How to build software, not write code

The non-coding skills are at least
as important as knowing how to code

(maybe more)

Today’s code:

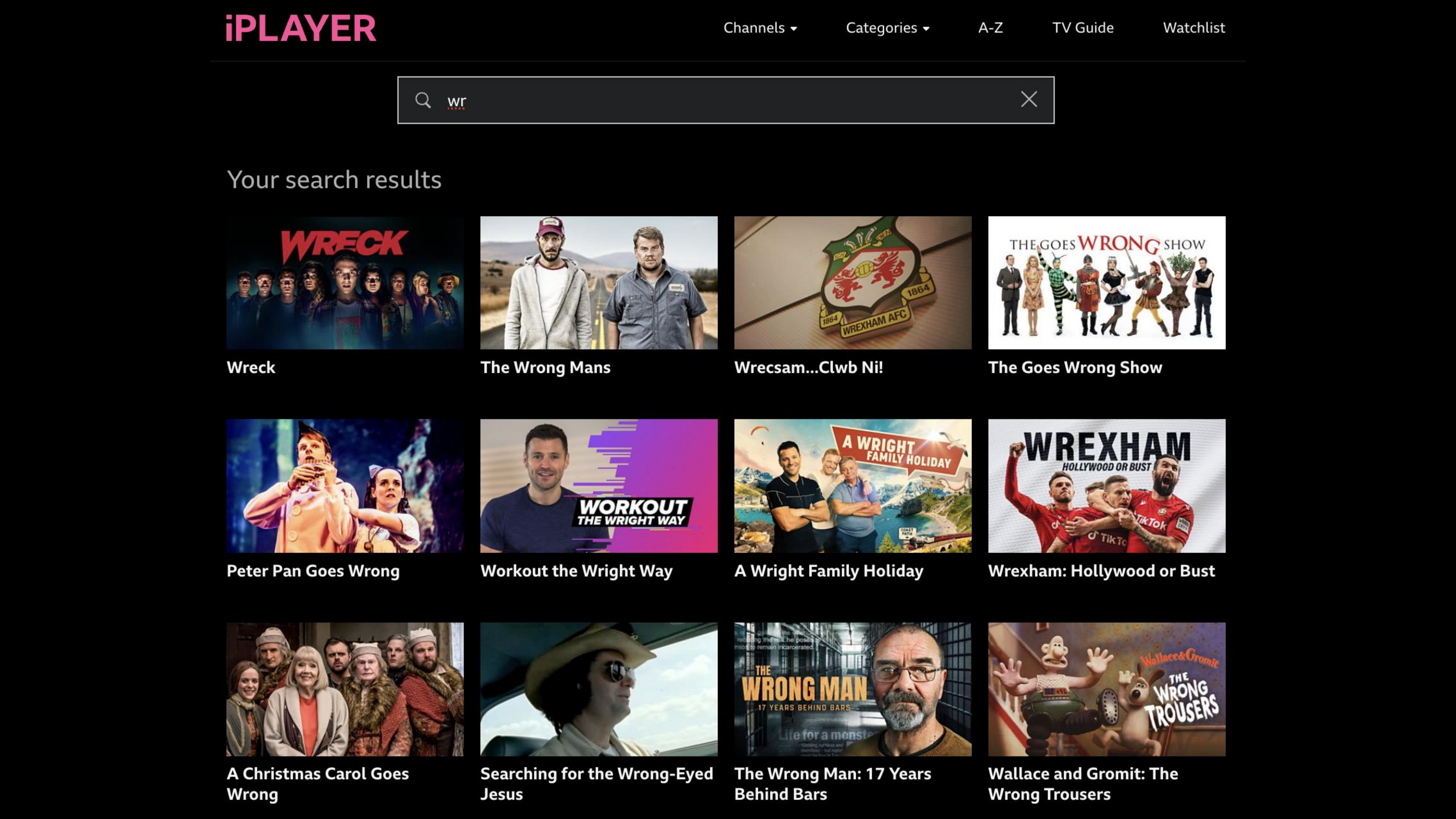
XX-XX-XX

Hi! I’m Will

Maru

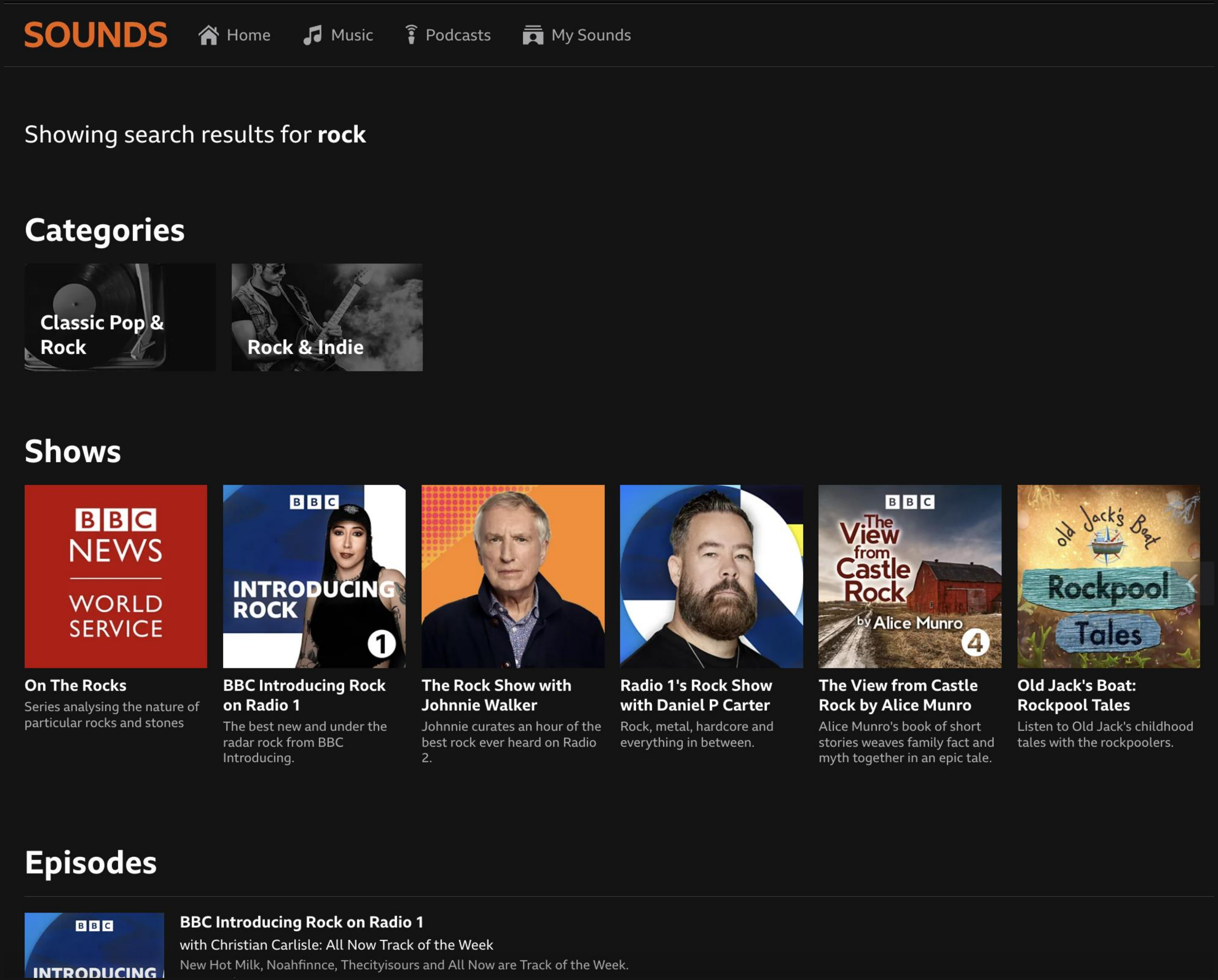
Mochi

BBC



Your search results

- Wreck
- The Wrong Mans
- Wrecsam...Clwb Ni!
- The Goes Wrong Show
- Peter Pan Goes Wrong
- Workout the Wright Way
- A Wright Family Holiday
- Wrexham: Hollywood or Bust
- A Christmas Carol Goes Wrong
- Searching for the Wrong-Eyed Jesus
- The Wrong Man: 17 Years Behind Bars
- Wallace and Gromit: The Wrong Trousers



Showing search results for **rock**

Categories

Classic Pop & Rock

Rock & Indie

Shows

On The Rocks
Series analysing the nature of particular rocks and stones

BBC Introducing Rock on Radio 1
The best new and under the radar rock from BBC Introducing.

The Rock Show with Johnnie Walker
Johnnie curates an hour of the best rock ever heard on Radio 2.

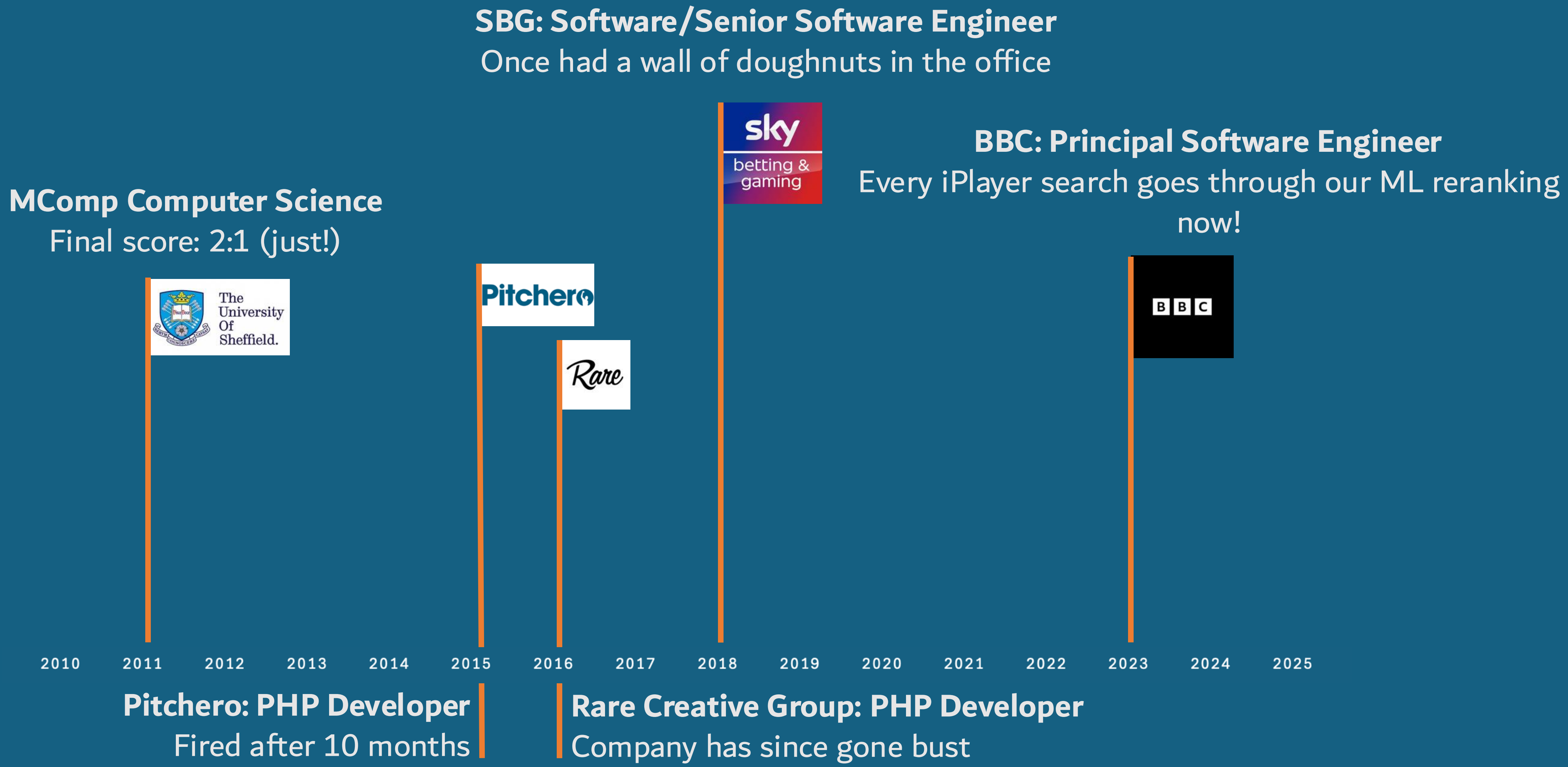
Radio 1's Rock Show with Daniel P Carter
Rock, metal, hardcore and everything in between.

