GitHub and Git

An Overview

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What is version control?

- A system that records changes to a file so that you can recall specific versions later.
- Source code versions are controlled in the industry.
- Helps revert a file to a previous change, even an entire project.
- Helps compare changes to the file.
- See who has made changes to the file, who introduced an issue in the code and so on.
- Helps recover projects or files to a stable state with very little overhead.
- Git, Mercurial, SVN are a few version control tools that are commonly used.

How it works?

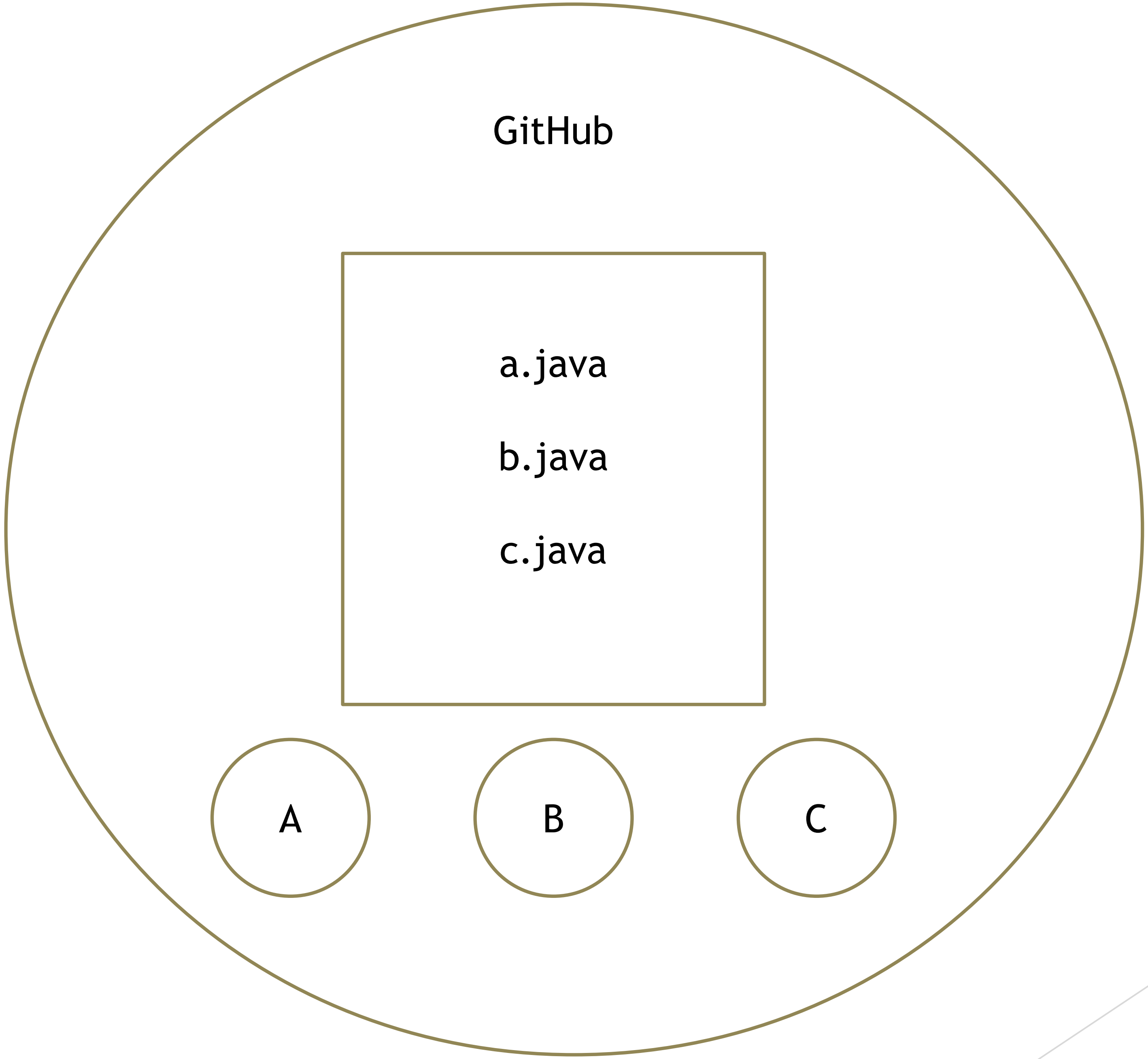
- It helps pull a repository into your local machine on which you can work.
- This just means that you have a local copy of the entire repository or a file that you have chosen to be on your machine.
- Any changes that you make will be local to your machine till you publish it.
- Once it is published the changes that you have made will be present in the centralized repository.
- Anyone who has access to the repository will be able to view your changes.
- In case you have made some mistakes you can easily revert the changes you made and move it back to the previous version before your changes.

Why is it needed?

- Many engineers will be working on a single project. Version controls maintain the access to files for different users.
- It can also limit control of a file to a single user at a time so that multiple users do not try to modify it at the same time.
- Version Control helps maintains multiple versions of files.
- It also maintains details of the author and the timestamp of files.
- This helps identifying stable versions in the project.
- Also to revert to a previous version with very little overhead.

Git and GitHub

- Git is the version control tool that we will be using for our coursework.
- We will be using GitHub to make our repositories.
- So every student must have a GitHub account. Those who do not have can signup for a new account at GitHub at www.github.com



GitHub

a.java

b.java

c.java

A

B

C

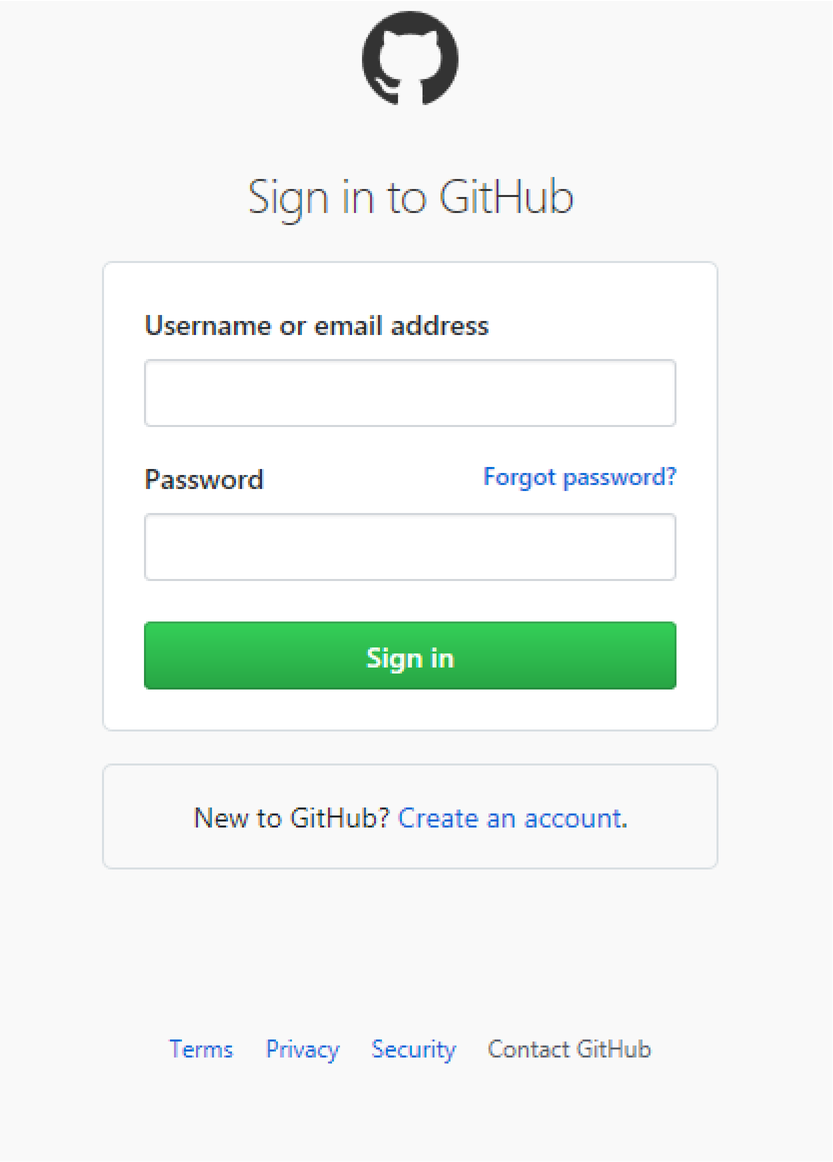
Setting up GIT on Windows

- Download and install the latest version of GitHub Desktop. This will automatically install Git *and* keep it up-to-date for you.
- Once your installation is done you just have to login with your username and password. It will ask you for email id which you can enter. Or alternatively you can do the following steps.
- On your computer, open the **Git Shell** application.
- Tell Git your *name* so your commits will be properly labeled. Type everything after the $ here.
  - $ git config --global user.name “Your Name”
- Tell Git the *email address* that will be associated with your Git commits. This should be the email address that you have registered your GitHub account with. To keep your email address hidden, see "Keeping your email address private".
  - $ git config --global user.email “Your Email Address”

Connecting over HTTPS

- The https:// clone URLs are available on all repositories.
- You can use SSH as well but HTTPS is the preferred method.
- When you are using the git commands like git clone, git pull etc you will be asked for your GitHub username and password.
- You can use a credential helper so Git will remember your GitHub username and password.

