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Use Git like a senior engineer

Git is a powerful tool that feels great to use when you know how to use it.

Jacob Bennett · [Follow](#)Published in [Level Up Coding](#)

4 min read · Nov 15, 2022

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I've used these features of Git for years across teams and projects. I'm still developing opinions around some workflows (like to squash or not) but the core tooling is powerful and flexible (and scriptable!).

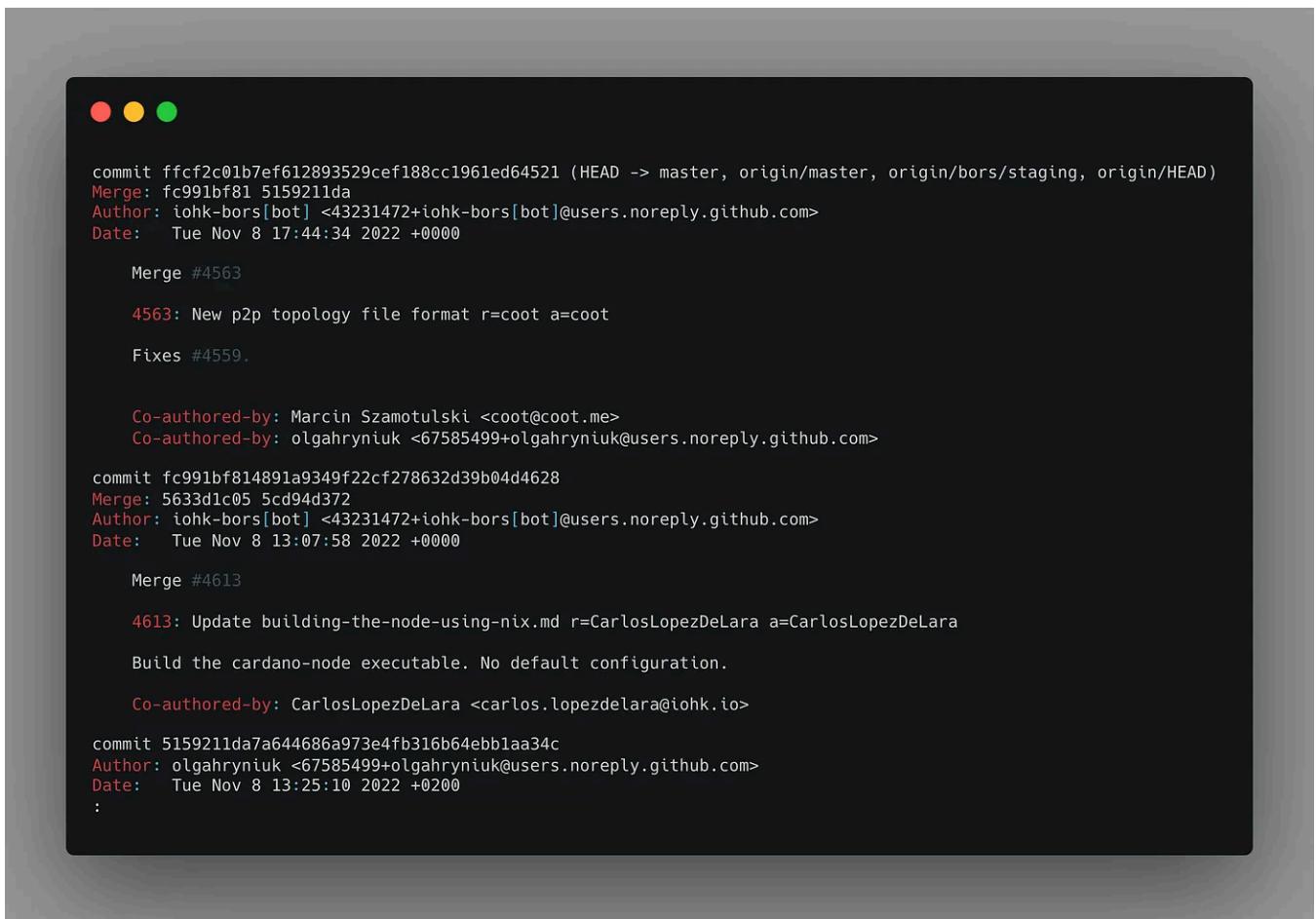
Going through Git logs

Git logs are gross to go through out of the box.

git log is basic

Using `git log` gives you some information. But it's extremely high-resolution and not usually what you're looking for.