The View from Castle Rock by Alice Munro
Alice Munro's book of short stories weaves family fact and myth together in an epic tale.

Old Jack's Boat: Rockpool Tales
Listen to Old Jack's childhood tales with the rockpoolers.

Episodes

BBC Introducing Rock on Radio 1
with Christian Carlisle: All Now Track of the Week
New Hot Milk, Noahfinnce, Thecityisours and All Now are Track of the Week.



MComp Computer Science

Final score: 2:1 (just!)

Pitchero: PHP Developer

Fired after 10 months

Rare Creative Group: PHP Developer

Company has since gone bust

SBG: Software/Senior Software Engineer

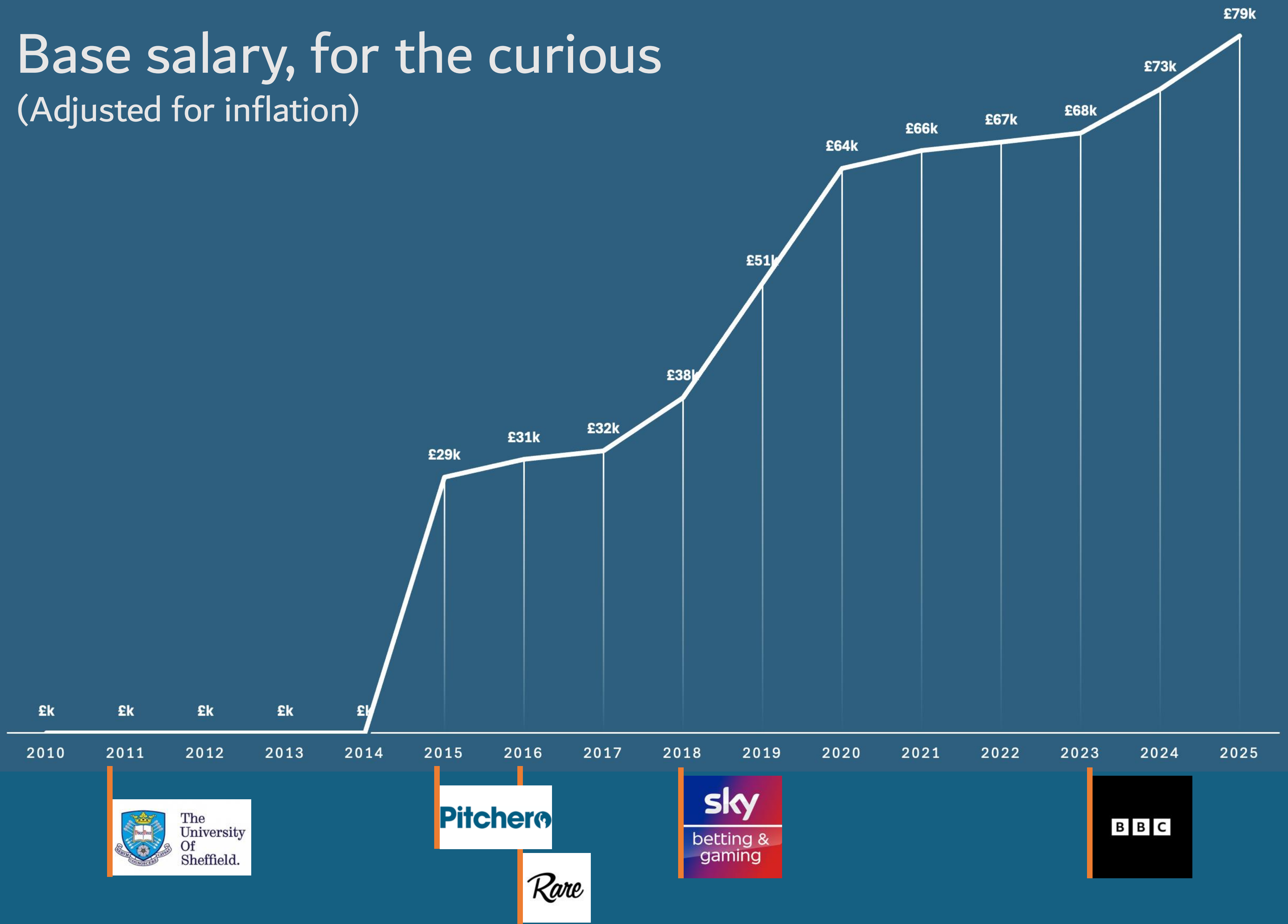
Once had a wall of doughnuts in the office

BBC: Principal Software Engineer

Every iPlayer search goes through our ML reranking now!

Base salary, for the curious

(Adjusted for inflation)



findyourjam.team

Open source team building tool

dotwo.games

My games (one good, many bad)

Squarepinski

Release date: 1st December!

Before we begin, two definitions

Pragmatic

dealing with things sensibly and realistically;
based on practical rather than theoretical considerations

Dogmatic

inclined to lay down principles as undeniably true;
black-and-white view on things

What are we going to talk about?

What are we going to talk about?

What makes a good software engineer

Other people’s code sucks (and what do about it)

Use git! Even on solo projects!

