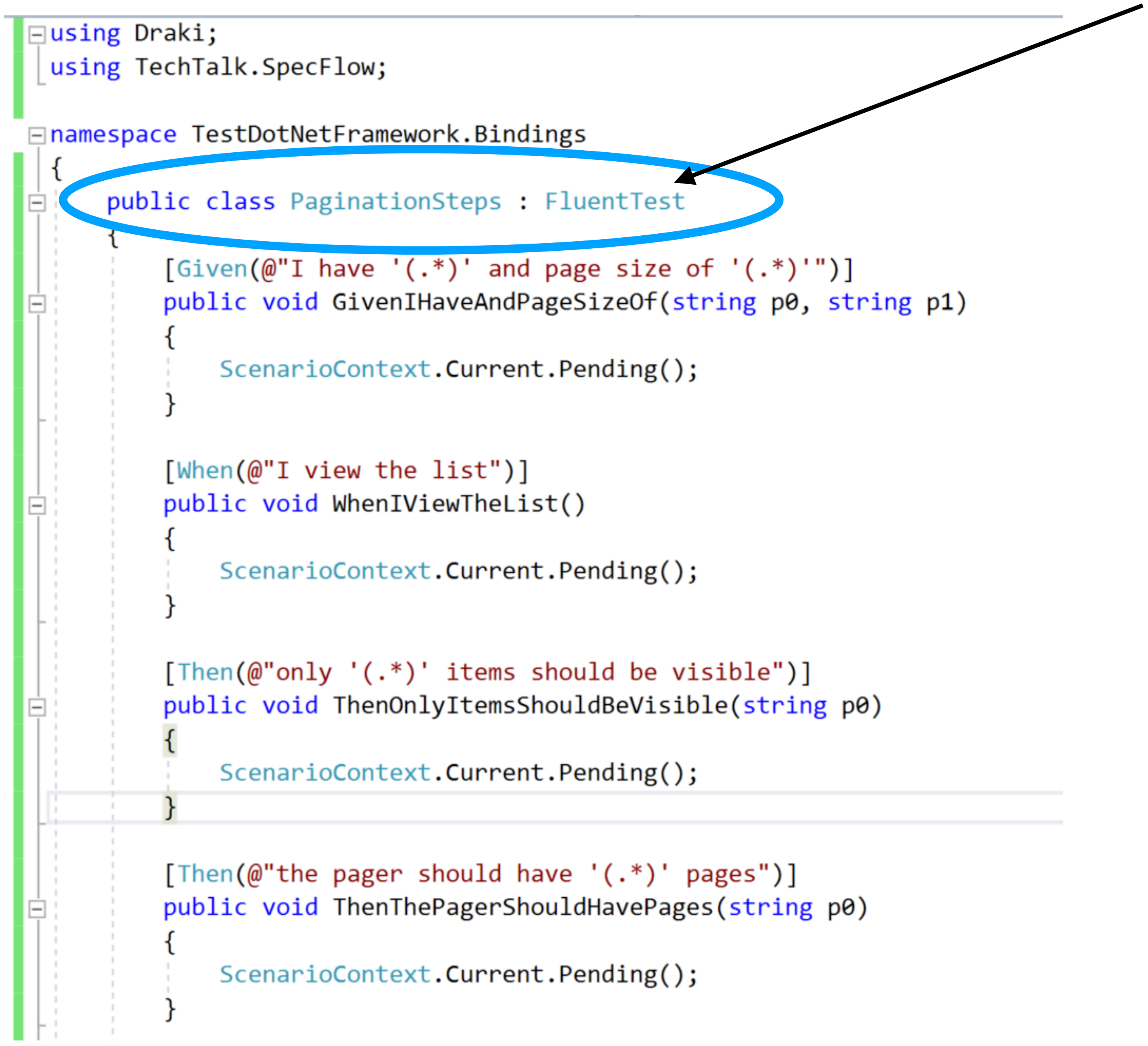
Examples:
    | totalAdverts | pagesize |                          total |
    | ---          | ---      |                          ---   |
    | 25           | 10       |                          1     |
    | 30           | 5        | 5   | 6   | 3            | 10    |

