

Automating Open Source with Probot

Bex Warner





DevOps

'We think autonomous coding is a very real thing' – GitHub CEO imagines a future without programmers

#TheFuture #OrMaybeNot



HOW LONG CAN YOU WORK ON MAKING A ROUTINE TASK MORE
EFFICIENT BEFORE YOU'RE SPENDING MORE TIME THAN YOU SAVE?
(ACROSS FIVE YEARS)

		HOW OFTEN YOU DO THE TASK					
		50/DAY	5/DAY	DAILY	WEEKLY	MONTHLY	YEARLY
HOW MUCH TIME YOU SHAVE OFF	1 SECOND	<div><div>1</div></div> DAY	2 HOURS	30 MINUTES	4 MINUTES	1 MINUTE	5 SECONDS
	5 SECONDS	<div><div>5</div></div> DAYS	12 HOURS	2 HOURS	21 MINUTES	5 MINUTES	25 SECONDS
	30 SECONDS	<div><div></div><div></div><div></div><div></div><div></div><div></div></div> 4 WEEKS	<div><div>3</div></div> DAYS	12 HOURS	2 HOURS	30 MINUTES	2 MINUTES
	1 MINUTE	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 8 WEEKS	<div><div>6</div></div> DAYS	<div><div>1</div></div> DAY	4 HOURS	1 HOUR	5 MINUTES
	5 MINUTES	9 MONTHS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 4 WEEKS	<div><div>6</div></div> DAYS	21 HOURS	5 HOURS	25 MINUTES
	30 MINUTES		6 MONTHS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 5 WEEKS	<div><div>5</div></div> DAYS	<div><div>1</div></div> DAY	2 HOURS
	1 HOUR		10 MONTHS	2 MONTHS	<div><div>10</div></div> DAYS	<div><div>2</div></div> DAYS	5 HOURS
	6 HOURS				2 MONTHS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 2 WEEKS	<div><div>1</div></div> DAY
	<div><div>1</div></div> DAY					<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 8 WEEKS	<div><div>5</div></div> DAYS

Jidoka

automation *with a human touch.*



Automating Process

Improves consistency, reduces overhead,
increases your confidence



Identify repeated tasks

*“We {action}
every {period of time}.”*



Identify repeated tasks

*“We **release a changelog**
every **two weeks.**”*



What does
automation look
like on GitHub?



OAuth Apps





Authorize GitHub Classroom



GitHub Classroom by [github](#)

wants to access your hiimbex account



Personal user data

Email addresses (read-only)



Repositories

Public and private



Delete repositories

Ability to delete any adminable repository



Organization access



campus-experts ✓



github ✓



octokit ✓

Authorize github

Authorizing will redirect to
<https://classroom.github.com>



ACCESS TO



ALL THE THINGS



GitHub's Permission System is Flawed #113

Open

zenorocha opened this issue on Feb 10, 2016 · 65 comments



zenorocha commented on Feb 10, 2016

Contributor



This is an open letter to @github on behalf of third-party app developers.

For a very long time, [permission scopes](#) has been a common issue for both users and app developers. These scopes are extremely permissive and far too broad, preventing users from using third-party applications.

We need a more granular permission system and we hope you listen to this.

Below you can find some examples that describes exactly what we mean by how flawed the system is and some suggestions to improve it.

gist scope

| Grants write access to gists.

github.com/dear-github/dear-github



GitHub Apps 🎉



Granular permissions



Permissions

Changes to permissions will be applied to all future installations. Current users will be prompted to accept any changes and enable the new permissions on their installation.

Repository administration ⓘ

Repository creation, deletion, settings, teams, and collaborators.

Access: Read & write ▾

Checks ⓘ

Checks on code.

Repository contents ⓘ

Repository contents, commits, branches, downloads, releases, and merges

Select an access level



No access

Read-only

✓ Read & write

Deployments ⓘ

Deployments and deployment statuses.

Access: No access ▾

Issues ⓘ

Issues and related comments, assignees, labels, and milestones.

Access: No access ▾





Install WIP


Install on your organization GitHub



☒ **All repositories**

This applies to all current *and* future repositories.

☐ **Only select repositories**

 Select repositories ▼

...with these permissions:

✗ **No access to code**

✓ **Read** access to pull requests



✓ **Read and write** access to commit statuses


Install

[Cancel](#)




You've probably seen it in action


 **probot / dco**  build **passing**


[Current](#) [Branches](#) [Build History](#) [Pull Requests](#) More options 


✓ **Pull Request #79** CHECKSAPISUPPORT 🍷


 [View commit on GitHub](#)


 Warner <bexmwarner@gmail.com>


 [Commit d1e17f5](#)


 [#79: CHECKSAPISUPPORT](#)

 [Branch master](#)

 Bex Warner authored and committed

 **#300 passed**


 Ran for 56 sec


 a day ago

Restart build












You've probably seen it in action




**All checks have passed**
4 successful checks

[Hide all checks](#)

	 ci/circleci — Your tests passed on CircleCI!	Details
	 ci/circleci: build-python27 — Your tests passed on CircleCI!	Details
	 ci/circleci: build-python35 — Your tests passed on CircleCI!	Details
	 ci/circleci: build-python36 — Your tests passed on CircleCI!	Details


**This branch has no conflicts with the base branch**
Merging can be performed automatically.

Merge pull request 

You can also [open this in GitHub Desktop](#) or view [command line instructions](#).