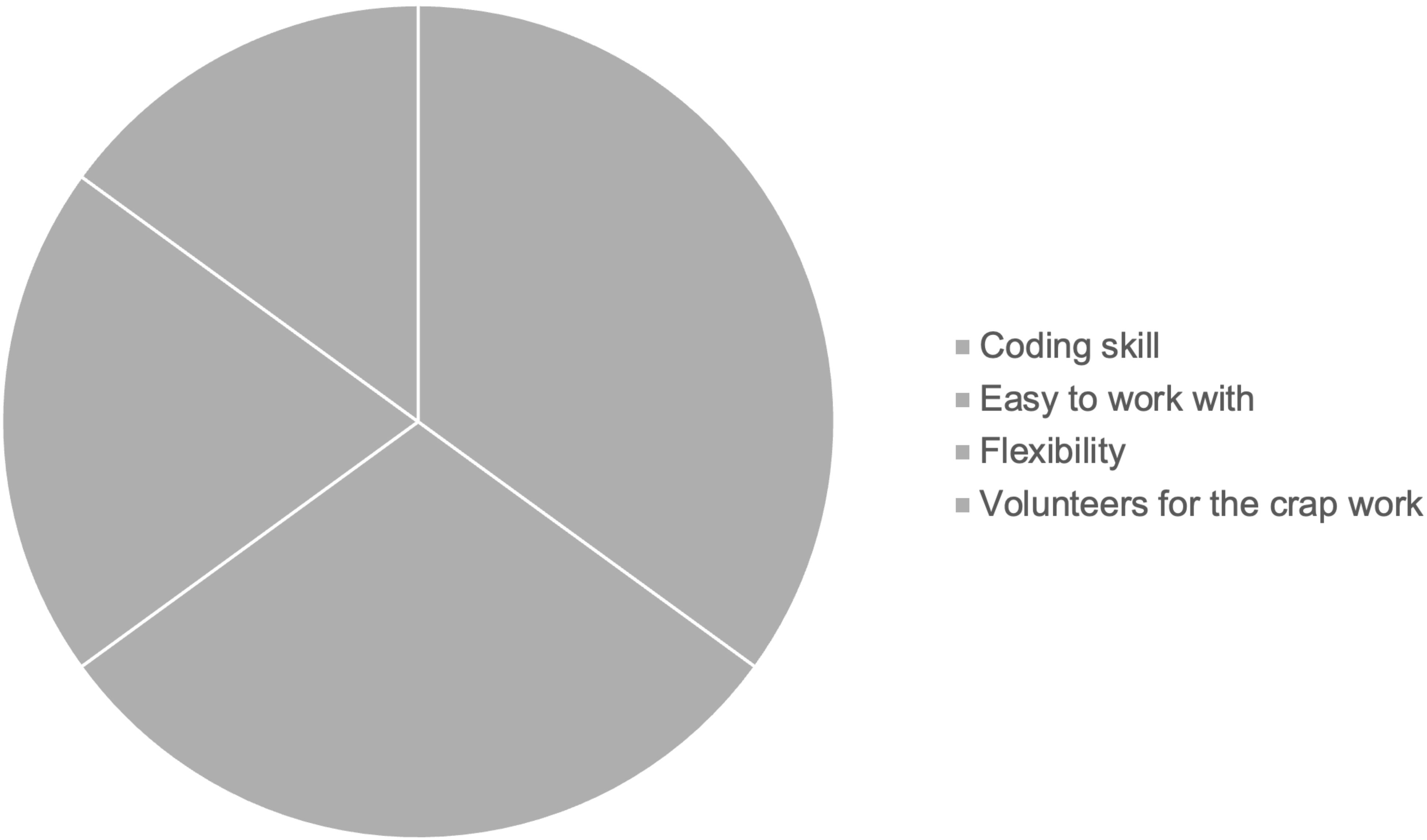
How to review code

Why tests are important, actually

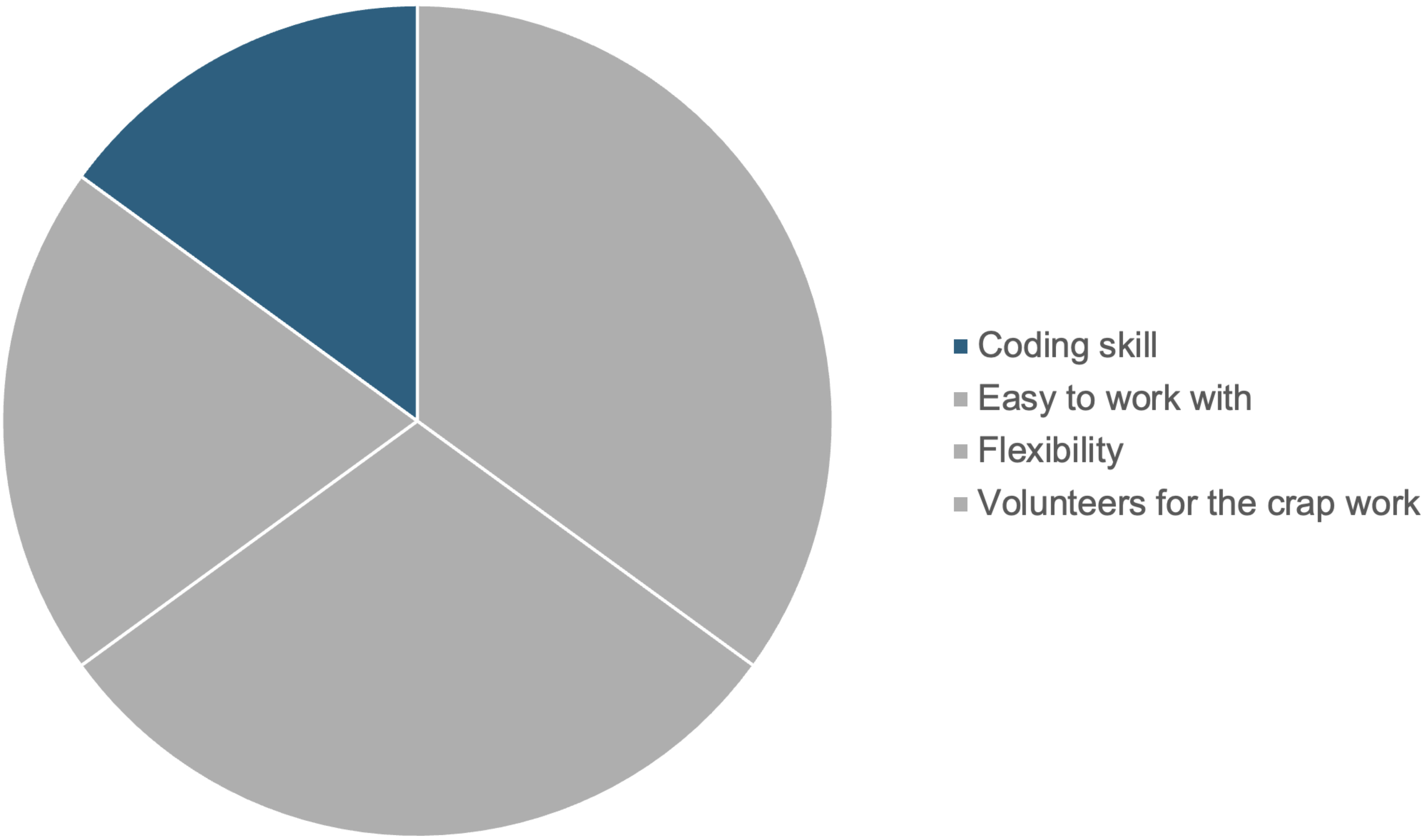
How to make working in a team go smoothly

What makes a good software engineer?

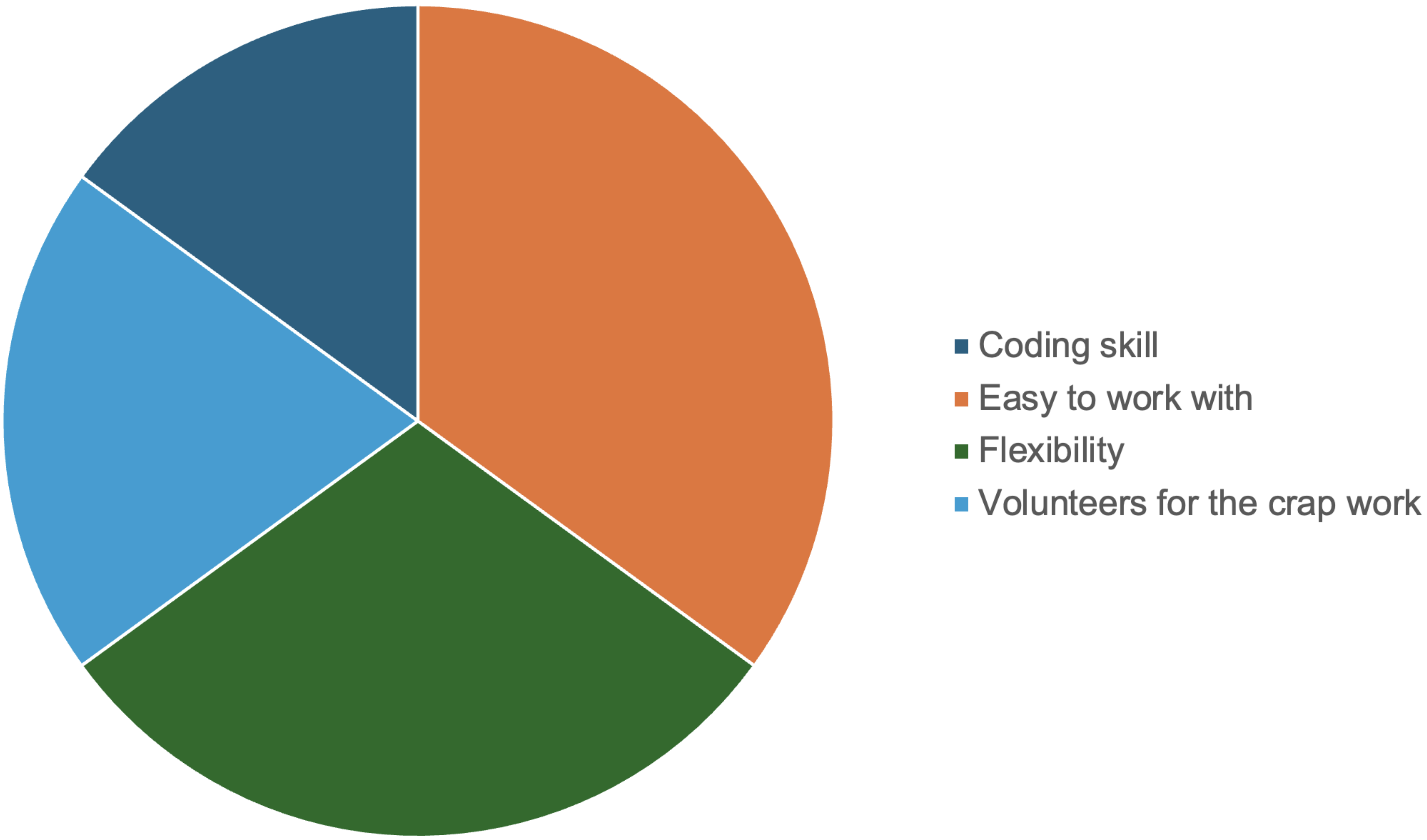
What makes a good software engineer?



What makes a good software engineer?



What makes a good software engineer?



Audience Participation

Question 1/3

Hands up if you’ve written code

(This isn’t a trick question)

Question 2/3

Hands up if you’ve worked with other people’s code

Question 3/3

Hands up if working on other people’s code ***absolutely sucked***

Why other people’s code is awful

It’s too terse

It’s too verbose

It uses too many abstractions

It doesn’t use enough abstractions

The author didn’t write enough tests

The author wrote way too many tests

…

Why other people’s code is awful

I don’t understand it

I think the developer made poor decisions

I would have done it differently

Code is very subjective

Writing code is like writing a group essay

You **don't** need to be identical

You **do** need to be similar

Every choice is a trade-off

Language A vs. Language B

Abstractions for flexibility vs. Overly loose code

The list is genuinely endless

Most of the time,

it honestly doesn't matter

Being *Most Correct™* doesn't matter!

You spend far more time reading code than writing code

Optimise for developer experience

- CPU is cheap
- RAM is cheap
- Your time is not cheap

Following existing rules > doing things *Better But Different*

A quick word on writing ***quality*** code and tests

(They are not the focus of this talk)

The only rule I recommend to people

1. Make It Work

2. Make It Right

3. Make It Fast

Attributed to Kent Beck, part of the Unix Way

I don’t have enough time to dig into detail today

There’s a wealth of information online

Why write code that *Good Enough* ?

Code doesn’t exist in a vacuum

Your code serves a business goal

Balance “shovel out garbage” and “spend weeks writing a single module”

Git and friends

Doesn’t it take loads of time?

Not as much as it saves!

It takes seconds to commit a change

It can (and will) save you days of effort when things go wrong

Past You and Future You are totally different people!

How important is it really?