    # testing of negative numbers, and zero adverts is not in scope for the first smoke tests
```

- right click the scenario step, select “generate step defintions” to generate the binding file
- convert the PaginationSteps.cs to derive from FluentTest

update the bindings to automate the web page using draki (selenium)

- convert the starter step definition class from previous step (PaginationSteps.cs) to derive from FluentTest



```
using Draki;
using TechTalk.SpecFlow;

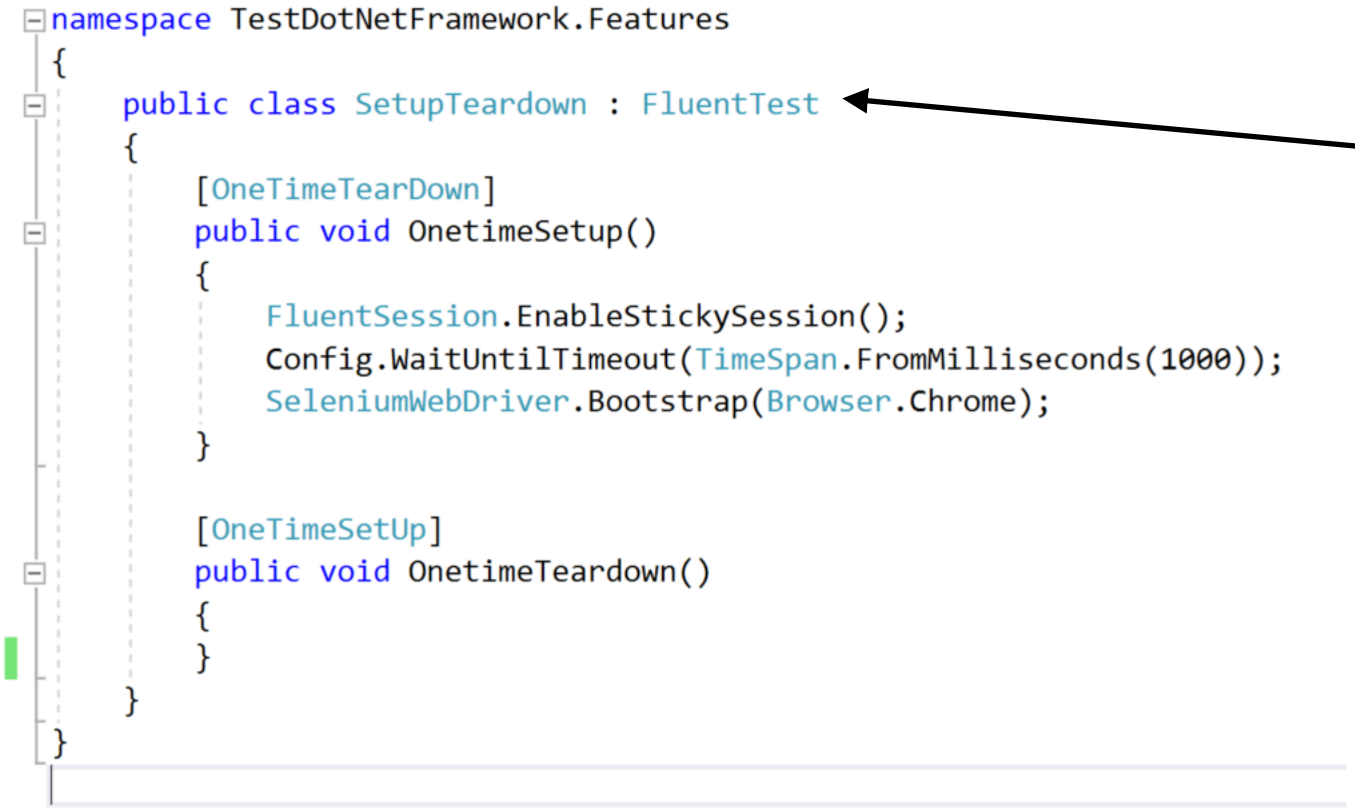
namespace TestDotNetFramework.Bindings
{
    public class PaginationSteps : FluentTest
    {
        [Given(@"I have '(.*)' and page size of '(.*)'")]
        public void GivenIHaveAndPageSizeOf(string p0, string p1)
        {
            ScenarioContext.Current.Pending();
        }

