ENGINEERING

Optimizing Our React Performance

Performance is Often a Subtraction Game

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May 7, 2025

Shipping fast is awesome. You're moving quickly, breaking things (hopefully not too much), and getting value into users' hands fast. But sometimes, you pay the performance tax.

That's what I realized a few days ago.

At Levels.fyi, we've been focused on shipping our new product, Interactive Offers, to early customers over the past few months.

Then came one peaceful Monday. Fresh off a long weekend, coffee in hand, good vibes in the air, I decided to take a step back and fire up the React Profiler to peek under the hood.

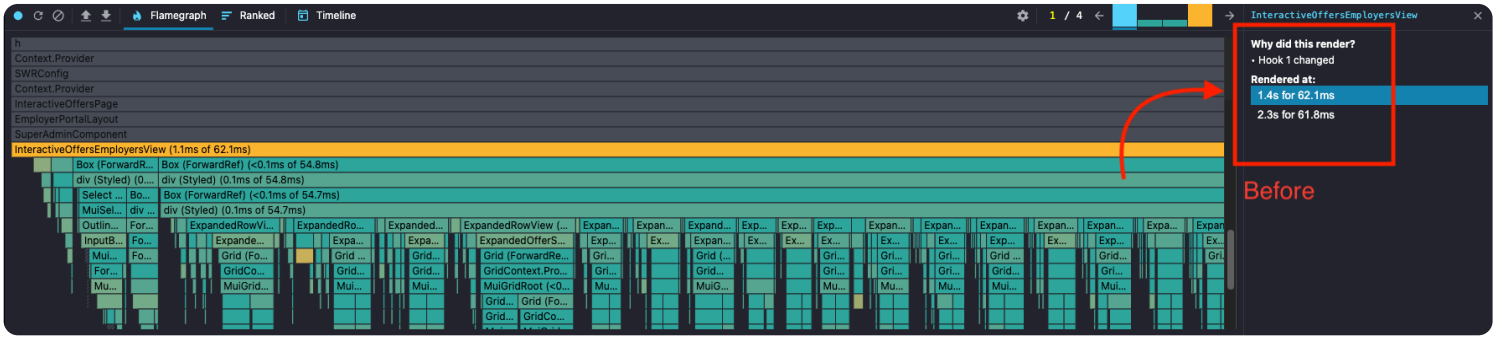
And, well...

As Shakespeare might've said:

"Hark, the morn doth break, and thou shalt dedicate this Monday's toil to mend this tangled mess of re-renders."

So let's tackle it one case at a time.

