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INSIDE KNOWLEDGE

Protractor is dead, long live Cypress

Angular Meetup Graz, 2.6.2021

Rainer Hahnekamp

About me...

- Rainer Hahnekamp
- **ANGULARarchitects.io**
- Trainings and Consultancy
- > 20 Years Experience

@RainerHahnekamp

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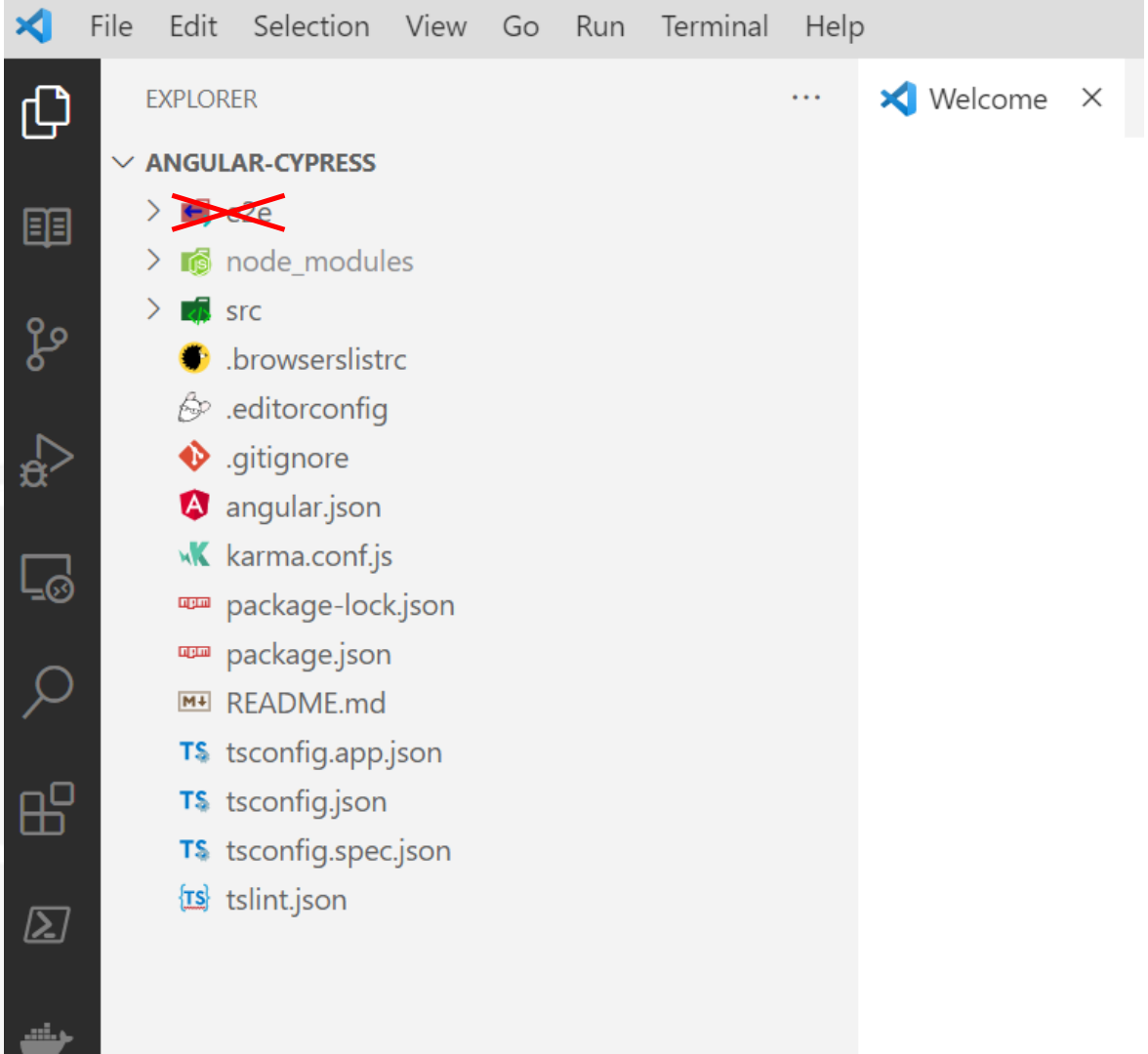

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Agenda

1. Landscape of E2E Frameworks (Angular)
2. Why you should use Cypress
3. Demo Time
    a. Cypress Basics
    b. Potential Pitfalls
        i. Flakiness with Command Chaining
        ii. Asynchrony
4. Why you should not use Cypress

