Loop Technical Evaluation

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Introduction

Create a Playwright-driven test suite that leverages data-driven techniques to minimize code duplication and improve scalability. By driving test scenarios from a JSON object, we can dynamically adapt each test case without repeating code, ensuring a clean and maintainable structure as new cases are added.

Implementation Details

TypeScript types and interfaces

There is a hierarchy of AsanaBoard -> AsanaSwimlane -> AsanaStory and corresponding types that add testing-specific data.

```
export interface AsanaStory {
  title: string
  description: string
  tags: string[]
}

export interface AsanaSwimlane {
  order: number
  kind: ASANA_SWIMLANE_KIND
  stories: AsanaStory[]
}

export type AsanaStoryTestData = AsanaStory & { included: boolean }
export type AsanaSwimlaneTestData = Omit<AsanaSwimlane, 'stories'> & {
  stories: AsanaStoryTestData[]
}
```

Data-Driven Testing

All test data comes from `test-data.ts` which implements the tests described in the requirements document. This data in turn drives which tests are perfomed using the type system described above.

DOM Parsing: `getSwimlanes` Function

There is a single DOM-parsing function that retrieves the Swimlanes from the given page. This is heavy on specific selectors ATM, but, we need to infer relationships between tasks and swimlanes to ensure:

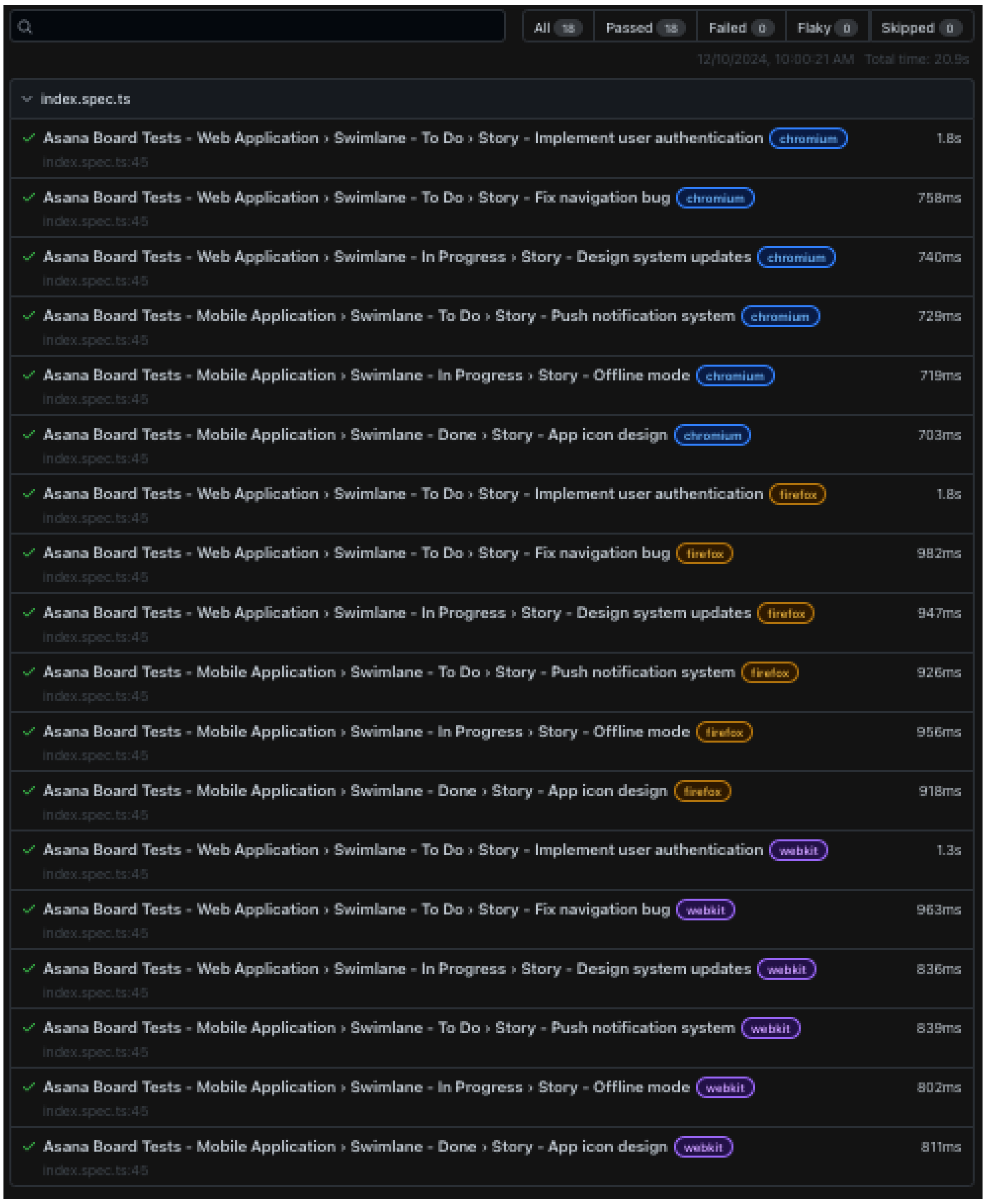
- Each test is preformed on the correct swimlane
- That tests for the existence of things are carried out only on relevant portions of the DOM. E.g., we need to check for both for "Design" as a tag and "Design system updates" as a task title.