Login



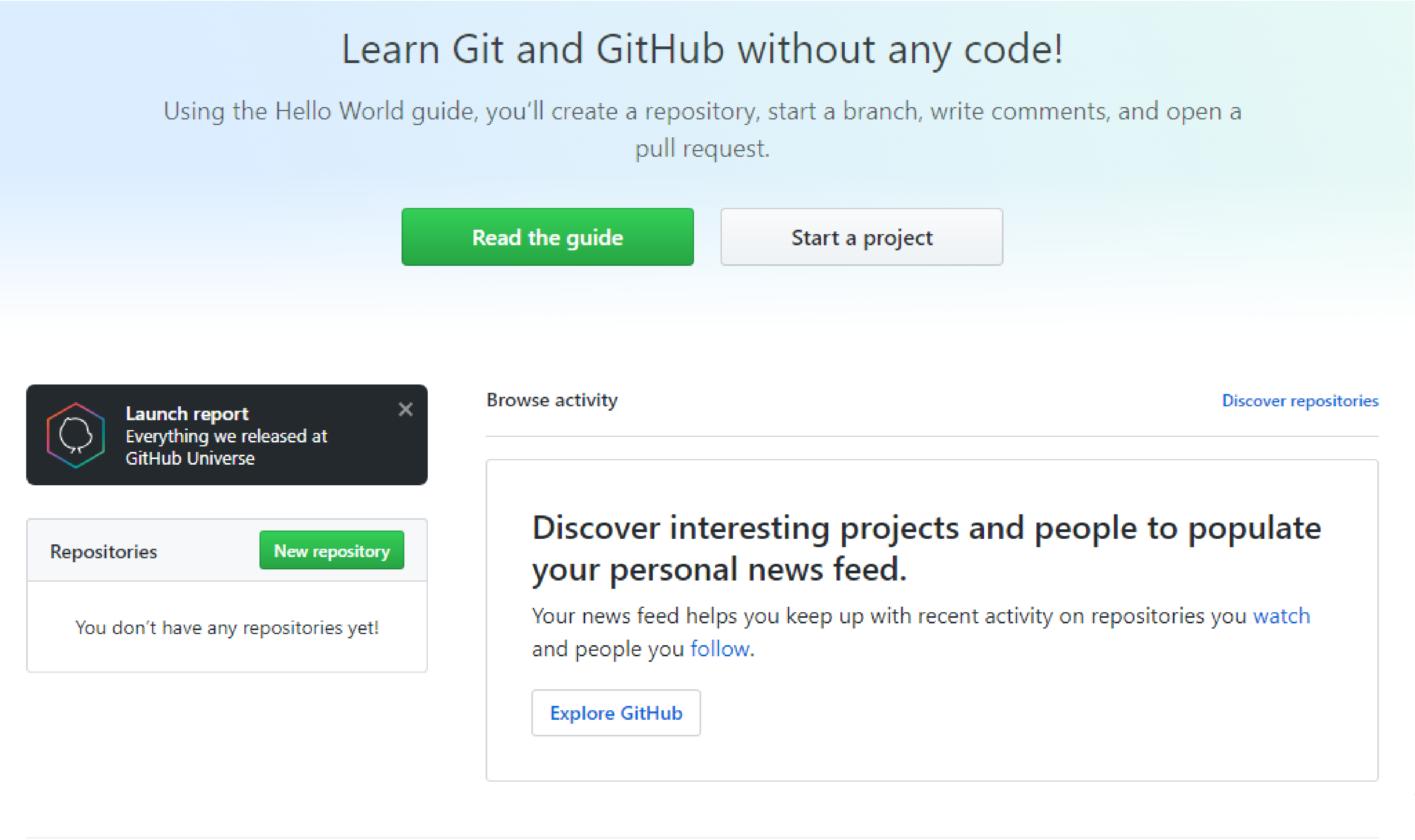
Sign in to GitHub

Username or email address

Password

New to GitHub? Create an account.

Main Screen



Learn Git and GitHub without any code!

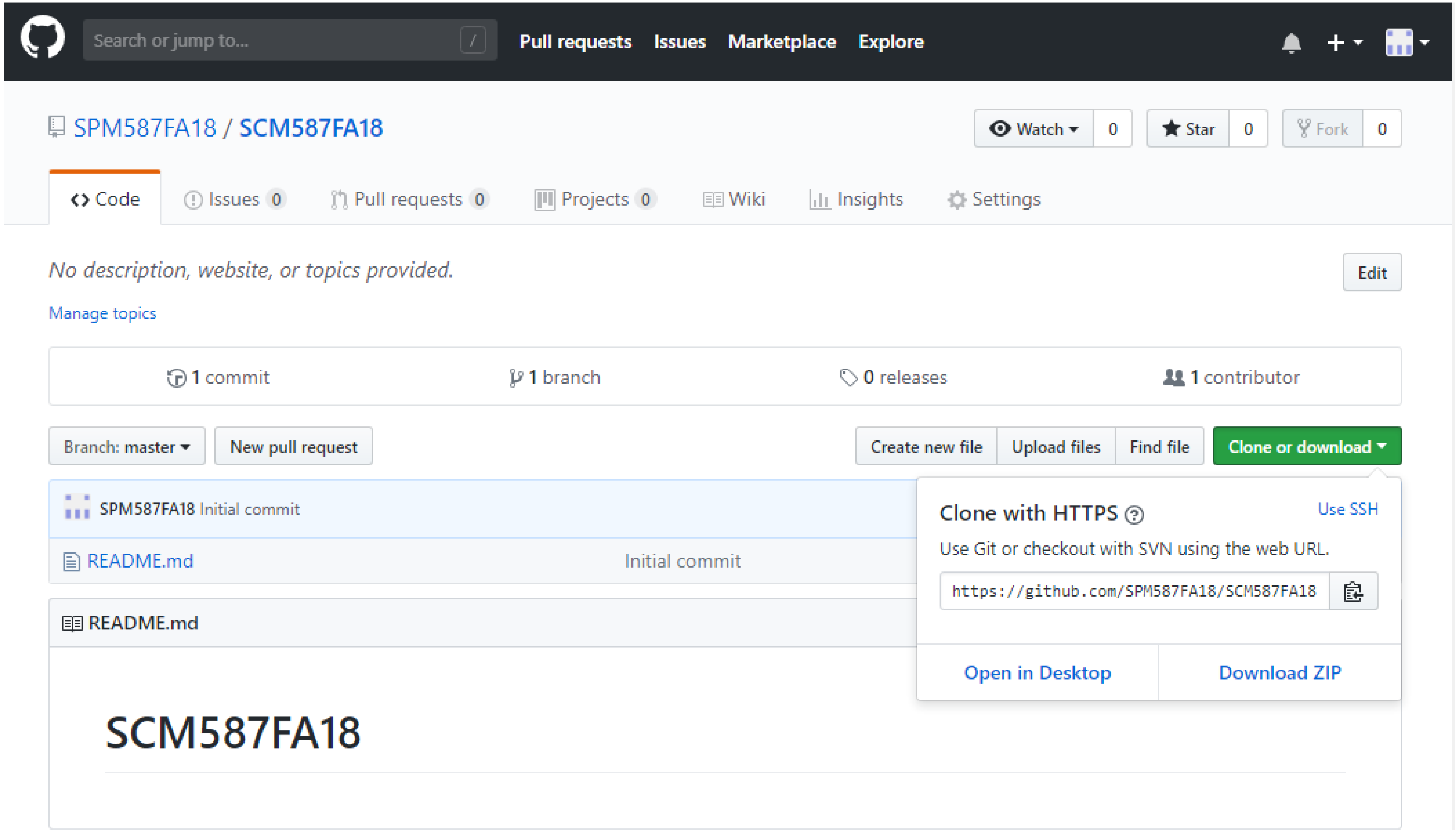
Using the Hello World guide, you'll create a repository, start a branch, write comments, and open a pull request.

You don't have any repositories yet!

Discover interesting projects and people to populate your personal news feed.

Your news feed helps you keep up with recent activity on repositories you watch and people you follow.

Selecting a Repository to Clone



No description, website, or topics provided.

