BDD

specflow

1) BDD, Specification by Example
2) SpecFlow, TestStack.BDDfy
3) Acceptance testing

Links

https://habrahabr.ru/post/166747/

Specification By Example – BDD для прагматиков

https://habrahabr.ru/post/182032/

Исполняемая спецификация: SpecFlow от А до Я

https://habrahabr.ru/post/178407/

Автоматизация тестирования Web-приложений (BDD-style)

SbE

В основе процесса *Specification By Example* лежат

- agile
- TDD
- BDD
- Continuous Integration

Ключевые элементы *Specification By Example* :

- Выделяйте главное *(deriving scope from goals)*
- Составляйте спецификацию совместно *(specifying collaboratively)*
- Приводите примеры *(illustrating using examples)*
- Очищайте спецификацию *(refining the specification)*
- Внедряйте автоматизацию тестирования без изменения спецификации *(automating validation without changing specification)*
- Встраивайте выполнение тестов в процесс сборки и развивайте документацию *(validating frequently, evolving a documentation system)*

User Stories

User-stories обязательно должны содержать 3 пункта:

In order to	—	зачем?
As a	—	кто?
I want	—	что?

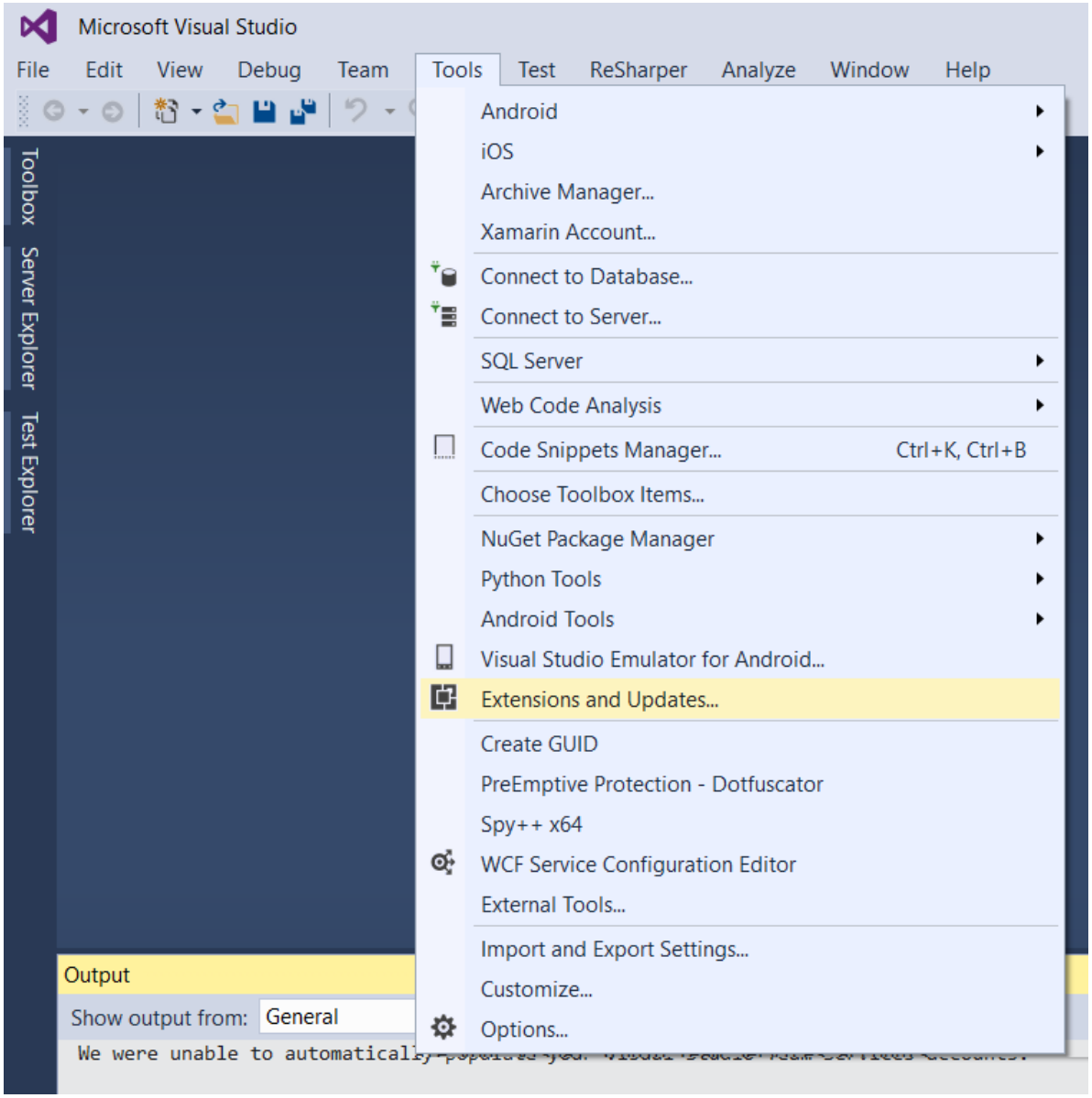
Given — первоначальный контекст (предусловие)
When — событие (что является триггером сценария)
Then — результат, который мы хотим получить