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Landscape of E2E Frameworks

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2 Core Technologies

1. **WebDriver**
2. Chrome DevTool Protocol (CDP)

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WebDriver

- Often mistaken for Selenium
  - Selenium RC merged with WebDriver into Selenium 2
  - Selenium WebDriver is the framework's name
- API along Protocol
- Language Neutral
- Requires a driver for each Browser

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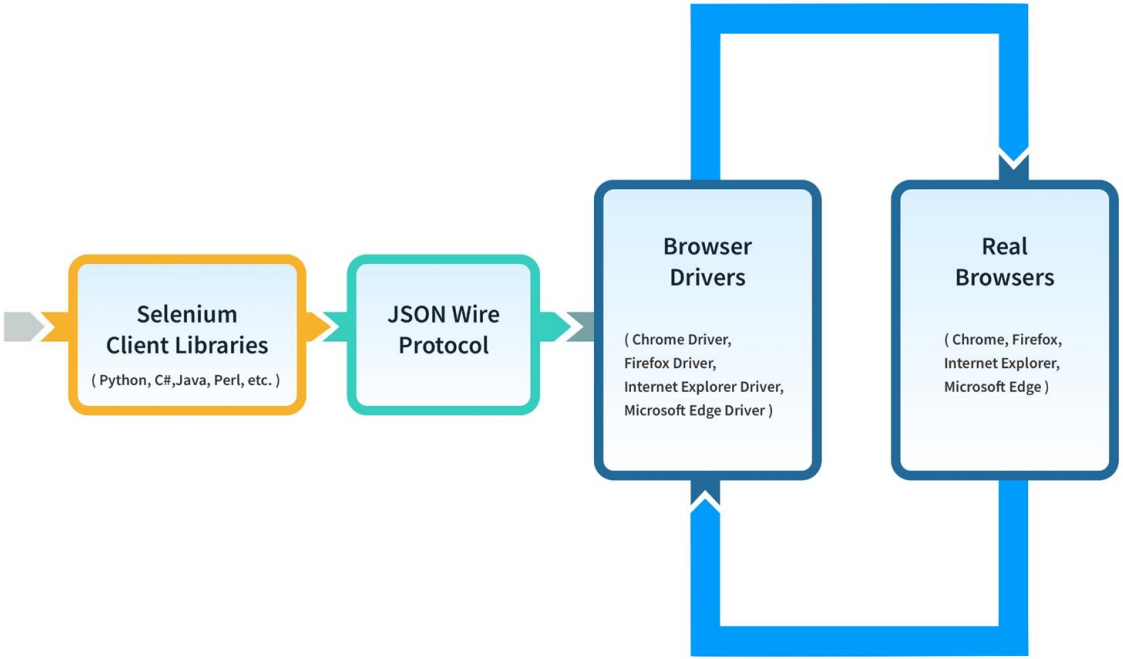
Selenium WebDriver Architecture



https://www.browserstack.com/guide/selenium-webdriver-tutorial

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WebDriver

- W3C Standard
- Cross-Browser Support
- Known to be flaky
- WebDriver BiDi as successor
- Popular E2E Tools (very roughly)
  - Protractor
  - Selenium
  - NightWatch
  - WebDriverIO

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2 Core Technologies

1. WebDriver
2. **Chrome DevTool Protocol (CDP)**

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CDP (Chrome DevTools Protocol)

- Debugging Tool for Chromium-based Browsers
- Puppeteer as primary library
- Playwright incl. Safari
- Much more stable
- Constrained to CDP-Browsers

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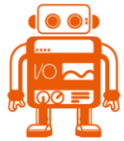
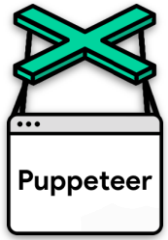
WebDriver

CDP
(Chrome DevTools Protocol)

Native





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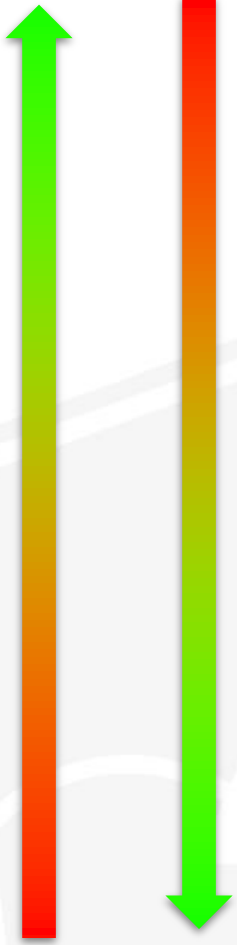
Cross Browser Support