`git log`



```
commit ffcf2c01b7ef612893529cef188cc1961ed64521 (HEAD -> master, origin/master, origin/bors/staging, origin/HEAD)
Merge: fc991bf81 5159211da
Author: iohk-bors[bot] <43231472+iohk-bors[bot]@users.noreply.github.com>
Date: Tue Nov 8 17:44:34 2022 +0000

Merge #4563

4563: New p2p topology file format r=coot a=coot

Fixes #4559.

Co-authored-by: Marcin Szamotulski <coot@coot.me>
Co-authored-by: olgahryniuk <67585499+olgahryniuk@users.noreply.github.com>

commit fc991bf814891a9349f22cf278632d39b04d4628
Merge: 5633d1c05 5cd94d372
Author: iohk-bors[bot] <43231472+iohk-bors[bot]@users.noreply.github.com>
Date: Tue Nov 8 13:07:58 2022 +0000

Merge #4613

4613: Update building-the-node-using-nix.md r=CarlosLopezDeLara a=CarlosLopezDeLara

Build the cardano-node executable. No default configuration.

Co-authored-by: CarlosLopezDeLara <carlos.lopezdelara@iohk.io>

commit 5159211da7a644686a973e4fb316b64ebb1aa34c
Author: olgahryniuk <67585499+olgahryniuk@users.noreply.github.com>
Date: Tue Nov 8 13:25:10 2022 +0200
:
```

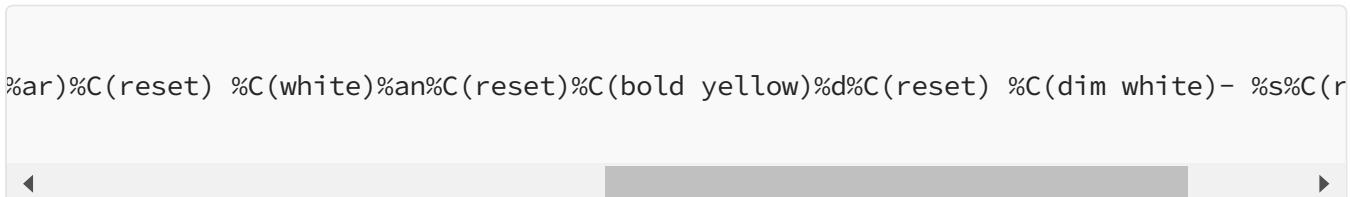
git log

Let's be real. These logs aren't impressing anyone. They are boring. And they're full of information that you don't really need right now. You're trying to get a high-level understanding of what has been going on in your project.

There's a better way.

