How to boost Test Implementation Speed by 10x?

Testing As A Service

mesutdurukal

AGENDA

Preparation

- Problem Definition
- Requirement Analysis

Implementation

Serve

- Maintenance
- Support

Chapter One

Preparation

Problem Statement

- No standard across multiple teams/projects
- Struggling with problems,
  which were already solved somewhere else
- Duplication
- Code quality
- Reliability issues
- No monitoring

```
myFramework.checkText(filterButton, '25 k')
```

Kayla

```
cy.get(button +
':visible')
   .click()
   .should('contain',
      '25 k');
```

Leo

```
cy.get(button)
   .should('be.visible')
   .click()
   .should('have.text',
      '25 k');
```

Susan

```
cy.get(button + ':visible')
   .click()
   .invoke('text')
   .as('labelOnButton');
cy.wait(2000);
cy.get('@labelOnButton')
      .then((actualLabel) => {
         expect(actualLabel)
         .to
         .equal('25 k')})
```

Rob

```
cy.get(button +
':visible')
      .click()
      .then((button)=>{
         expect(button
         .text())
         .to
         .equal('25k');})
```

Targets

- Developing standards.
- Avoid any antipatterns.
- Remove duplication.
- Provide solutions to common problems.
- Provide an opportunity for monitoring
- Dashboards, queries, filters, charts

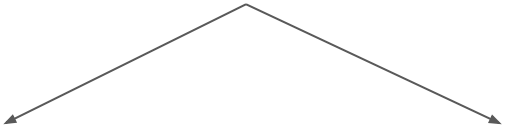
Roadmap

- Objectives & Key Results
- Requirements definition
- Prioritization

Objectives
and Key Metrics

Test coverage	90%
Number of critical incidents	<3
Automation coverage	100%
Total regression duration	<10 mins
False failures	<5%
Average test fix time	< 24 hours
Average test implementation time	< 1 sprint

QUALITY ASSURANCE

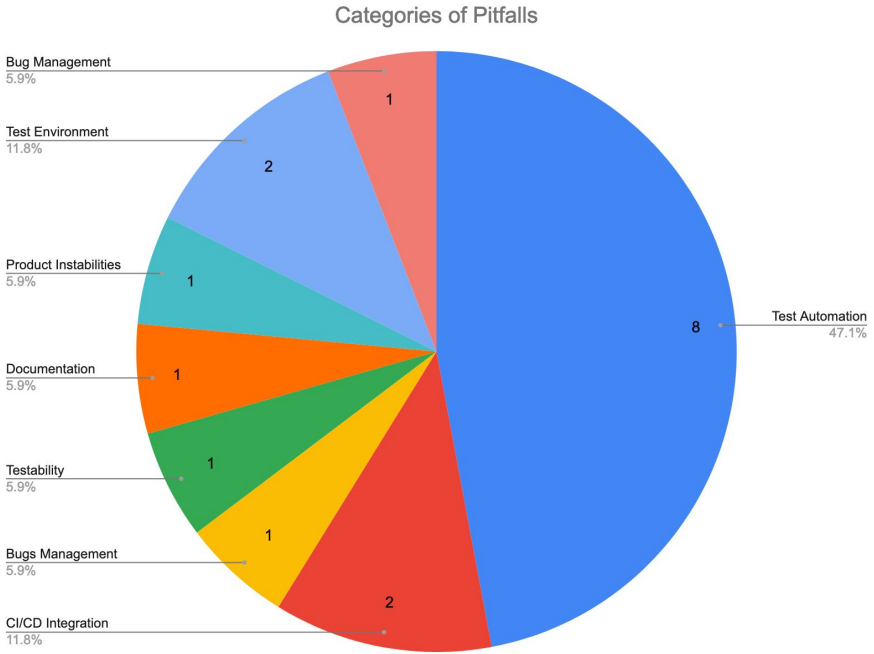


Improve Confidence
- Quantity: Coverage
- Quality: Escaped Bugs

Support Fast Delivery
- Automation
- Execution duration
- Implementation
- False alarms
- Test fix time