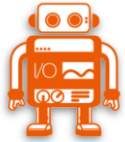
Reliability



WebDriver

CDP
(Chrome DevTools Protocol)

Native



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Why you should use Cypress

Why you should use Cypress

1. **Reliable Tests**

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Why you should use Cypress

1. Reliable Tests
2. **"Inofficial/Community Successor" of Protractor**

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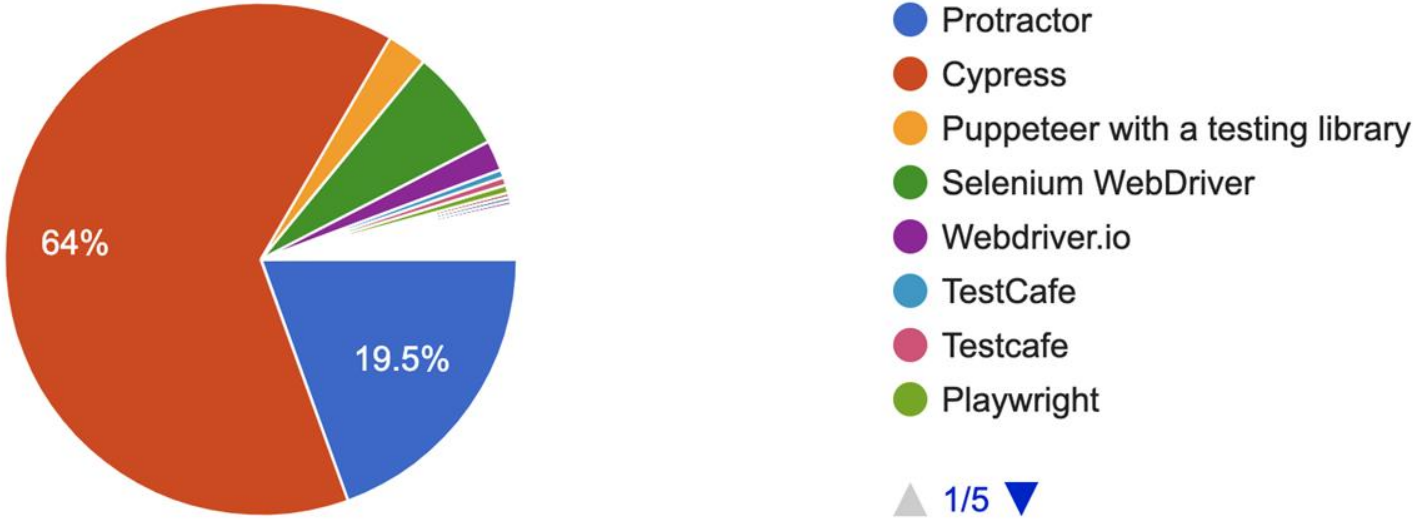
What e2e testing tools do you use?



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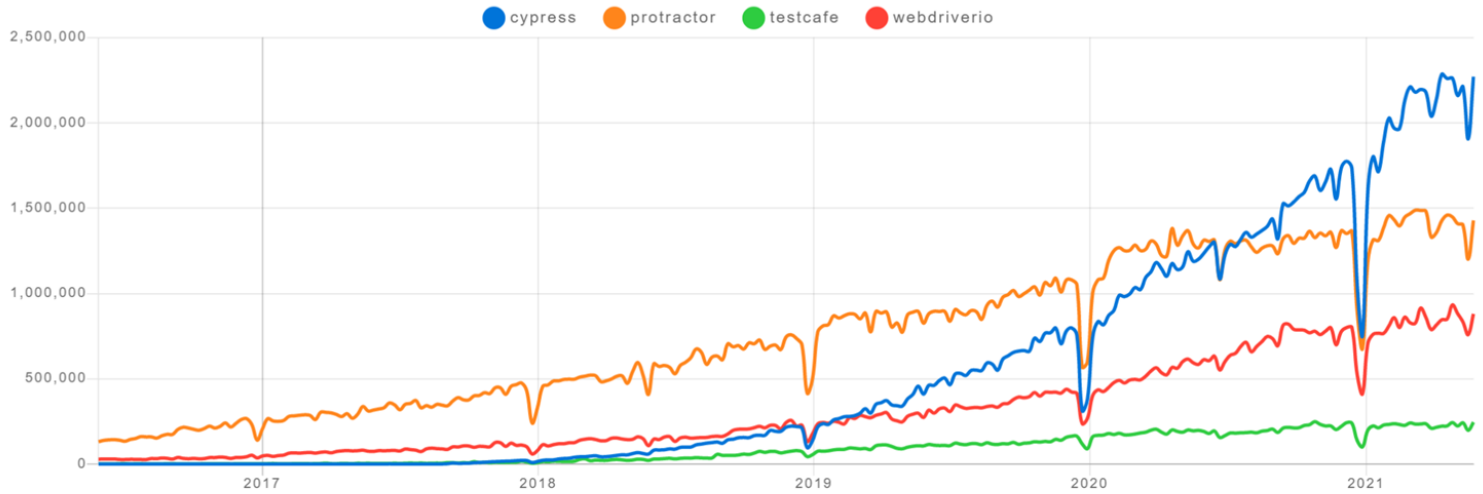
Downloads in past 5 Years



