

Web Apps don't need no manual testing

by Hendrik Wallbaum

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Developer for fun 

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The why and how of End-to-End testing for Web Apps.

Testing - Why we do it

- Find bugs before users do
- Ensure we fulfill specification
- Help future developers



Story time



Story time - Development tasks



Meetings



Implementation work

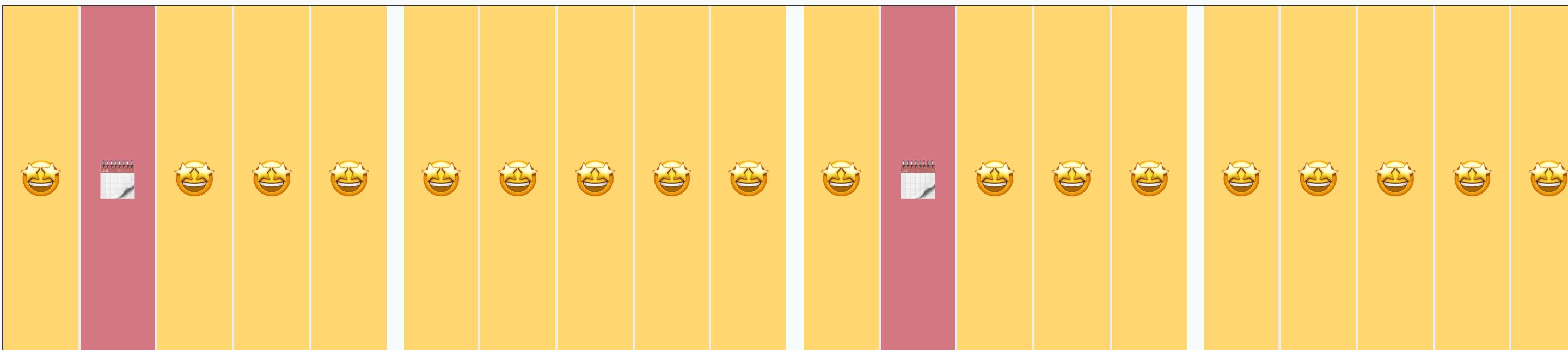


Manual testing