Challenges

- Safari Automation
- No infrastructure for automated regression testing
- No proper Jira workflow for bugs
- Impossibly testable cases
- Unclear requirements / features
- Infrastructure instabilities
- Errors raised by the SUT
- Cross domain redirection
- Code changes to selectors / missing selectors
- Proctor tests roll ups breaking automation
- Test flakiness
- Escaped bugs
- Share tests between similar products
- Use same approach for tests within a project
- Keeping account profile data untainted
- API testing framework compatibility

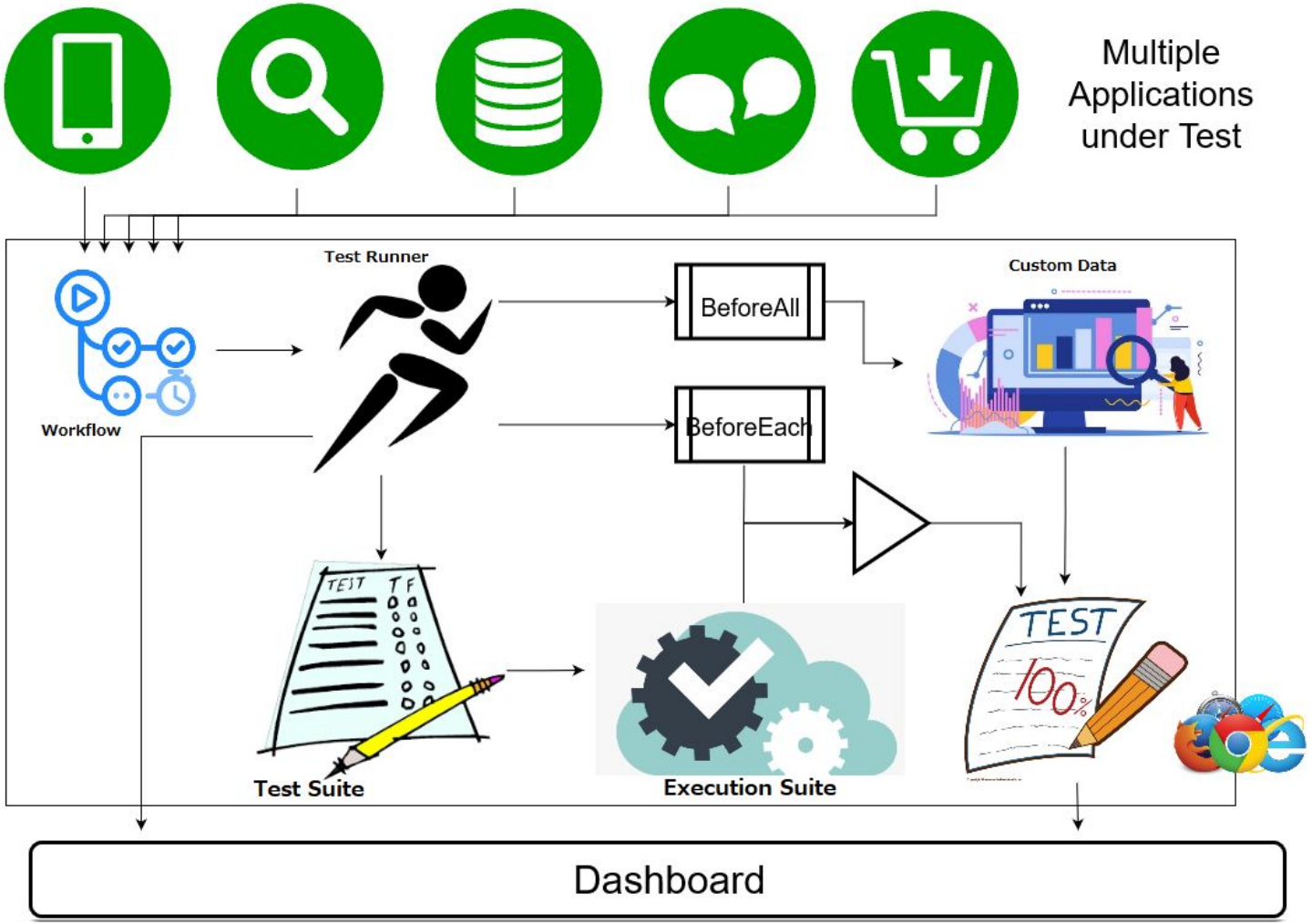


Requirements

- Testing BE and/or FE together should be supported
- Rest API and GraphQL testing should be supported
- API testing should support authenticated requests
- FE testing modules should support Cookie operations
- Including individual or a group of tests to the suite
- Excluding tests from the executions should be possible.
- Requests modification/interception should be supported
- Response modification/interception should be supported
- Test Input Management should be in place
- Automatic bug reports after failures
- Slack Notifications after executions
- Evidence collection
- Monitoring dashboards
- There should be Hard fail and soft fail modes
- Tests should be easily integrable to Gitlab/Github
- Tests should be executable on multi-branch pipelines
- Tests should be executable on different branches
- Tests should be executable after commits/before merges
- Cross domain testing should be supported
- Clean up
- Mocking should be supported
- Various browsers should be supported
- Mobile testing should be supported (native app)
- User manual should be generated
- It should be easy to write new tests
- Parallel execution should be supported
- Test flakiness should be detected and reduced
- Retry (line/whole test) strategy
- No sensitive data should be revealed
- Resources should be configurable
- Static code analysis (linters, servers)
- Dependencies should be auto-updated?
- Accessibility testing components
- Tests should have priorities
- Async requests should be handled properly.

Chapter Two

Implementation


Multiple Applications under Test
Test Runner
Workflow
BeforeAll
BeforeEach
Custom Data
Test Suite
Execution Suite