SPM587FA18 Initial commit

README.md Initial commit

Clone with HTTPS

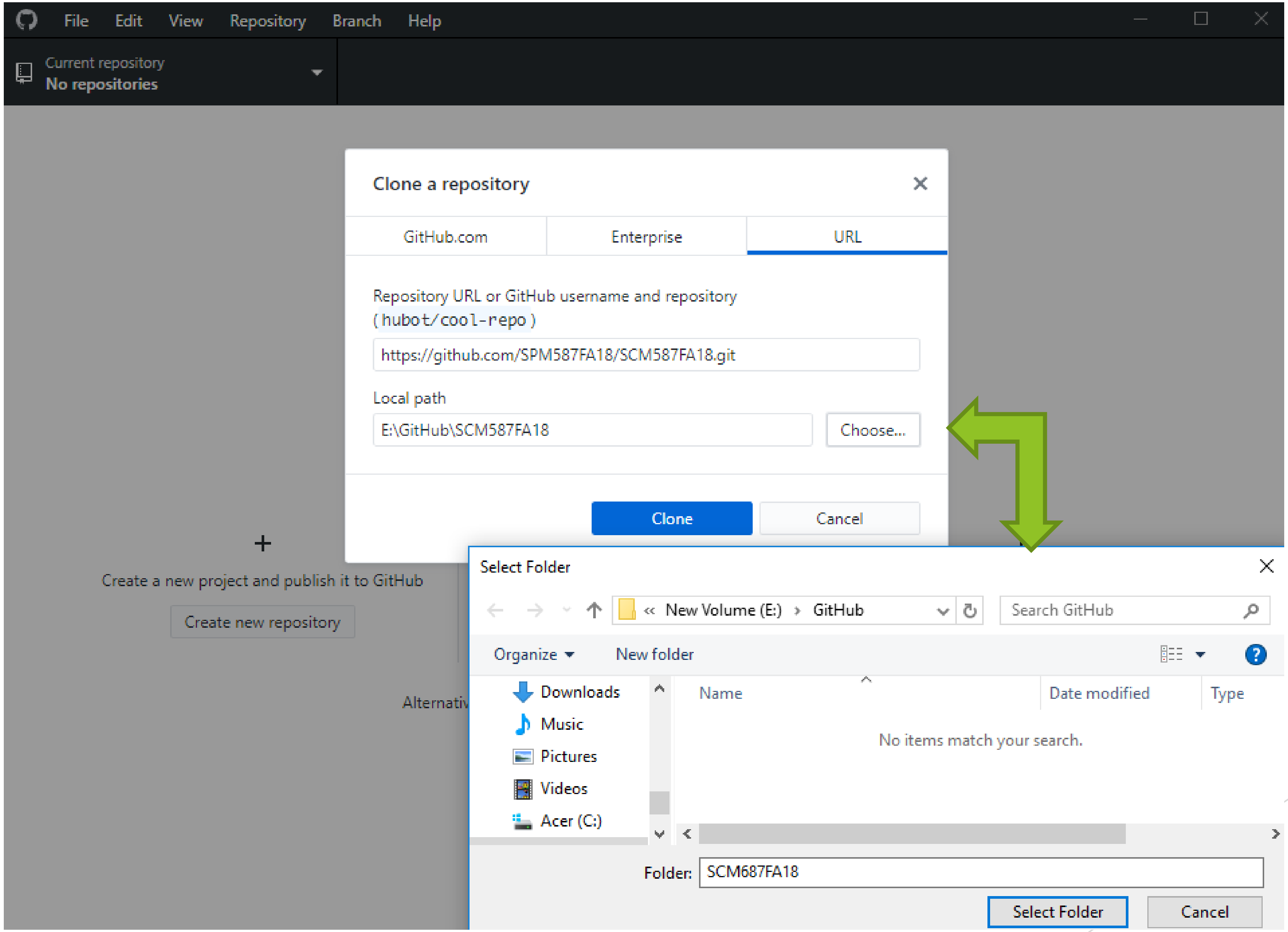
Use Git or checkout with SVN using the web URL.

```
https://github.com/SPM587FA18/SCM587FA18
```

README.md

SCM587FA18

Selecting a Repository to Clone



Current repository
No repositories

Clone a repository

Repository URL or GitHub username and repository (hubot/cool-repo)

https://github.com/SPM587FA18/SCM587FA18.git

Local path

E:\GitHub\SCM587FA18

Create a new project and publish it to GitHub

Alternativ

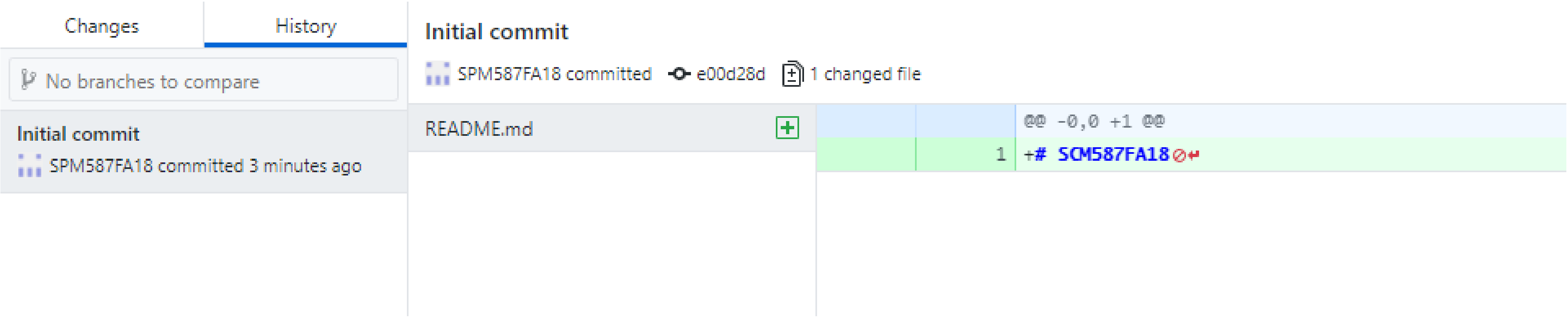
Select Folder

« New Volume (E:) › GitHub

No items match your search.

Folder: SCM687FA18

Viewing a Cloned Repository



Initial commit
SPM587FA18 committed 3 minutes ago

Initial commit
SPM587FA18 committed e00d28d 1 changed file

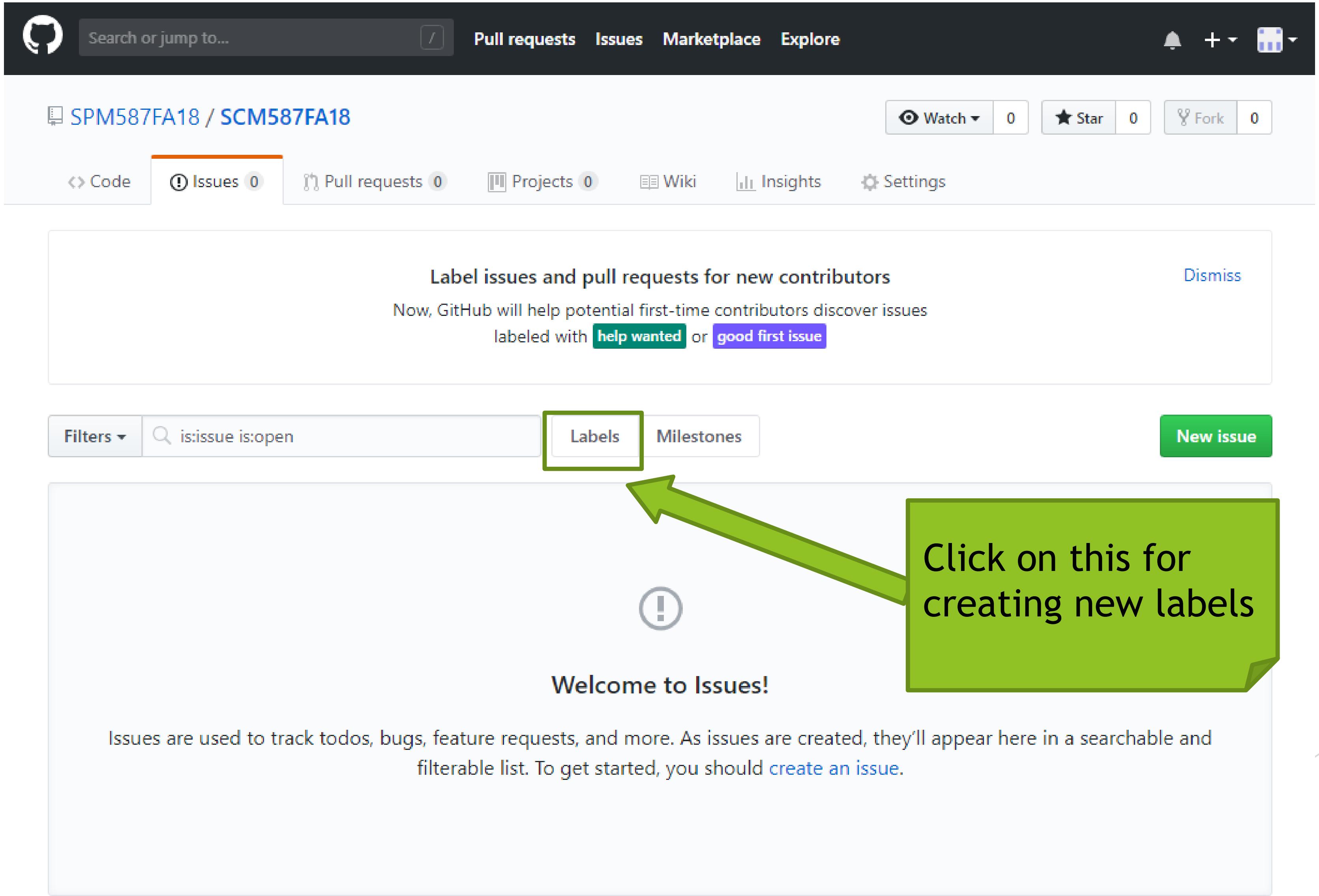
README.md

```
@@ -0,0 +1 @@
+# SCM587FA18
```

Issues and Labels

- Issues option in GitHub is a bug tracking tool for GitHub.
- Let’s say you find some bugs in your code.
- You can raise an issue with labels for each bug that you find.
- Issues can be created with different labels for different phases (Requirement, Design, Coding, Testing, Documentation)
- Labels are a great way to organize different types of issues. Issues can have as many labels as you want, and you can filter by one or many labels at once.
- There are some existing labels (Bug, Enhancement) but you can also create user defined label.
- Once you fix that code and the bug is cleared you will be making a commit to your repo.
- At this time you can close that issue.

