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E2E Testing Cypress

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Outline

- Motivation
- E2E Testing with Cypress
- Cypress E2E Testing Lab
- Advanced topics



Motivation Testing

- Prevent bugs
- Enforce code quality
- Tests must be backed by Devs (require discipline)
- Writing Tests needs to be learned
- Tests must run fast, each has its own universe

Testing pyramid

End-to-End (E2E) Tests

Component Tests
(Functional & Visual)

Unit Tests



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Official version (until NG 11)

End-to-End (E2E) Tests



Component Tests



Unit Tests



Our recommendation



cypress vs protractor

Enter an npm package...

cypress x

protractor x

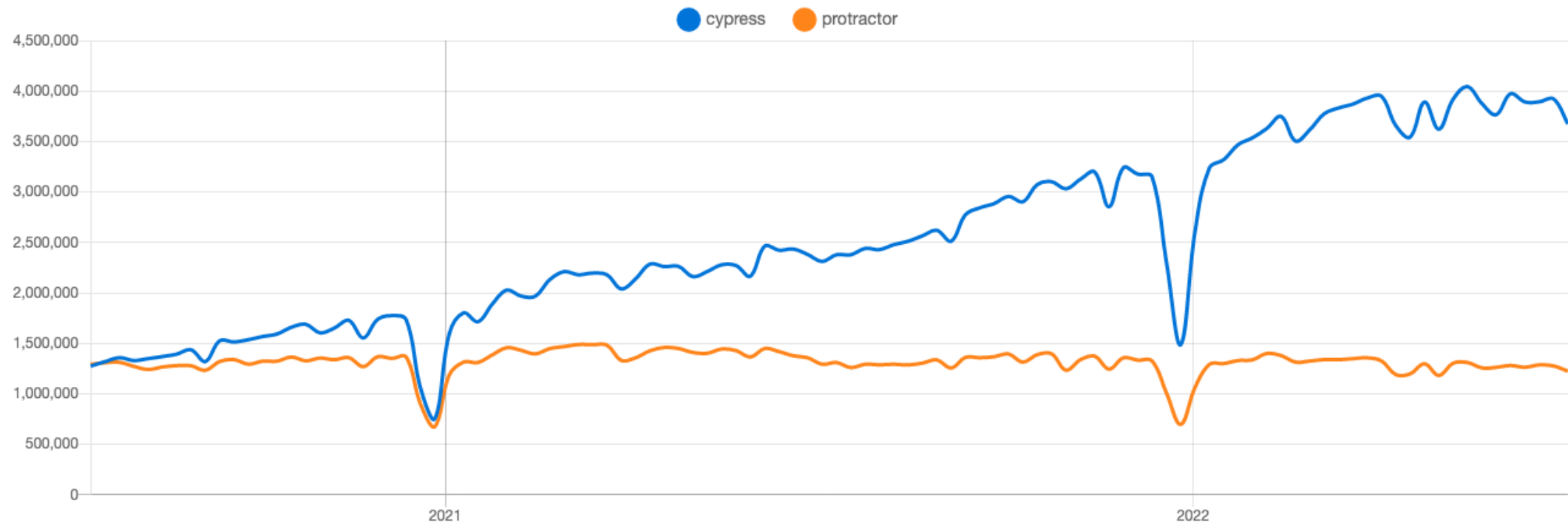
+ nightwatch

+ webdriverio

+ puppeteer

+ testcafe

Downloads in past 2 Years v



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Intro



- Cypress (in most cases) perfect successor
- Migration is a rewrite



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Motivation

- Great Developer Experience
- Good Documentation
- Easy Setup
- Internal "IDE"
- CI Features like Videorecording and Screenshots



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Cypress Setup

- Cypress has no Angular integration (yet?)
- `yarn add -D cypress`
- add `tsconfig.json` to newly cypress directory
- `cypress open` (open the Cypress Dashboard) or
- `cypress run` (just runs the tests)

Basic commands

- `cy.visit(url: string)`
 - Can only be run at the beginning (of a test)
 - Domain can't be changed
- `cy.get(selector)`
 - Uses jQuery style selectors
 - Runs asynchronously
 - Chainable
 - contains
 - click
 - type
 - ...



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Assertions Implicit

- Behaves like a normal command
- Does waiting as well (asynchronicity)
- Good for single assertions

```
cy

  .get('h1')

  .should(

    'have.text',

    ' Unforgettable Holidays '

  );
```



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Assertions Explicit

- More verbose
- Good when more logic is involved

```
cy.get('h1').should(($h1) => {  
  
    expect($h1).to.have  
  
        .text(' Unforgettable Holidays ');  
  
});
```



Assertions are
not required!



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Cypress – Demo

Ready for the lab!

- What are your questions?



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Setup for Labs

- Prerequisites
 - NodeJS (I use version 14 because NG 12 currently demands it)
 - IDE: Visual Studio Code (free) or IntelliJ WebStorm
 - Chrome (or Chromium based)
 - Your repos checked out



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Advanced topics



Page Object Model

- a page object should allow a software client
 - to do anything
 - see anything that a human can
- used for significant elements on a page

```
class Sidemenu {  
    click(name: "Customers" | "Holidays"): Chainable {  
        return cy.get("mat-drawer a").contains(name).click();  
    }  
}  
  
export const sidemenu = new Sidemenu();
```



Page Object Model - Demo

Database Test Seed?

- Provide a Database specifically for Tests
- "One size fits all" approach
- Does not scale
- Better: Use Backend API for Arrange/Given Parts



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Without API access

- Reasons
 - Requires special privileges
 - External Data Source/Proxy
 - Unreasonable (complexity, efforts)
- Mocked API

```
cy.server();

cy.route({

  method: 'GET',

  url: '/customer',

  response: [

    { id: 1, firstname: 'Hugo', name: 'Brandt', country: 'AT'},

    { id: 2, firstname: 'Natalia', name: 'Rusnov', country: 'RU'},

  ],

});

cy.visit('');
```



Alternative: Arrange API Requests

- Call same endpoints as Angular
- Don't use the frontend directly!

```
cy.request({  
  method: 'POST',  
  url: '/holidays',  
  body: {  
    title: 'Pyramids',  
    teaser: 'Visit the Ancient Wonders of Old Egypt',  
    description: 'Fly to Cairo, get on a ship on the Nile and live like a Pharaoh'  
  }  
}).then(res => res.body.id);
```



Best Case: Dedicated Test API

- Backend provides special API for test mode
- Shortcuts possible, e.g.
 - merge chain of requests into one
 - Overcome Security Issues
- Best option, but of course expensive

Now you know how to use Cypress

- Any questions left over? 😊



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