TEST
100%
Dashboard

Benchmarking

- Community Research
- Check other benchmarks
- Self experience
- Decision Criteria
  - Speed
  - Ease of coding
  - Flexibility
  - Documentation & Support
  - Licensing / Cost
  - Feature Compatibility

```
describe('Search button', function () {
    Cypress.env().executionPlatforms.forEach((executionPlatform) => {
        it(
            'Search button ' + executionPlatform,
            {
                testid: 'C31881136',
                platform: executionPlatform,
                priority: 'p0',
            },
            () => {
                base.log('Initialize');
                let performSearch = new PerformSearch();

                base.log('Search Button is disabled before filling queries');
                cy.get(serpPage.searchButton()).should('be.disabled');

                base.log('Click Search button after entering a query');
                let randomQuery;
                do {
                    randomQuery = base.generateRandomText();
                } while ('0x'.includes(randomQuery.toLowerCase()));
                performSearch.
                cy.get(serpPag

                base.log('Chec
                performSearch.
                cy.url().shoul
            }
        );
    });
});
```

Cypress

```
fixture('Search Button Test')
    .page(userVariables.url)
    .requestHooks(CustomHeader);

test
    .meta('testid', 'C31881136')
    .meta('platform', 'executionPlatform')
    .meta('priority', 'p0')('Search Button Test', async

    console.log('Initialize: ' + mytest.fixtureCtx.myVa
    const select = new selectors();
    await mytest.resizeWindow(320, 568).setNativeDialog

    console.log('Search Button is disabled before filli
    await mytest
        .expect(select.find(select.searchButton()).hasA
        .ok();

    console.log('Click Search button after entering a q
    let randomQuery;
    do {
        randomQuery = new TestBase(
    } while ('0x'.includes(randomQu
    await mytest
        .typeText(select.keyword(),
        .click(select.searchButton(

    console.log('Check that button
    await mytest
        .expect(select.find(select.
        .eql(randomQuery)
        .expect(await select.curren
        .contains('q=' + randomQuer
});
```