Create Labels



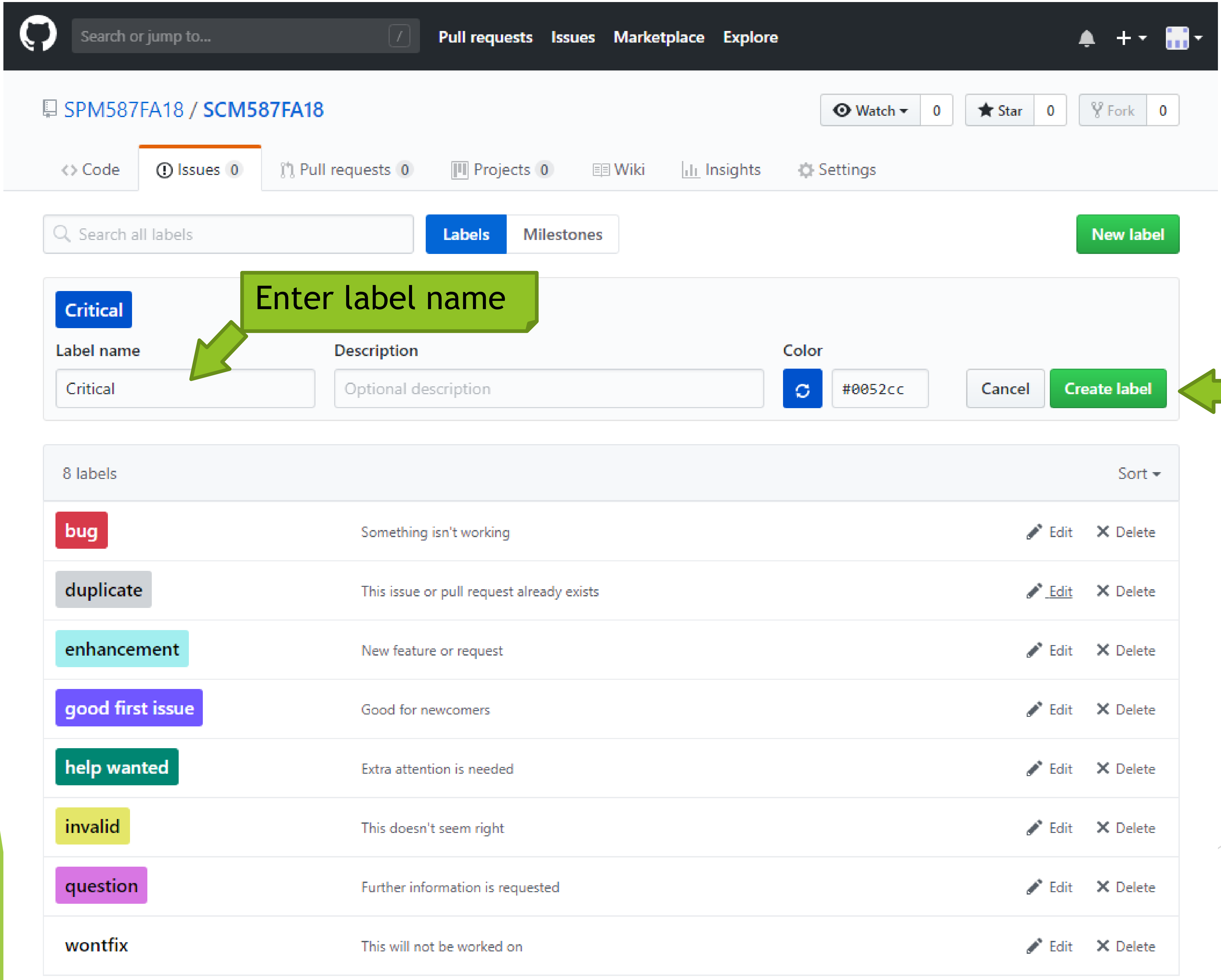
Label issues and pull requests for new contributors

Now, GitHub will help potential first-time contributors discover issues labeled with help wanted or good first issue

Welcome to Issues!

Issues are used to track todos, bugs, feature requests, and more. As issues are created, they'll appear here in a searchable and filterable list. To get started, you should create an issue.

Click on this for creating new labels



Label name: Critical

Description: Optional description

Color: #0052cc

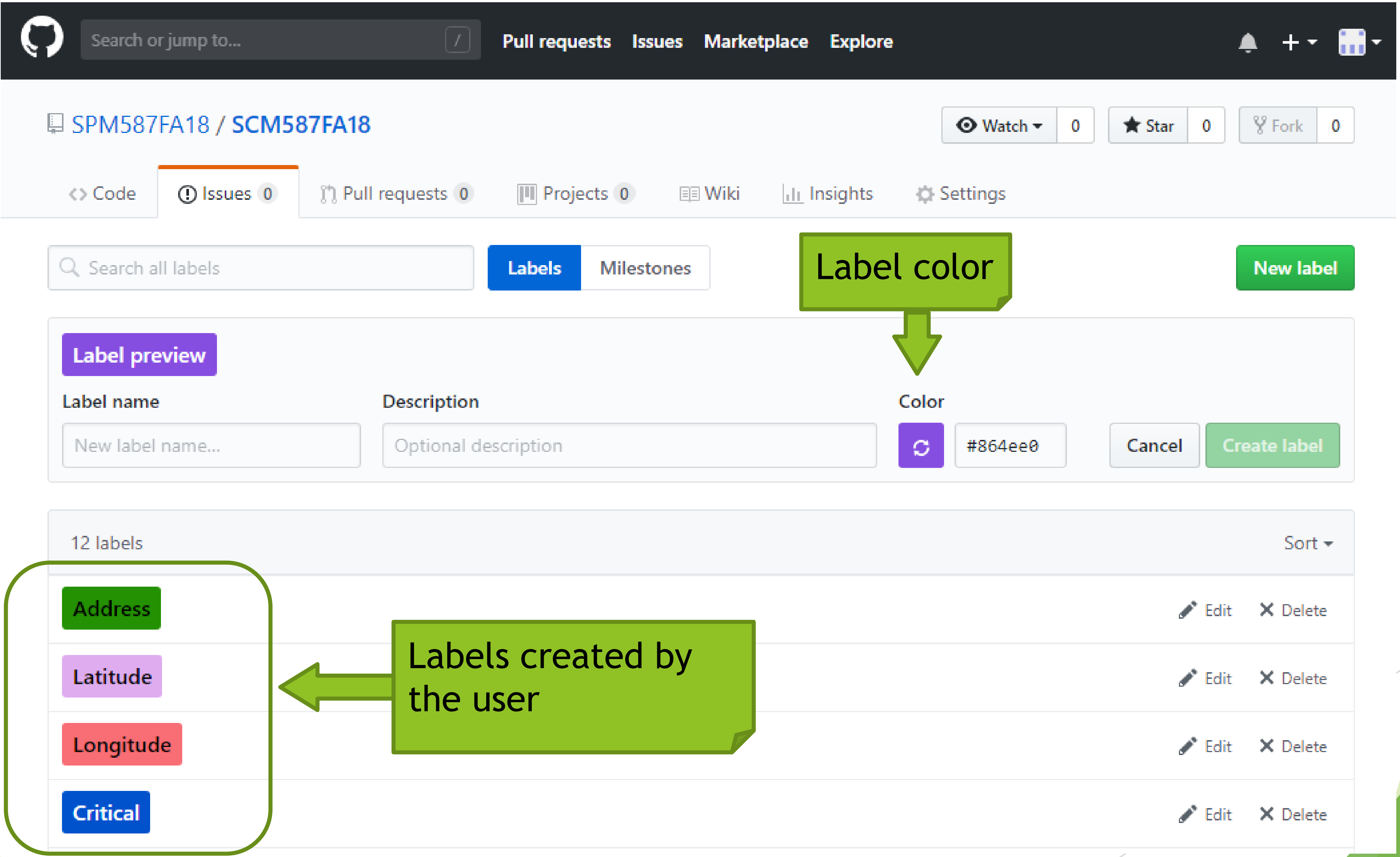
Enter label name

Select create label

8 labels

bug	Something isn't working	Edit ✕ Delete
duplicate	This issue or pull request already exists	Edit ✕ Delete
enhancement	New feature or request	Edit ✕ Delete
good first issue	Good for newcomers	Edit ✕ Delete
help wanted	Extra attention is needed	Edit ✕ Delete
invalid	This doesn't seem right	Edit ✕ Delete
question	Further information is requested	Edit ✕ Delete
wontfix	This will not be worked on	Edit ✕ Delete

Labels



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Label preview

Label name: New label name...