Feature and Scenario

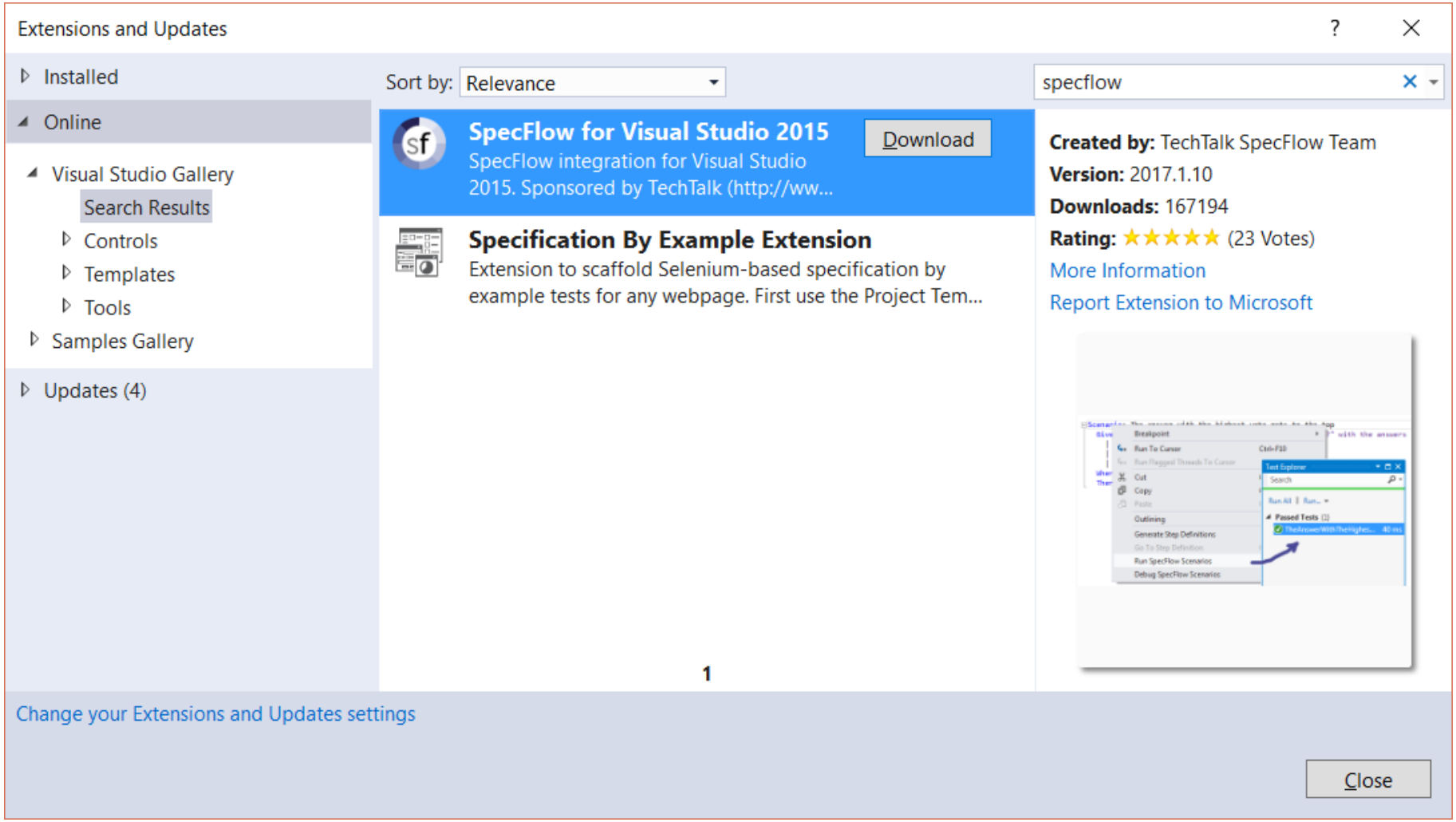
```
Feature: Free delivery
        In order to save money
        As a VIP customer
        I want the system to offer free delivery on certain items to me

Scenario: Free delivery
        Given I am a VIP customer
        And I am on product detail page
        And There are only books in my shopping cart
        And There are <= 10 books in my shopping cart
        And I have added 'ABC Press' book to my shopping cart
        When I press 'Go to checkout' button
        And I have chosen 'Moscow' in 'Ship To' dropdown
        Then I can choose free delivery
```