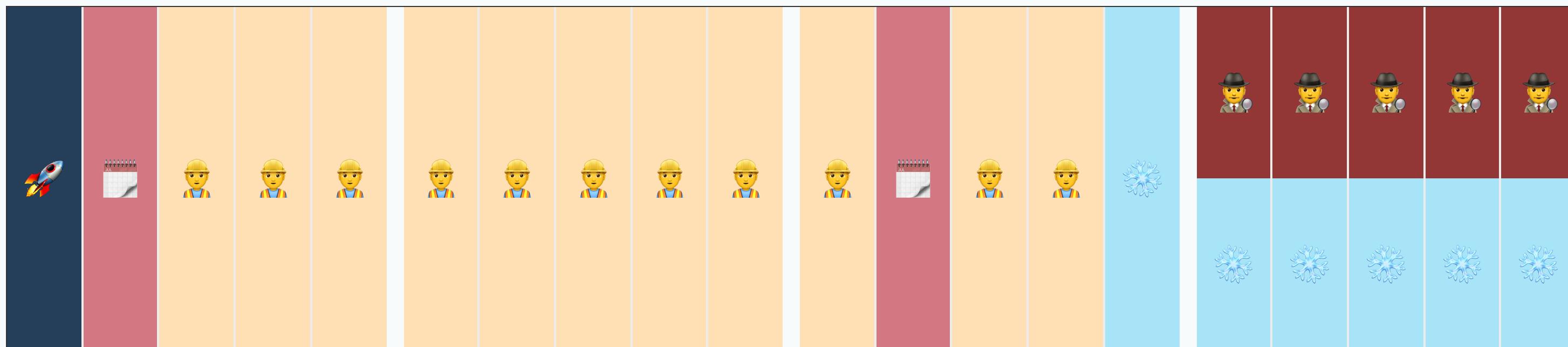


Releasing

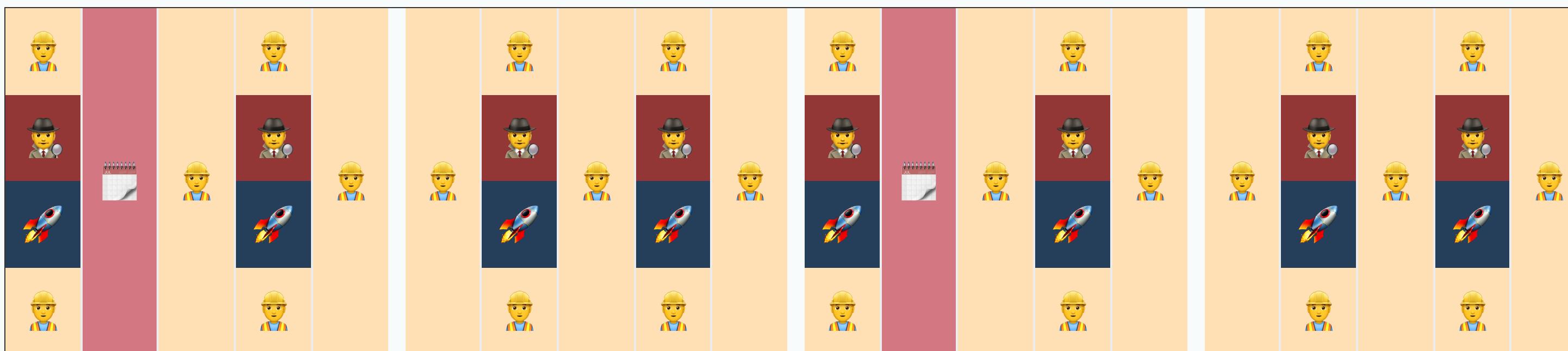
Story time - My dream



Story time - Code Freeze



Story time - Manual Releases



Story time - Time investment

Dev^d	Test^d	Meet^d	Releasing^d	Releases
11	5	2	1	1
14	2	2	2	8

d = days

Story time - Time investment

Dev^d	Test^d	Meet^d	Releasing^d	Releases	Bugs
11	5	2	1	1	
14	2	2	2	8	

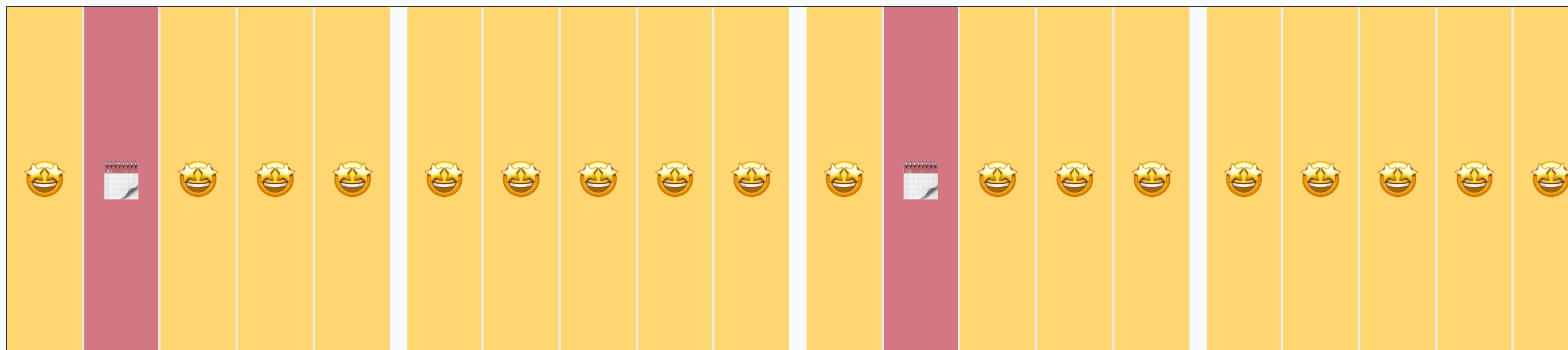
d = days

Story time - Numbers

High performing organizations:

- Deploy **200** times as often
- Have a **3** times lower change failure rate
- Recover **24** times faster from failures

Story time - My dream



My dream - New stats

Dev^d	Test^d	Meet^d	Releasing^d	Releases	Bugs
11	5	2	1	1	
14	2	2	2	8	
18	0	2	0	200	

d = days

My dream - Required actors



Developer

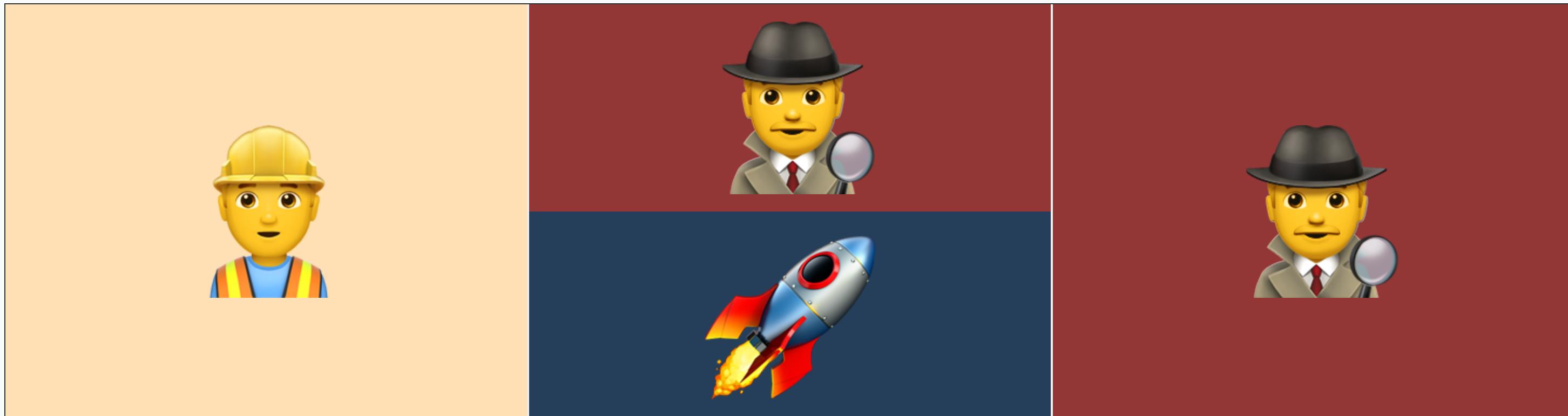
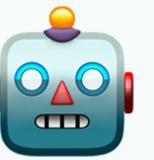