git log with more visibility

Using `--graph` and `--format` we can quickly get a summary view of git commits in our project.



```
%ar)%C(reset) %C(white)%an%C(reset)%C(bold yellow)%d%C(reset) %C(dim white)- %s%C(r
```

```
* cdf528a14 - (3 weeks ago) Yupanqui - trace-dispatcher: Starting forwarding stress test
* 2aed8e156 - (3 weeks ago) Yupanqui - trace-dispatcher: with new hook
* e8f671fe0 - (3 weeks ago) Yupanqui - node: with new hook
| * 5faf743ba - (9 hours ago) Jordan Millar (origin/jordan/move-bech32-serialization-to-cardano-api) - WIP: cli propagation
| * 3413ea4ea - (5 days ago) Jordan Millar - bench changes?
| * 2b5606f92 - (5 days ago) Jordan Millar - WIP
|
| * 9fe539c4e - (3 hours ago) iohk-bors[bot] (origin/gh-pages) - deploy: ffcf2c01b7ef612893529cef188cc1961ed64521
| * ffcf2c01b - (5 hours ago) iohk-bors[bot] (HEAD -> master, origin/master, origin/bors/staging, origin/HEAD) - Merge #4563
| \
| | * 5159211da - (11 hours ago) olgahryniuk - Update ChangeLog.md
| | * aaaf86f0f - (11 hours ago) olgahryniuk - content edits
| | * b8c01d5ba - (12 hours ago) olgahryniuk - some minor editing tweaks
| | * 24e1f6ea7 - (13 days ago) Marcin Szamotulski - Expanded installation instructions
| | * 8d5688cd - (13 days ago) Marcin Szamotulski - Added test of p2p topology decoder
| | * 5874a30d7 - (13 days ago) Marcin Szamotulski - New topology file format
| | * fc991bf81 - (9 hours ago) iohk-bors[bot] - Merge #4613
| \
| | * 5cd94d372 - (5 days ago) CarlosLopezDeLara - Update building-the-node-using-nix.md
| | * 5633d1c05 - (11 hours ago) iohk-bors[bot] - Merge #4209
| \
| | *
| | | b09f4cd19 - (4 months ago) Marcin Szamotulski - Document how to disable ledger peers.
| |
| | * 47c3d696e - (12 days ago) Marcin Szamotulski (origin/jj/update-ledger) - Updated cardano-node for 1.35.5 release
| | * 21d0f1f9d - (35 hours ago) Joosep Jääger - Copied changes from #4600
| | * a2b7ad295 - (5 days ago) Joosep Jääger - Updated ledger and ouroboros-network dependencies
```

`git log --graph --format=format:'<>' --all`

Wow! These are some good-looking logs! There's even a semblance of a branched tree beside it.

These logs show you who has been working on what, when changes were made, and where your changes fit into the bigger picture.

`--graph` adds the tree graph to the left. It's not the most stylish graph, but it helps to visualize changes in the project's branches. ([Read the docs here.](#))

`--format` lets you customize the format of your logs. There are preset formats to choose from, or you can write your own format like this example. ([Read the docs here.](#))

`--all` includes all of the refs, tags, and branches in the logs (including remote branches). You might not want *everything* so adjust this as you see fit. ([Read the docs here.](#))

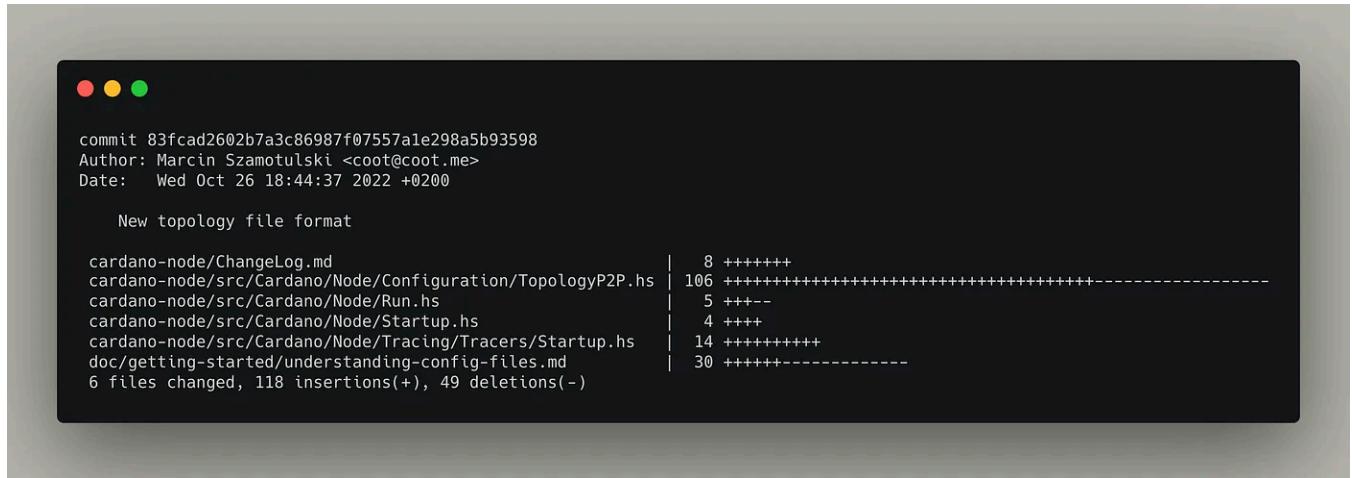
[See the git-log docs for more information on how you can level up your git logs. →](#)

Understanding a particular commit

You'll often want to understand what's happening with a specific commit. `git show` can show you a high-level view of changes in a commit, but it also lets you see changes to specific files.