Candidate #1

Knows one or two programming languages

Can use version control

- Provable project history
- I can review how you built your software
- Can work with existing teams

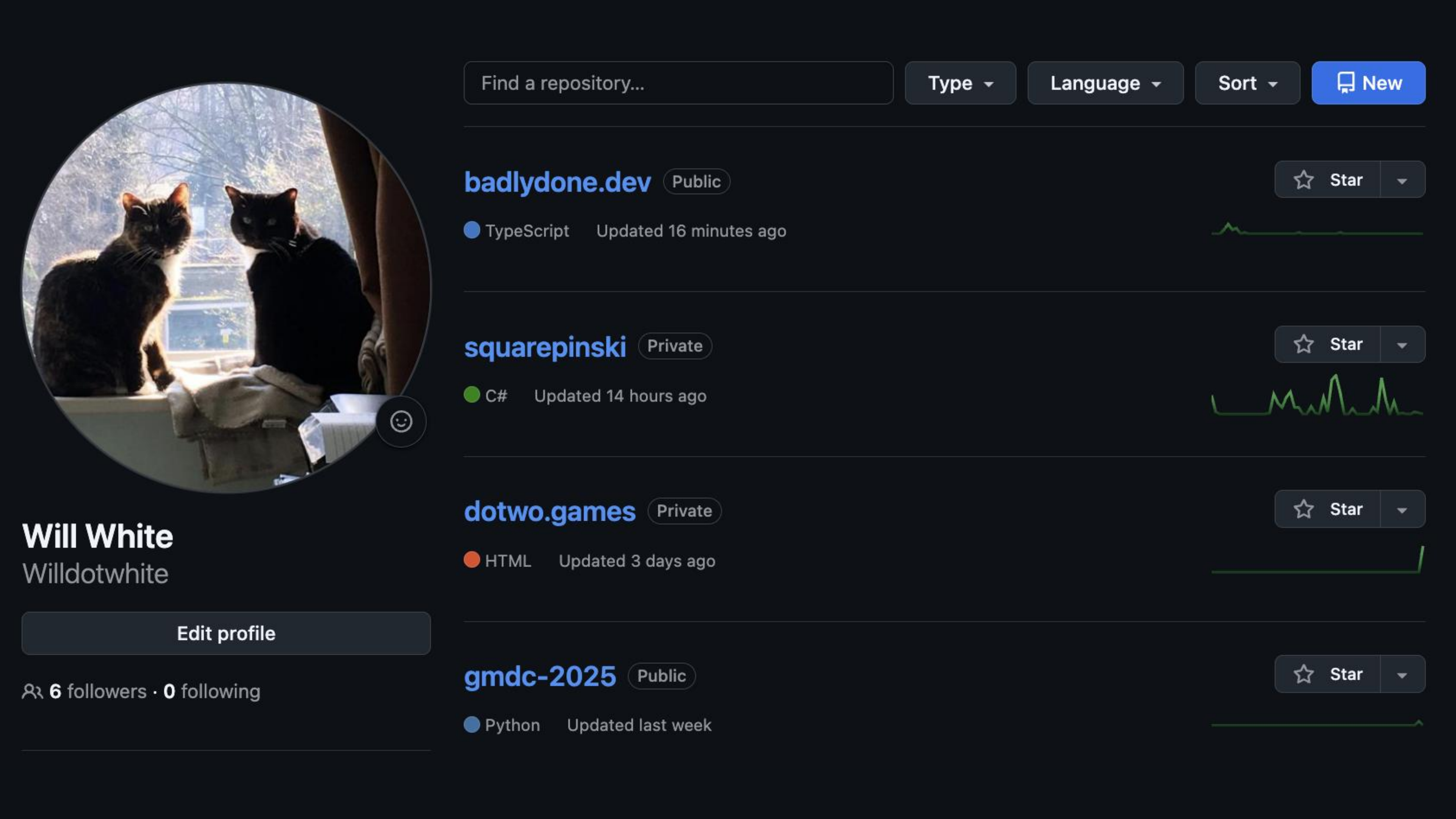
☑

Candidate #2

Knows fifteen programming languages

Can’t use version control

- Cannot easily demo projects
- Working approach can’t be reviewed
- Will need up-front training regardless of where you work



Will White
Willdotwhite

6 followers · 0 following

badlydone.dev Public
● TypeScript Updated 16 minutes ago

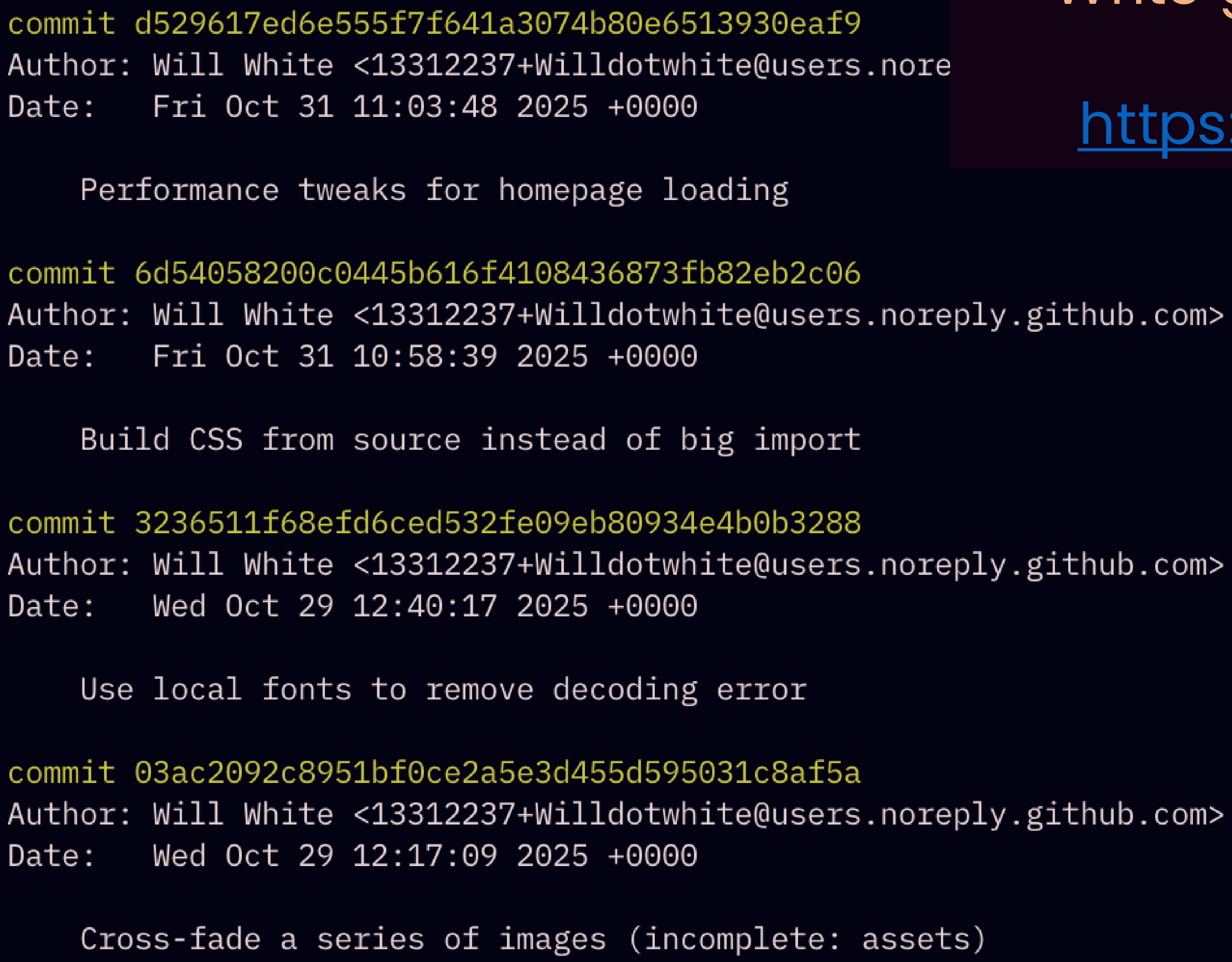
squarepinski Private
● C# Updated 14 hours ago

dotwo.games Private
● HTML Updated 3 days ago

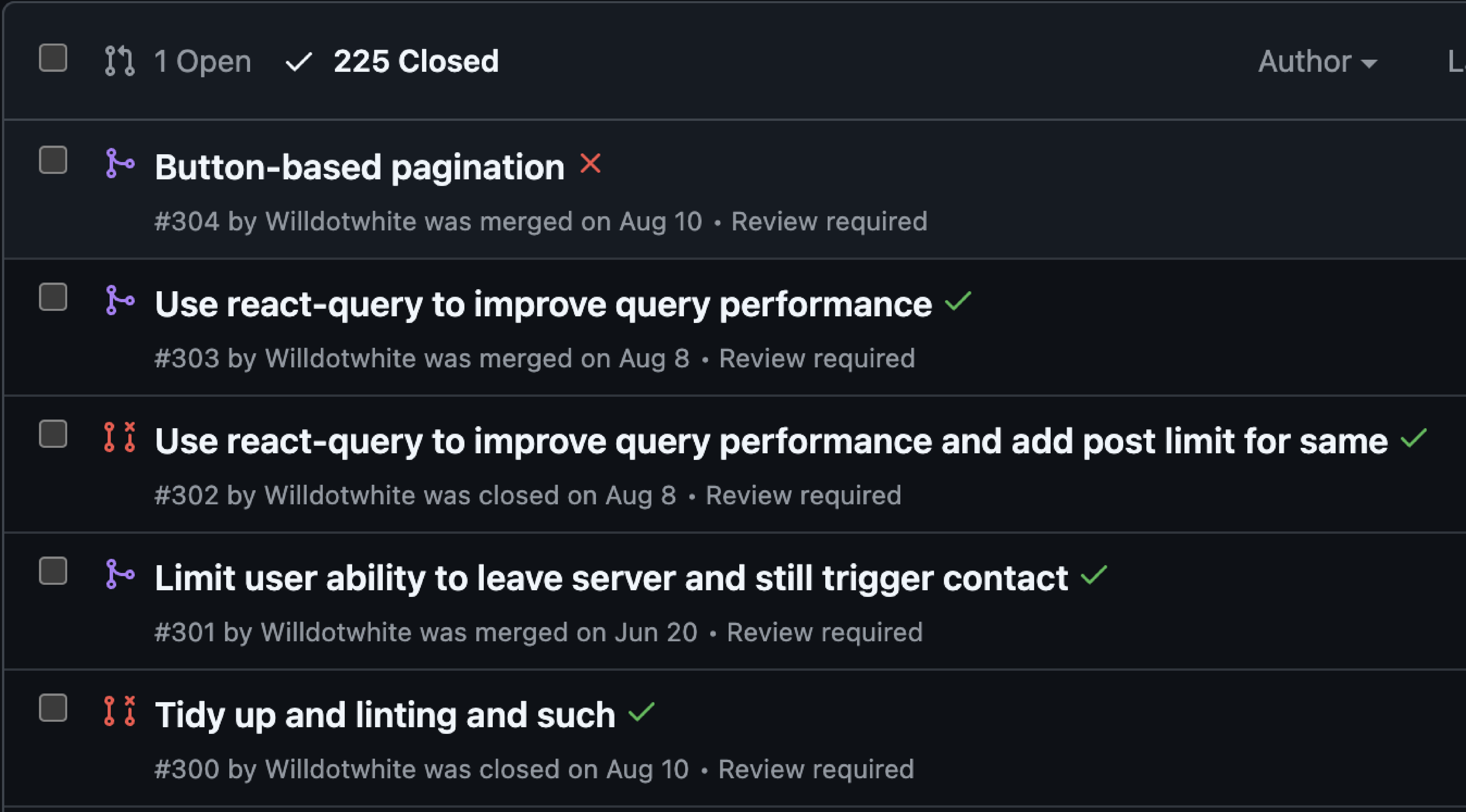
gmdc-2025 Public
● Python Updated last week