        [When(@"I view the list")]
        public void WhenIViewTheList()
        {
            ScenarioContext.Current.Pending();
        }

        [Then(@"only '(.*)' items should be visible")]
        public void ThenOnlyItemsShouldBeVisible(string p0)
        {
            ScenarioContext.Current.Pending();
        }

        [Then(@"the pager should have '(.*)' pages")]
        public void ThenThePagerShouldHavePages(string p0)
        {
            ScenarioContext.Current.Pending();
        }
```

bootstrap selenium

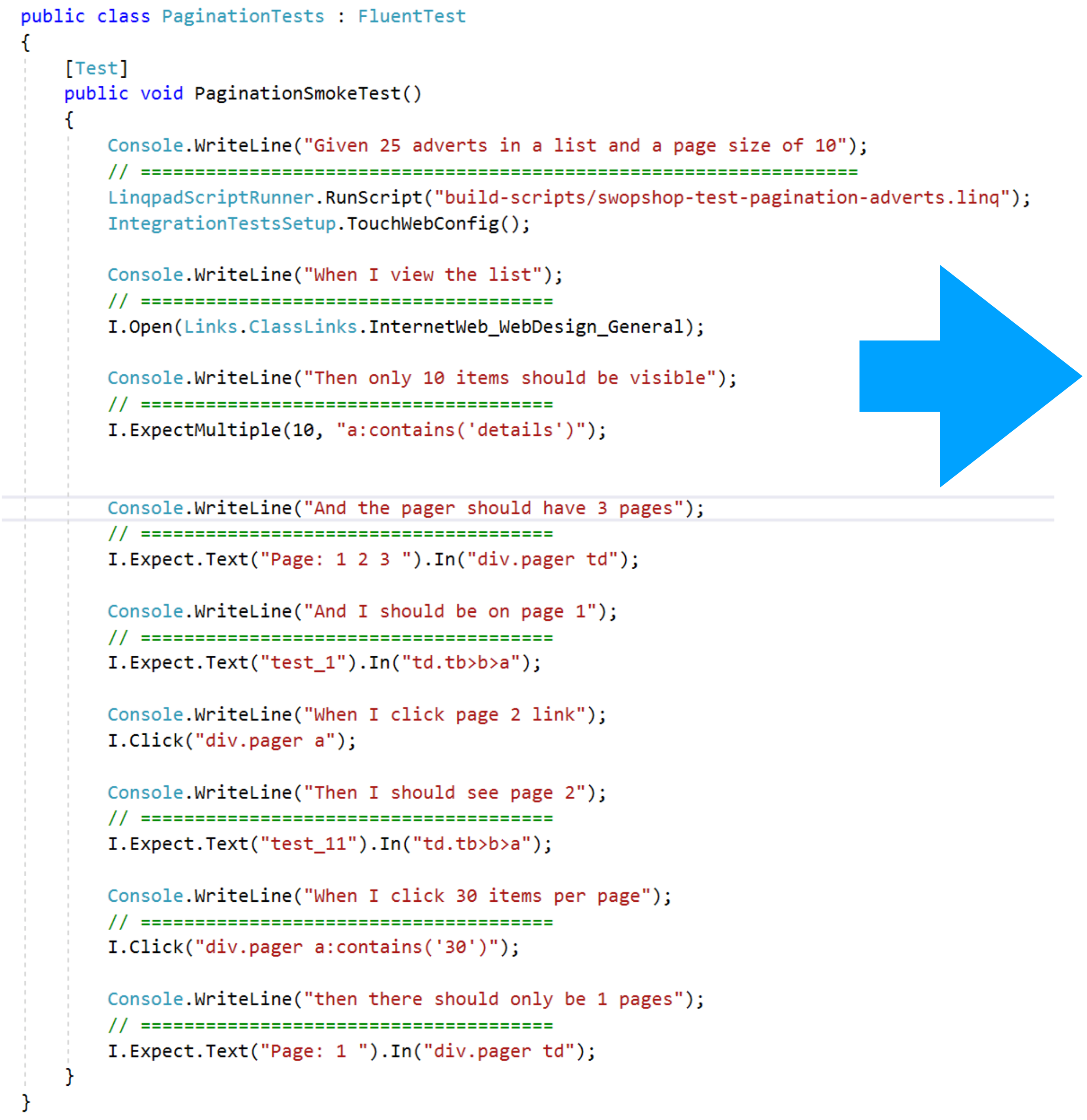