You've probably seen it in action

 **github2** APP 9:50 AM

Pull request merged by hiimbex


#621 Clarifies the Probot requires a webhook secret


 probot/probot | Jul 12th

 hiimbex

1 new commit pushed to master


952f88b5 - Clarifies the Probot requires a webhook secret (#621)


 probot/probot

 hiimbex


1 new commit pushed to master

8f8fe479 - Update docs for v7.0.1

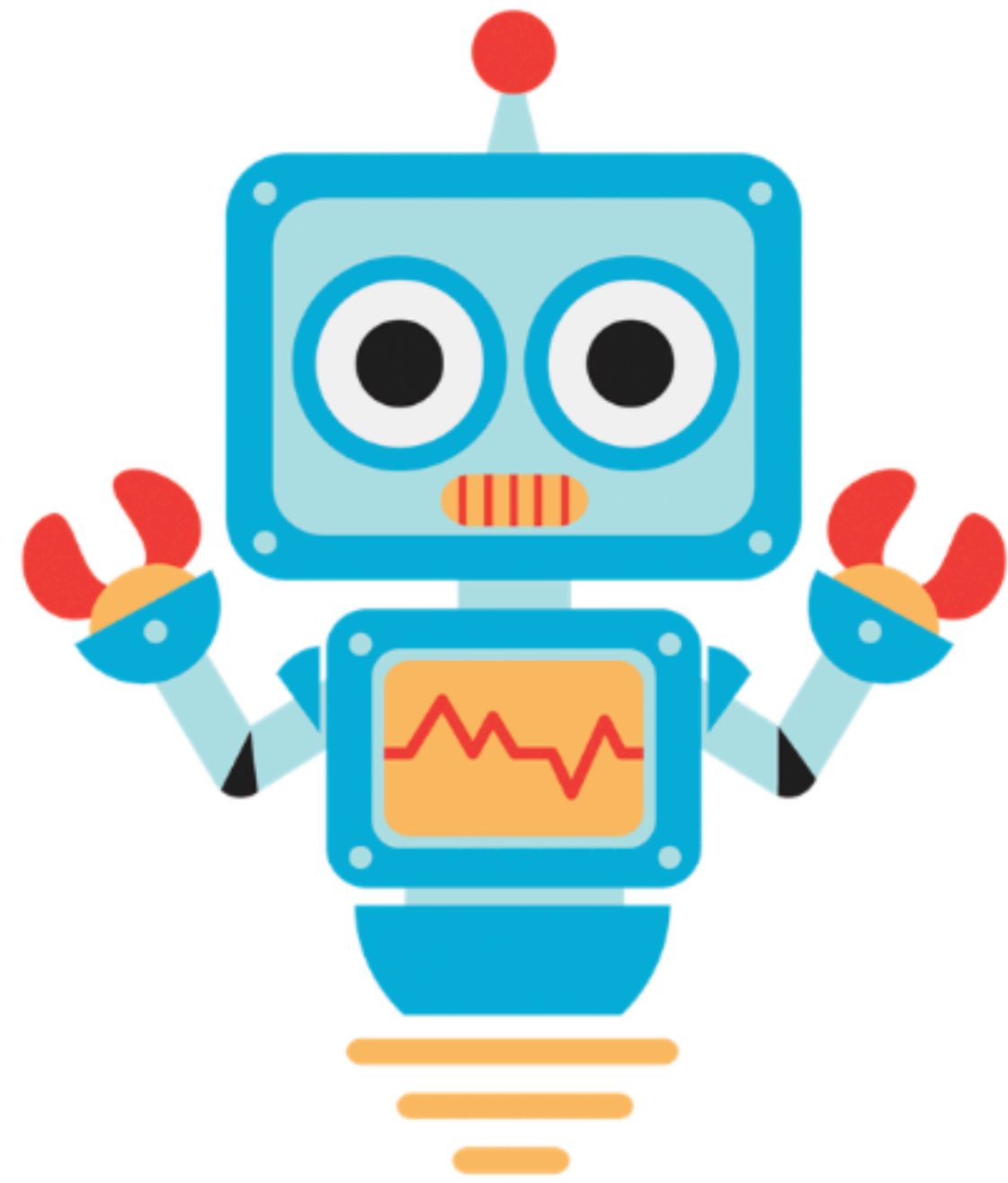
 probot/probot.github.io

 hiimbex

Successfully deployed 8f8fe47 to github-pages

 probot/probot.github.io





PROBOT

GitHub Apps to automate
and improve your workflow

Use pre-built apps to extend GitHub,
and easily build and share your own.

probot.github.io



Listen on Webhooks

Take action via the GitHub API



Authentication

JWT + installation access token



Authenticating with GitHub Apps

You can authenticate as a GitHub App or as an installation.

- i. [Generating a private key](#)
- ii. [Verifying private keys](#)
- iii. [Deleting private keys](#)
- iv. [Authenticating as a GitHub App](#)
- v. [Accessing API endpoints as a GitHub App](#)
- vi. [Authenticating as an installation](#)
- vii. [Accessing API endpoints as an installation](#)
- viii. [HTTP-based Git access by an installation](#)

Note: To access the API with your integration, you must provide a custom [media type](#) in the `Accept` Header for your requests.

```
application/vnd.github.machine-man-preview+json
```

Generating a private key

After you create a GitHub App, you'll need to generate one or more private keys. You'll use the private key to sign access token requests.

You can create multiple private keys and rotate them to prevent downtime if a key is compromised or lost. To verify that a private key matches a public key, see [Verifying private keys](#).

To generate a private key:

1

In the upper-right corner of any page, click your profile photo, then click **Settings**.

