

EFFECTIVE END TO END TESTING WITH CODECEPTJS



by Michael Bodnarchuk

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ABOUT ME

- Michael Bodnarchuk **@davert**
- Web developer from Kyiv, Ukraine
- Lead developer of **CodeceptJS**
- Also author of Codeception, Robo and others
- Tech **Consultant**, CTO at SDCLabs

MY EXPERIENCE

- 10+ years in web development
- Writing tests since 2008
- Languages: JavaScript, PHP, Ruby

MY VISION

- Tests should be simple to write and understand
- Tests have their priority. Don't write tests for everything
- Tests should follow business values
- Testing should be joyful

CODECEPTJS



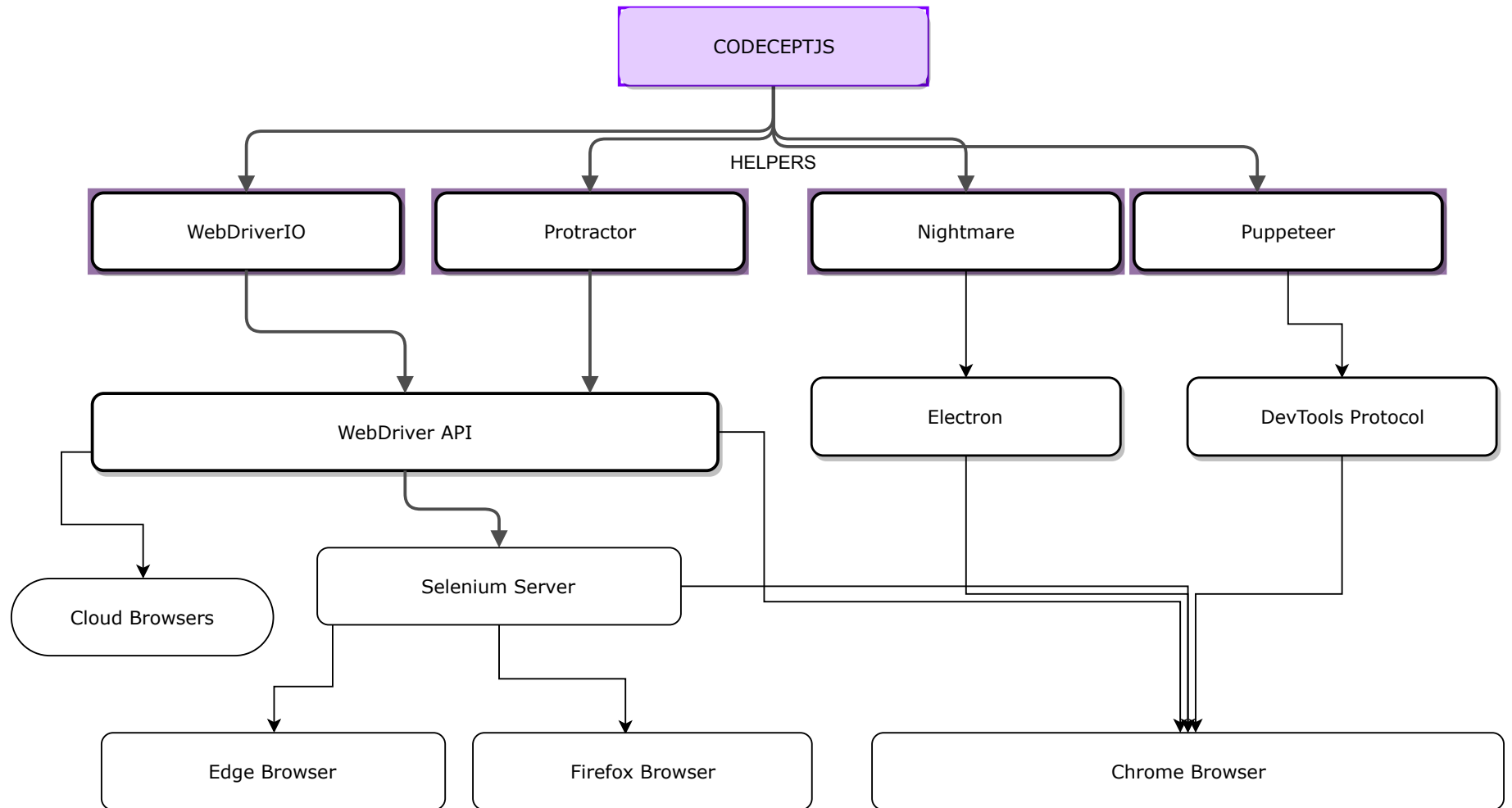
CODECEPTJS

- **end to end** testing framework
- helpers for popular testing backend
- high-level **unified APIs** for all backends
- **~15K** week installations

PURPOSE OF CODECEPTJS

- Ideas taken from [Codeception](#)
- High-level BDD-style language
- Run a single test over multiple backends
- Don't worry about asynchronicity