Case 1: Improving Our Employers Dashboard by ~5x

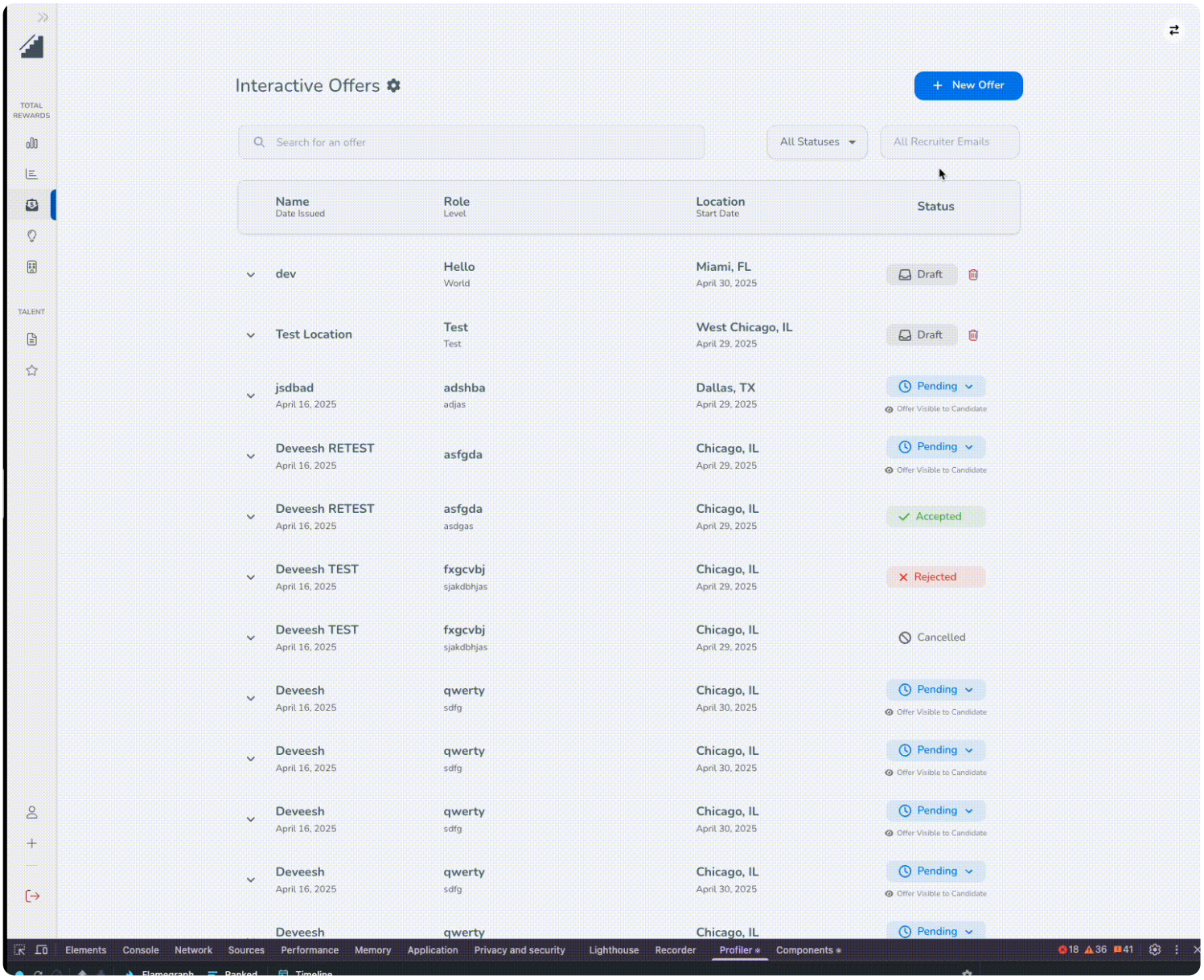


*Flame chart **before** the optimizations*

> 💡 Above is a flame chart generated by React Profiler. It logs the component render times as you interact with the UI.

In this case, toggling the accordion in our employers table, a pretty basic interaction, was taking around **60ms**. That's much too high.

Here's a visual of what was going on:



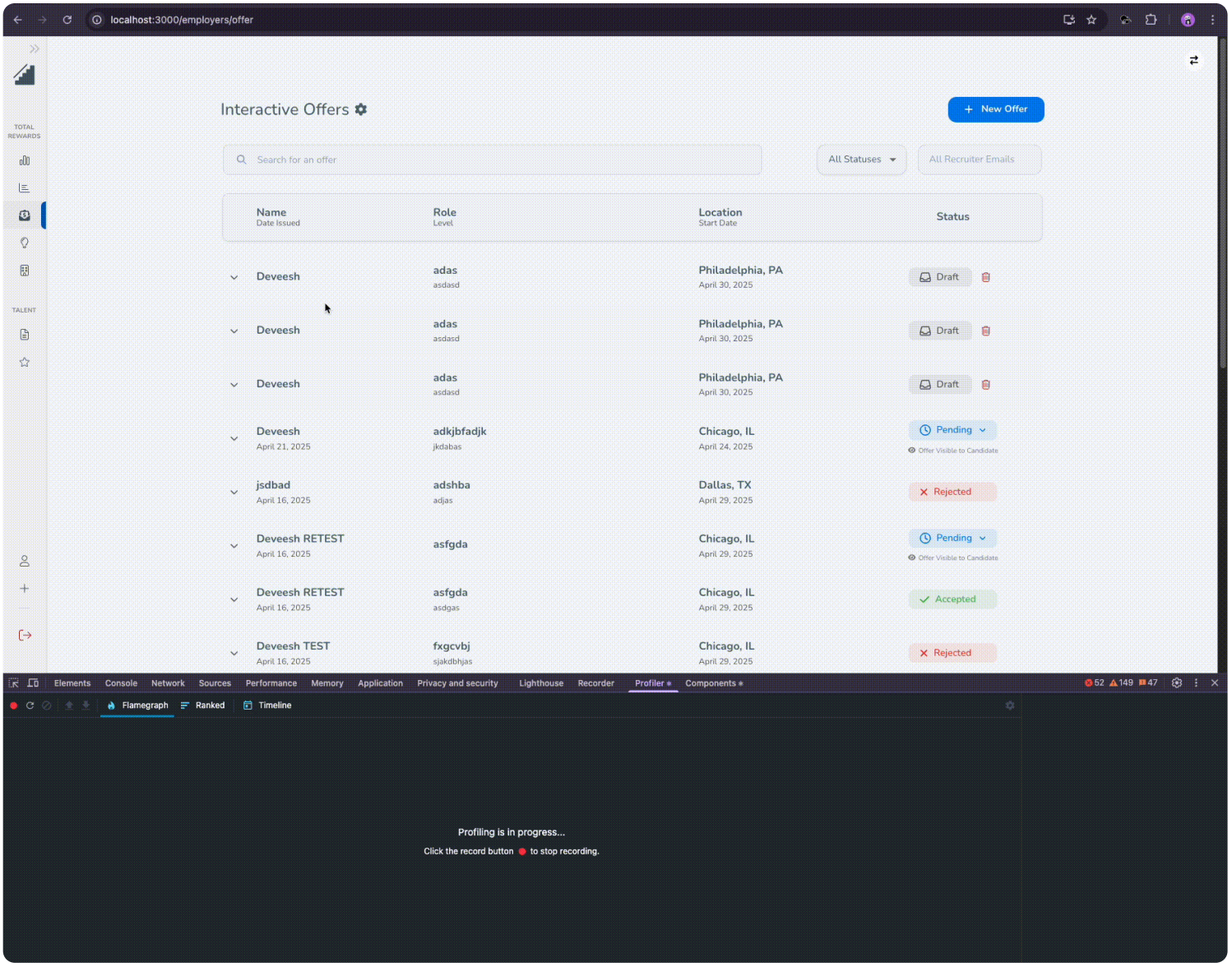
So what went wrong?

We had a `useState` in the parent component tracking the open/closed state of the accordion. This caused every child component to re-render, even ones that didn't need to.

The fix? Relatively straightforward:

- Split the large component into smaller, independent ones
- Move the state down to the child component
- Since React data flows top-down, we kept the parent clean
- Memoize all functions and objects using `useCallback` and `useMemo`

After that little spring cleaning...