```
namespace TestDotNetFramework.Features
{
    public class SetupTeardown : FluentTest
    {
        [OneTimeTearDown]
        public void OnetimeSetup()
        {
            FluentSession.EnableStickySession();
            Config.WaitUntilTimeout(TimeSpan.FromMilliseconds(1000));
            SeleniumWebDriver.Bootstrap(Browser.Chrome);
        }

        [OneTimeSetUp]
        public void OnetimeTeardown()
        {
        }
    }
}
```

derive from fluent test

convert your functional (xunit or nunit selenium test) to a specflow binding



```
public class PaginationTests : FluentTest
{
    [Test]
    public void PaginationSmokeTest()
    {
        Console.WriteLine("Given 25 adverts in a list and a page size of 10");
        // =================================================================
        LinqpadScriptRunner.RunScript("build-scripts/swopshop-test-pagination-adverts.linq");
        IntegrationTestsSetup.TouchWebConfig();

        Console.WriteLine("When I view the list");
        // =====================================
        I.Open(Links.ClassLinks.InternetWeb_WebDesign_General);

        Console.WriteLine("Then only 10 items should be visible");
        // =====================================
        I.ExpectMultiple(10, "a:contains('details')");


        Console.WriteLine("And the pager should have 3 pages");
        // =====================================
        I.Expect.Text("Page: 1 2 3 ").In("div.pager td");

        Console.WriteLine("And I should be on page 1");
        // =====================================
        I.Expect.Text("test_1").In("td.tb>b>a");

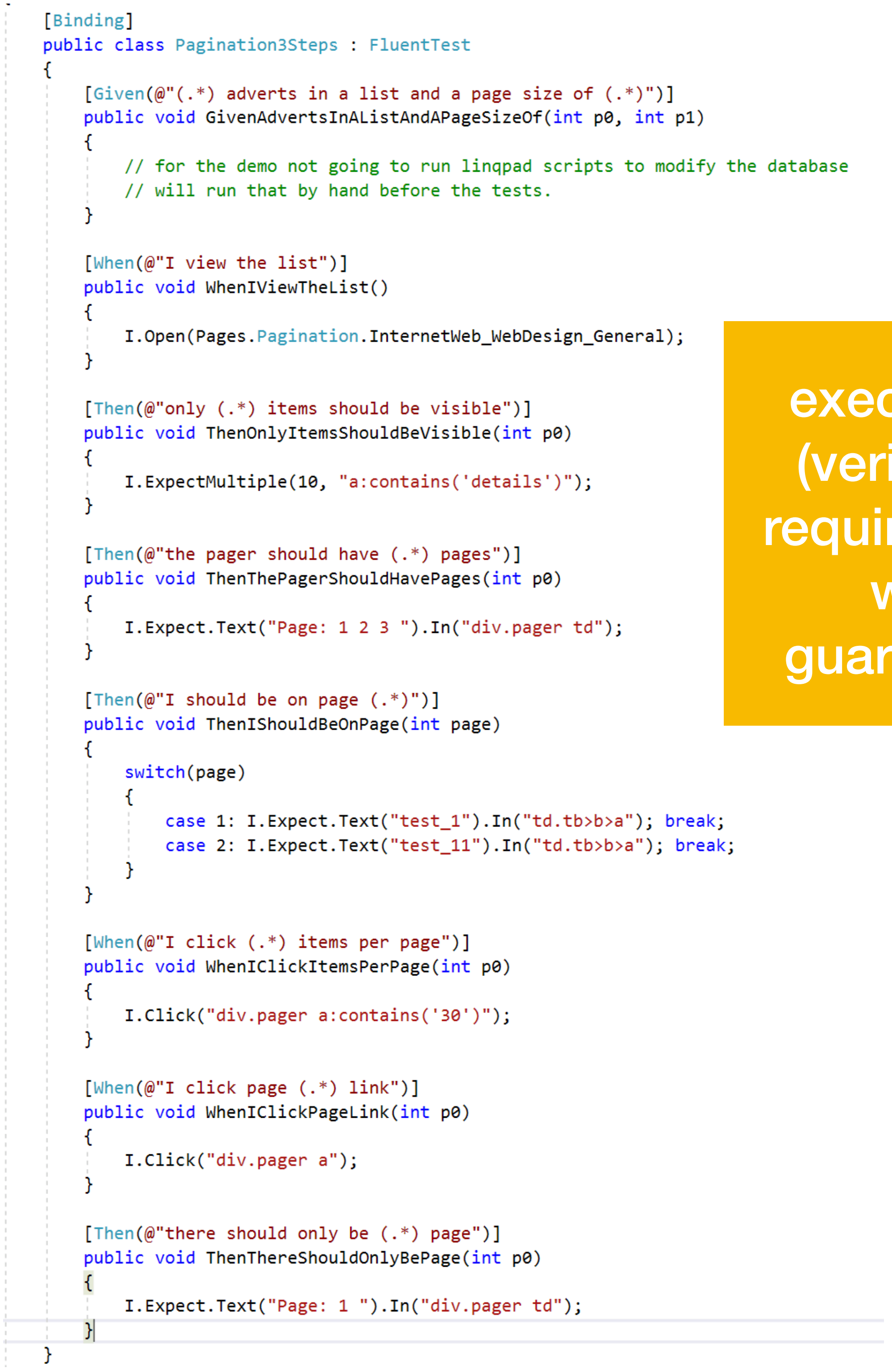
        Console.WriteLine("When I click page 2 link");
        I.Click("div.pager a");