Write good commit messages!

https://cbea.ms/git-commit/



```
commit d529617ed6e555f7f641a3074b80e6513930eaf9
Author: Will White <13312237+Willdotwhite@users.nore
Date:   Fri Oct 31 11:03:48 2025 +0000

    Performance tweaks for homepage loading

commit 6d54058200c0445b616f4108436873fb82eb2c06
Author: Will White <13312237+Willdotwhite@users.noreply.github.com>
Date:   Fri Oct 31 10:58:39 2025 +0000

    Build CSS from source instead of big import

commit 3236511f68efd6ced532fe09eb80934e4b0b3288
Author: Will White <13312237+Willdotwhite@users.noreply.github.com>
Date:   Wed Oct 29 12:40:17 2025 +0000

    Use local fonts to remove decoding error

commit 03ac2092c8951bf0ce2a5e3d455d595031c8af5a
Author: Will White <13312237+Willdotwhite@users.noreply.github.com>
Date:   Wed Oct 29 12:17:09 2025 +0000

    Cross-fade a series of images (incomplete: assets)
```



□ 1 Open ✓ 225 Closed

□ **Button-based pagination** ✗

#304 by Willdotwhite was merged on Aug 10 • Review required

□ **Use react-query to improve query performance** ✓

#303 by Willdotwhite was merged on Aug 8 • Review required

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□ **Tidy up and linting and such** ✓

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Reviewing Code

How to review code

Expect:

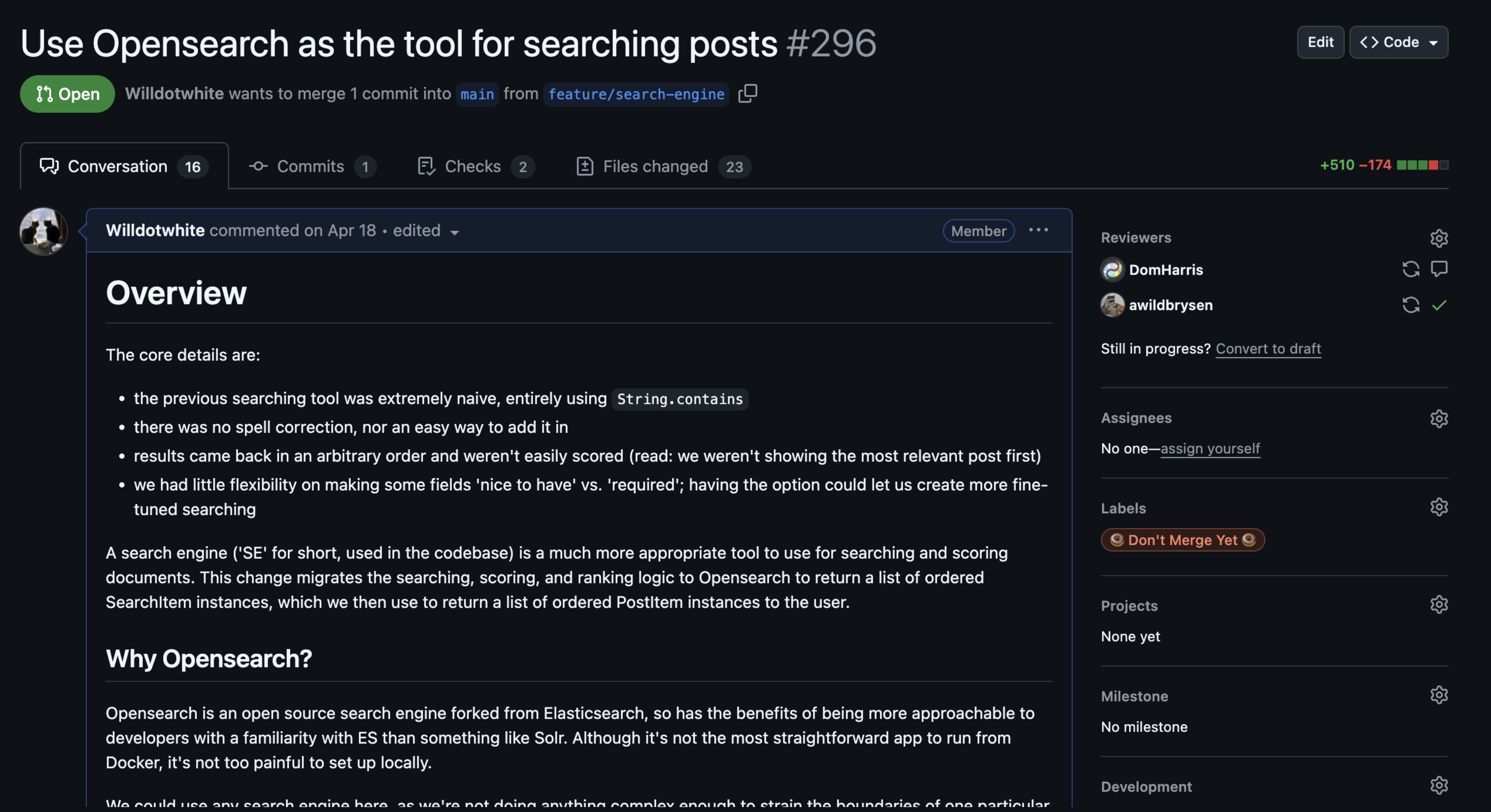
- to share your knowledge
- to learn from others
- for it to be uncomfortable at first

You are not your code

Reviews are never “reviewers vs. authors”

- They’re “reviewers + authors vs. software is hard to build”

But seriously,
how do you review code?



Use Opensearch as the tool for searching posts #296

Willdotwhite wants to merge 1 commit into `main` from `feature/search-engine`

Willdotwhite commented on Apr 18 • edited

Overview

The core details are:

- the previous searching tool was extremely naive, entirely using `String.contains`
- there was no spell correction, nor an easy way to add it in
- results came back in an arbitrary order and weren't easily scored (read: we weren't showing the most relevant post first)
- we had little flexibility on making some fields 'nice to have' vs. 'required'; having the option could let us create more fine-tuned searching

A search engine ('SE' for short, used in the codebase) is a much more appropriate tool to use for searching and scoring documents. This change migrates the searching, scoring, and ranking logic to Opensearch to return a list of ordered SearchItem instances, which we then use to return a list of ordered PostItem instances to the user.

Why Opensearch?

Opensearch is an open source search engine forked from Elasticsearch, so has the benefits of being more approachable to developers with a familiarity with ES than something like Solr. Although it's not the most straightforward app to run from Docker, it's not too painful to set up locally.

We could use any search engine here, as we're not doing anything complex enough to strain the boundaries of one particular