localhost:3000/employers/offer
Interactive Offers
New Offer
Search for an offer
All Statuses
All Recruiter Emails
Name
Date Issued
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Chicago, IL
April 24, 2025
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Offer Visible to Candidate
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April 16, 2025
adshba
adjas
Dallas, TX
April 29, 2025
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Chicago, IL
April 29, 2025
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Offer Visible to Candidate
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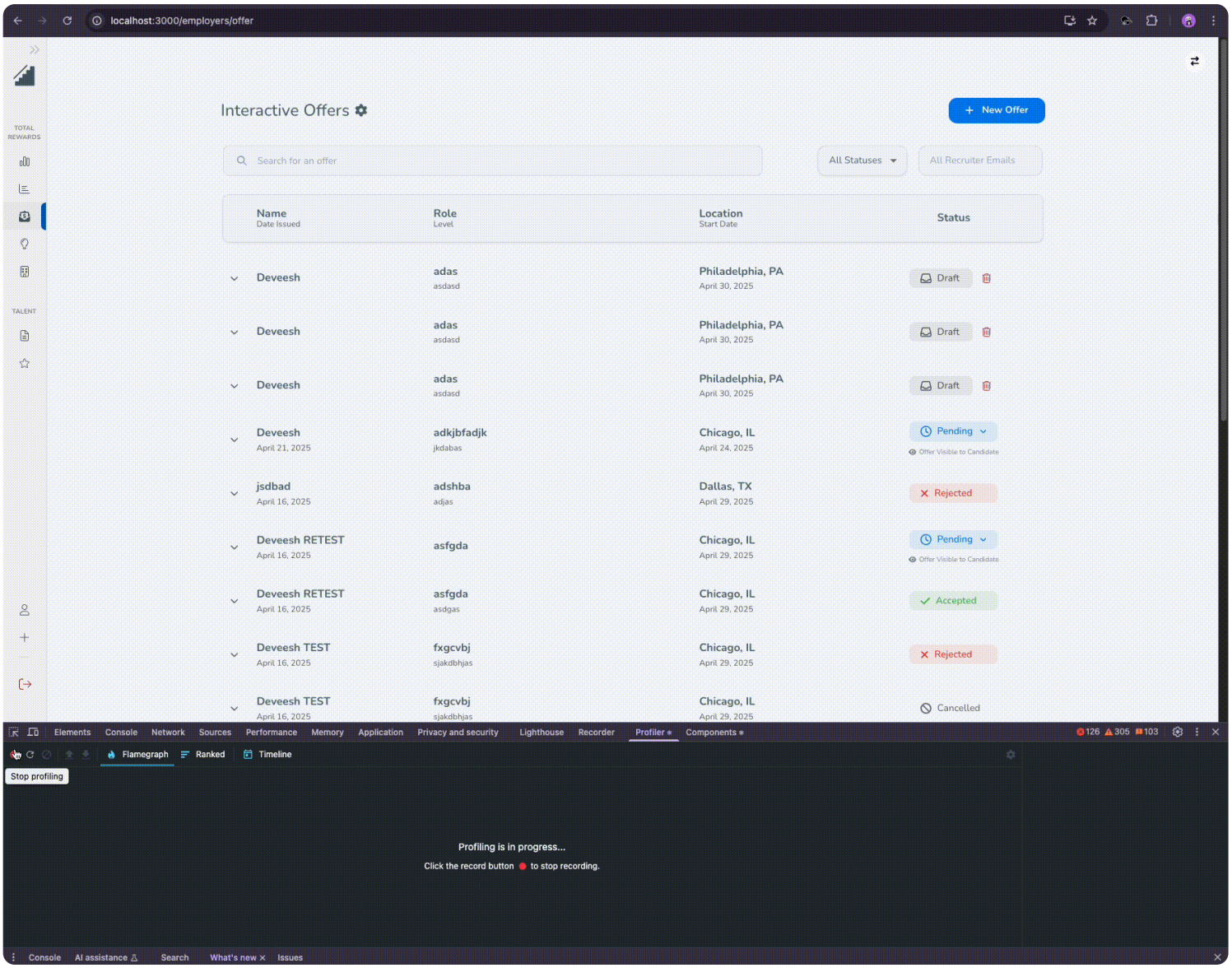
April 16, 2025
asfgda
asdgas
Chicago, IL
April 29, 2025
Accepted
Deveesh TEST
April 16, 2025
fxgcvbj
sjakdbhjas
Chicago, IL
April 29, 2025
Rejected
Elements
Console
Network
Sources
Performance
Memory
Application
Privacy and security
Lighthouse
Recorder
Profiler
Components
Flamegraph
Ranked
Timeline
Profiling is in progress...
Click the record button to stop recording.