View the summary of a commit

```
git show <commit> --stat
```



A screenshot of a macOS terminal window. The title bar shows three colored dots (red, yellow, green). The main area displays the output of a git command. It starts with a commit hash, author information, and date. Below that, it says "New topology file format". Then it lists files with their changes, using '+' for insertions and '-' for deletions. The output is as follows:

```
commit 83fcad2602b7a3c86987f07557ale298a5b93598
Author: Marcin Szamotulski <coot@coot.me>
Date:   Wed Oct 26 18:44:37 2022 +0200

    New topology file format

cardano-node/ChangeLog.md          |   8 ++++++++
cardano-node/src/Cardano/Node/Configuration/TopologyP2P.hs | 106 ++++++-----+
cardano-node/src/Cardano/Node/Run.hs   |   5 +----
cardano-node/src/Cardano/Node/Startup.hs |   4 +---
cardano-node/src/Cardano/Node/Tracing/Tracers/Startup.hs | 14 ++++++++
doc/getting-started/understanding-config-files.md | 30 ++++++-----+
6 files changed, 118 insertions(+), 49 deletions(-)
```

```
git show <commit> --stat
```

Using the `--stat` flag you'll see the commit summary along with the files that changed and details on how they changed.

View specific file changes for a commit

When you want to dive into the specific line changes in a particular file, use `git show` with the file path.

```
git show <commit> -- <filepath>
```

```

commit 83fcad2602b7a3c86987f07557a1e298a5b93598
Author: Marcin Szamotulski <coot@coot.me>
Date:   Wed Oct 26 18:44:37 2022 +0200

    New topology file format

diff --git a/cardano-node/src/Cardano/Node/Run.hs b/cardano-node/src/Cardano/Node/Run.hs
index e6a4559c1..61bbdf0ea 100644
--- a/cardano-node/src/Cardano/Node/Run.hs
+++ b/cardano-node/src/Cardano/Node/Run.hs
@@ -391,7 +391,7 @@ handleSimpleNode runP p2pMode tracers nc onKernel = do
    EnabledP2PMode -> do
        traceWith (startupTracer tracers)
            (StartupP2PInfo (ncDiffusionMode nc))
-       nt <- TopologyP2P.readTopologyFileOrError nc
+       nt <- TopologyP2P.readTopologyFileOrError (startupTracer tracers) nc
        let (localRoots, publicRoots) = producerAddresses nt
        traceWith (startupTracer tracers)
            $ NetworkConfig localRoots
@@ -500,6 +500,7 @@ handleSimpleNode runP p2pMode tracers nc onKernel = do
                developmentNtcVersions)

#ifndef UNIX
+ -- only used when P2P is enabled
    updateTopologyConfiguration :: StrictTVar IO [(Int, Map RelayAccessPoint PeerAdvertise)]
                                -> StrictTVar IO [RelayAccessPoint]
                                -> StrictTVar IO UseLedgerAfter
@@ -507,7 +508,7 @@ handleSimpleNode runP p2pMode tracers nc onKernel = do
    updateTopologyConfiguration localRootsVar publicRootsVar useLedgerVar =
        Signals.Catch $ do
            traceWith (startupTracer tracers) NetworkConfigUpdate
-       result <- try $ readTopologyFileOrError nc
+       result <- try $ TopologyP2P.readTopologyFileOrError (startupTracer tracers) nc
        case result of
            Left (FatalError err) ->
                traceWith (startupTracer tracers)