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cypress	31,427	1,436	Jun 2, 2021	Mar 4, 2015	minzipped size 380.0 KB
protractor	8,744	667	May 28, 2021	Jan 16, 2013	minzipped size 61.7 KB
testcafe	8,956	450	Jun 1, 2021	Apr 20, 2015	minzipped size 1.3 MB
webdriverio	6,724	130	Jun 1, 2021	Aug 30, 2011	minzipped size 301.4 KB

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Why you should use Cypress

1. Reliable Tests
2. "Inofficial/Community Successor" of Protractor
3. **Excellent Developer Experience**

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Demo Time

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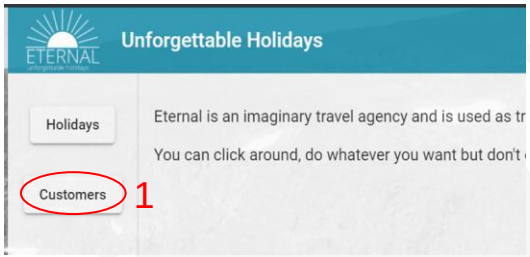
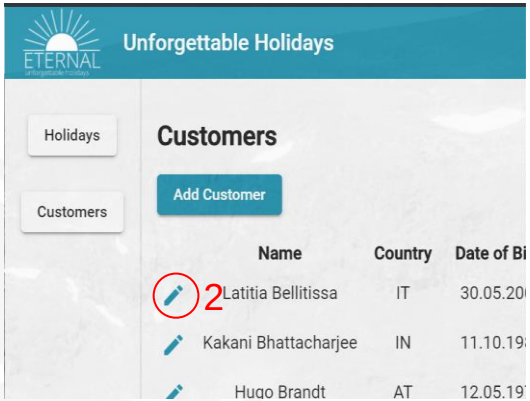


1. Select Customers



2. Select Customer

3. Edit Firstname

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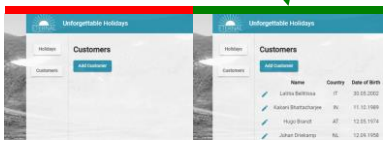
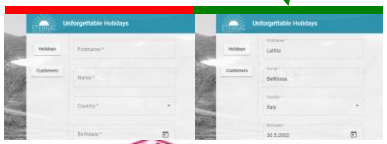
Non-Waiting Style

1. Select Customers

2. Select Customer



3. Edit Firstname



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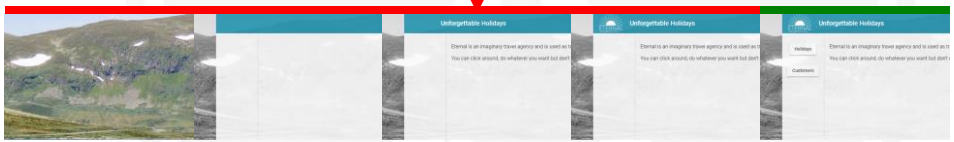
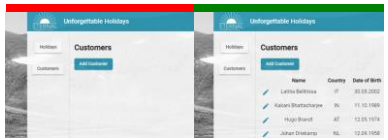
Non-Waiting Style