Much better. 😌

Case 2: The Unnecessary Re-render

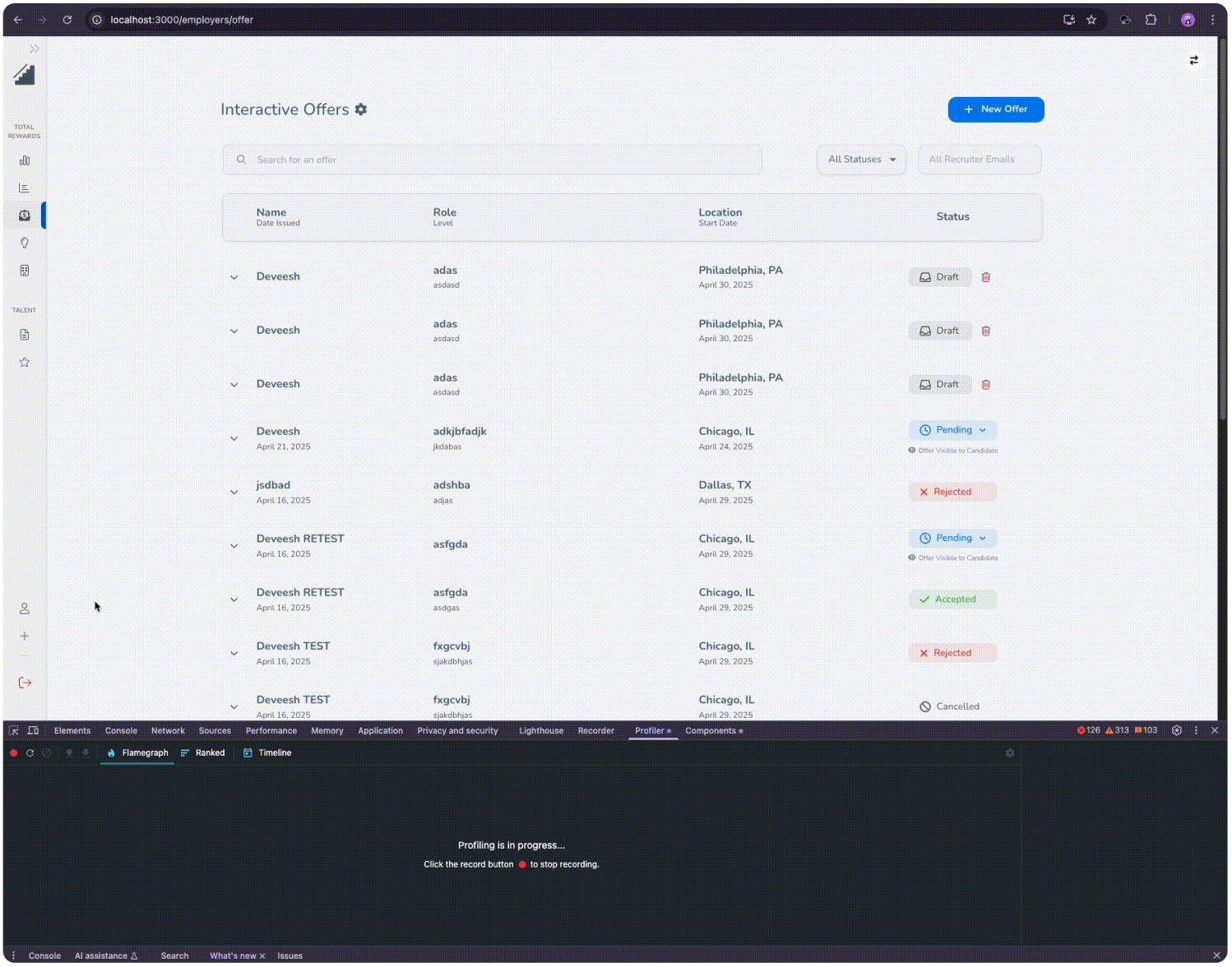


Even after optimizing the dashboard, toggling the **Settings modal** was causing unnecessary re-renders of sibling components.

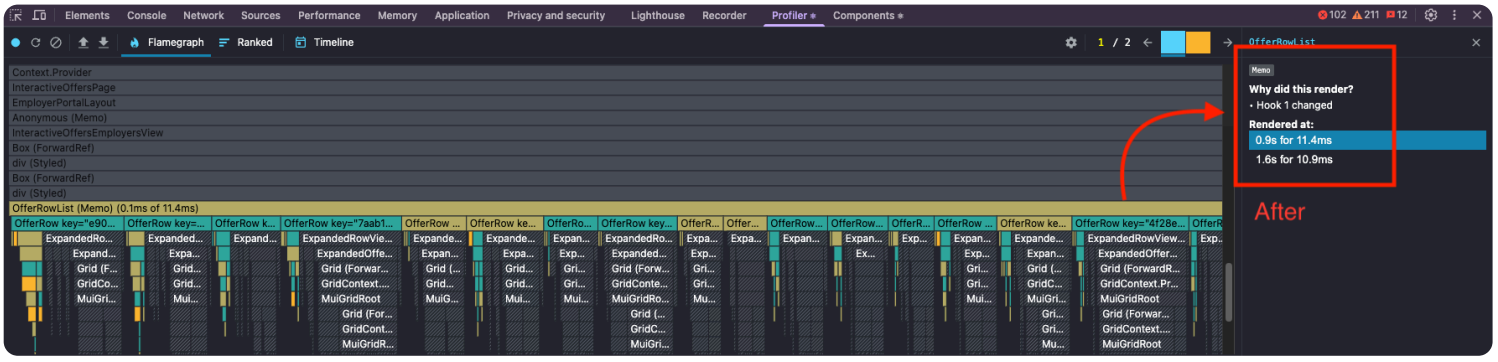
The issue?
The modal lived inside the top-most component. So every toggle triggered a re-render of everything beneath it.