Tester / QA



Computer

My dream - The perfect day



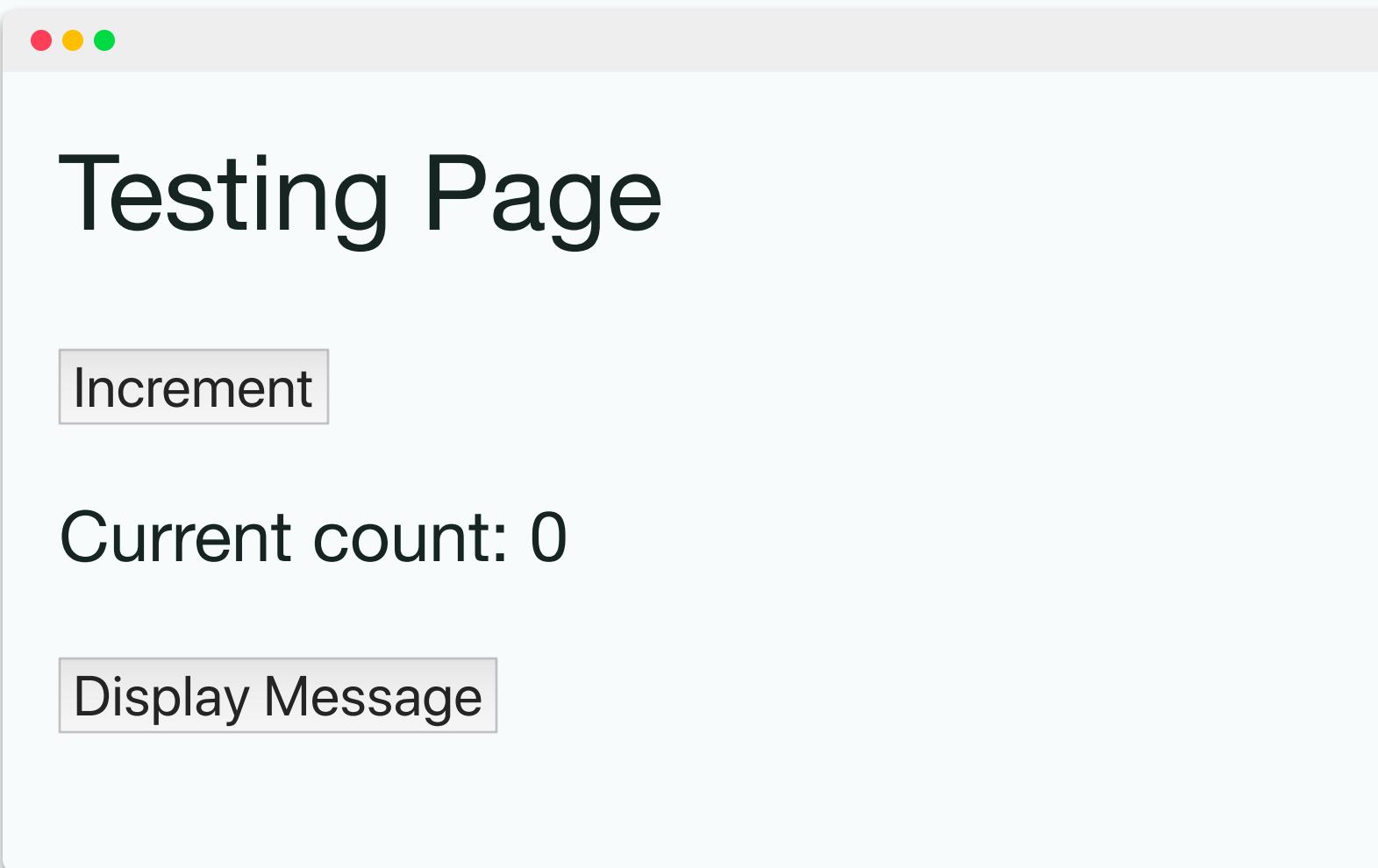
**Use the right tool for the
right job**