Challenges and Solutions

The key challenge in testing this code is isolating discreet sections of the DOM to ensure we are checking for elements/strings in the right place.

While it is a best-practice to test only user-visible behavior, achieving this required some DOM parsing. To isolate this as much as possible I wrote a `getSwimlanes` helper function that uses very basic selectors that is run before each test. If there is a change in the DOM of the target page, this will at least break cleanly and in a way that is easy to fix.

Results



```
All 18   Passed 18   Failed 0   Flaky 0   Skipped 0
12/10/2024, 10:00:21 AM  Total time: 20.9s

index.spec.ts
✓ Asana Board Tests - Web Application › Swimlane - To Do › Story - Implement user authentication  chromium  1.8s
  index.spec.ts:45
✓ Asana Board Tests - Web Application › Swimlane - To Do › Story - Fix navigation bug  chromium  758ms
  index.spec.ts:45
✓ Asana Board Tests - Web Application › Swimlane - In Progress › Story - Design system updates  chromium  740ms
  index.spec.ts:45
✓ Asana Board Tests - Mobile Application › Swimlane - To Do › Story - Push notification system  chromium  729ms
  index.spec.ts:45
✓ Asana Board Tests - Mobile Application › Swimlane - In Progress › Story - Offline mode  chromium  719ms
  index.spec.ts:45
✓ Asana Board Tests - Mobile Application › Swimlane - Done › Story - App icon design  chromium  703ms
  index.spec.ts:45
✓ Asana Board Tests - Web Application › Swimlane - To Do › Story - Implement user authentication  firefox  1.8s
  index.spec.ts:45
✓ Asana Board Tests - Web Application › Swimlane - To Do › Story - Fix navigation bug  firefox  982ms
  index.spec.ts:45
✓ Asana Board Tests - Web Application › Swimlane - In Progress › Story - Design system updates  firefox  947ms
  index.spec.ts:45
✓ Asana Board Tests - Mobile Application › Swimlane - To Do › Story - Push notification system  firefox  926ms
  index.spec.ts:45
✓ Asana Board Tests - Mobile Application › Swimlane - In Progress › Story - Offline mode  firefox  956ms
  index.spec.ts:45
✓ Asana Board Tests - Mobile Application › Swimlane - Done › Story - App icon design  firefox  918ms
  index.spec.ts:45
✓ Asana Board Tests - Web Application › Swimlane - To Do › Story - Implement user authentication  webkit  1.3s
  index.spec.ts:45
✓ Asana Board Tests - Web Application › Swimlane - To Do › Story - Fix navigation bug  webkit  963ms
  index.spec.ts:45
✓ Asana Board Tests - Web Application › Swimlane - In Progress › Story - Design system updates  webkit  836ms
  index.spec.ts:45
✓ Asana Board Tests - Mobile Application › Swimlane - To Do › Story - Push notification system  webkit  839ms
  index.spec.ts:45
✓ Asana Board Tests - Mobile Application › Swimlane - In Progress › Story - Offline mode  webkit  802ms
  index.spec.ts:45
✓ Asana Board Tests - Mobile Application › Swimlane - Done › Story - App icon design  webkit  811ms
  index.spec.ts:45
```

Recommendations

Retrospectively, I could have done a better job separating the JSON test data from the implementation. There should have been a separate JSON file which would have both made it easier to maintain the test suite and to potentially generate new test suites for JSON files generated by a tool.

I would consider adding the Asana TypeScript types to improve the `getSwimlanes` function because doing so *might* make it easier to parse the Asana data and it is reasonable to assume I think that all Asana instances will implement the official Asana types.

The downside is that it creates a third-party dependency, which is why I chose to create very simple types that describe the how Boards/Swimlanes/Stories/Tags are related in the presentation layer.