Getting started with building apps

Differences between GitHub Apps and OAuth Apps

▼ Building GitHub Apps

[Creating a GitHub App](#)

[Creating custom badges for GitHub Apps](#)

[Setting permissions for GitHub Apps](#)

Authenticating with GitHub Apps

[Identifying and authorizing users for GitHub Apps](#)

[Understanding rate limits for GitHub Apps](#)

► Managing GitHub Apps

► Building OAuth Apps

► Managing OAuth Apps

API Status: good



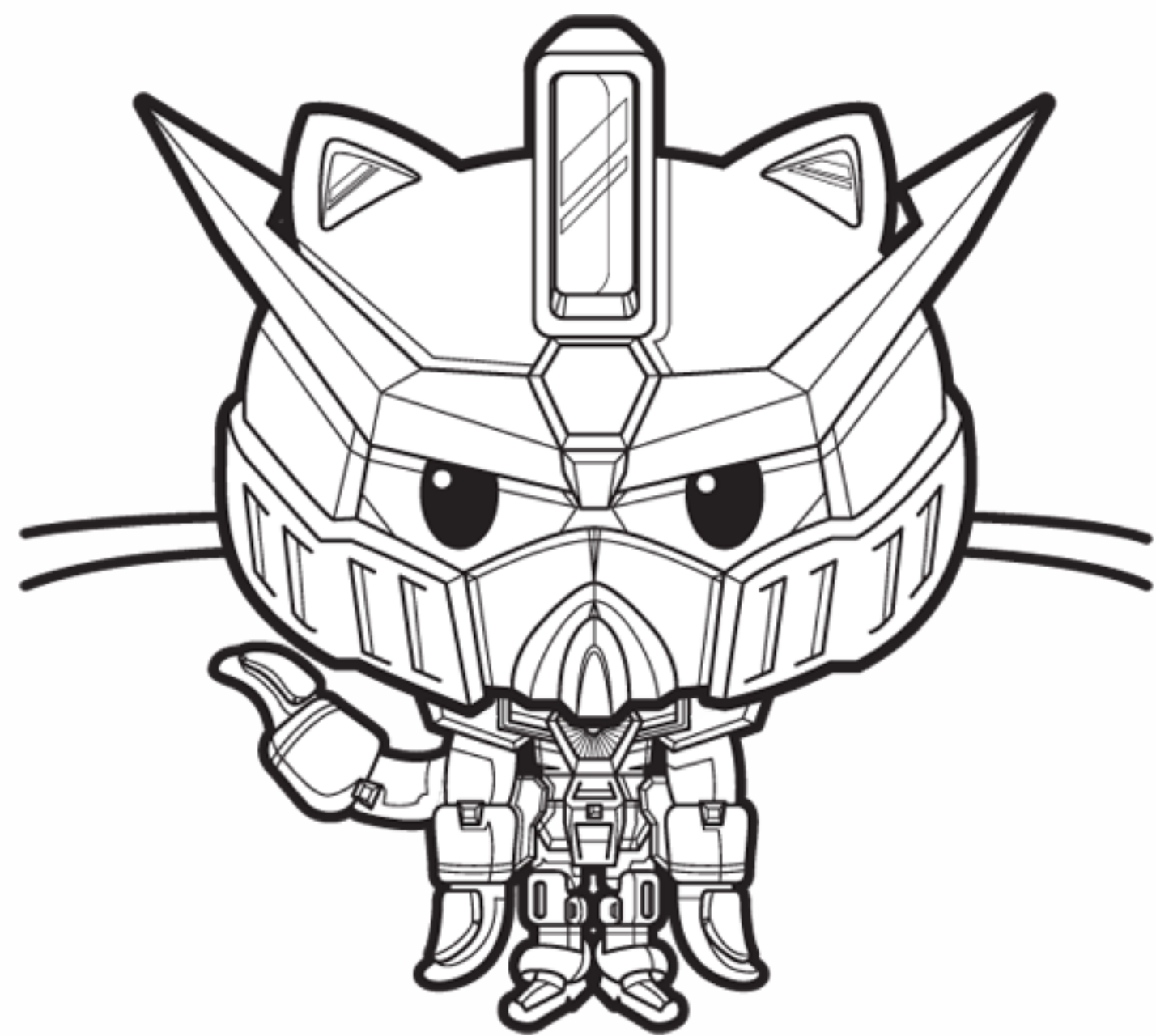
Abstracted away



GitHub APIs

REST, GraphQL, Octokit