The fix:
Wrap the child component in `React.memo`. Since the modal toggle didn't affect its props, it had no reason to re-render.

And just like that, fixed.



Let's check the flame chart after the optimizations.

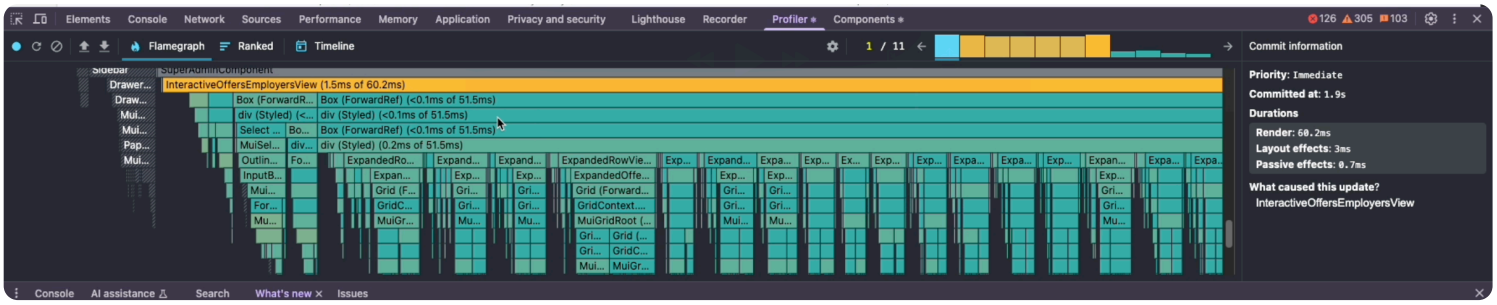


*Flame chart **after** the optimizations, when opening and closing an accordion*

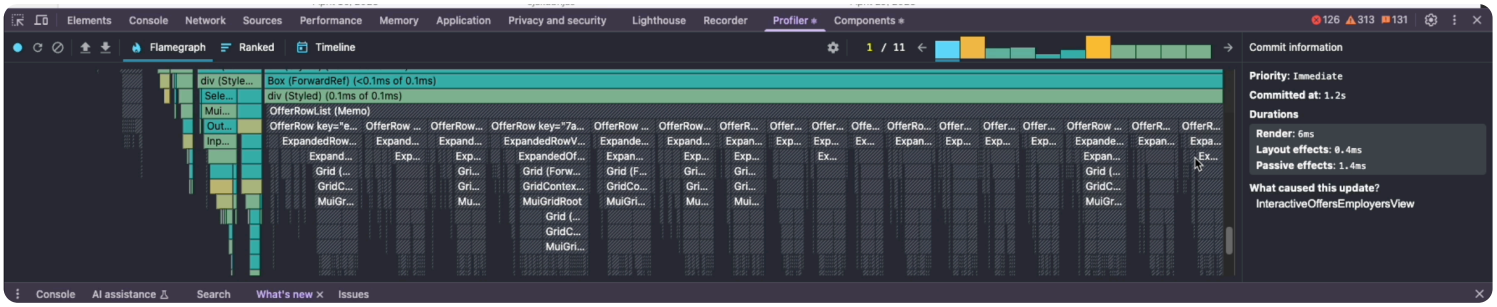
From **60ms** to **11ms**, that's a **5.5x** improvement!

And the settings modal? That one fix alone gave us a **10x** boost in performance.
That's a big win in my book.

Before Optimizations:



After Optimizations:



We made a few other tweaks in different parts of the app too. But if I included all of them, this blog post would turn into a full-blown React performance textbook.

Final Thoughts

Well jokes apart, these small things create a big difference in the long run. We could have easily ignored it, but taking some time out to fix the existing flow always pays off well (no pun intended).

According to web performance standards, **100ms** is the threshold for something to feel instant. These improvements may not be flashy to the eye, but they absolutely improve the experience, and I learned a ton along the way.

Also... confession:
The slow, messy code before optimization? Yeah, I wrote that. But it's fixed now, so we're cool 😅

Happy coding and happy optimizing. See ya! ✨

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