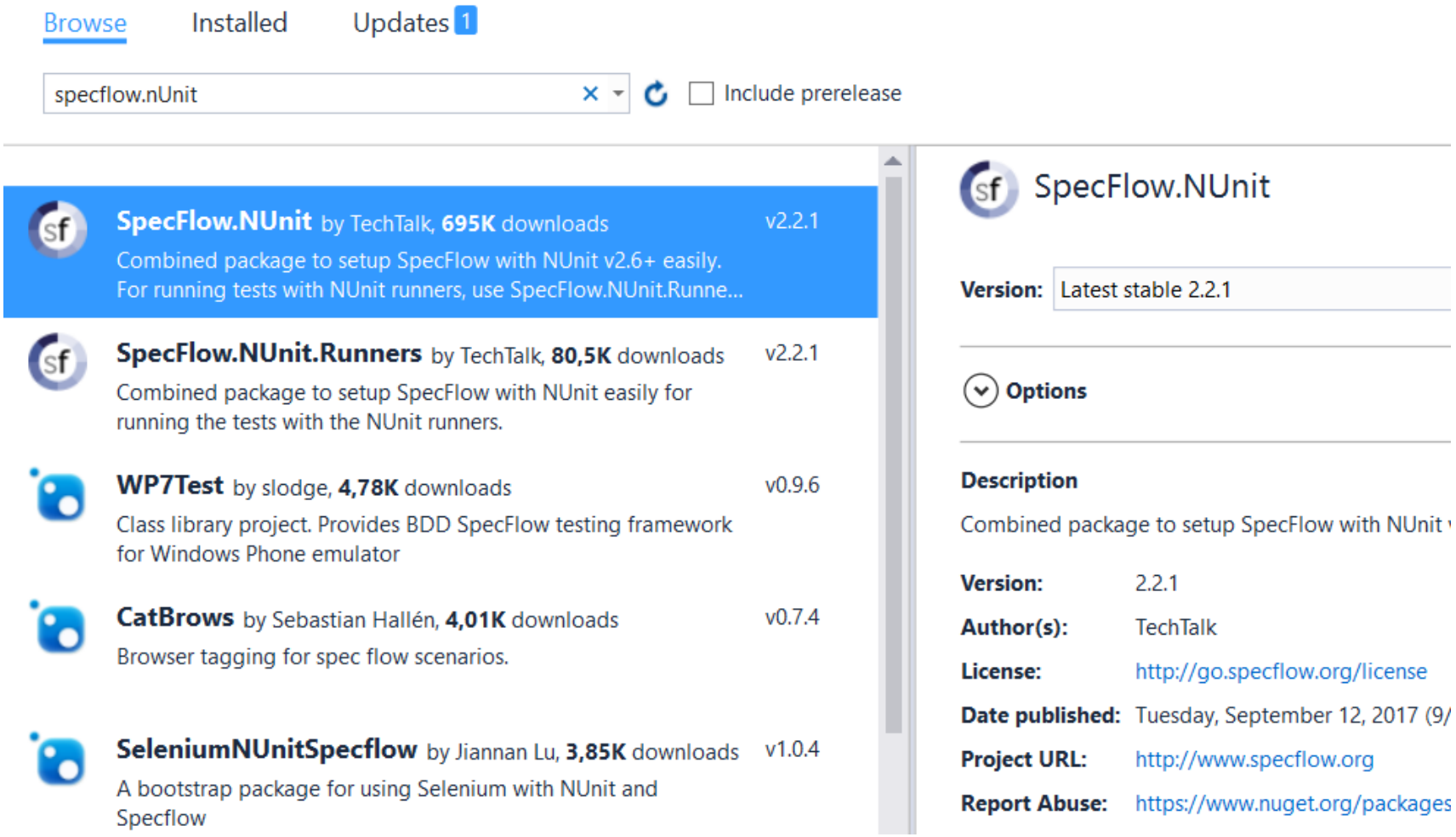
Install SpecFlow



Install SpecFlow



SpecFlow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A bootstrap package for using Selenium with NUnit and Specflow
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Version: Latest stable 2.2.1
Options