Description: Optional description

Color: #864ee0

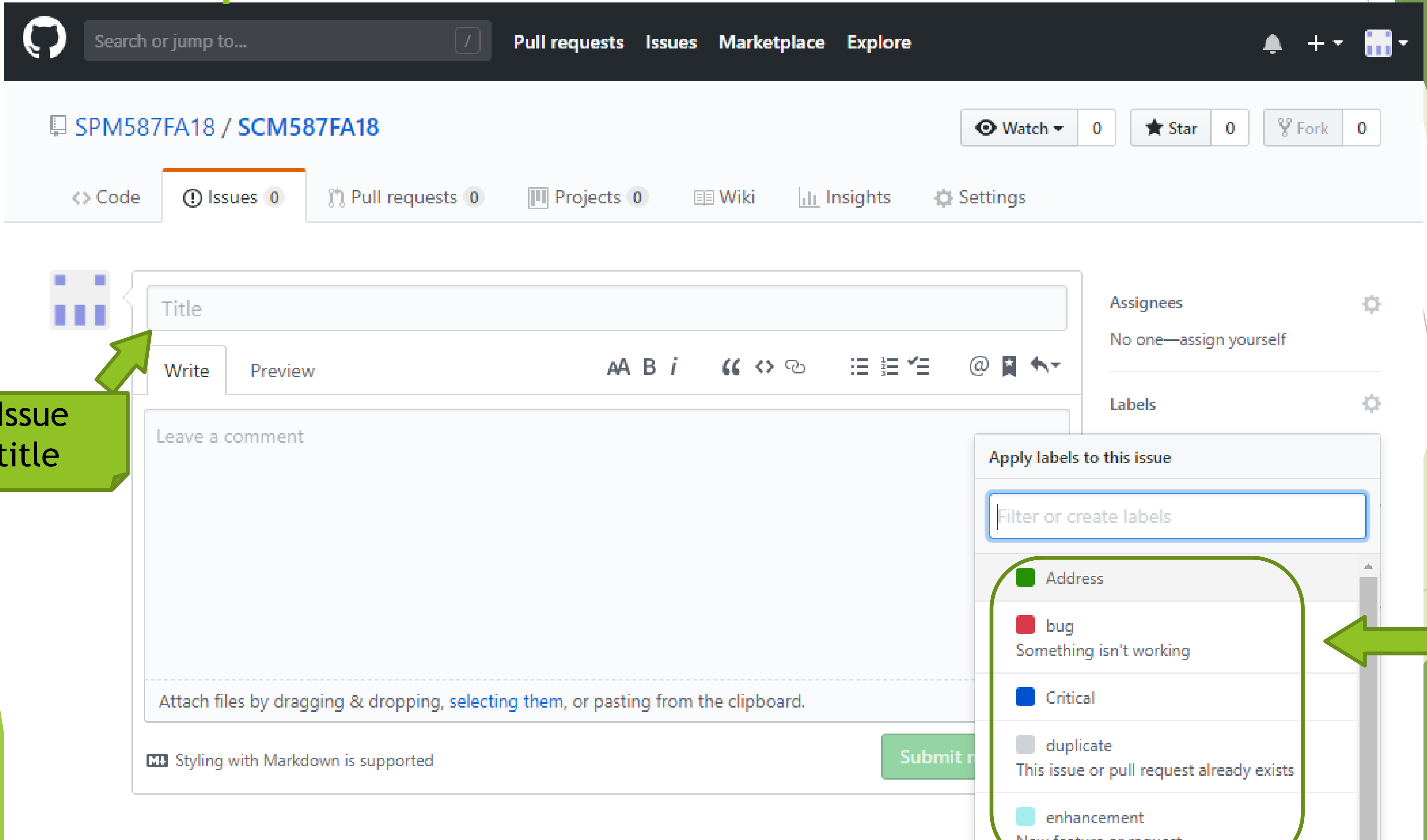
12 labels

- Address
- Latitude
- Longitude
- Critical

Label color

Labels created by the user

Multiple Labels



SPM587FA18 / SCM587FA18

Attach files by dragging & dropping, selecting them, or pasting from the clipboard.

Styling with Markdown is supported

Assignees

No one—assign yourself

Labels

Apply labels to this issue

Filter or create labels

🟩 Address

🟥 bug
Something isn't working

🟦 Critical

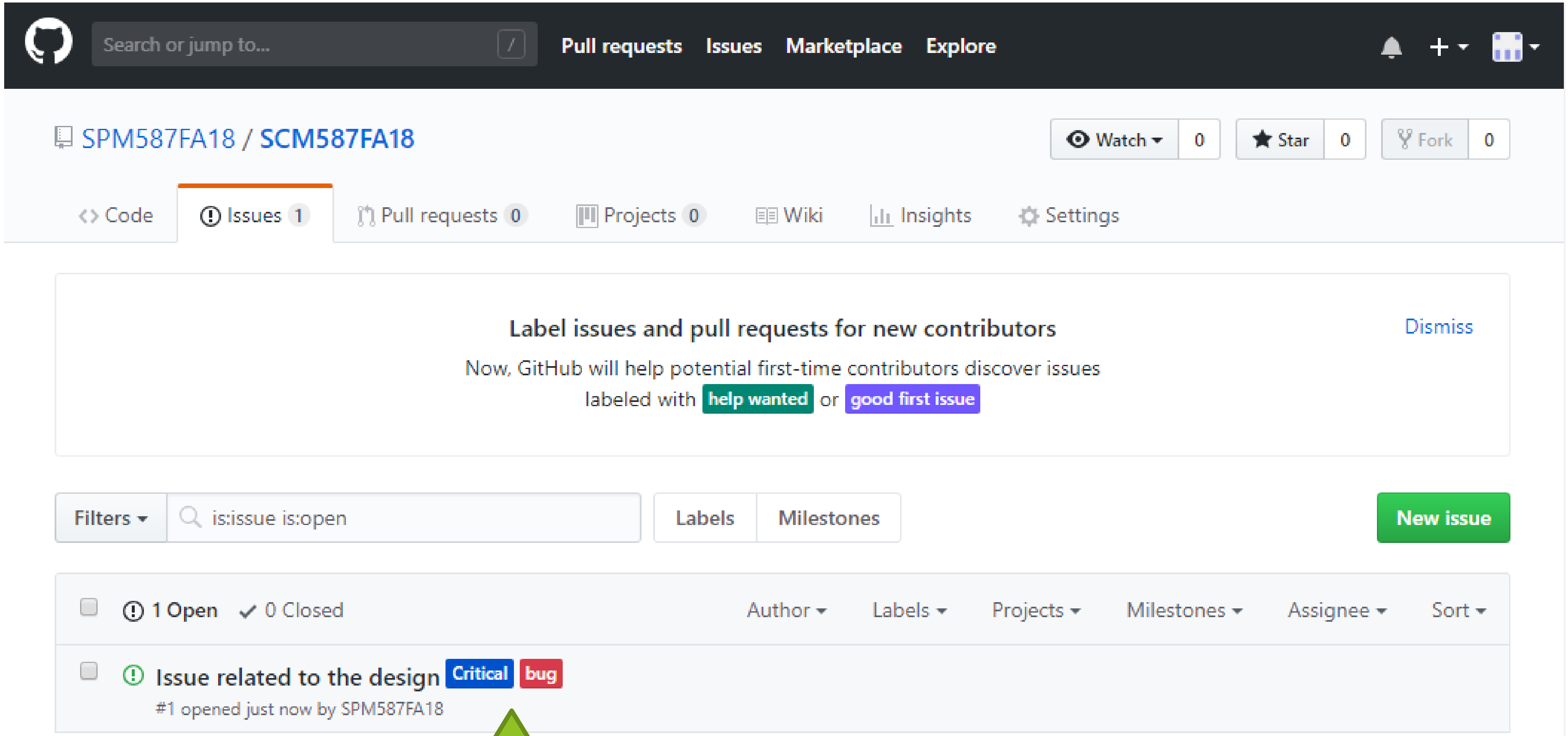
⬜ duplicate
This issue or pull request already exists

🟦 enhancement
New feature or request

Issue title

Multiple labels

Issues with Multiple labels



Search or jump to... /

Pull requests Issues Marketplace Explore

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Watch ▾ 0 | ★ Star 0 | Fork 0

Code | Issues 1 | Pull requests 0 | Projects 0 | Wiki | Insights | Settings

Label issues and pull requests for new contributors

Now, GitHub will help potential first-time contributors discover issues labeled with **help wanted** or **good first issue**

Dismiss

Filters ▾ | is:issue is:open | Labels | Milestones | New issue

□ 1 Open ✓ 0 Closed — Author ▾ Labels ▾ Projects ▾ Milestones ▾ Assignee ▾ Sort ▾

□ Issue related to the design **Critical** **bug**

#1 opened just now by SPM587FA18

Multiple labels

Filter Issues

- You can filter issues and pull requests to find:

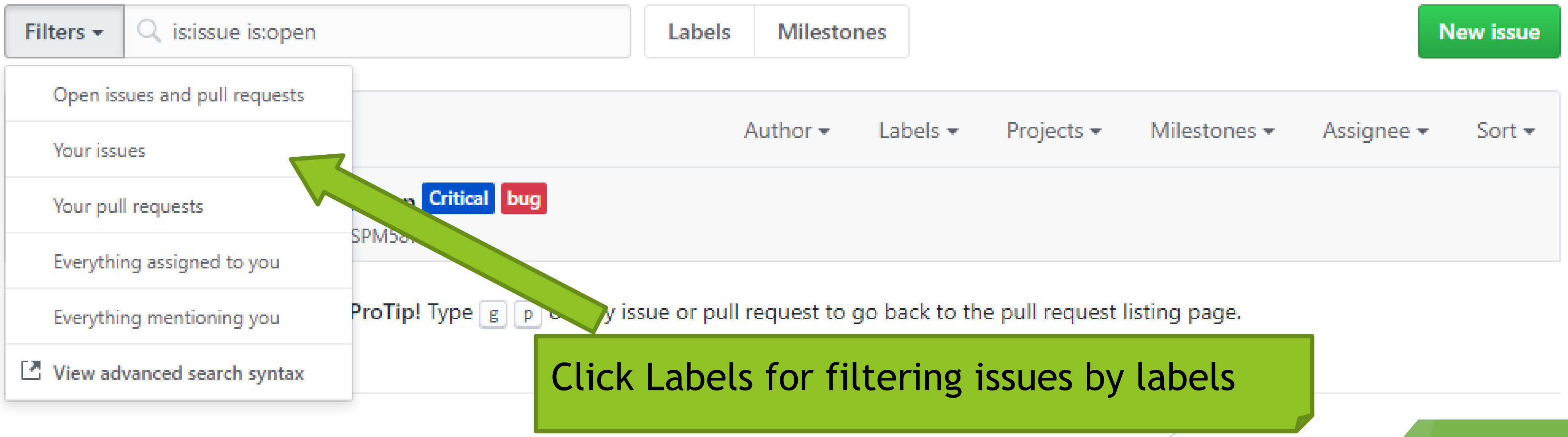
  All open issues and pull requests

  Issues and pull requests that you've created

  Issues and pull requests that are assigned to you

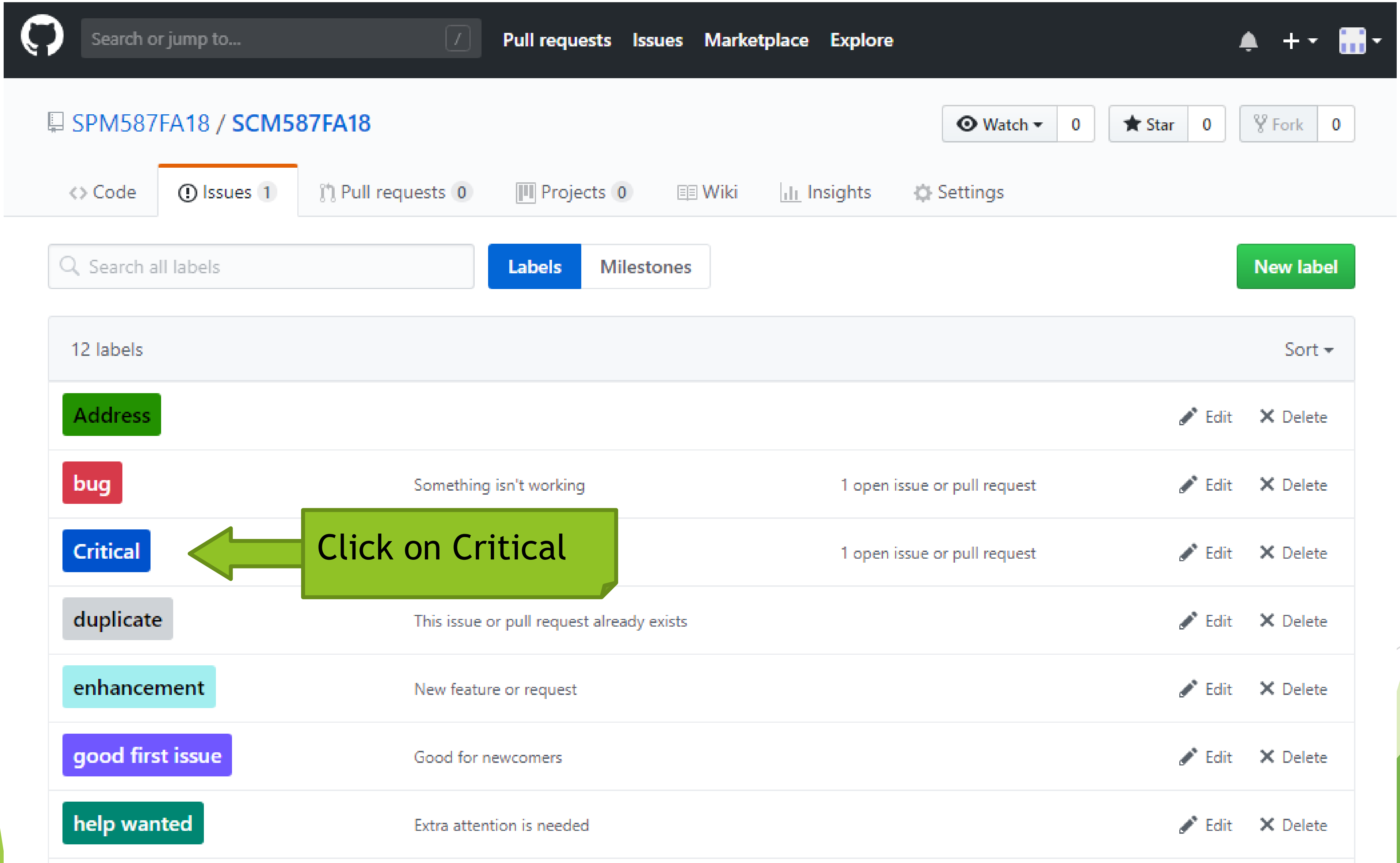
  Issues and pull requests where you're @mentioned

- You can also Filtering issues and pull requests by labels.


Filters ▾
is:issue is:open
Labels
Milestones
New issue
Open issues and pull requests
Your issues
Your pull requests
Everything assigned to you
Everything mentioning you
View advanced search syntax
Author ▾
Labels ▾
Projects ▾
Milestones ▾
Assignee ▾
Sort ▾
Critical
bug
SPM5
ProTip! Type g p o y issue or pull request to go back to the pull request listing page.

Click Labels for filtering issues by labels

Filter Issues



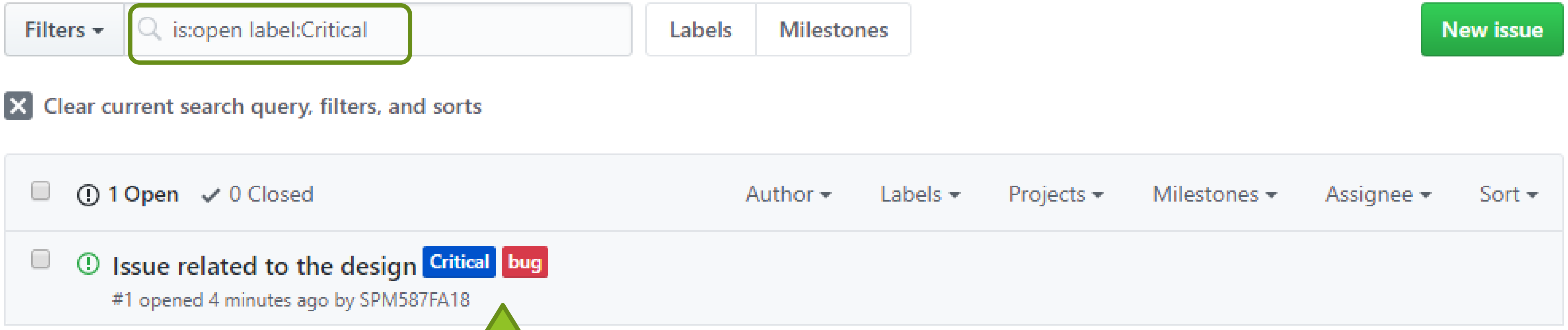
SPM587FA18 / SCM587FA18

12 labels

Address			Edit ✕ Delete
bug	Something isn't working	1 open issue or pull request	Edit ✕ Delete
Critical		1 open issue or pull request	Edit ✕ Delete
duplicate	This issue or pull request already exists		Edit ✕ Delete
enhancement	New feature or request		Edit ✕ Delete
good first issue	Good for newcomers		Edit ✕ Delete
help wanted	Extra attention is needed		Edit ✕ Delete

Click on Critical

Filter issues



is:open label:Critical

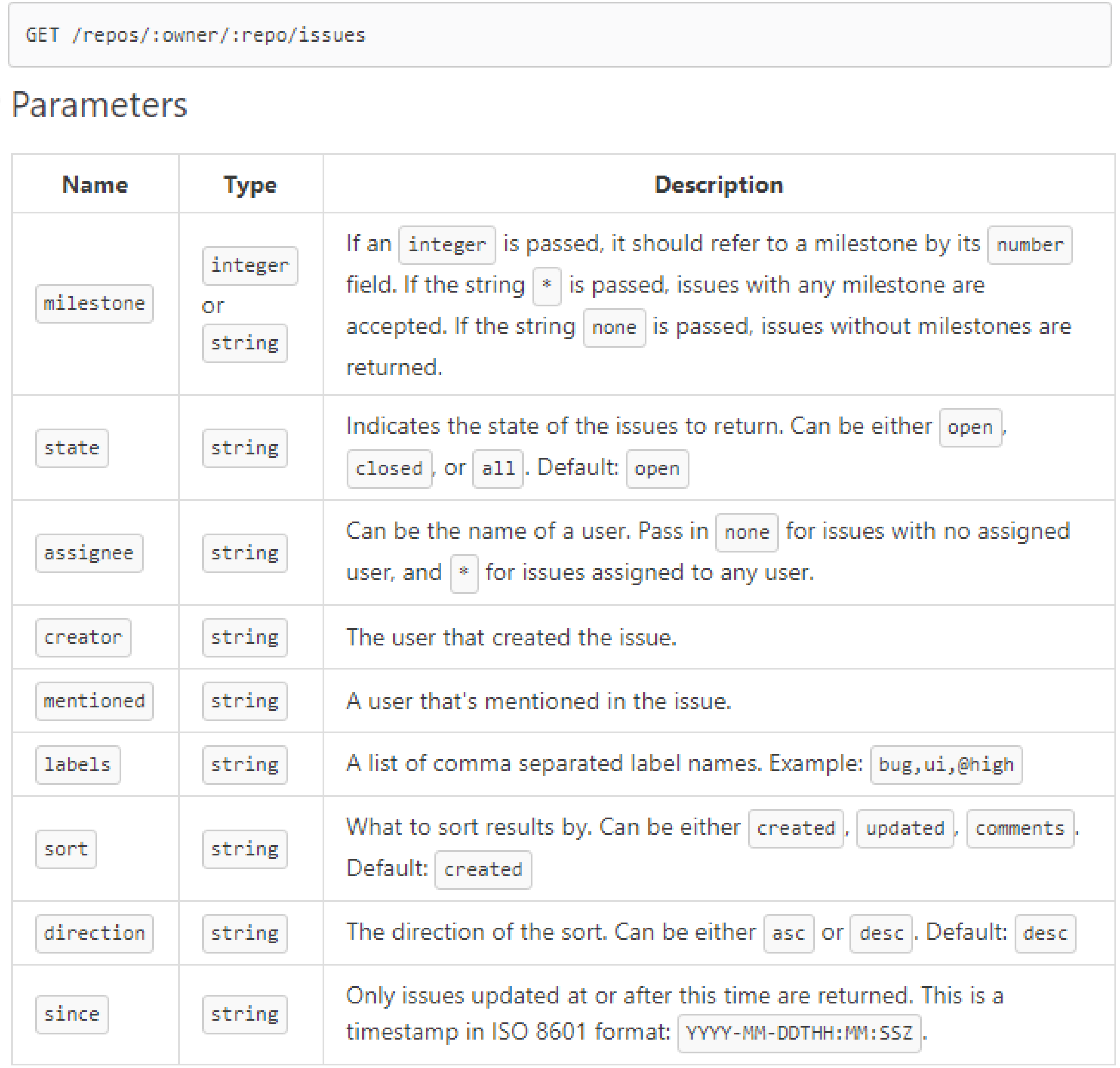
☒ Clear current search query, filters, and sorts