Cypress - E2E and integration testing



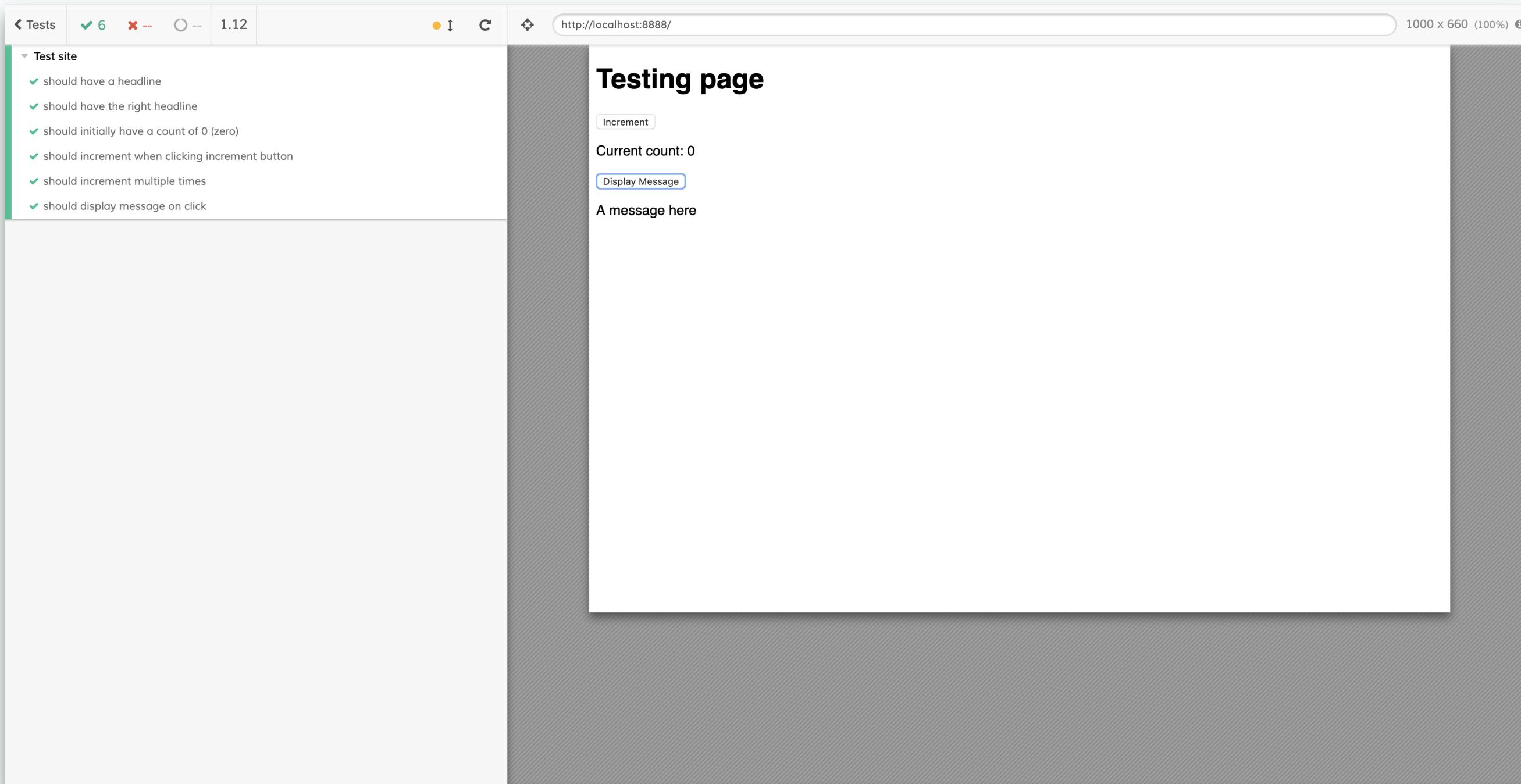
Cypress - Example app



Cypress - Testcases

1. Basic render 
2. Counter logic 
3. Message display 

Cypress - In action



Cypress - Setup

```
● ● ●  
// Basic file structure some.spec.js.  
  
/// <reference types="Cypress" />  
  
describe('Some component', () => {  
  it('should do something', () => {  
    cy.doThings().assert('to.be', true)  
  })  
})
```

Cypress - Setup

cypress.json

```
● ● ●  
{  
  "baseUrl": "http://localhost:8888"  
}
```

Cypress - Coding

1. Basic render 🎉

```
● ● ●  
it('should have a headline', () => {  
  cy.visit('/')  
  cy.get('h1')  
})
```

Cypress - Coding

1. Basic render 🎉

```
it('should have the right headline', () => {
  cy.visit('/')
  cy.get('h1').contains('Testing page')
})
```