Authenticated Octokit client



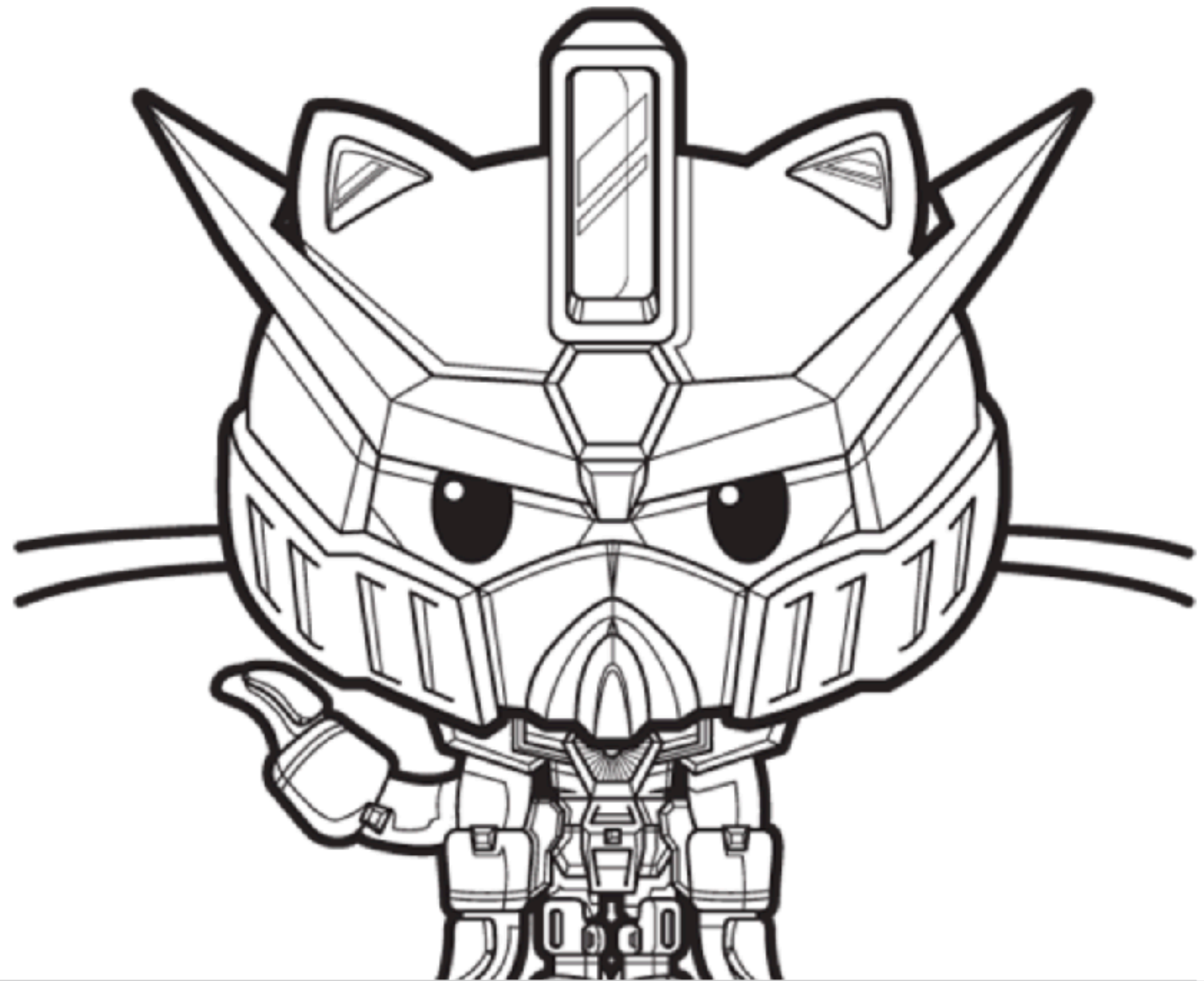
Octokit comes in many flavors

Use the official Octokit library, or choose between any of the available third party libraries.

Ruby [octokit.rb](https://github.com/octokit/octokit.rb)

.NET [octokit.net](https://github.com/octokit/octokit.net)

Node.js [octokit/rest.js](https://github.com/octokit/rest.js)



<https://developer.github.com/v3/libraries/>



Let's build an app!





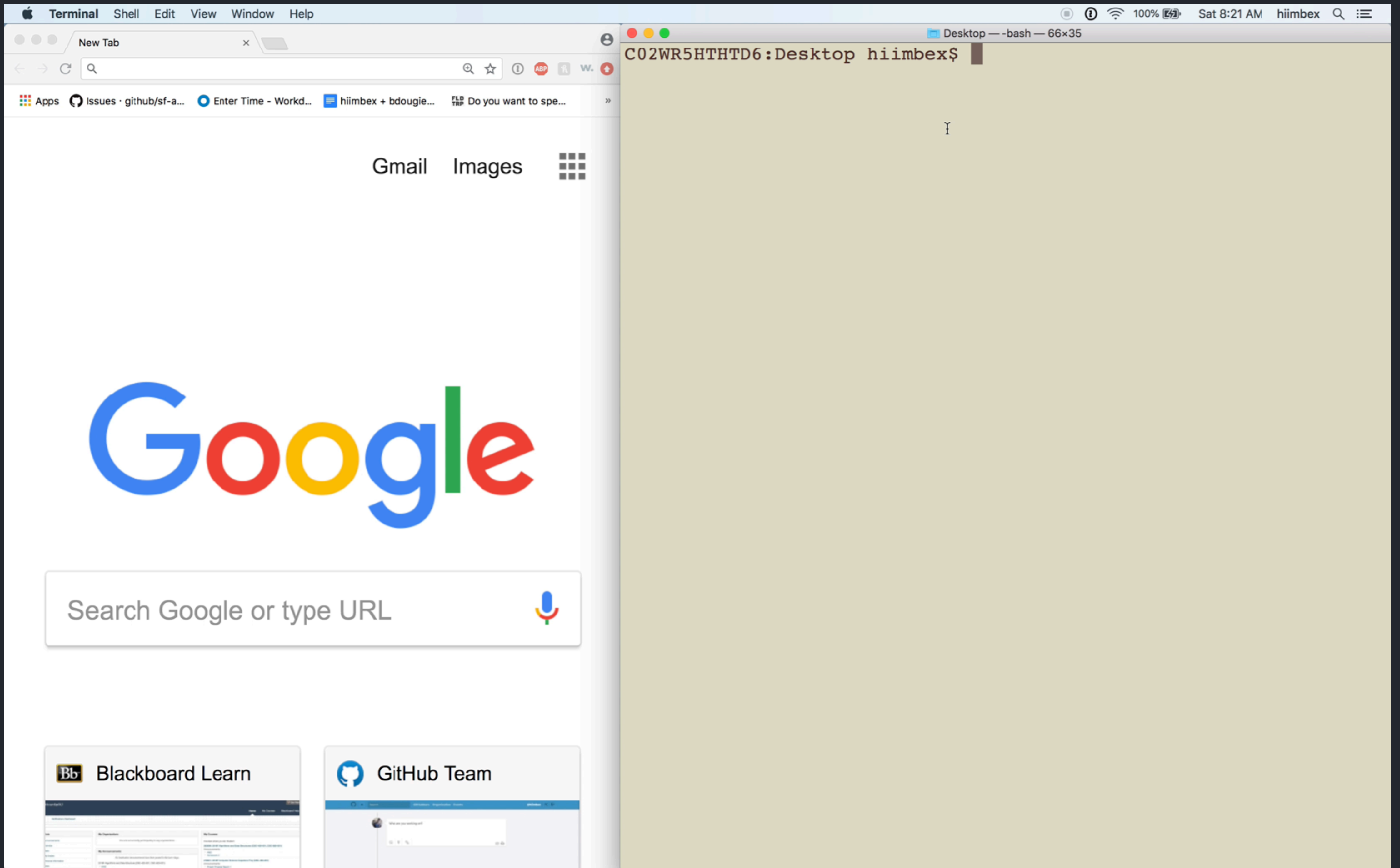
```
$ npx create-probot-app my-first-app
```