        Console.WriteLine("Then I should see page 2");
        // =====================================
        I.Expect.Text("test_11").In("td.tb>b>a");

        Console.WriteLine("When I click 30 items per page");
        // =====================================
        I.Click("div.pager a:contains('30')");

        Console.WriteLine("then there should only be 1 pages");
        // =====================================
        I.Expect.Text("Page: 1 ").In("div.pager td");
    }
}
```

functional tests written in gherkin syntax.



```
[Binding]
public class Pagination3Steps : FluentTest
{
    [Given(@"(.*) adverts in a list and a page size of (.*)")]
    public void GivenAdvertsInAListAndAPageSizeOf(int p0, int p1)
    {
        // for the demo not going to run linqpad scripts to modify the database
        // will run that by hand before the tests.
    }

    [When(@"I view the list")]
    public void WhenIViewTheList()
    {
        I.Open(Pages.Pagination.InternetWeb_WebDesign_General);
    }

    [Then(@"only (.*) items should be visible")]
    public void ThenOnlyItemsShouldBeVisible(int p0)
    {
        I.ExpectMultiple(10, "a:contains('details')");
    }

    [Then(@"the pager should have (.*) pages")]
    public void ThenThePagerShouldHavePages(int p0)
    {
        I.Expect.Text("Page: 1 2 3 ").In("div.pager td");
    }

    [Then(@"I should be on page (.*)")]
    public void ThenIShouldBeOnPage(int page)
    {
        switch(page)
        {
            case 1: I.Expect.Text("test_1").In("td.tb>b>a"); break;
            case 2: I.Expect.Text("test_11").In("td.tb>b>a"); break;
        }
    }

    [When(@"I click (.*) items per page")]
    public void WhenIClickItemsPerPage(int p0)
    {
        I.Click("div.pager a:contains('30')");
    }

    [When(@"I click page (.*) link")]
    public void WhenIClickPageLink(int p0)
    {
        I.Click("div.pager a");
    }