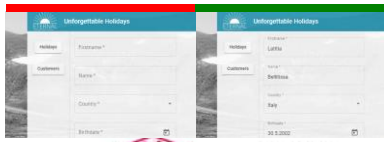
1. Select Customers

2. Select Customer

3. Edit Firstname







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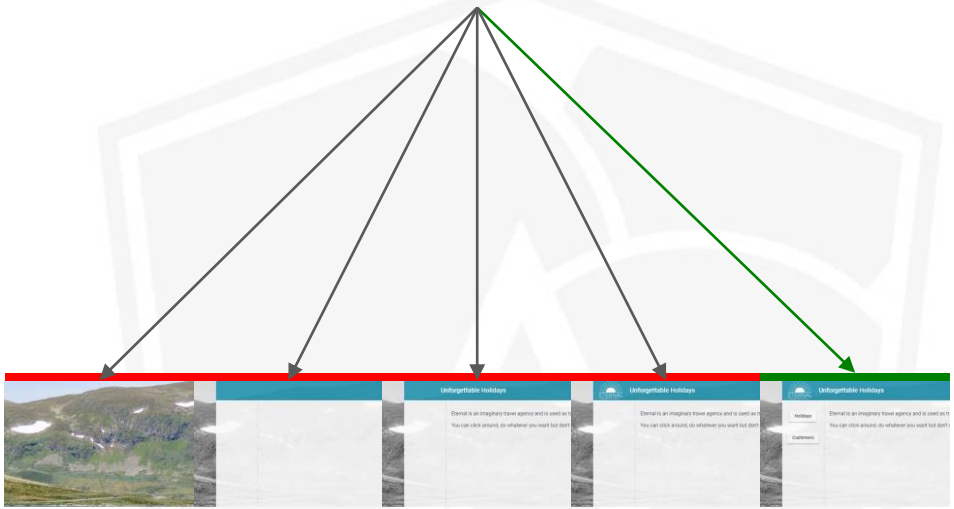
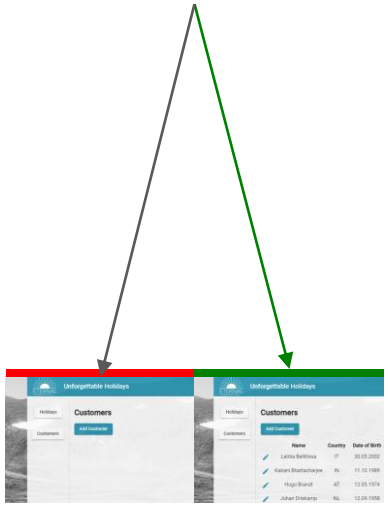
Waiting Style