Reviewers: DomHarris, awildbrysen

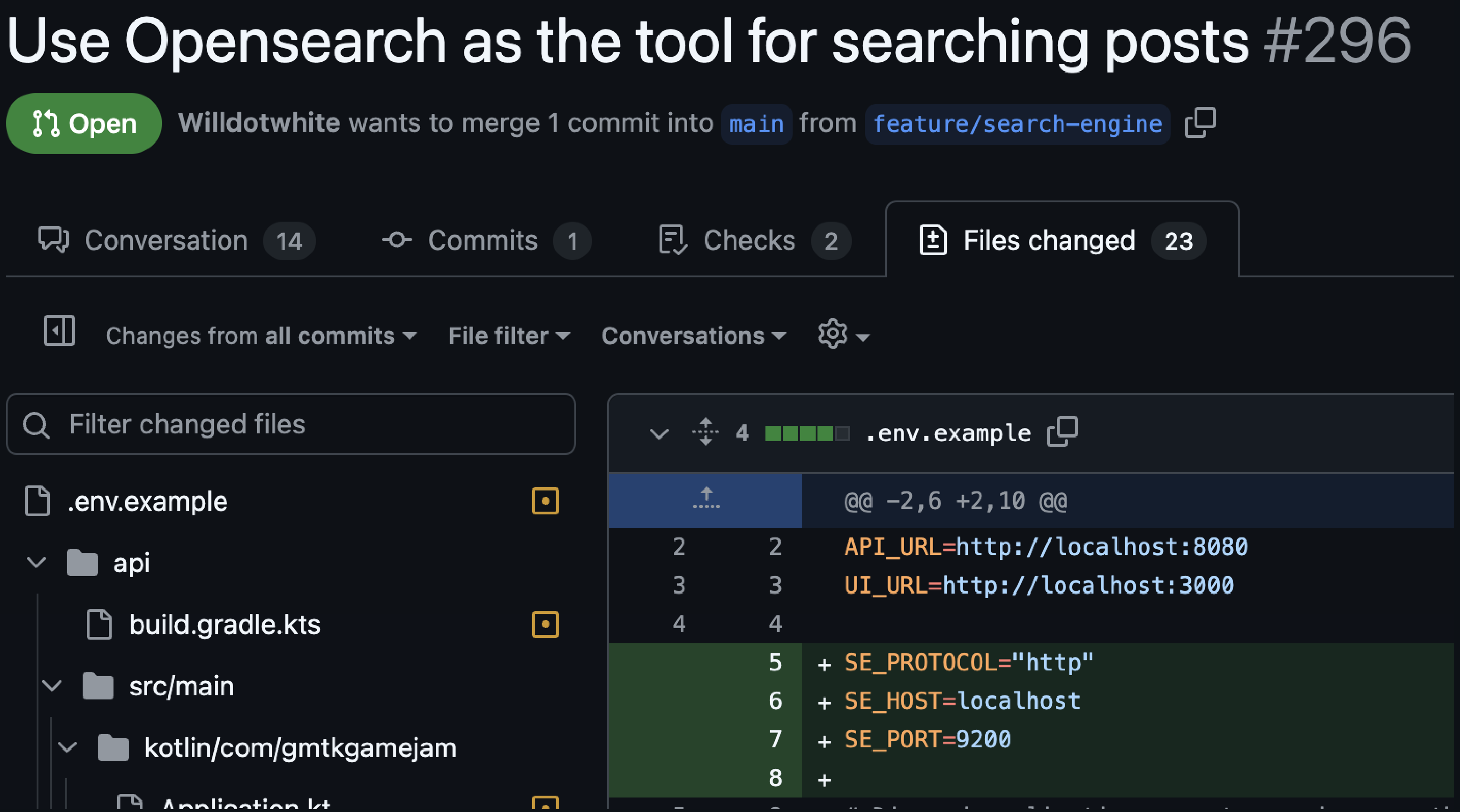
Still in progress? Convert to draft

Assignees: No one—assign yourself

Labels: Don't Merge Yet

Projects: None yet

Milestone: No milestone



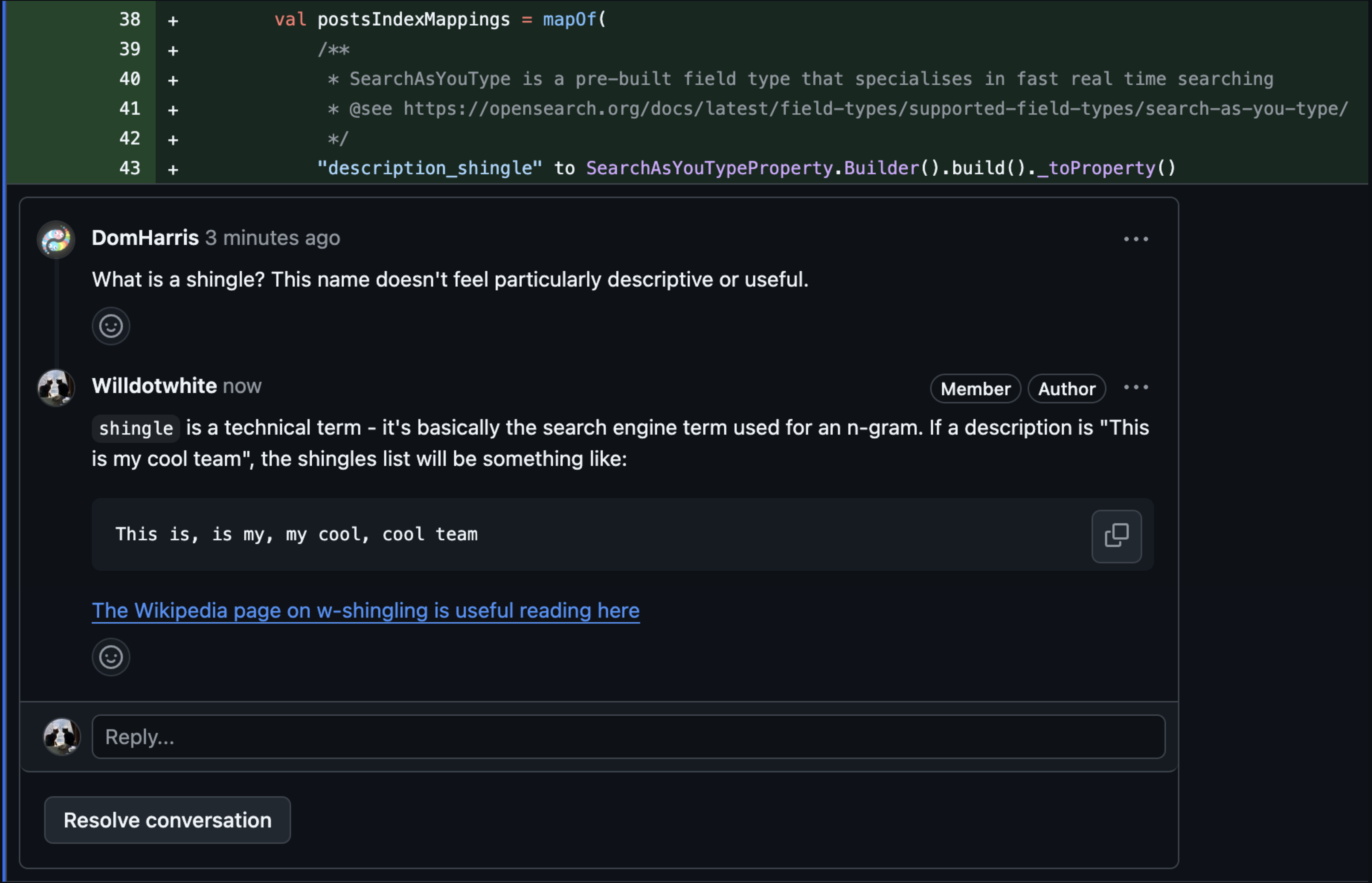
Use Opensearch as the tool for searching posts #296

Open **Willdotwhite** wants to merge 1 commit into `main` from `feature/search-engine`

- .env.example
- api
  - build.gradle.kts
  - src/main
    - kotlin/com/gmtkgamejam
      - Application.kt

```
4 .env.example

@@ -2,6 +2,10 @@
2   2     API_URL=http://localhost:8080
3   3     UI_URL=http://localhost:3000
4   4
    5   + SE_PROTOCOL="http"
    6   + SE_HOST=localhost
    7   + SE_PORT=9200
    8   +
```



```
+        val postsIndexMappings = mapOf(
+            /**
+             * SearchAsYouType is a pre-built field type that specialises in fast real time searching
+             * @see https://opensearch.org/docs/latest/field-types/supported-field-types/search-as-you-type/
+             */
+            "description_shingle" to SearchAsYouTypeProperty.Builder().build()._toProperty()
```

DomHarris 3 minutes ago

What is a shingle? This name doesn't feel particularly descriptive or useful.

Willdotwhite now

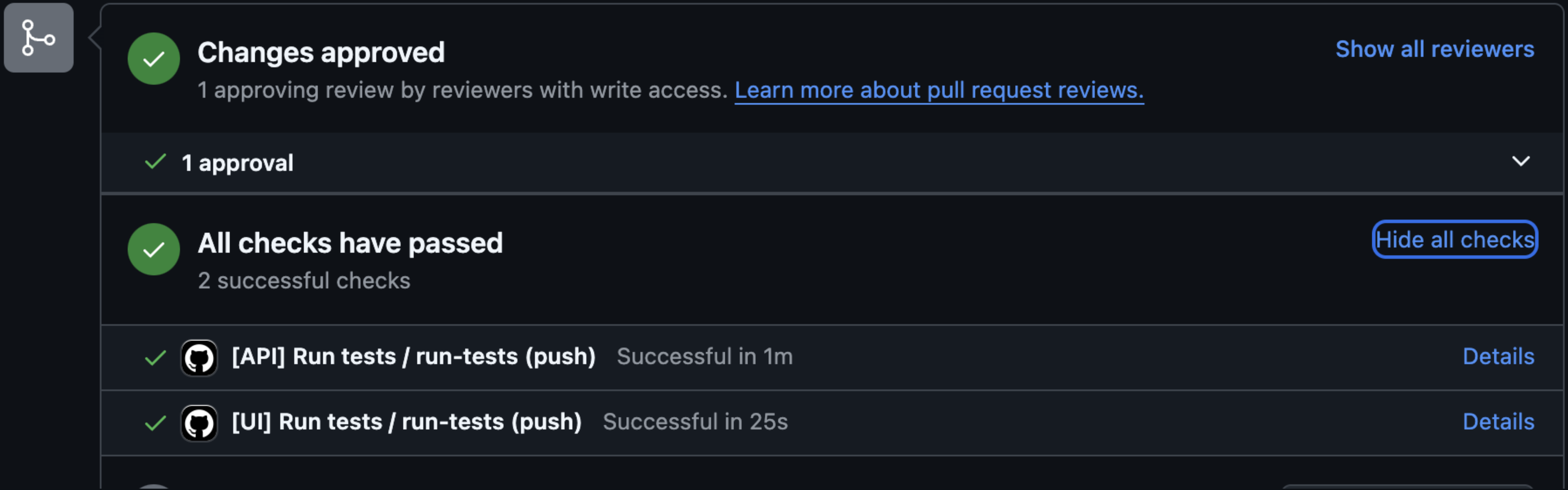
`shingle` is a technical term - it's basically the search engine term used for an n-gram. If a description is "This is my cool team", the shingles list will be something like:

```
This is, is my, my cool, cool team
```

The Wikipedia page on w-shingling is useful reading here

How tests get used

(This used to be the CI/CD section,
but I had to cut it because of the time constraint)



Changes approved

1 approving review by reviewers with write access. Learn more about pull request reviews.