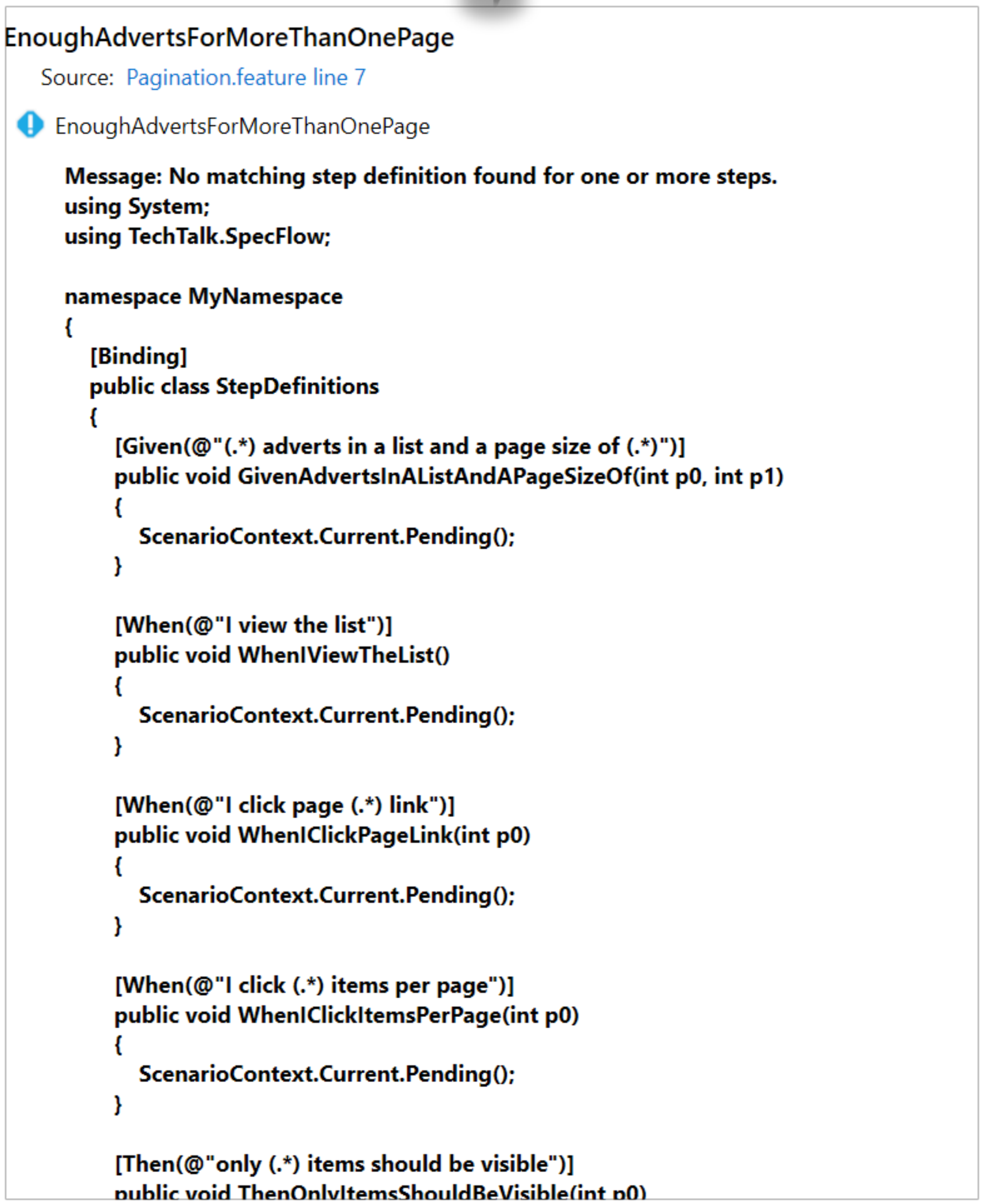
    [Then(@"there should only be (.*) page")]
    public void ThenThereShouldOnlyBePage(int p0)
    {
        I.Expect.Text("Page: 1 ").In("div.pager td");
    }
}
```

executable (verifiable) requirements with guarantees

if you run and have issues…

```
get-process | where { $_.name -eq ‘chromedriver’ } | stop-process
```

- if you run the tests and get “no tests found to run”
- if you run and nothing happens, no error but output shows bindings you have definitely updated ->
  * you probably left off the [Binding] attribute on your binding class.
- start over, new file, new names for everything, right click feature file and generate the whole binding starter file.
- rename the Scenario name (not just the file) and rebuild.
- if you get TinyIOC registration errors then check that you remembered to add [SetupFixture] to the bootstrapper.



EnoughAdvertsForMoreThanOnePage

Source: Pagination.feature line 7

EnoughAdvertsForMoreThanOnePage

```
Message: No matching step definition found for one or more steps.
using System;
using TechTalk.SpecFlow;

namespace MyNamespace
{
  [Binding]
  public class StepDefinitions
  {
    [Given(@"(.*) adverts in a list and a page size of (.*)")]
    public void GivenAdvertsInAListAndAPageSizeOf(int p0, int p1)
    {
      ScenarioContext.Current.Pending();
    }