ARCHITECTURE



BACKENDS & DEPENDENCIES

- WebDriverIO =>
 - `webdriverio` package
 - Selenium Server
 - ChromeDriver or GeckoDriver
- Protractor
 - `protractor` package
 - ChromeDriver
- Puppeteer
 - `puppeteer` package
- Nightmare
 - `nightmare` package

SAMPLE SCENARIO

```
Scenario('todomvc', (I) => {  
  I.amOnPage('http://todomvc.com/examples/react/');  
  I.waitForElement('.new-todo');  
  I.dontSeeElement('.todo-count');  
  I.fillField('What needs to be done?', 'Write a guide');  
  I.pressKey('Enter');  
  I.see('Write a guide', '.todo-list');  
  I.see('1 item left', '.todo-count');  
  I.fillField('What needs to be done?', 'Write a test');  
  I.pressKey('Enter');  
  I.see('Write a test', '.todo-list');  
  I.see('2 items left', '.todo-count');  
  I.fillField('What needs to be done?', 'Write a code');  
  I.pressKey('Enter');  
  I.see('Write a code', '.todo-list');  
  I.see('3 items left', '.todo-count');  
});
```

CodeceptJS v1.1.8

Using test root `"/home/davert/demos/webinar"`);

Todo -- ('Todo');

todomvc

- I am on page `"http://todomvc.com/examples/react/"`
- I wait for element `".new-todo"`
- I dont see element `".todo-count"`
- I fill field `"What needs to be done?"`, `"Write a guide"`
- I press key `"Enter"`
- I see `"Write a guide"`, `".todo-list"`
- I see `"1 item left"`, `".todo-count"`
- I fill field `"What needs to be done?"`, `"Write a test"`
- I press key `"Enter"`
- I see `"Write a test"`, `".todo-list"`
- I see `"2 items left"`, `".todo-count"`
- I fill field `"What needs to be done?"`, `"Write a code"`
- I press key `"Enter"`
- I see `"Write a code"`, `".todo-list"`
- I see `"3 items left"`, `".todo-count"`

✓ **OK** in 2846ms a test', '.todo-list');

I.see('2 items left', '.todo-count');

I.fillField('What needs to be done?', 'Write a code');

OK 1 passed // 5s

davert@davert-pad:~/demos/webinar\$

I.see('Write a code', '.todo-list');

I.see('3 items left', '.todo-count');

));

GOALS

- Focus on scenario not on implementation
- Easy to read and write
- Separate test code from support code

FEATURES

REFACTOR TESTS!

```
Scenario('post article', async (I, loginPage) => {  
  const user = await I.createUser('davert');  
  loginPage.login(davert);  
  // ..  
  I.see('User logged in', loginPage.messageBox);  
})
```

FEATURES

TESTS CAN BE WRITTEN IN YOUR NATIVE LANGUAGE:

```
Scenario('Efetuar login', (Eu) => {  
  Eu.estouNaPagina('http://minhaAplicacao.com.br');  
  Eu.preenchoOCampo("login", "usuario@minhaAplicacao.com.br");  
  Eu.preenchoOCampo("senha", "123456");  
  Eu.clico("Entrar");  
  Eu.vejo("Seja bem vindo usuário!");  
});
```

FEATURES

USE API TO PREPARE/CLEANUP DATA FOR TESTS

```
const user = await I.sendGetRequest('/api/users/1');  
// create a post and save its Id  
const postId = await I.sendPostRequest('/api/posts', { author: user.id,
```

BASIC CONCEPTS

- **Actor** - object representing a person who performs a test
- **Helper** - customized actions for the actor
- **PageObject** - grouped reusable actions accross test suite
- **Hooks:**
 - Custom functions performed on bootstrap/terdown
 - Custom functions handling events

FILE STRUCTURE

Files	Description
<code>codecept.json</code>	global config
<code>codecept.conf.js</code>	alternative config
<code>output/</code>	temporary files created by tests
<code>*_test.js</code>	tests
<code>steps.d.ts</code>	TypeScript definitions
<code>steps_file.js</code>	custom actor
<code>*_helper.js</code>	custom helper

END TO END TESTING

HOW TO RUN BROWSERS

- Window Mode
 - via Selenium Server
 - via ChromeDriver, MarionetteDriver
 - Puppeteer or Nightmare with `debug: true`
- Headless Mode
 - Puppeteer
 - Nightmare
 - Headless Chrome or Firefox
 - via Docker
 - with Xvfb (virtual framebuffer)

WHAT TO DO

- open pages: `I.amOnPage`
- act: `I.click`, `I.fillField`, `I.selectOption`, ...
- assert: `I.see`, `I.seeElement`, `I.dontSee`
- wait: `I.waitForElement`, `I.waitForText()`
- take information from page: `await I.grabTextFrom`