github.com/probot/create-probot-app



LIVE DEMO???





Let's write some
code





```
/**
 * This is the entry point for your Probot App.
 * @param {import('probot').Application} app - Probot's Application class.
 */
module.exports = app => {
  // Your code here
  app.log('Yay, the app was loaded!')

  // For more information on building apps:
  // https://probot.github.io/docs/

  // To get your app running against GitHub, see:
  // https://probot.github.io/docs/development/
}
```

index.js



Identify repeated tasks

*“We {action}
every {period of time}.”*



Identify repeated tasks

*“We **add a label** for
every **every new issue**.”*





```
// ...  
module.exports = app => {  
  // Your code here  
  app.on('*', async context => {  
    app.log(context)  
  })  
}
```

**`app.on`
listening for webhooks**



Webhooks

<https://developer.github.com/webhooks/>



Issues Event

[https://developer.github.com/v3/activity/events/types/
#issueevent](https://developer.github.com/v3/activity/events/types/#issueevent)





```
module.exports = app => {  
  app.on('issues.opened', async context => {  
    app.log(context)  
  })  
}
```

Listening on `issues.opened`



Issues - addLabels

REST API doc

POST

```
/repos/:owner/:repo/issues/:number/labels
```

async/await

Promise

Callback

```
const result = await octokit.issues.addLabels({labels, owner, repo, number})
```

<https://octokit.github.io/rest.js/#api-Issues-addLabels>



Probot's Internal APIs

<https://probot.github.io/api/latest/classes/context.html#issue>



issue

🔗 `issue<T>(object?: T): object & object & T`

Defined in [context.ts:73](#)

Return the `owner`, `repo`, and `number` params for making API requests against an issue or pull request. The object passed in will be merged with the repo params.

```
const params = context.issue({body: 'Hello World!'})  
// Returns: {owner: 'username', repo: 'reponame', number: 123, body: 'Hello World!'}
```

``context.issue()``





```
module.exports = app => {  
  app.on('issues.opened', async context => {  
    const params = context.issue({labels: ['needs-response']})  
    // {owner: 'username', repo: 'reponame', number: 123, labels: ['needs-response']}  
  })  
}
```

Add necessary params





```
module.exports = app => {  
  app.on('issues.opened', async context => {  
    const params = context.issue({labels: ['needs-response']})  
    await context.github.issues.addLabels(params)  
  })  
}
```

Make the API call



Brand new issue! #54

Edit

New issue

Open hiimbex opened this issue 27 seconds ago · 0 comments



hiimbex commented 27 seconds ago



hello world!



bex-is-the-best bot added the **needs-response** label 26 seconds ago



Write

Preview

AA B i “ < > ↺ ☰ ☷ ✓ @ 📌 ↶

Leave a comment

Attach files by dragging & dropping, [selecting them](#), or pasting from the clipboard.

Styling with Markdown is supported

Close issue

Comment

Assignees



No one—assign yourself

Labels



needs-response

Projects



None yet

Milestone



No milestone

Notifications

Unsubscribe

You're receiving notifications because you authored the thread.

Watch it work!



Existing Apps



Featured Apps

Stale

Close stale Issues and Pull Requests

🔗 845 ★ 431



Work In Progress

Prevent merging of Pull Requests with "WIP" in the title

🔗 572 ★ 239



First Timers

Create starter issues to help onboard new open source contributors

🔗 238 ★ 136



Developer Certificate of Origin

Enforce the DCO on Pull Requests

🔗 224 ★ 66



todo

Creates new issues from actionable comments in your code.

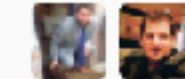
🔗 221 ★ 140



Reminders

Set reminders on Issues and Pull Requests

🔗 213 ★ 31



Welcome

Welcomes new users

🔗 181 ★ 32



Settings

Pull Requests for repository settings

🔗 160 ★ 218



Request Info

Requests more info on Issues and pull requests with the default title or an empty body.

🔗 142 ★ 25



probot.github.io/apps



Welcome

Welcomes new users

+ Add to GitHub

🔗 307 ★ 56

Update README.md #5

🔗 Open

🔖 Bookmark

🚧 Pre-release

· hiimbex-testing wants to merge 1 commit into hiimbex:master from hiimbex-te:

💬 Conversation 7

🔗 Commits 1

📄 Files changed 1



hiimbex-testing commented 14 days ago

First-time contributor



This is my first pull request!



Update README.md

a402b02



new-pr-welcome bot commented 14 days ago



Thanks for making your first PR here!

Repository

behaviorbot/welcome

Authors

hiimbex

Updated

October 17, 2018

Used By



Work In Progress

Prevent merging of Pull Requests with "WIP" in the title

+ Add to GitHub

🔗 1366 ★ 311

WIP Update README.md #16

[Open](#) gr2m wants to merge 1 commit into `master` from `skippy-was-here`

🗨 Conversation 0 | 📄 Commits 1 | 📋 Checks 1 | 📄 Files changed 1



gr2m commented 28 seconds ago

Member + 🗨 ...