    [When(@"I view the list")]
    public void WhenIViewTheList()
    {
      ScenarioContext.Current.Pending();
    }

    [When(@"I click page (.*) link")]
    public void WhenIClickPageLink(int p0)
    {
      ScenarioContext.Current.Pending();
    }

    [When(@"I click (.*) items per page")]
    public void WhenIClickItemsPerPage(int p0)
    {
      ScenarioContext.Current.Pending();
    }

    [Then(@"only (.*) items should be visible")]
    public void ThenOnlyItemsShouldBeVisible(int p0)
```

known selenium / draki Issues

- Element.Drag(from).To(to) does not work with HTML5 onXX events. This is a known (?) issue with Selenium, I found a work around a few days ago, that will need some testing, involves injecting event mocks, in the same way Draki currently injects Sizzle.

Draki roadmap, what currently working on, volunteers wanted to test help with the project….

- not tested with .NET core. literally finished alpha (spike test) yesterday.

- Not tested cross platform. Not even considered what will work on OSX, Linux. (audience?)

- multiple browsers not tested. Some tests disabled.

some acceptance tests work perfectly well just using XUnit or NUnit, not everything has to be a .feature file.

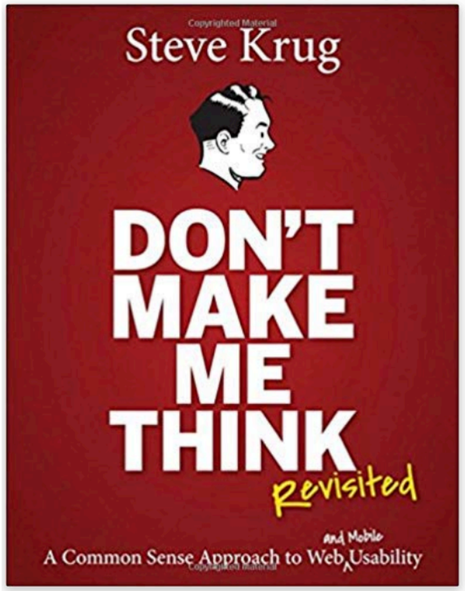
- ask experts present : when to use a .feature file, and when to simply write a functional acceptance test?
- .
- .
- .

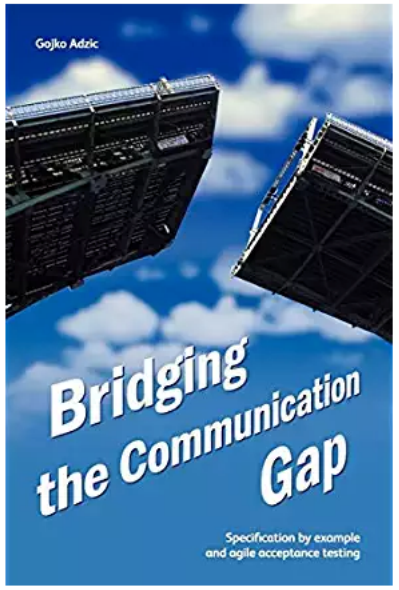
using Draki in any sensitive project

- fork the project and build your own package.

- one of the reasons Draki is so easy to use is that it embeds the latest chomedriver.exe compatible with Selenium.Support and Selenium.WebDriver

references…




Gojko Adzic
Bridging the Communication Gap
Specification by example and agile acceptance testing

- **books**
    - Specification by example (Gojko Adzic)
    - Don't make me think (A common sense approach to web usability) , (Steven Krug)

- **links**
    - Draki (C# library to make selenium tests fun) :
        - https://github.com/goblinfactory/Draki
    - Specflow official website :
        - https://specflow.org/getting-started/
        - specflow getting started samples

contact details

things change quickly, so if you find a bug when working through these notes on your own, please contact me on github or twitter with details to reproduce so that I can help you and update the notes.

Journeyman agile dev, mostly .NET, cloud, micro-services & web. Passionate about good code, good requirements, good tests and happy customers. Maintainer of the open source fluent testing library Draki - Fluent web automation for C#.

https://github.com/goblinfactory/

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