Description
Combined package to setup SpecFlow with NUnit
Version: 2.2.1
Author(s): TechTalk
License: http://go.specflow.org/license
Date published: Tuesday, September 12, 2017 (9/
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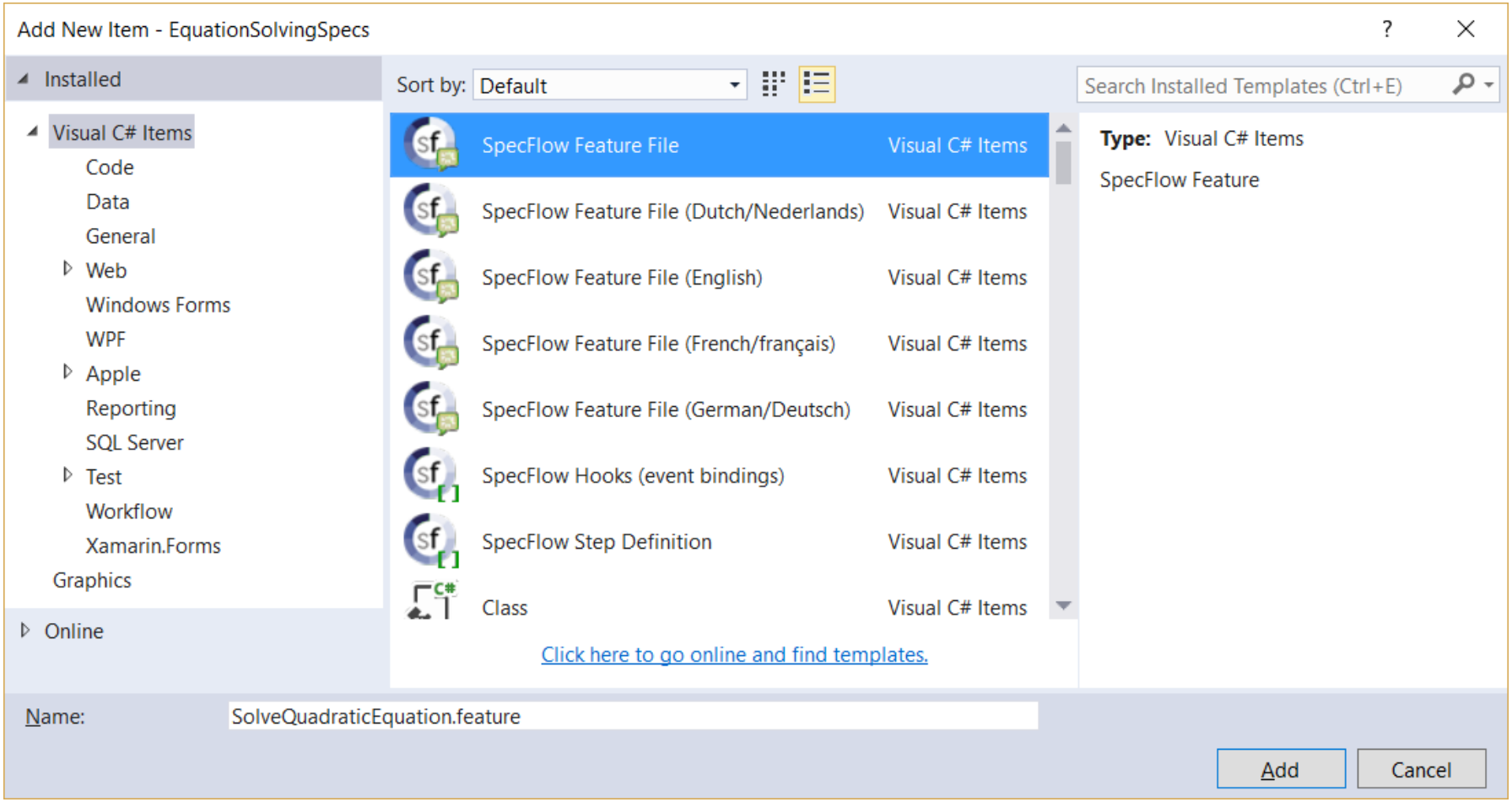
Add SpecFlow Feature