No description provided.

📄 Update README.md

Verified • e4e3d7a

✏ gr2m changed the title from **Update README.md** to **WIP Update README.md** just now

Add more commits by pushing to the `skippy-was-here` branch on `wip/sandbox`.



⚠ Some checks haven't completed yet

[Hide all checks](#)

1 in progress check

🔴 WIP (dev) In progress — Work in progress

Required [Details](#)

⚠ Required statuses must pass before merging

[Update branch](#)

All required [statuses](#) and check runs on this pull request must run successfully to enable automatic merging.

As an administrator, you may still merge this pull request.

[Rebase and merge](#)

▾ You can also open this in [GitHub Desktop](#) or view [command line instructions](#).

Repository

gr2m/wip-bot

Authors

gr2m

Updated

October 17, 2018

Used By



Stale

Close stale Issues and Pull Requests

+ Add to GitHub

🔗 1145 ★ 547



🏷️ **probot-stale** bot added the **stale** label on May 9

probot-stale bot commented on May 9

+ 😊 ✎ ✕

This issue has been automatically marked as stale because it has not had recent activity. It will be closed if no further activity occurs. Thank you for your contributions.

🚫 **probot-stale** bot closed this 23 days ago

Repository

probot/stale

Authors

bkeepers

Updated

October 18, 2018

Used By



Semantic Pull Requests

Status check that ensures your pull requests follow the Conventional Commits spec

+ Add to GitHub

🔗 68 ★ 30



Some checks haven't completed yet

1 pending and 3 successful checks

[Hide all checks](#)



Semantic Pull Request *Pending* — add semantic commit or PR title

[Details](#)



WIP — ready for review

[Details](#)



continuous-integration/travis-ci/pr — The Travis CI build passed

[Details](#)



continuous-integration/travis-ci/push — The Travis CI build passed

[Details](#)

Repository

probot/semantic-pull-requests

Authors

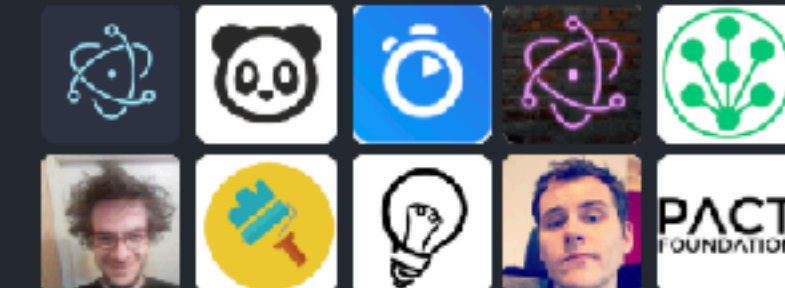
zeke

bkeepers

Updated

October 1, 2018

Used By



Developer Certificate of Origin

Enforce the DCO on Pull Requests

+ Add to GitHub

🔗 419 ★ 85

Update README.md #62

Edit

[Open](#) hiimbex wants to merge 1 commit into `test` from `hiimbex-patch-24`

🗨 Conversation 0 🔗 Commits 1 📋 Checks 1 📄 Files changed 1

+0 -1



hiimbex commented 6 minutes ago

Owner + 🗨 📝

Signed-off-by: Bex Warner bexmwarner@gmail.com



Update README.md

Verified ✓ f32e41b

Signed-off-by: Bex Warner <bexmwarner@gmail.com>

Add more commits by pushing to the `hiimbex-patch-24` branch on `hiimbex/testing-things`.



✓ All checks have passed

1 successful check

[Hide all checks](#)



✓ DCO Successful in ~1m — DCO

[Details](#)



✓ This branch has no conflicts with the base branch

Merging can be performed automatically.

Merge pull request

You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

Reviewers

No reviews

Assignees

No one—assign yourself

Labels

None yet

Projects

None yet

Milestone

No milestone

Notifications

🔔 Unsubscribe

You're receiving notifications because you authored the thread.

Repository

probot/dco

Authors

bkeepers

hiimbex

Updated

October 21, 2018

Used By



Polls

Create polls in GitHub issues.

+ Add to GitHub

🔗 170 ★ 138

Code

Issues 2

Pull requests 0

Releases 1

More

Settings

Demo 🤖 🎉 #2

Open

evenchange4 opened this issue 14 hours ago • 0 comments



evenchange4 14 hours ago • edited



0



First Issue in this repo

Owner



Option1



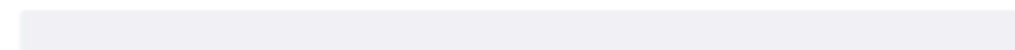
50% 1

Option 2



50% 1

Option 3



0%



polls

bot

added the

Polls

label 14 hours ago

Repository

evenchange4/gh-polls-bot

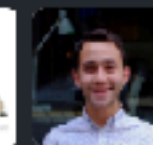
Authors

evenchange4

Updated

January 15, 2018

Used By





+



Stay up to date

Use `/github subscribe [repository name]` in Slack to start receiving updates about activities like:

- New commits
- New pull requests
- New issues
- Code reviews
- Deployment statuses



sophshep 10:30 AM
/github subscribe <https://github.com/github/fetch>



GitHub APP 10:30 AM
| subscribed to [github/fetch](#)



GitHub APP 11:35 AM
Pull request opened by bkeepers



bkeepers

#521 Add additional fallbacks

This extends the solution in #253 for React Native compatibility.