```

git show <commit> -- <filepath>

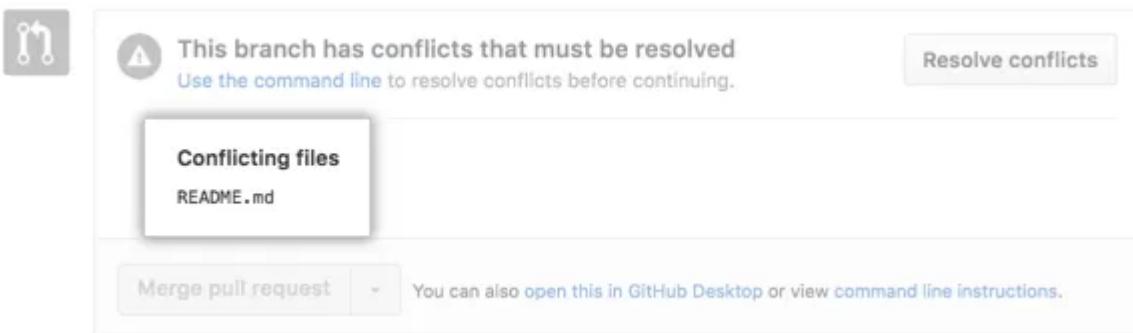
This gives you specific line changes for your file. By default, it will show you line changes along with 3 additional lines on either end to give you the context of where the changed lines are in the file.

[See the git-show docs for more information on how you can level up your git commit understanding.](#) →

Making changes

You've made a branch on the project, committed some changes to your branch, and you're ready to merge those changes back into `main`. Since you branched, another engineer has made changes to the same files. 🤦

If you're using a service like GitHub, your PR will tell you if you have merge conflicts.



GitHub merge conflict

Git will prompt you to resolve those merge conflicts before you shove your changes back into `main`. This is good since you don't want to stomp out all the hard work others are doing.

To get started resolving this locally you will usually take one of two paths: `merge` or `rebase`.

git merge vs git rebase

When there are changes on the `main` branch that you want to incorporate into your branch, you can either *merge* the changes in or *rebase* your branch from a different point.

`merge` takes the changes from one branch and merges them into another branch in one *merge commit*.

```
git merge origin/main your-branch
```

`rebase` adjusts the point at which a branch actually branched off (i.e. moves the branch to a new starting point from the base branch).

```
git rebase origin/main your-branch
```

Generally, you'll use `rebase` when there are changes in an upstream branch (like `main`) that you want to include in your branch. You'll use `merge` when there are changes in a branch that you want to put back into `main`.

To squash or not to squash

I used to be pro-squash. But an article by [Dr. Derek Austin](#) 🧑‍💻 changed my opinion on this. I recommend the article and don't think I have anything useful to add beyond what he said.

Why I Prefer Regular Merge Commits Over Squash Commits

I used to think squash commits were so cool, and then I had to use them all day, every day. Here's why you should avoid...

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Resources

- [git-log documentation](#)
- [git-show documentation](#)
- [When do you use Git rebase instead of Git merge? \(Stack Overflow\)](#).