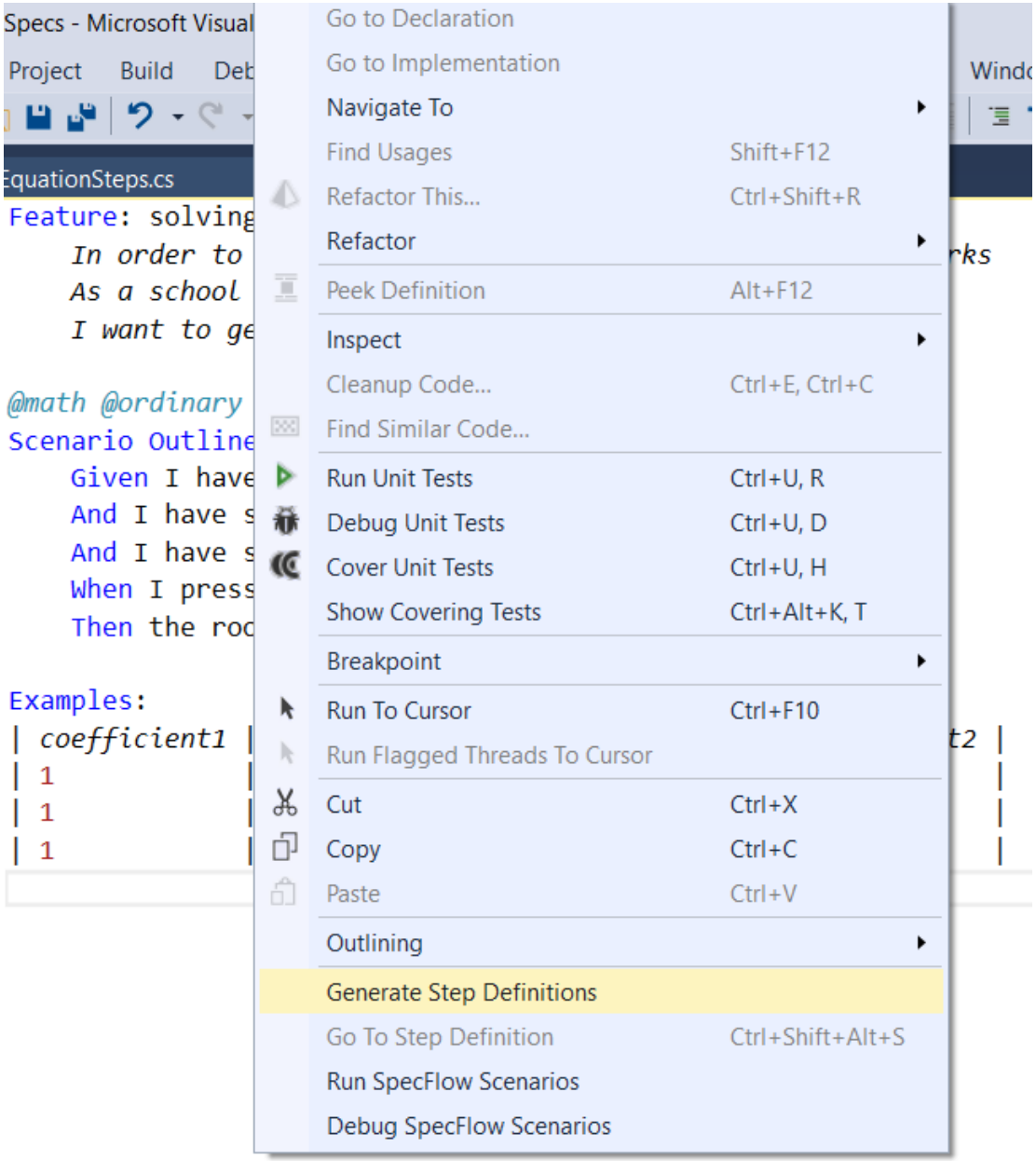


Write SpecFlow Feature

EquationSteps.cs | SolveQuadraticEquation.feature

```
Feature: solving quadratic equation
    In order to demonstrate that Quadratic Formula really works
    As a school math teacher
    I want to get the roots of quadratic equation

@math @ordinary
Scenario Outline: Solve ordinary quadratic equation
    Given I have set <coefficient1>
    And I have set <coefficient2>
    And I have set <coefficient3>
    When I press Solve
    Then the roots should be <root1> and <root2>

Examples:
| coefficient1 | coefficient2 | coefficient3 | root1 | root2 |
| 1            | 1            | -6           | -3    |  2    |
| 1            | 0            | -4           |  2    | -2    |
| 1            | 5            | 0            |  0    | -5    |
```