github/fetch | Today at 11:35 AM



codecov/project: 97.04% (-0.1) compared to b8b2627



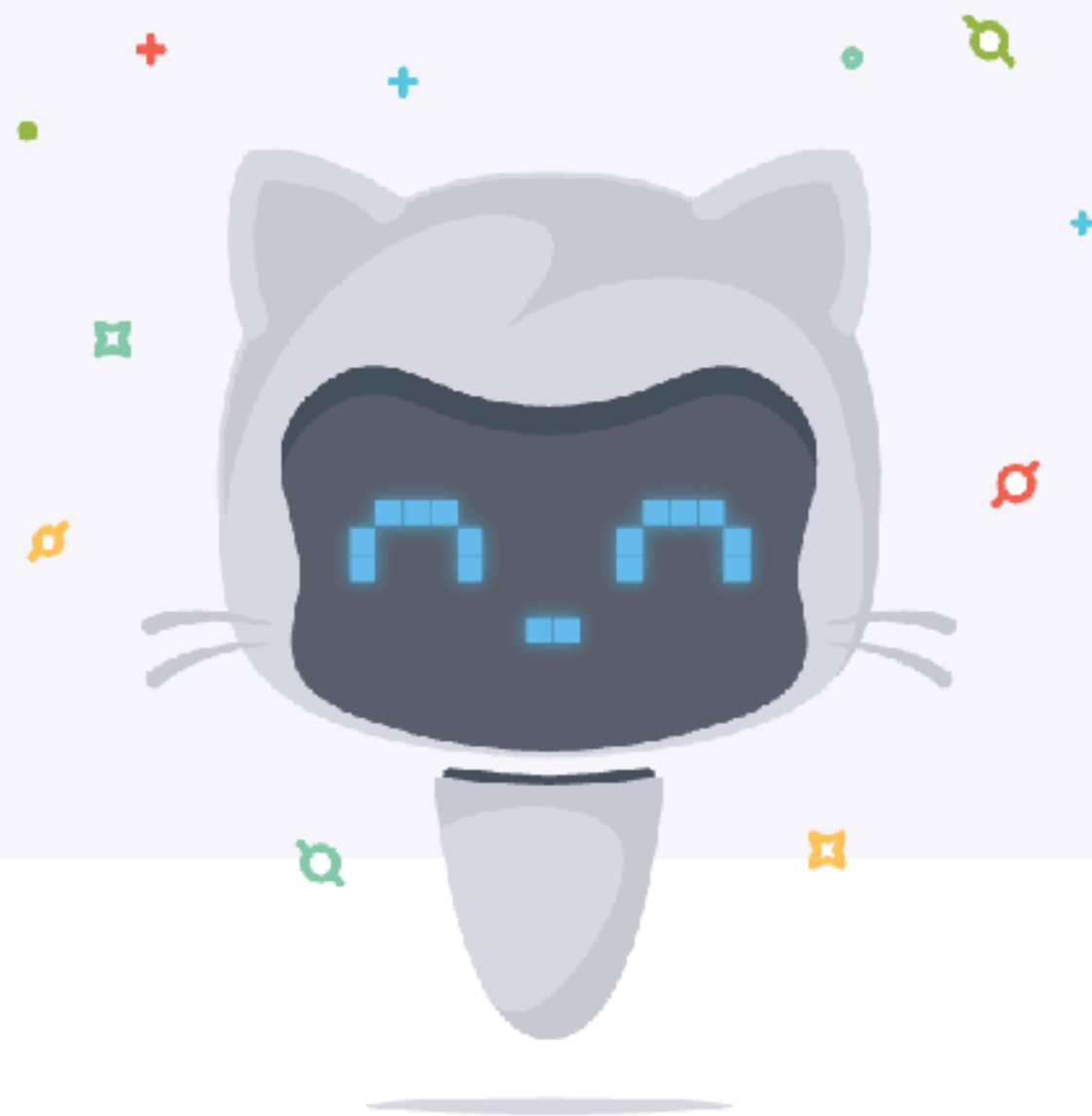
codecov/patch: 0% of diff hit (target 97.14%)



3 other checks have passed

3/5 successful checks





Learn from GitHub

The Learning Lab bot will guide you through projects and provide feedback right from your GitHub repository, helping you build every step of the way.



GitHub Learning Lab bot commented just now

This issue is unassigned 🙄

Unassigned issues don't have someone to look after them. Assigned issues and pull requests tell visitors to your repository that you'll be facilitating this particular conversation 💪.