□ 1 Open ✓ 0 Closed

□ Issue related to the design Critical bug
#1 opened 4 minutes ago by SPM587FA18

Issues with Critical labels

List issues for a Repository



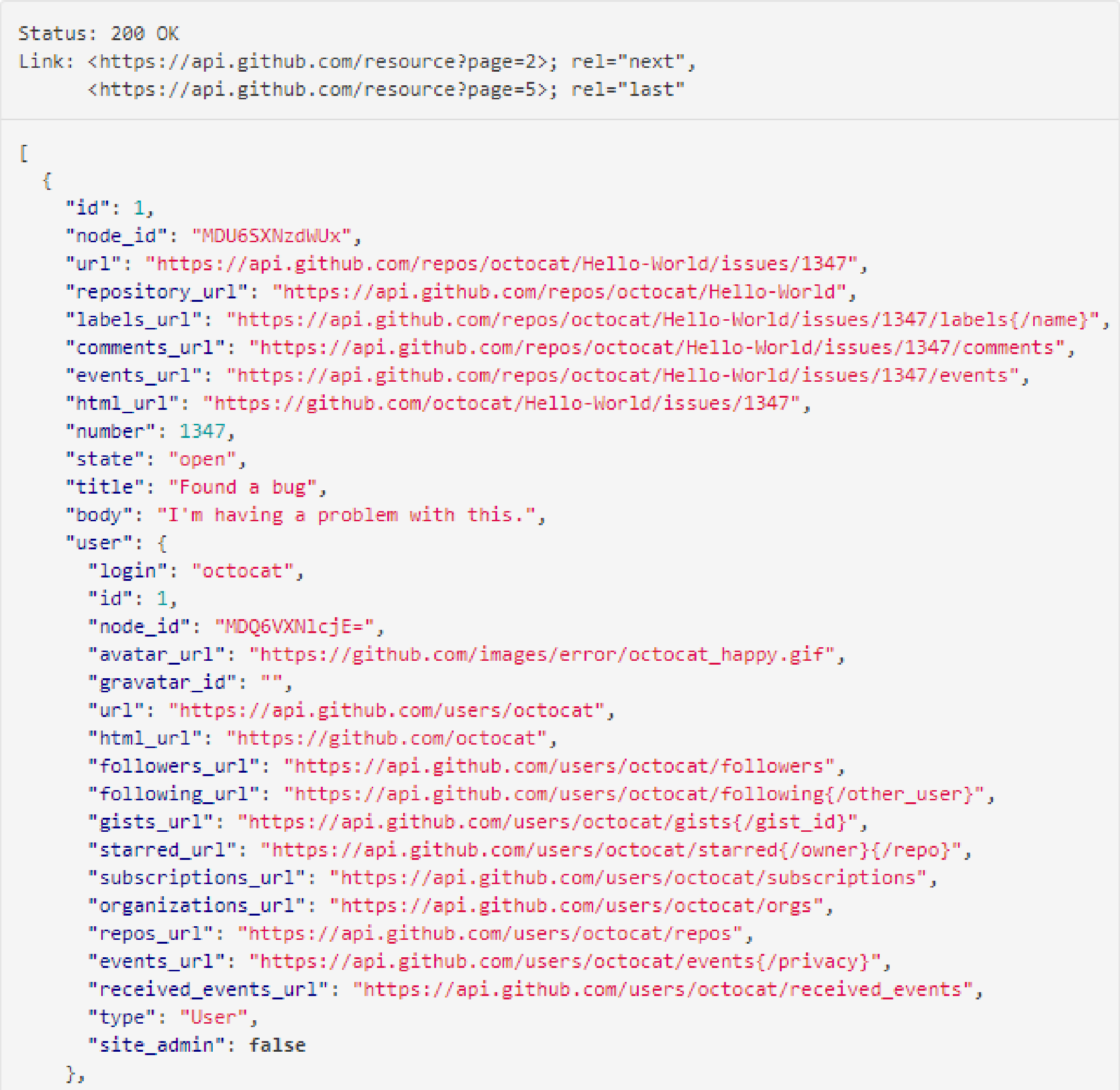
```
GET /repos/:owner/:repo/issues
```

Parameters

Name	Type	Description
`milestone`	`integer` or `string`	If an `integer` is passed, it should refer to a milestone by its `number` field. If the string `*` is passed, issues with any milestone are accepted. If the string `none` is passed, issues without milestones are returned.
`state`	`string`	Indicates the state of the issues to return. Can be either `open`, `closed`, or `all`. Default: `open`
`assignee`	`string`	Can be the name of a user. Pass in `none` for issues with no assigned user, and `*` for issues assigned to any user.
`creator`	`string`	The user that created the issue.
`mentioned`	`string`	A user that's mentioned in the issue.
`labels`	`string`	A list of comma separated label names. Example: `bug,ui,@high`
`sort`	`string`	What to sort results by. Can be either `created`, `updated`, `comments`. Default: `created`
`direction`	`string`	The direction of the sort. Can be either `asc` or `desc`. Default: `desc`
`since`	`string`	Only issues updated at or after this time are returned. This is a timestamp in ISO 8601 format: `YYYY-MM-DDTHH:MM:SSZ`.

List issues for a Repository

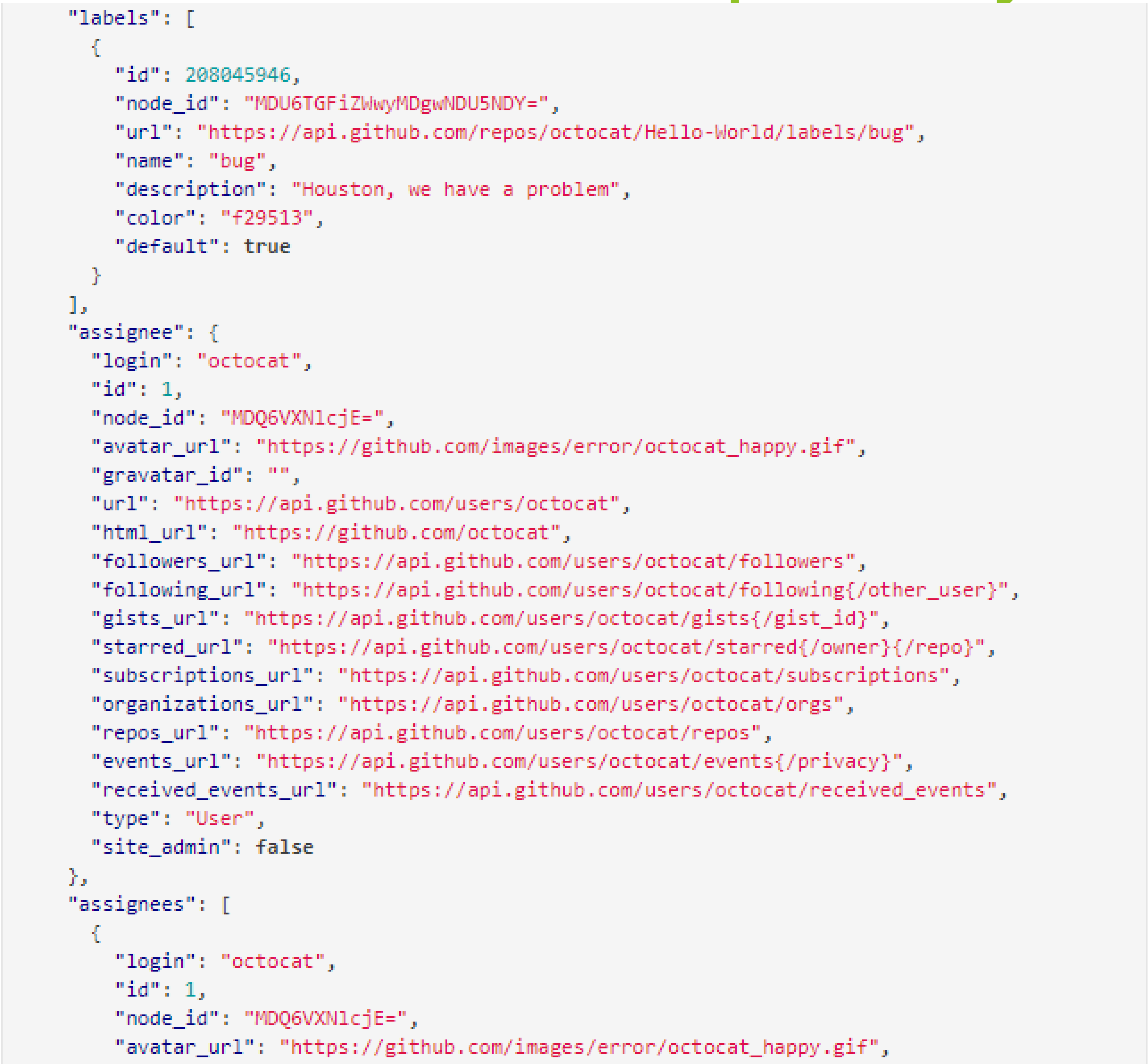
Response



```
Status: 200 OK
Link: <https://api.github.com/resource?page=2>; rel="next",
      <https://api.github.com/resource?page=5>; rel="last"
```