Generate Step Definitions



Generate Step Definitions

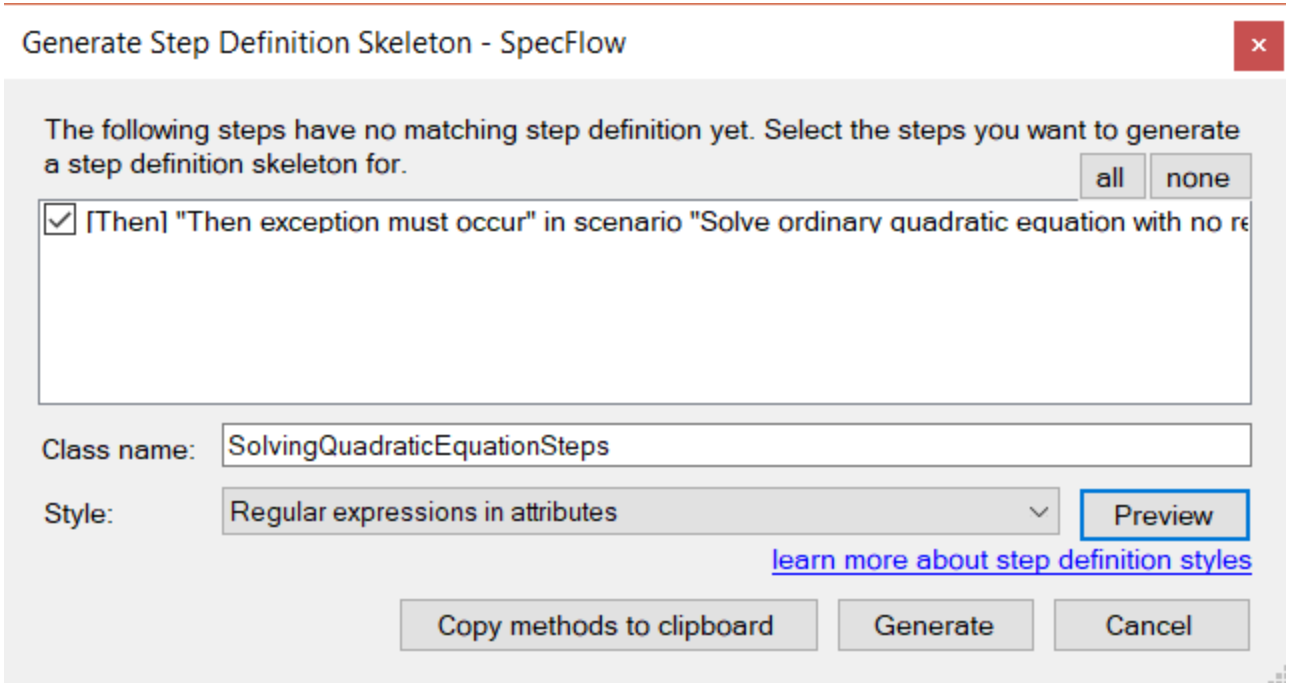
```
using TechTalk.SpecFlow;

namespace EquationSolvingSpecs
{
    [Binding]
    public class SolvingQuadraticEquationSteps
    {
        [Given(@"I have set (.*)")]
        public void GivenIHaveSet(string p0)
        {
            ScenarioContext.Current.Pending();
        }

        [When(@"I press Solve")]
        public void WhenIPressSolve()
        {
            ScenarioContext.Current.Pending();
        }

        [Then(@"the roots should be (.*) and (.*)")]
        public void ThenTheRootsShouldBeAnd(string p0, string p1)
        {
            ScenarioContext.Current.Pending();
        }
    }
}
```

Write Code

```
using TechTalk.SpecFlow;

namespace EquationSolvingSpecs
{
    [Binding]
    public class SolvingQuadraticEquationSteps
    {
        readonly EquationSolver _solver = new EquationSolver(new PolynomialRoots());

        readonly List<double> _coefficients = new List<double>();
        double[] _roots;

        [Given(@"I have set (.*)")]
        public void GivenIHaveSet(double coeff)
        {
            _coefficients.Add(coeff);
        }

        [When(@"I press Solve")]
        public void WhenIPressSolve()