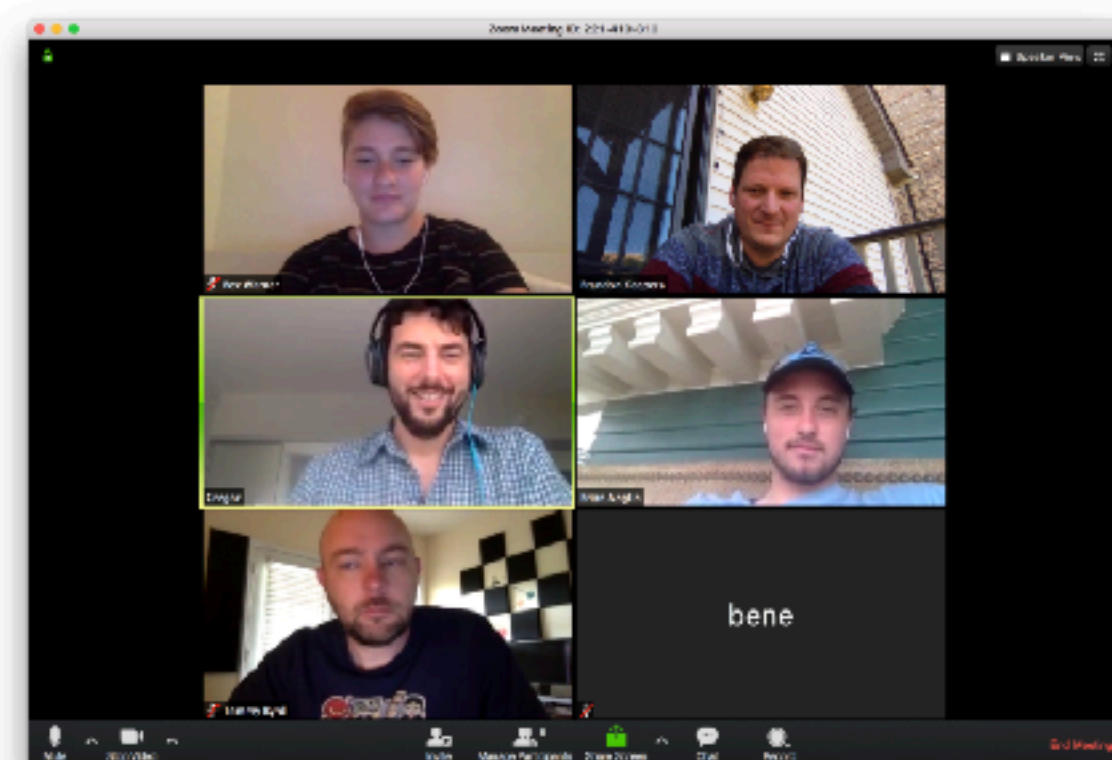
Activity

1. On the right side of the screen, under the **Assignees** section, click **assign yourself**.



Join the Community

We're thrilled that you'd like to contribute to this project.
Your help is essential for keeping it great.

[Chat on Slack](#)[Contribute on GitHub](#)[Follow on Twitter](#)[Ask on Stack Overflow](#)

Office Hours

Join us every **Thursday at 2:00 PM** to give feedback, ask questions, get help, or just chat about ideas.

[Add to Calendar](#)

Listen to the podcast with [@hiimbex](#) & [@bdougie](#):
🔊 [Frontsize 105: Automating GitHub with Probot](#)

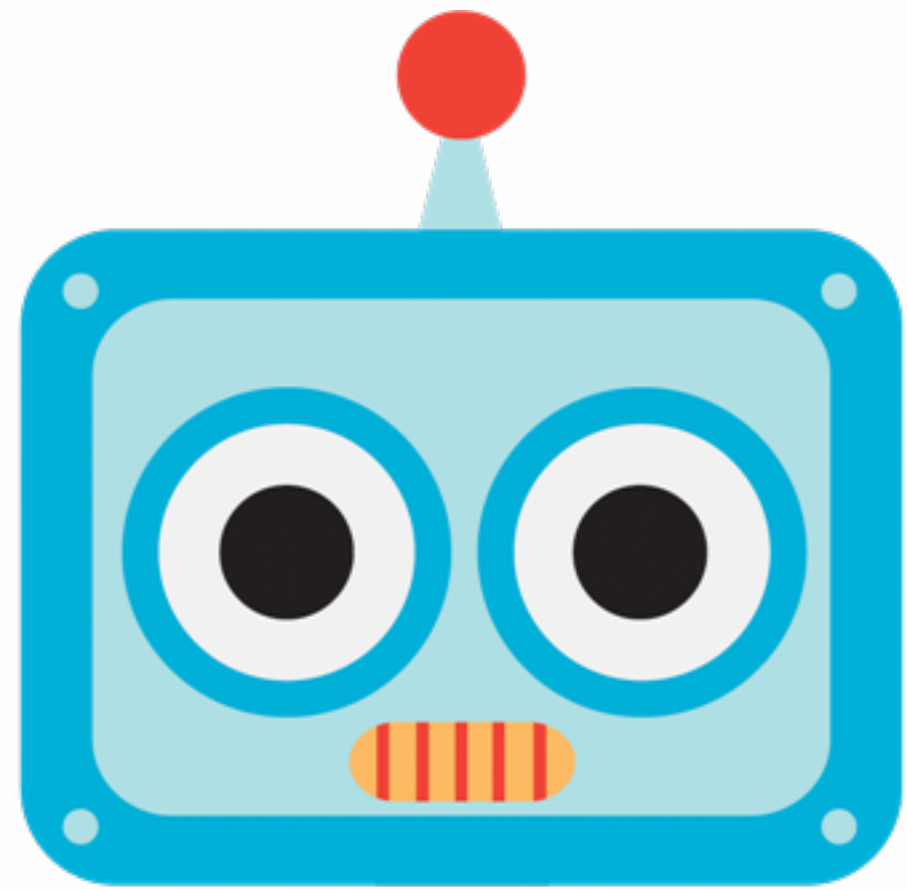
Watch the talk at GitHub Universe from [@jbjonessjr](#):
🎥 [Extending with GitHub: easy integrations with Probot](#)

Listen to the podcast with [@bkeepers](#) & [@hiimbex](#):
🔊 [The Changelog #264: Automating GitHub with Probot](#)

Watch the talk at Node Summit from [@hiimbex](#):
🎥 [Automating your Workflow with Probot](#)



probot.github.io/community



probot.github.io

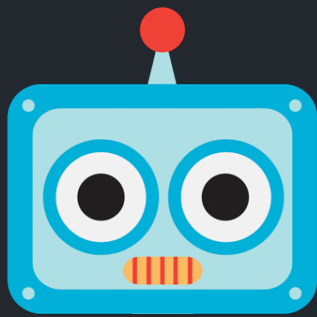


We're hiring!



<https://github.com/about/careers>





probot.github.io



developer@github.com



@hiimbex



@hiimbexo



Bex Warner

GitHub