HOW TO LOCATE ELEMENTS

- CSS (*most common*)
- XPath (*most powerful*)
- Button | Link Texts
- Field Names (*most stable*)
- Field Labels (*most readable*)

GOOD LOCATORS

- Short (ideally id of element)
- Doesn't rely on element's position
- Stable to changes

```
I.seeElement('#user'); // good  
I.seeElement('div>div>ul>li>span'); // bad  
I.seeElement('//*[ @id="listing-23891891"]/div/div/div[1]/div/div[2]/div/
```

WHAT TO CHECK

- Text visibility on page
- Elements on page
- URLs on page

MANAGING ASYNCHONITY

- Wait for elements
- Wait for JavaScript
- SmartWait

PRACTICE

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Booking.com

UAH



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Your account

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Accommodation

Flights

Car rentals

Airport taxis

Find deals for any season

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Destination, property name or address:

Tallinn

Check-in



Check-in date

Check-out



Check-out date

2 adults

No children

1 room

☐ I'm travelling for work

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Old Town exploring, architecture, city walks

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5 Jun - 8 Jun

1 room, 1 adult



5 Jun - 9 Jun

1 room, 1 adult



London

9,016 properties

Average price
UAH 5,573

Paris

3,837 properties

Average price
UAH 5,113

Rome

11,631 properties

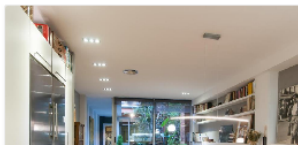
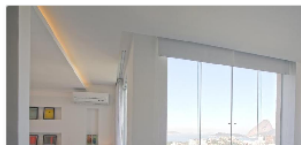
Average price
UAH 4,666

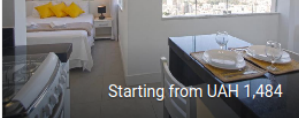
Dubai

1,883 properties

Average price
UAH 3,984

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Sugar Loft Apartments

Rio de Janeiro

9.3 Superb
295 reviews

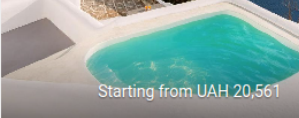


Starting from UAH 34,840

Artlifebcn Apartment

Barcelona

9.6 Exceptional
66 reviews

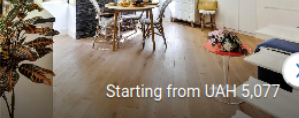


Starting from UAH 20,561

Annabel's Luxury Suites

Imerovigli

9.8 Exceptional
11 reviews




Starting from UAH 5,077

MY CASA - 14 CASSINI - BRAND NEW DUPLEX - PORT AREA

Nice


8.8 Fabulous
16 reviews

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1,303 properties

Cotswolds
1,003 properties

Great Ouse Valley

Lake District
2,839 properties

Cornwall
3,905 properties

Ilkley

Bali
9,189 properties

Al Madinah Al Munnawarah Pr...

Malindi, Maldives, Bali

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INSTALL CODECEPTJS

```
npm install codeceptjs webdriverio --save-dev
```

Install Selenium Server + ChromeDriver:

```
[sudo] npm install -g selenium-standalone  
selenium-standalone install  
selenium-standalone start
```

BOOTSTRAP PROJECT

```
./node_modules/.bin/codeceptjs init
```

FIRST TEST

```
./node_modules/.bin/codeceptjs gt
```

```
Feature('Book');  
  
Scenario('test something', (I) => {  
  I.amOnPage('/');  
  pause();  
});
```



```
I.fillField('ss', 'Kyiv')  
I.click('li[data-label="Kiev, Ukraine"]');  
I.fillField('checkin_monthday', "09");  
I.fillField('checkin_month', '07');  
I.fillField('checkin_year', '07');
```

USE MOMENTJS TO FILL VALUES

```
npm i moment --save
```

```
moment = require('moment');  
  
const checkinDate = moment().add(3, 'months');  
const checkoutDate = checkinDate.add(3, 'days');  
  
I.fillField('checkin_monthday', checkinDate.format('DD'));  
I.fillField('checkin_month', checkinDate.format('MM'));  
I.fillField('checkin_year', checkinDate.format('YY'));
```

OPEN FIRST HOTEL

```
const hotelNames = await I.grabTextFrom('.sr-hotel__name');
const hotelName = hotelNames[0];
I.say(`I want to book at ${hotelName}`);
within('/*[@id="hotellist_inner"]/div[1]', () => {
  I.see(hotelName);
  I.dontSee(hotelNames[1]);
  I.click(hotelName);
});
I.switchToNextTab();
I.see(hotelName, 'h2');
```

NEXT TASKS

- Refactor to PageObjects
- Try different cities
- Finish booking

QUESTIONS?

- Me: Michael Bodnarchuk
- Project: CodeceptJS
- Website: codecept.io
- Twitter: `@codeceptjs`