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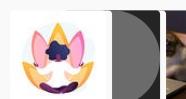
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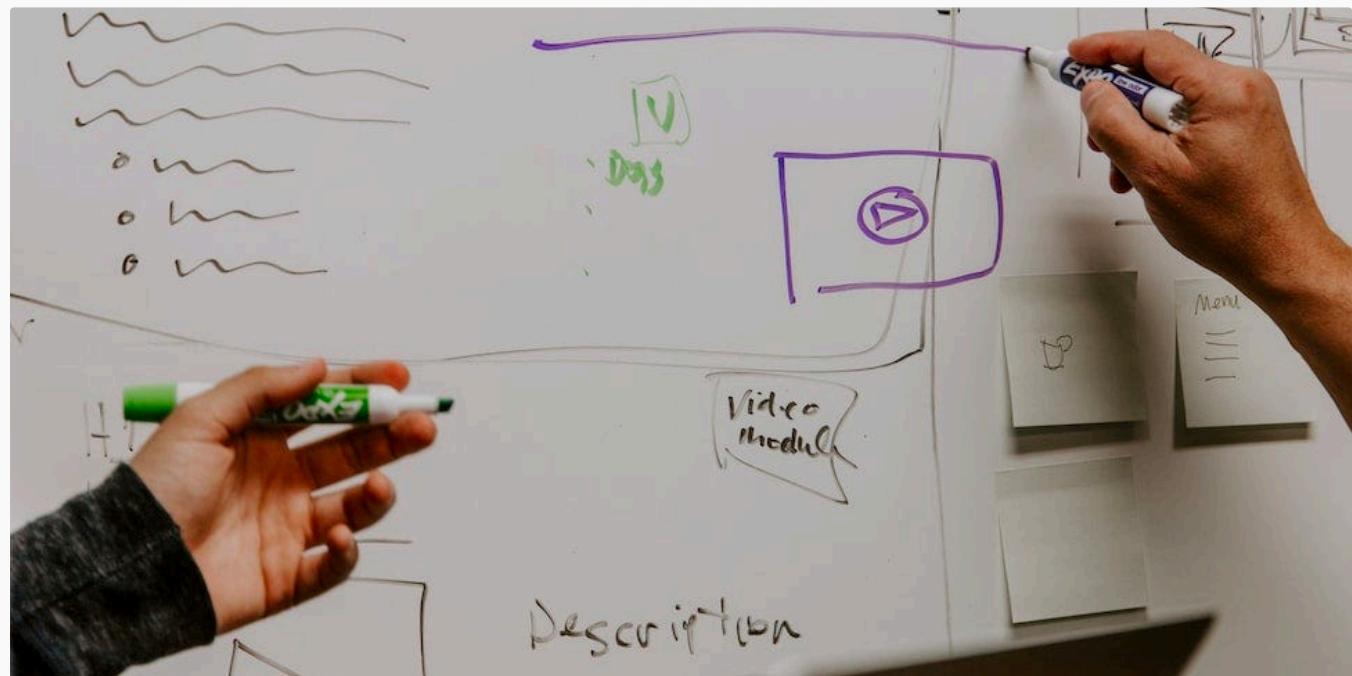
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A coding question, from the viewpoint of an Google/Amazon/Microsoft interviewer