        {
            _roots = _solver.Solve(_coefficients.ToArray());
        }

        [Then(@"the roots should be (.*) and (.*)")]
        public void ThenTheRootsShouldBeAnd(double r1, double r2)
        {
            Assert.That(_roots, Is.EquivalentTo(new [] { r1, r2 }));
        }
    }
}
```

Another scenario

```
@math @exception
Scenario: Solve ordinary quadratic equation with no real roots
    Given I have set 1
    And I have set 1
    And I have set 6
    When I press Solve
    Then exception must occur
```



Another scenario

```
[When(@"I press Solve")]
public void WhenIPressSolve()
{
    // 1-ый способ обработки исключения
    try
    {
        _roots = _solver.Solve(_coefficients.ToArray());
    }
    catch (Exception ex)
    {
        _exception = ex;
    }

    // 2-ой способ - Assert.Catch() и использовать Scope в атрибуте When
}

[Then(@"the roots should be (.*) and (.*)")]
public void ThenTheRootsShouldBeAnd(double r1, double r2)
{
    Assert.That(_roots, Is.EquivalentTo(new [] { r1, r2 }));
}

[Then(@"exception must occur")]
public void ThenExceptionMustOccur()
{
    Assert.That(_exception, Is.Not.Null);
    Assert.That(_exception, Is.TypeOf<ArithmeticException>());
}
```