2. Counter logic

```
● ● ●  
it('should initially have a count of 0', () => {  
  cy.visit('/')  
  cy.get('[data-testid="count-output"]').contains('0')  
})
```

Cypress - Coding

2. Counter logic

```
●●●  
it('should increment', () => {  
  cy.visit('/')  
  cy.get(' [data-testid="button-increment"] ').click()  
  cy.get(' [data-testid="count-output"] ').contains('1')  
})
```

Cypress - Coding

2. Counter logic

```
● ● ●  
it('should increment multiple times', () => {  
  cy.visit('/')  
  cy.get(' [data-testid="button-increment"] ').click()  
  cy.get(' [data-testid="button-increment"] ').click()  
  cy.get(' [data-testid="count-output"] ').contains('2')  
})
```

Cypress - Coding

3. Messsage display

```
●●●  
it('should display message on click', () => {  
  cy.visit('/')  
  cy.get('[data-testid="button-display"]').click()  
  cy.get('[data-testid=display]')  
})
```

Beyond the basics



Cypress - Advanced

What to run?

```
●●●  
it.only('should only run this', () => {})  
it.skip('should skip this', () => {})
```

Cypress - Advanced

Using previous state

```
● ● ●  
it('should increment from previous value', () => {  
  cy.visit('/')  
  cy.get(' [data-testid="count-output"] ')  
    .invoke('text')  
    .then(text => {  
      cy.get(' [data-testid="button-increment"] ').click()  
      cy.get(' [data-testid="count-output"] ') .contains(parseInt(text) + 1)  
    })  
})
```

Cypress - Advanced

Cypress returns Promise like values.

You can **not** `await` Cypress commands.

Thus we need to chain `.then()` should we want to use values from previous commands.

Cypress - Advanced

Fixtures

```
●●●  
it('should compare to fixture', () => {  
  cy.visit('/')  
  cy.fixture('data').then(dataFixture => {  
    cy.get('.data-element').contains(dataFixture)  
  })  
})
```

Cypress - Advanced

Mocks and fixtures

```
●●●  
it('should mock requests', () => {  
  cy.server()  
  cy.route(/some\/regex/, 'fixture:response.json')  
  cy.visit('/loads/data')  
  cy.get(' [data-testid="data"] ')  
})
```

Cypress - Advanced

Aliases

```
before(() => {
  cy.fixture('data').as('dataFixture')
})

it('should ...', function() {
  cy.get('element').contains(this.dataFixture)
})
```

Cypress - Best Practices

Consider what to E2E-test.

Expose APIs from your application.

`.get()` does not need positive assertions.

Speed up your tests by logging in programmatically.

[More best practices](#)

Cypress - Best Practices

```
cy.request({
  method: 'POST',
  url: 'https://your.domain',
  body: {
    password,
    username,
  },
}).then(response => {
  expect(response.isOkStatusCode).to.be.true
  const id = response.body.id
  window.localStorage.setItem('id', id)
  // Cookies are set by Cypress
})
```

Cypress - Best Practices

Custom Commands

```
● ● ●  
Cypress.Commands.add('login', (username, password) => {  
  // Login programmatically  
})  
  
// some.spec.js  
beforeEach(() => {  
  cy.login('username', 'password')  
})
```

Cypress - Reporting

```
● ● ●  
// cypress.json configuration.  
{  
  "baseUrl": "http://localhost:8888",  
  "reporter": "junit",  
  "reporterOptions": {  
    "mochaFile": "results/test-results-[hash].xml"  
  }  
}
```

Cypress is build on Mocha and has access to all [build in reporters](#).

**Web Apps don't need no
manual testing!?** - Or do
they? 🤔

Presentation

Resources

- [Cypress Guides](#)
- [Cypress API](#)
- [Examples](#)
- [Repo for this presentation](#)

The End

Questions?

Find my social media and blog on: HendrikWallbaum.de