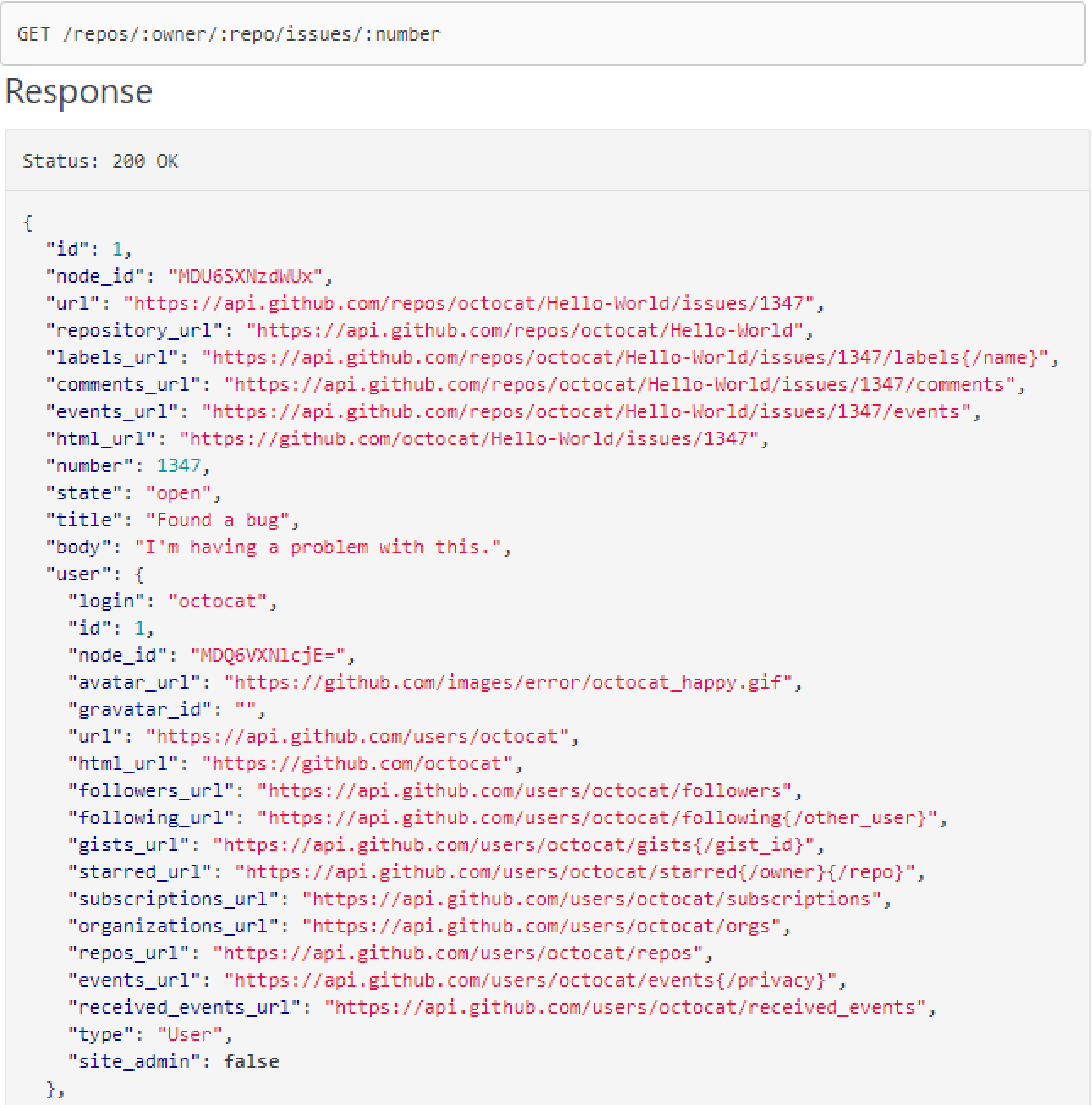
```
[
  {
    "id": 1,
    "node_id": "MDU6SXNzdWUx",
    "url": "https://api.github.com/repos/octocat/Hello-World/issues/1347",
    "repository_url": "https://api.github.com/repos/octocat/Hello-World",
    "labels_url": "https://api.github.com/repos/octocat/Hello-World/issues/1347/labels{/name}",
    "comments_url": "https://api.github.com/repos/octocat/Hello-World/issues/1347/comments",
    "events_url": "https://api.github.com/repos/octocat/Hello-World/issues/1347/events",
    "html_url": "https://github.com/octocat/Hello-World/issues/1347",
    "number": 1347,
    "state": "open",
    "title": "Found a bug",
    "body": "I'm having a problem with this.",
    "user": {
      "login": "octocat",
      "id": 1,
      "node_id": "MDQ6VXNlcjE=",
      "avatar_url": "https://github.com/images/error/octocat_happy.gif",
      "gravatar_id": "",
      "url": "https://api.github.com/users/octocat",
      "html_url": "https://github.com/octocat",
      "followers_url": "https://api.github.com/users/octocat/followers",
      "following_url": "https://api.github.com/users/octocat/following{/other_user}",
      "gists_url": "https://api.github.com/users/octocat/gists{/gist_id}",
      "starred_url": "https://api.github.com/users/octocat/starred{/owner}{/repo}",
      "subscriptions_url": "https://api.github.com/users/octocat/subscriptions",
      "organizations_url": "https://api.github.com/users/octocat/orgs",
      "repos_url": "https://api.github.com/users/octocat/repos",
      "events_url": "https://api.github.com/users/octocat/events{/privacy}",
      "received_events_url": "https://api.github.com/users/octocat/received_events",
      "type": "User",
      "site_admin": false
    },
```

List issues for a Repository



```
    "labels": [
      {
        "id": 208045946,
        "node_id": "MDU6TGFiZWwyMDgwNDU5NDY=",
        "url": "https://api.github.com/repos/octocat/Hello-World/labels/bug",
        "name": "bug",
        "description": "Houston, we have a problem",
        "color": "f29513",
        "default": true
      }
    ],
    "assignee": {
      "login": "octocat",
      "id": 1,
      "node_id": "MDQ6VXNlcjE=",
      "avatar_url": "https://github.com/images/error/octocat_happy.gif",
      "gravatar_id": "",
      "url": "https://api.github.com/users/octocat",
      "html_url": "https://github.com/octocat",
      "followers_url": "https://api.github.com/users/octocat/followers",
      "following_url": "https://api.github.com/users/octocat/following{/other_user}",
      "gists_url": "https://api.github.com/users/octocat/gists{/gist_id}",
      "starred_url": "https://api.github.com/users/octocat/starred{/owner}{/repo}",
      "subscriptions_url": "https://api.github.com/users/octocat/subscriptions",
      "organizations_url": "https://api.github.com/users/octocat/orgs",
      "repos_url": "https://api.github.com/users/octocat/repos",
      "events_url": "https://api.github.com/users/octocat/events{/privacy}",
      "received_events_url": "https://api.github.com/users/octocat/received_events",
      "type": "User",
      "site_admin": false
    },
    "assignees": [
      {
        "login": "octocat",
        "id": 1,
        "node_id": "MDQ6VXNlcjE=",
        "avatar_url": "https://github.com/images/error/octocat_happy.gif",
```

Get a Single issue



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

Response

```
Status: 200 OK
```

```
{
  "id": 1,
  "node_id": "MDU6SXNzdWUx",
  "url": "https://api.github.com/repos/octocat/Hello-World/issues/1347",
  "repository_url": "https://api.github.com/repos/octocat/Hello-World",
  "labels_url": "https://api.github.com/repos/octocat/Hello-World/issues/1347/labels{/name}",
  "comments_url": "https://api.github.com/repos/octocat/Hello-World/issues/1347/comments",
  "events_url": "https://api.github.com/repos/octocat/Hello-World/issues/1347/events",
  "html_url": "https://github.com/octocat/Hello-World/issues/1347",
  "number": 1347,
  "state": "open",
  "title": "Found a bug",
  "body": "I'm having a problem with this.",
  "user": {
    "login": "octocat",
    "id": 1,
    "node_id": "MDQ6VXNlcjE=",
    "avatar_url": "https://github.com/images/error/octocat_happy.gif",
    "gravatar_id": "",
    "url": "https://api.github.com/users/octocat",
    "html_url": "https://github.com/octocat",
    "followers_url": "https://api.github.com/users/octocat/followers",
    "following_url": "https://api.github.com/users/octocat/following{/other_user}",
    "gists_url": "https://api.github.com/users/octocat/gists{/gist_id}",
    "starred_url": "https://api.github.com/users/octocat/starred{/owner}{/repo}",
    "subscriptions_url": "https://api.github.com/users/octocat/subscriptions",
    "organizations_url": "https://api.github.com/users/octocat/orgs",
    "repos_url": "https://api.github.com/users/octocat/repos",
    "events_url": "https://api.github.com/users/octocat/events{/privacy}",
    "received_events_url": "https://api.github.com/users/octocat/received_events",
    "type": "User",
    "site_admin": false
  },
```

To Do

- Sign Up on GitHub and create a new ID in the following format.
- Assume the name of the user is John Doe and his A-number is A12345678.
  - His ID would be JFA18SCM78D.
  - Here the first J is the first letter of his first name John.
  - The last D is the first letter of his last name Doe.
  - And 78 is the last two numbers of his A-number.
  - The term FA18SCM will be the same for everyone.
- Download and Install Git for Windows.
  - https://desktop.github.com/

Questions?