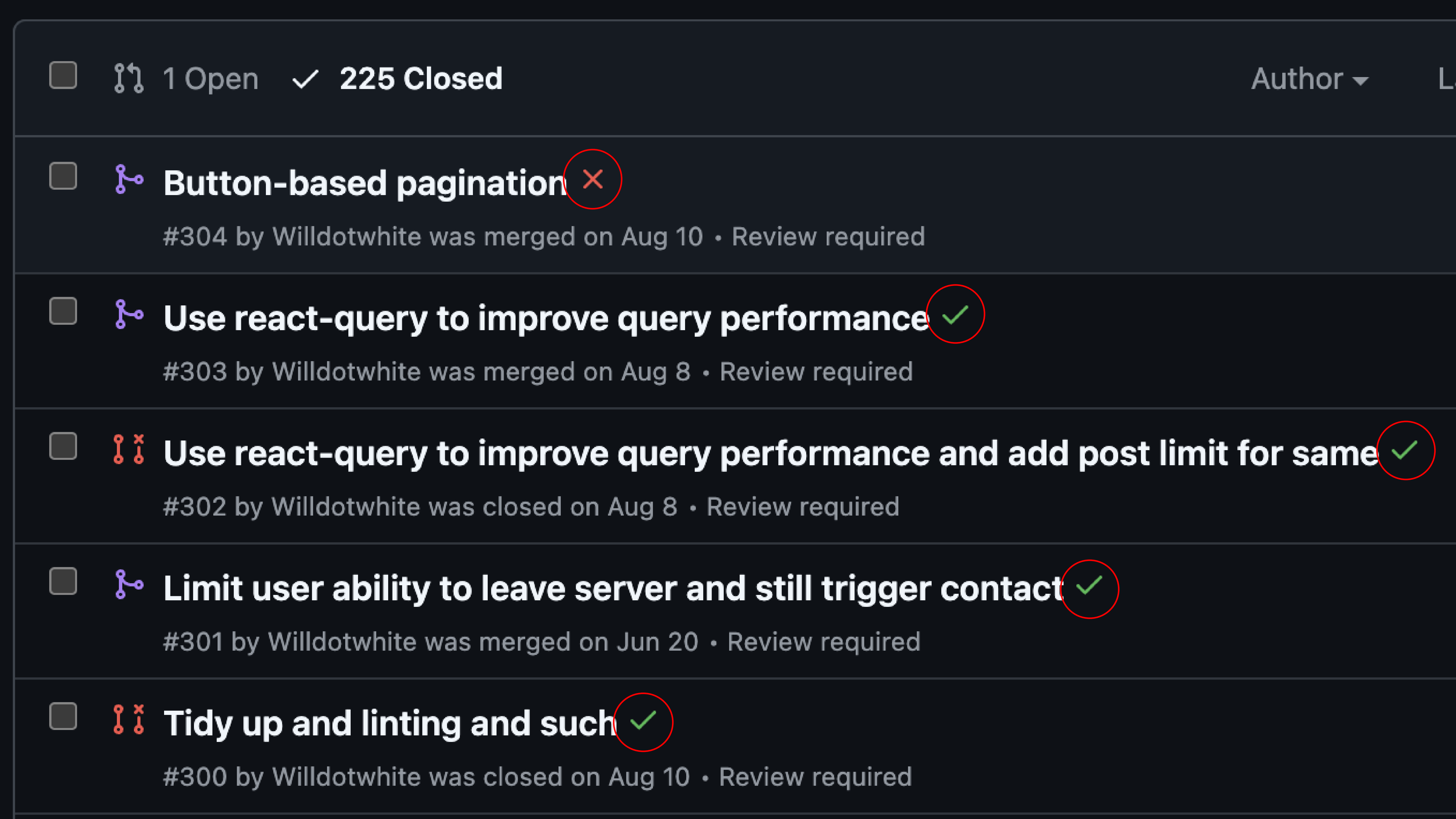
✓ 1 approval

All checks have passed

2 successful checks

✓ [API] Run tests / run-tests (push) Successful in 1m

✓ [UI] Run tests / run-tests (push) Successful in 25s



□ 1 Open ✓ 225 Closed Author ▾ L

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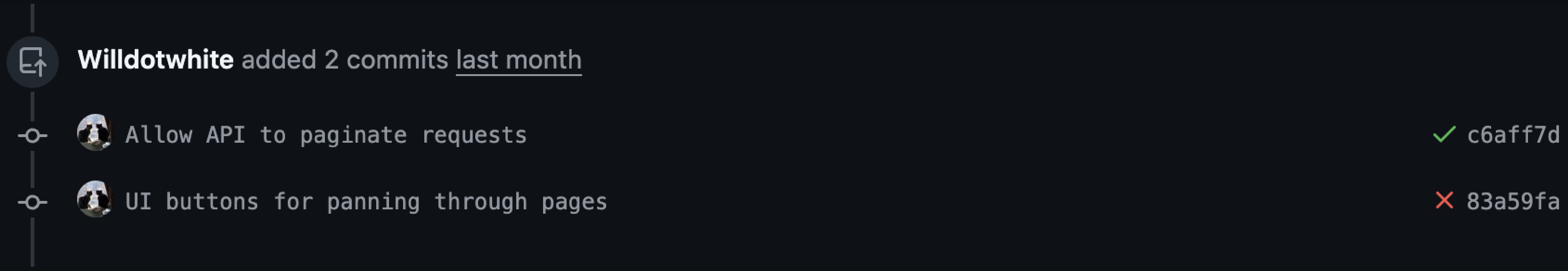
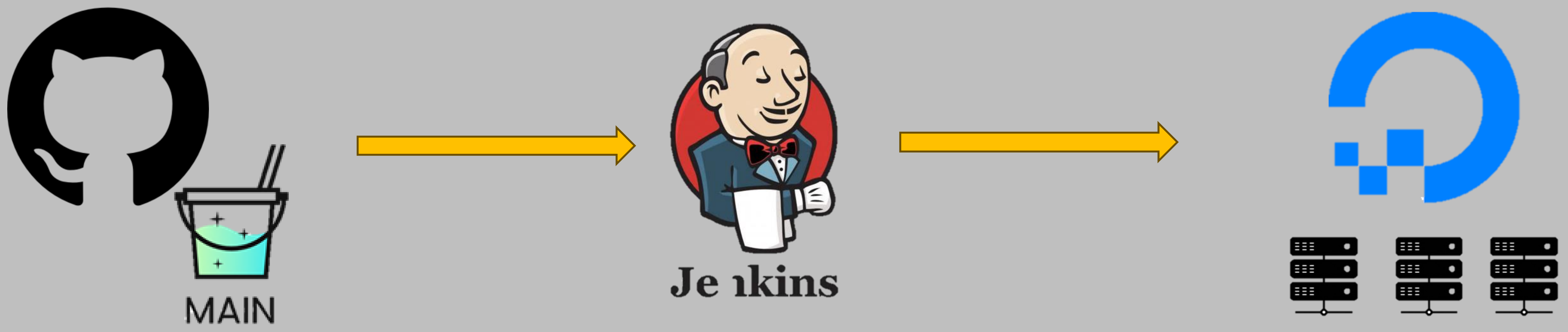


Willdotwhite added 2 commits last month

Allow API to paginate requests ✓ c6aff7d

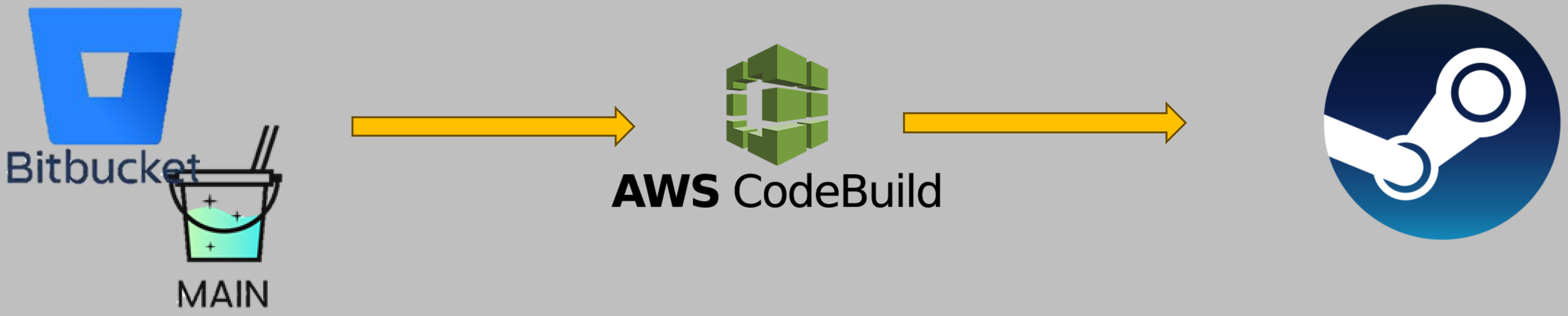
UI buttons for panning through pages ✗ 83a59fa

… and when it’s merged?



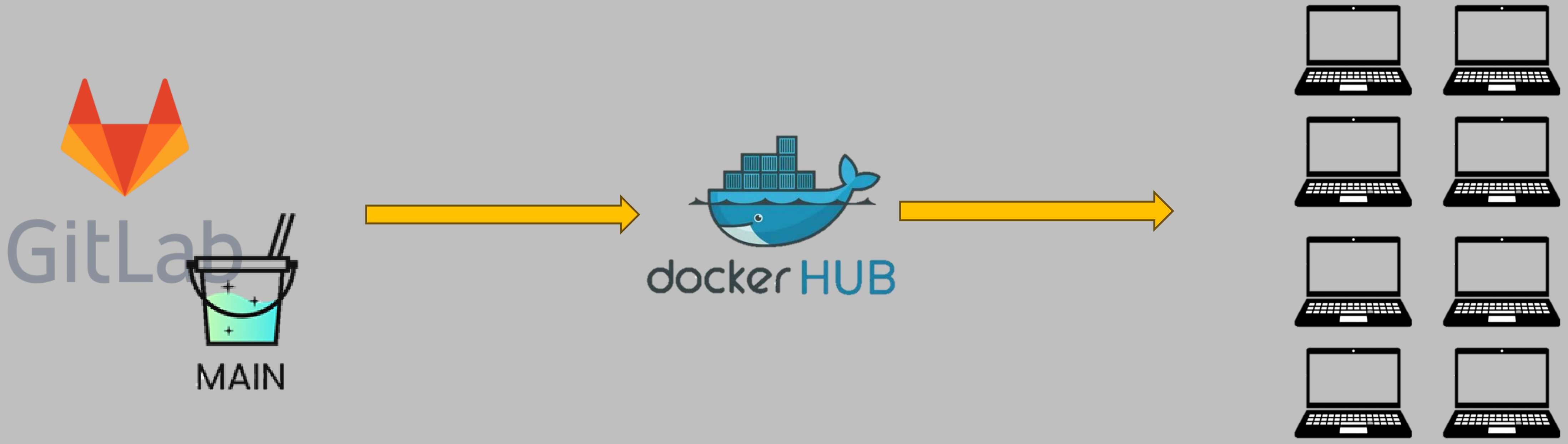
Option 1/many

… and when it's merged?



Option 2/many

… and when it’s merged?



Option 3/many

A quick note on libraries and frameworks

Why use libraries and frameworks?

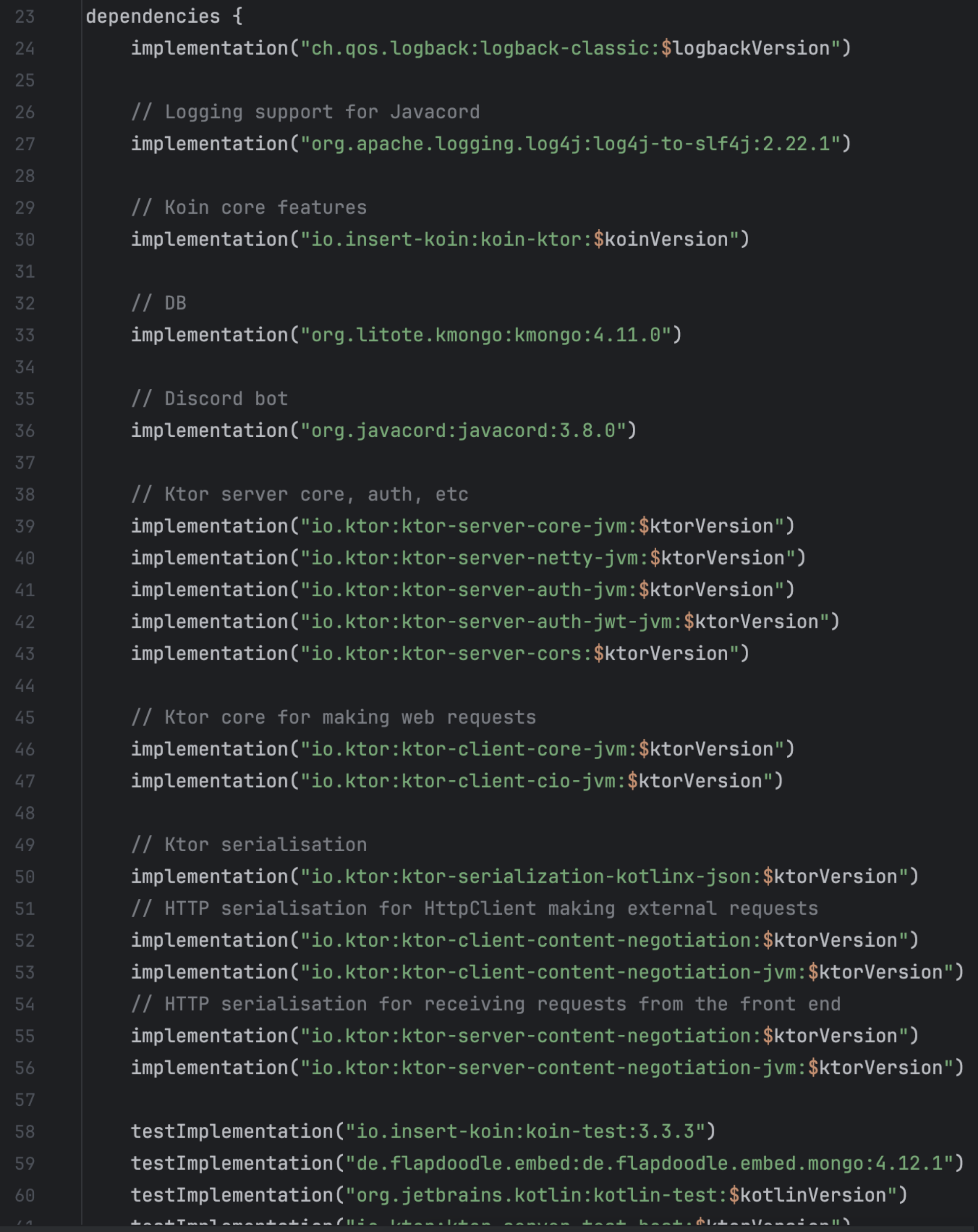
Don’t reinvent the wheel!