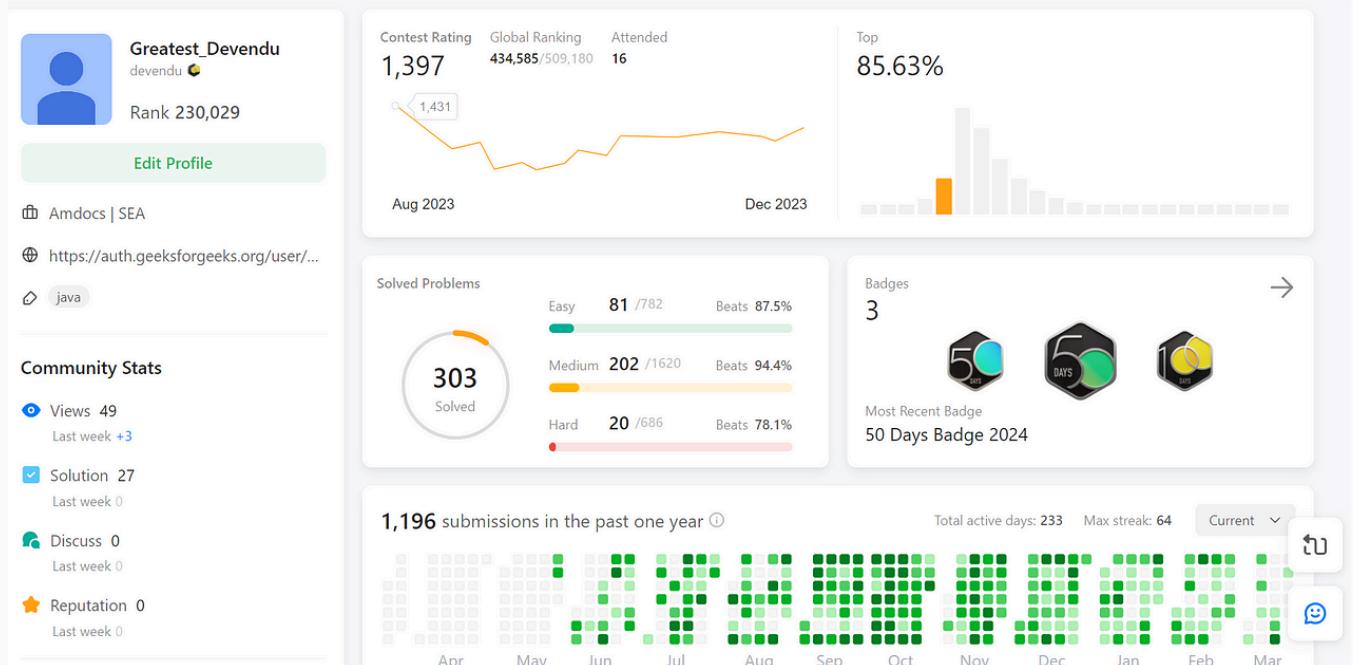
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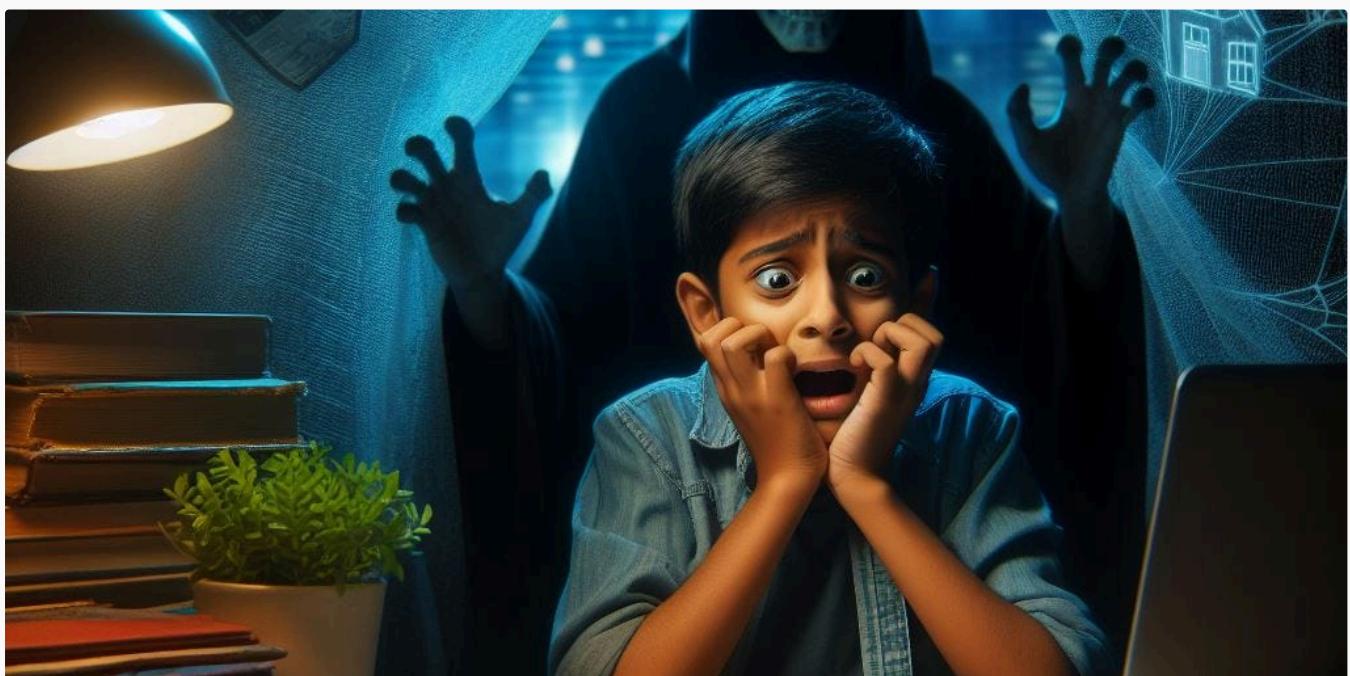
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