Another feature

```
Feature: solving custom algebraic equation
    In order to demonstrate how the algebraic equations are solved
    As a school math teacher
    I want to get the roots of algebraic equation

@math @ordinary
Scenario: Solve ordinary algebraic equation with real roots
    Given I have specified array of coefficients { 1, 3, -5, -15, 4, 12 }
    When I press Solve
    Then the array of roots should be { -3, -2, -1, 1, 2 }

@math @exception
Scenario: Solve algebraic equation with no unknowns
    Given I have set 0
    And I have set 0
    And I have set 3
    When I press Solve
    Then argument exception must occur
```

Extract Text Context

```
public class EquationSolvingContext
{
    public EquationSolver Solver { get; set; } = new EquationSolver(new FakeRoots());

    public List<double> Coefficients { get; set; } = new List<double>();
    public double[] Roots { get; set; }

    public Exception Exception { get; set; }
}
```

```
public class SolvingCustomAlgebraicEquationSteps
{
    private readonly EquationSolvingContext _context;

    public SolvingCustomAlgebraicEquationSteps(EquationSolvingContext context)
    {
        _context = context;
    }

    [Given(@"I have specified array of coefficients \{ ((?:.,\d+)*(?:.+)) }")]
    public void GivenIHaveSpecifiedArrayOfCoefficients(List<double> coeffs)
    {
        _context.Coefficients = coeffs;
    }

    [Then(@"the array of roots should be \{ ((?:.,\d+)*(?:.+)) }")]
    public void ThenTheArrayOfRootsShouldBe(List<double> roots)
    {
        Assert.That(_context.Roots, Is.EquivalentTo(roots));
    }

    [StepArgumentTransformation(@"((?:.,\d+)*(?:.+))")]
    public static List<double> ListIntTransform(string doubles)
    {
        return doubles.Split(',').Select(double.Parse).ToList();
    }

    [Then(@"argument exception must occur")]
    public void ThenArgumentExceptionMustOccur()
    {
        Assert.That(_context.Exception, Is.Not.Null);
        Assert.That(_context.Exception, Is.TypeOf<ArgumentException>());
    }
```

BDD and UI testing

```
Feature: SearchCSharpFeature
    In order to download WebDriver for C#
    As a Selenium website visitor
    I want to check that corresponding download link exists

Scenario: Search for C# download link
    Given I have opened Selenium search page
    And I have entered C#
    When I press search button
    Then the search results contain Downloads
```

BDD and UI testing

```
[Binding]
public class SearchCSharpFeatureSteps
{
    private IWebDriver _driver;

    private SeleniumSearchPage _searchPage;
    private SearchResultsPage _resultsPage;

    [BeforeScenario]
    public void Init()
    {
        _driver = new ChromeDriver();
        _driver.Manage().Timeouts().ImplicitWait = TimeSpan.FromSeconds(30);
    }

    [AfterScenario]
    public void Quit()
    {
        _driver.Quit();
    }
```

BDD and UI testing

```
[Given(@"I have opened Selenium search page")]
public void GivenIHaveOpenedSeleniumSearchPage()
{
    _searchPage = new SeleniumSearchPage(_driver);
    _searchPage.Navigate();
}

[Given(@"I have entered (.*)")]
public void GivenIHaveEntered(string query)
{
    _searchPage.EnterSearchQuery(query);
}

[When(@"I press search button")]
public void WhenIPressSearchButton()
{
    _resultsPage = _searchPage.ClickSearch();
}

[Then(@"the search results contain (.*)")]
public void ThenTheSearchResultsContain(string link)
{
    Assert.That(_resultsPage.Links, Does.Contain(link));
}
```

TestStack.BDDfy

http://teststackbddfy.readthedocs.io/en/latest/

Прочитать самостоятельно