Testcafe

```
test.describe('Search Button Test', () => {
    test('Search Button Test', async ({ page }) => {
        test.info().annotations.push({
            testid: 'C31881136',
            platform: ['desktop', 'mobile'],
            priority: 'p0',
        });
        console.log('Initialize');
        let keyword = page.locator(select.keywordInput(

        console.log('Search Button is disabled before f
        await page.locator(select.searchButton()).isDis

        console.log('Click Search button after entering a query');
        let randomQuery;
        do {
            randomQuery = new TestBase().generateRandomText();
        } while ('0x'.includes(randomQuery.toLowerCase()));
        await keyword.type(randomQuery);
        await page.locator(select.searchButton()).click();

        console.log('Check that button navigates to results');
        await expect(keyword).toHaveAttribute('value', randomQuery);
        await expect(page.url()).toContain('q=' + randomQuery);
    });
});
```

Playwright

```
describe('Search Butto
    this.tags = [
        {
            testid: '(
            platform:
            priority:
        },
];
it('Search button test
    //console.log('Initialize');
    const select = browser.page.selectors();

    //console.log('Search Button is disabled before filling queries');
    select.assert.attributeEquals('@searchButton', 'disabled', 'true');

    //console.log('Click Search button after entering a query');
    let randomQuery;
    do {
        randomQuery = base.generateRandomText();
    } while ('0x'.includes(randomQuery.toLowerCase()));
    select.setValue('@keyword', randomQuery).click('@searchButton');

    //console.log('Check that button navigates to results');
    select.assert.attributeEquals('@keyword', 'value', randomQuery);
    browser.assert.urlContains('q=' + randomQuery);
});
});
```

Nightwatch

```
describe('Search Button Test', () => {
    it('Search button test', async () => {
        console.log('Initialize');
        let driver = sbase.driver;
        let query = seleniumLocators.keywordInput();
        let keywordBox = await sbase.getElementById(query);
        let searchButton = await sbase.getElementClassName(
            seleniumLocators.searchButton()
        );

        console.log('Search Button is disabled before filling queries');
        expect(await searchButton.getAttribute('disabled')).toEqual('true');

        console.log('Click Search button after entering a query');
        let randomQuery;
        do {
            randomQuery = base.generateRandomText();
        } while ('0x'.includes(randomQuery.toLowerCase()));
        await keywordBox.sendKeys(randomQuery);
        await searchButton.click();

        console.log('Check that button navigates to results');
        keywordBox = await sbase.getElementById(query);
        expect(await keywordBox.getAttribute('value')).toEqual(randomQuery);
        expect(await driver.getCurrentUrl()).toContain('q=' + randomQuery);
    }, 15000);
});
```