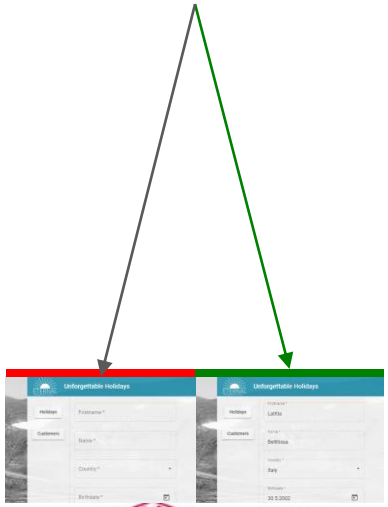
1. Select Customers



2. Select Customer



3. Edit Firstname



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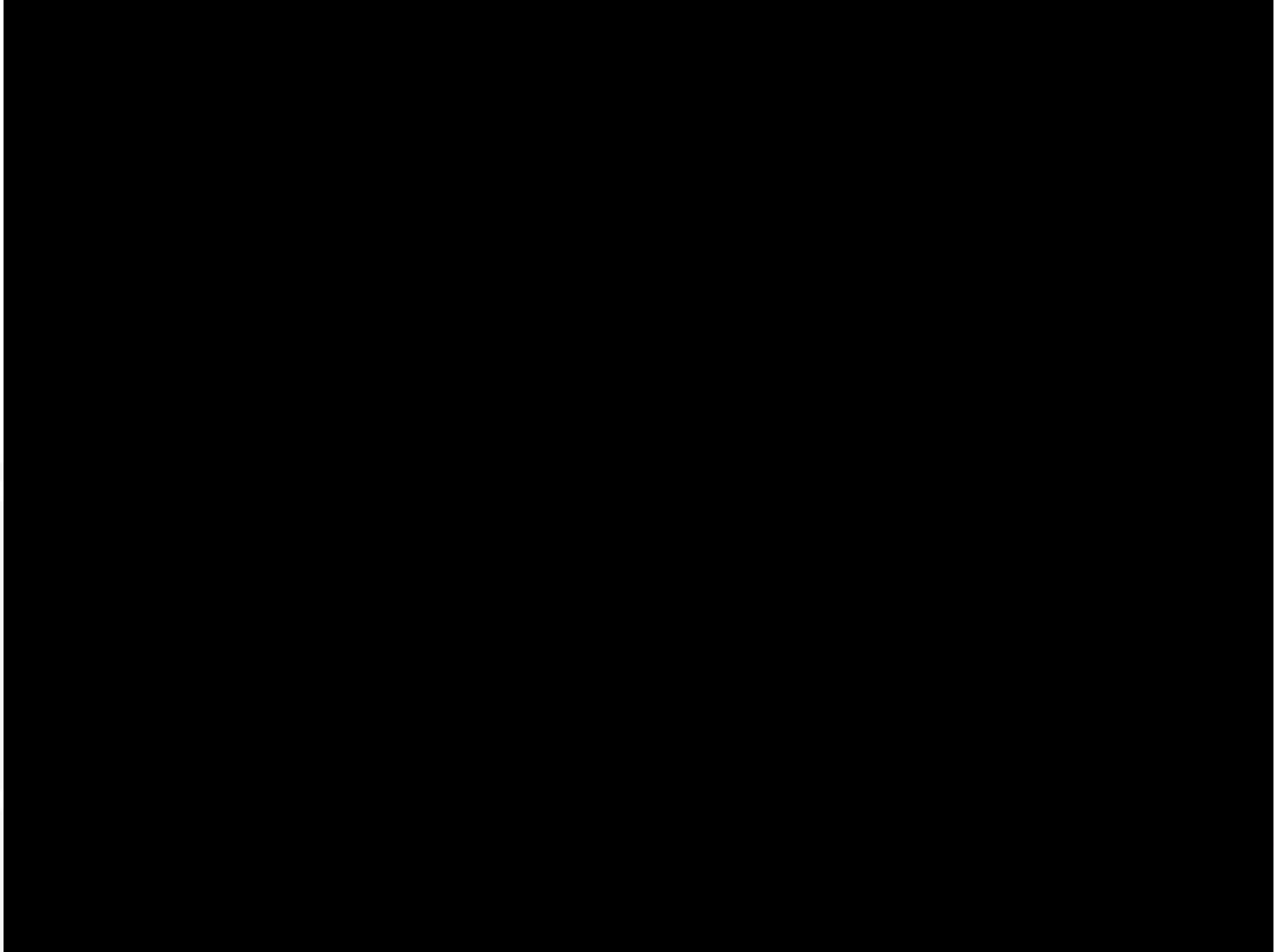

Flakiness / Unreliability

```
describe('Customers', () => {

  it('should add a customer', () => {

    cy.visit('');

    cy.get('a').contains('Customers').click();

    cy.get('a').contains('Add Customer').click();

  });

});
```

Flakiness / Unreliability

- Commands are not retried when they are successful
- Chains are multiple commands
- cy.get & cy.contains are commands

```
cy.get('a').contains('Add Customer').click();
```

1 2

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Prevent Flakiness by Assertion

```
describe('Customers', () => {

  it('add customer', () => {

    cy.visit('');

    cy.get('a').contains('Customers').click();

    cy.get('a').should('contain', 'Add Customer');

    cy.get('a').contains('Add Customer').click();

  });

});
```

Prevent Flakiness by a better Selection

```
describe('Customers', () => {

  it('add customer', () => {

    cy.visit('');

    cy.get('mat-drawer a').contains('Customers').click();

    cy.get('mat-drawer-content a').contains('Add Customer').click();

  });

});
```

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Prevent Flakiness by a much better Selection

```
describe('Customers', () => {

  it('add customer', () => {

    cy.visit('');

    cy.get('[data-test=btn-customers]').click();

    cy.get('[data-test=btn-add-customer]').click();

  });

});
```

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When you should not use Cypress

When you should not use Cypress

- Cross-Browser (mobile, Safari,...)
- iFrames: Workarounds possible
- Switching domains within one test
- Switch tabs

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Summary

- Cypress (in most cases) perfect successor
- Migration is a rewrite
- Trade-Off between Cross-Browser and Reliability

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