Use other people’s code

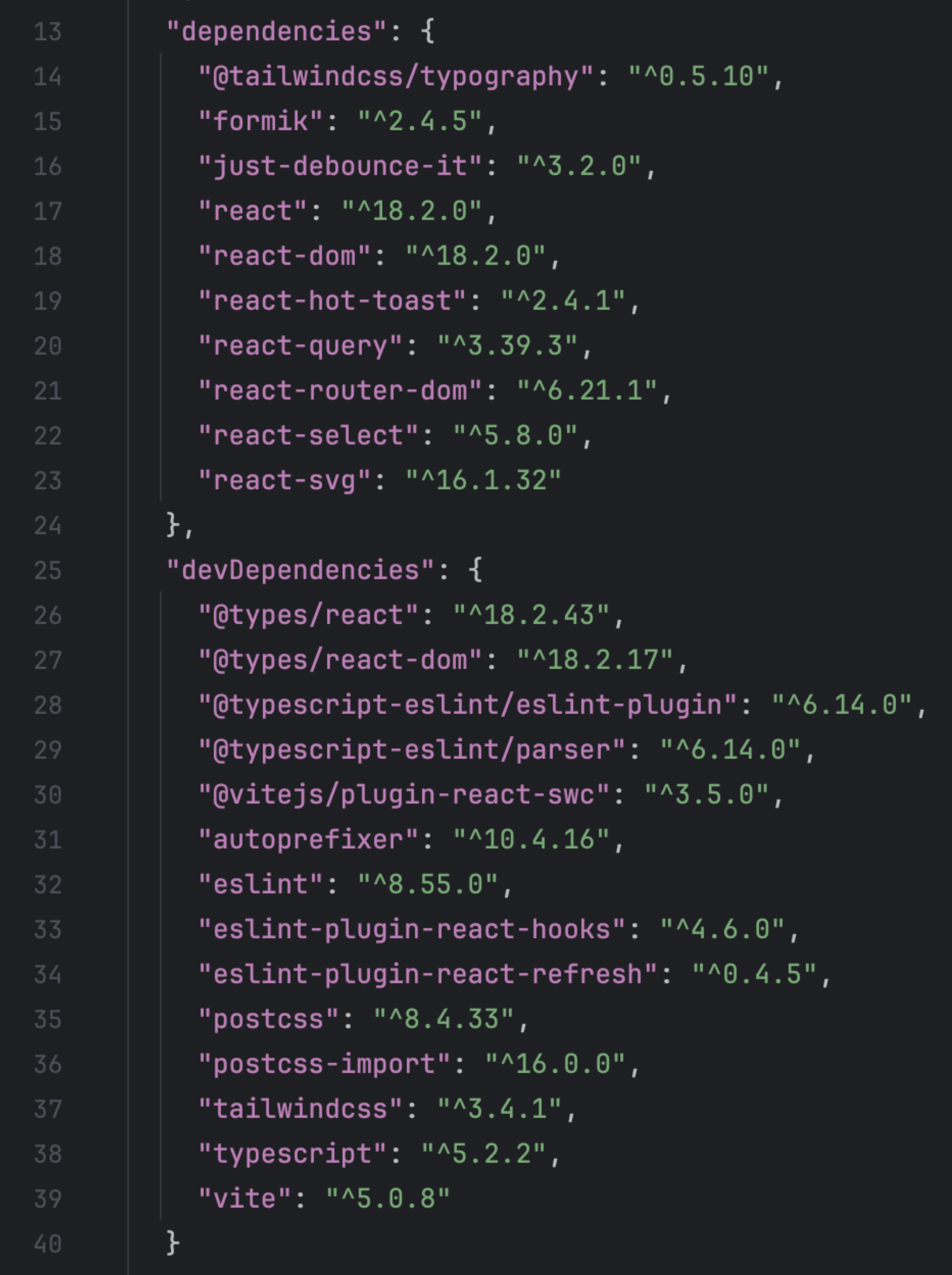
Save your time, focus on your work

Their code is better than yours

- (because they’ve spent longer getting it wrong)
- Do your research first – vulnerabilities are more common than ever



```kotlin
dependencies {
    implementation("ch.qos.logback:logback-classic:$logbackVersion")

    // Logging support for Javacord
    implementation("org.apache.logging.log4j:log4j-to-slf4j:2.22.1")

    // Koin core features
    implementation("io.insert-koin:koin-ktor:$koinVersion")

    // DB
    implementation("org.litote.kmongo:kmongo:4.11.0")

    // Discord bot
    implementation("org.javacord:javacord:3.8.0")

    // Ktor server core, auth, etc
    implementation("io.ktor:ktor-server-core-jvm:$ktorVersion")
    implementation("io.ktor:ktor-server-netty-jvm:$ktorVersion")
    implementation("io.ktor:ktor-server-auth-jvm:$ktorVersion")
    implementation("io.ktor:ktor-server-auth-jwt-jvm:$ktorVersion")
    implementation("io.ktor:ktor-server-cors:$ktorVersion")

    // Ktor core for making web requests
    implementation("io.ktor:ktor-client-core-jvm:$ktorVersion")
    implementation("io.ktor:ktor-client-cio-jvm:$ktorVersion")

    // Ktor serialisation
    implementation("io.ktor:ktor-serialization-kotlinx-json:$ktorVersion")
    // HTTP serialisation for HttpClient making external requests
    implementation("io.ktor:ktor-client-content-negotiation:$ktorVersion")
    implementation("io.ktor:ktor-client-content-negotiation-jvm:$ktorVersion")
    // HTTP serialisation for receiving requests from the front end
    implementation("io.ktor:ktor-server-content-negotiation:$ktorVersion")
    implementation("io.ktor:ktor-server-content-negotiation-jvm:$ktorVersion")

    testImplementation("io.insert-koin:koin-test:3.3.3")
    testImplementation("de.flapdoodle.embed:de.flapdoodle.embed.mongo:4.12.1")
    testImplementation("org.jetbrains.kotlin:kotlin-test:$kotlinVersion")
    testImplementation("io.ktor:ktor-server-test-host:$ktorVersion")
```



```json
  "dependencies": {
    "@tailwindcss/typography": "^0.5.10",
    "formik": "^2.4.5",
    "just-debounce-it": "^3.2.0",
    "react": "^18.2.0",
    "react-dom": "^18.2.0",
    "react-hot-toast": "^2.4.1",
    "react-query": "^3.39.3",
    "react-router-dom": "^6.21.1",
    "react-select": "^5.8.0",
    "react-svg": "^16.1.32"
  },
  "devDependencies": {
    "@types/react": "^18.2.43",
    "@types/react-dom": "^18.2.17",
    "@typescript-eslint/eslint-plugin": "^6.14.0",
    "@typescript-eslint/parser": "^6.14.0",
    "@vitejs/plugin-react-swc": "^3.5.0",
    "autoprefixer": "^10.4.16",
    "eslint": "^8.55.0",
    "eslint-plugin-react-hooks": "^4.6.0",
    "eslint-plugin-react-refresh": "^0.4.5",
    "postcss": "^8.4.33",
    "postcss-import": "^16.0.0",
    "tailwindcss": "^3.4.1",
    "typescript": "^5.2.2",
    "vite": "^5.0.8"
  }
```

Some final quick-fire thoughts

How can you make your Software Hut experience not terrible?

Be pragmatic about
what you contribute

Be moderate in what you
expect from others

You might want to discuss...

You might want to discuss…

- Will you use version control?
  - **YES, USE VERSION CONTROL!**
  - I recommend **git** and **trunk-based development**
    - This is the most common practice for version control
  - Write good commit messages: https://cbea.ms/git-commit/

You might want to discuss…

Will you use version control? (Yes)

What happens if you can’t agree on something?

- Do you vote? Toss a coin? Ask an unbiased peer?
- Look up “Disagree and commit”
- It’s impossible to do this *after* the big argument

You might want to discuss…

Will you use version control? (Yes)

What happens if you can’t agree on something?

How will you coordinate your work?

- JIRA tickets? Group DM chat?
- Will you pair program?
- How/when will you review pull requests?

Stretch goals

Consider using:

- PR checks to run tests
- Code linting tools
- CI/CD

Check out open source projects!

- They’re a great place to learn

A word on Generative AI

I can’t say “Don’t use it!” (although I wish I could)

Be very, *very* careful with how you use genAI

Studies are coming out on how badly use of genAI is damaging critical thinking and problem-solving abilities

If you use it, make it a study aid

Like a back-up outside of Emma’s office hours

Use it as a tool to work through confusion, and **always** fact check it afterwards!

Don’t let it do your work for you

You’ll be left behind by the people who internalise the underlying concepts

Today’s code:

XX-XX-XX

Thank you for your time!

These slides will be available on
badlydone.dev/presentations

You can contact me at
uos@badlydone.dev

Any questions?