Selenium

Quality Dimensions

Understandable
Transparent
Documentation
Troubleshooting

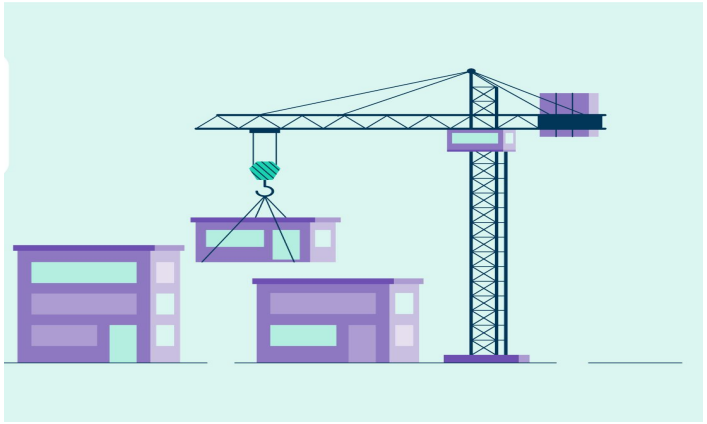
Flexible
Integrity
Scalable
Priority

Performance
Resource consumption
Multiple execution
Versioning

Reliable
Coverage
Non Disruptive
Testability

Flexible: Configurable, Cross Platforms

Integrity: Can integrate to CI platforms

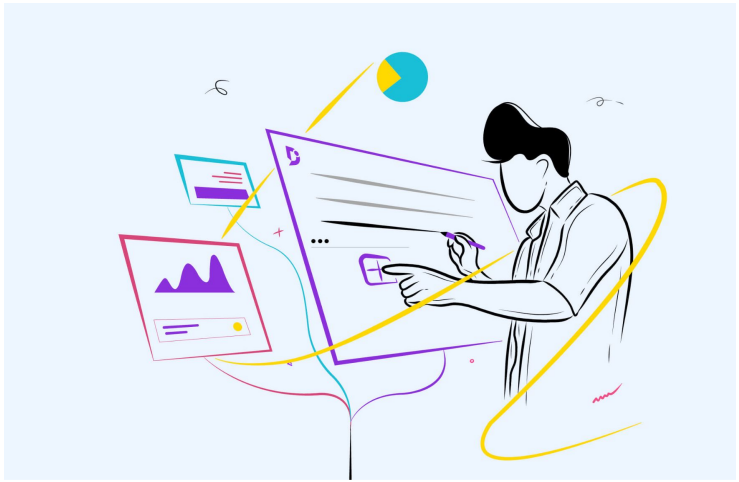


Scalable/Portable: Parallelization, Desktop/Mobile

Goal Oriented: Priorities

Understandable

Transparent, Visible



Documentation: Read Me, Manuals

Troubleshooting, Evidences: SS, Video

Reliable

Coverage

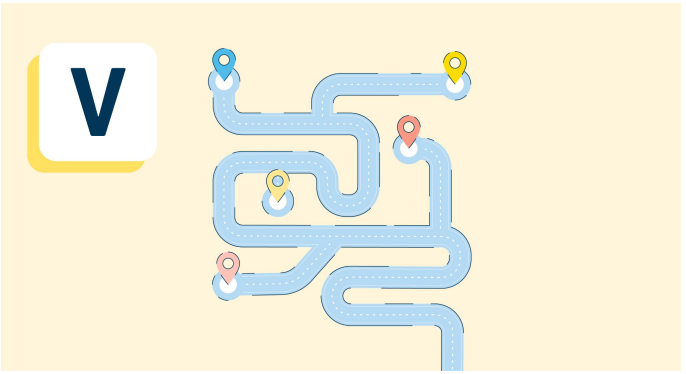
Nondisruptive

Testability: Mocks

Performance

Resource Consumption

Multiple Execution



Versioning

Chapter Three

Service

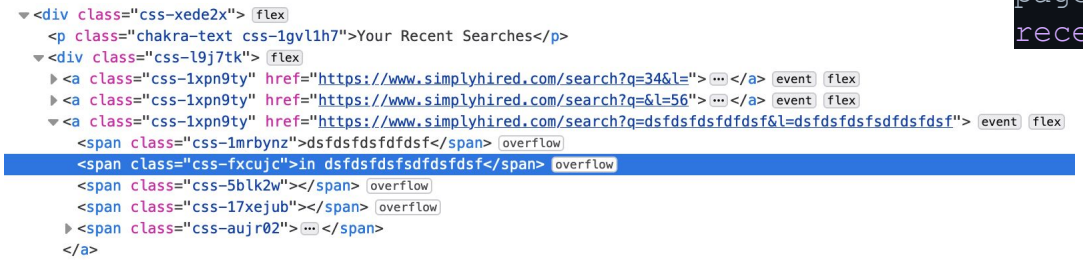
Speed Up Implementation

- Define the locators
  - Find the parent of an element
  - Find siblings and children
- Implement test steps
  - Wait for responses, conditions
  - Parse Promises

```
page.locator(selector).click();
vs
page.click(page.locator(selector));
```

```
page.locator(':text("label")');
vs
page.getElementsByName("label");
```

```
recentSearchesTitle().locator("xpath=..");
vs
page.locator("article:has(" +
recentSearchesTitle() + ")")
```

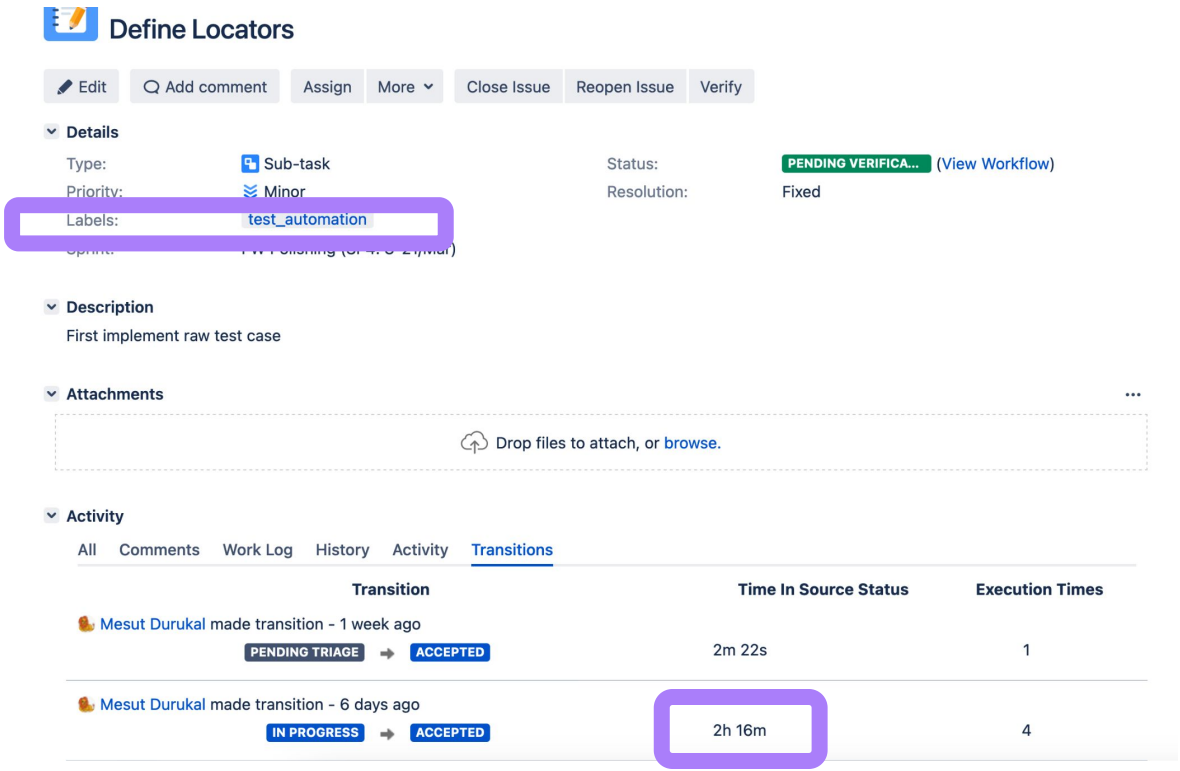


Eventually, looks like:

```
import { expect, test } from "@playwright/test";

test.describe("My Second Suite", () => {
  test( title: "Search Button Test", testFunction: async ({ page : Page }) => {
    console.log("Initialize");
    let keyword = "myQuery";
    let location = "myLocation";
    await page.click( selector: '[data-testid="mobileFindJobsKeywordButtonToggle"]');
    await page.goto( url: "https://simplyhired.com/");

    console.log("Enter a query");
    await page.locator( selector: '[data-testid="findJobsKeywordInput"]').type(keyword);
    await page.locator( selector: '[data-testid="findJobsLocationInput"]').type(location);

    console.log("Click Search button");
    await Promise.all( values: [
      page.waitForResponse( urlOrPredicate: (resp : Response ) =>
        resp.url().includes("search.json?q=myQuery&l=")
      ),
      page.click( selector: '[data-testid="findJobsSearchSubmit"]'),
    ]);

    console.log("Navigate to results");
    await expect(
      page.locator( selector: '[data-testid="findJobsKeywordInput"]')
    ).toHaveAttribute( name: "value", keyword);
    await expect(
      page.locator( selector: '[data-testid="findJobsLocationInput"]')
    ).toHaveAttribute( name: "value", location);
    await page.waitForURL( url: "**/search?q=" + keyword + "**");
  });
});
```

```
import { test } from "@playwright/test";
const SearchJobs = require("../SearchJobs");

test.describe("My Second Suite", () => {
  test( title: "Search Button Test2", testFunction: async ({ page : Page }) => {
    await page.goto( url: "https://simplyhired.com/");
    await new SearchJobs(page, app: "simplyhired", platform: "mobile").queryJobs(
      keyword: "myQuery",
      location: "locations"
    );
  });
});
```

Measure the effect!



Average:

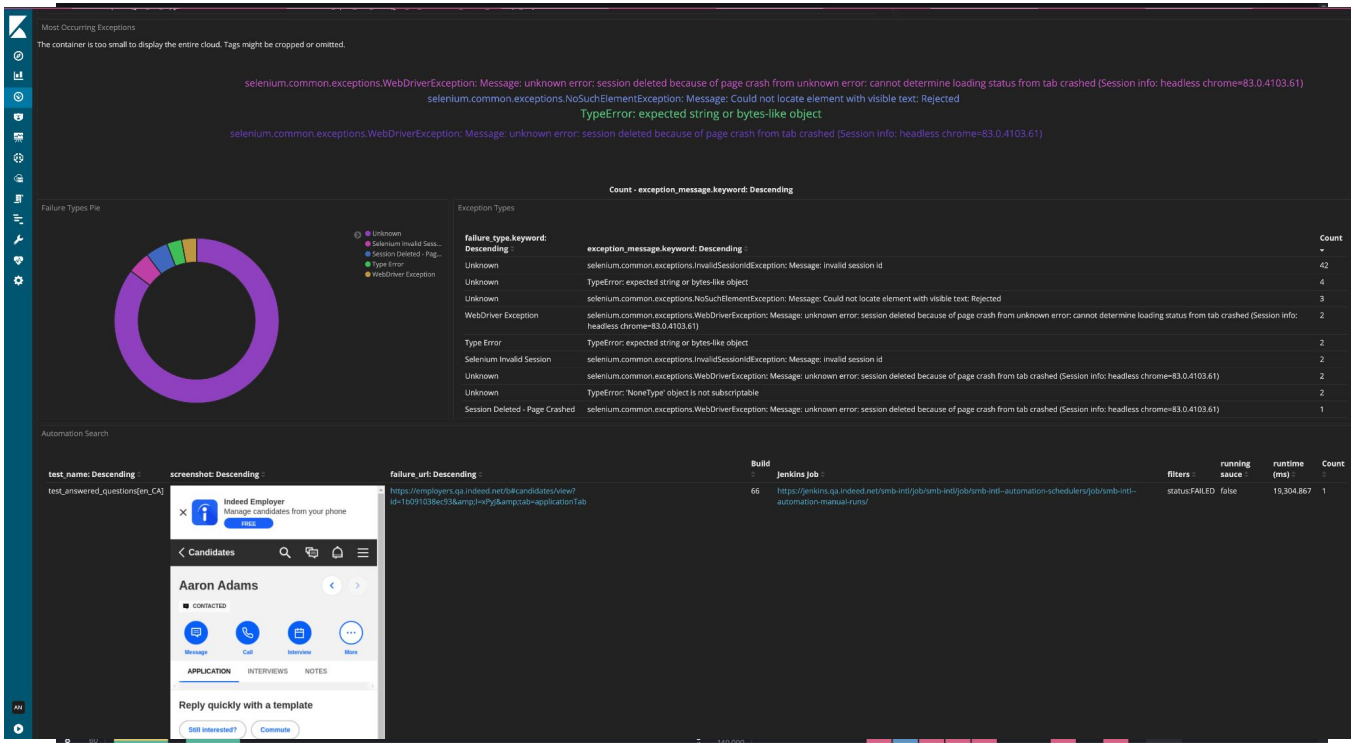
2 hours locators

3 hours implementation

↓

30 mins

Monitoring


Most Occurring Exceptions
The container is too small to display the entire cloud. Tags might be cropped or omitted.
selenium.common.exceptions.WebDriverException: Message: unknown error: session deleted because of page crash from unknown error: cannot determine loading status from tab crashed (Session info: headless chrome=83.0.4103.61)
selenium.common.exceptions.NoSuchElementException: Message: Could not locate element with visible text: Rejected
TypeError: expected string or bytes-like object
selenium.common.exceptions.WebDriverException: Message: unknown error: session deleted because of page crash from tab crashed (Session info: headless chrome=83.0.4103.61)
Count - exception_message.keyword: Descending
Failure Types Pie
Unknown
Selenium Invalid Sess...
Session Deleted - Pag...
Type Error
WebDriver Exception
Exception Types
failure_type.keyword: Descending
exception_message.keyword: Descending
Count
Unknown
selenium.common.exceptions.InvalidSessionIdException: Message: invalid session id
42
Unknown
TypeError: expected string or bytes-like object
4
Unknown
selenium.common.exceptions.NoSuchElementException: Message: Could not locate element with visible text: Rejected
3
WebDriver Exception
selenium.common.exceptions.WebDriverException: Message: unknown error: session deleted because of page crash from unknown error: cannot determine loading status from tab crashed (Session info: headless chrome=83.0.4103.61)
2
Type Error
TypeError: expected string or bytes-like object
2
Selenium Invalid Session
selenium.common.exceptions.InvalidSessionIdException: Message: invalid session id
2
Unknown
selenium.common.exceptions.WebDriverException: Message: unknown error: session deleted because of page crash from tab crashed (Session info: headless chrome=83.0.4103.61)
2
Unknown
TypeError: 'NoneType' object is not subscriptable
2
Session Deleted - Page Crashed
selenium.common.exceptions.WebDriverException: Message: unknown error: session deleted because of page crash from tab crashed (Session info: headless chrome=83.0.4103.61)
1
Automation Search
test_name: Descending
screenshot: Descending
failure_url: Descending
Build
Jenkins Job
filters
running sauce
runtime (ms)
Count
test_answered_questions[en_CA]
https://employers.qa.indeed.net/bi#candidates/view?id=1b091038ec53&l=kPyj&cat=applicationTab
66
https://jenkins.qa.indeed.net/smb-intl/job/smb-intl/job/smb-intl--automation-schedulers/job/smb-intl--automation-manual-runs/
status:FAILED
false
19,304.867
1
Indeed Employer
Manage candidates from your phone
FREE
Candidates
Aaron Adams
CONTACTED
Message
Call
Interview
More
APPLICATION
INTERVIEWS
NOTES
Reply quickly with a template
Still interested?
Commute


TRAINING

Wrap Up

- Observe Problems, Improvement Areas
- Requirements
- Architecture
- Implementation
- Outcome
- Monitoring

Japan テスト Community

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