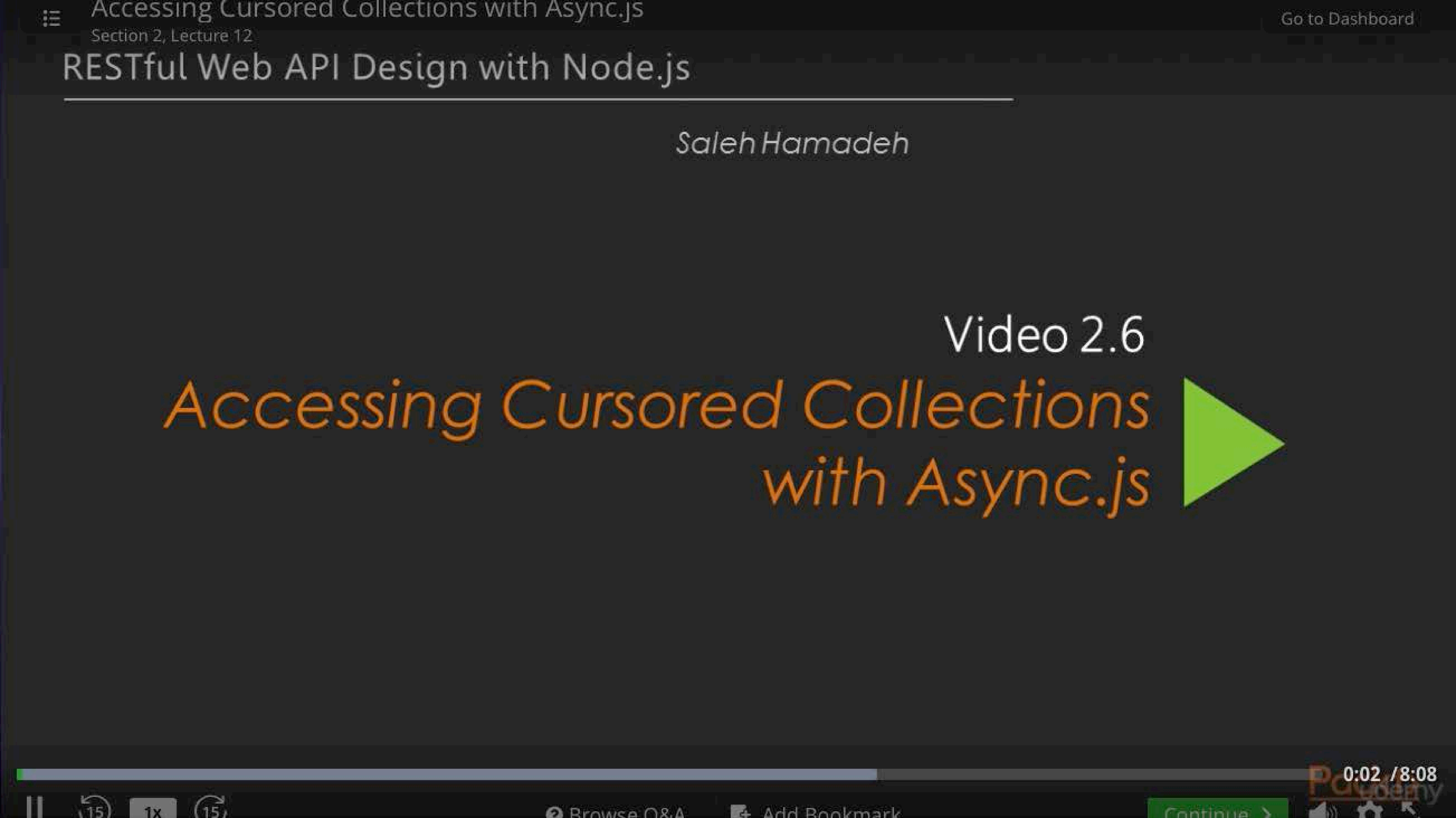


RESTful Web API Design with Node.js

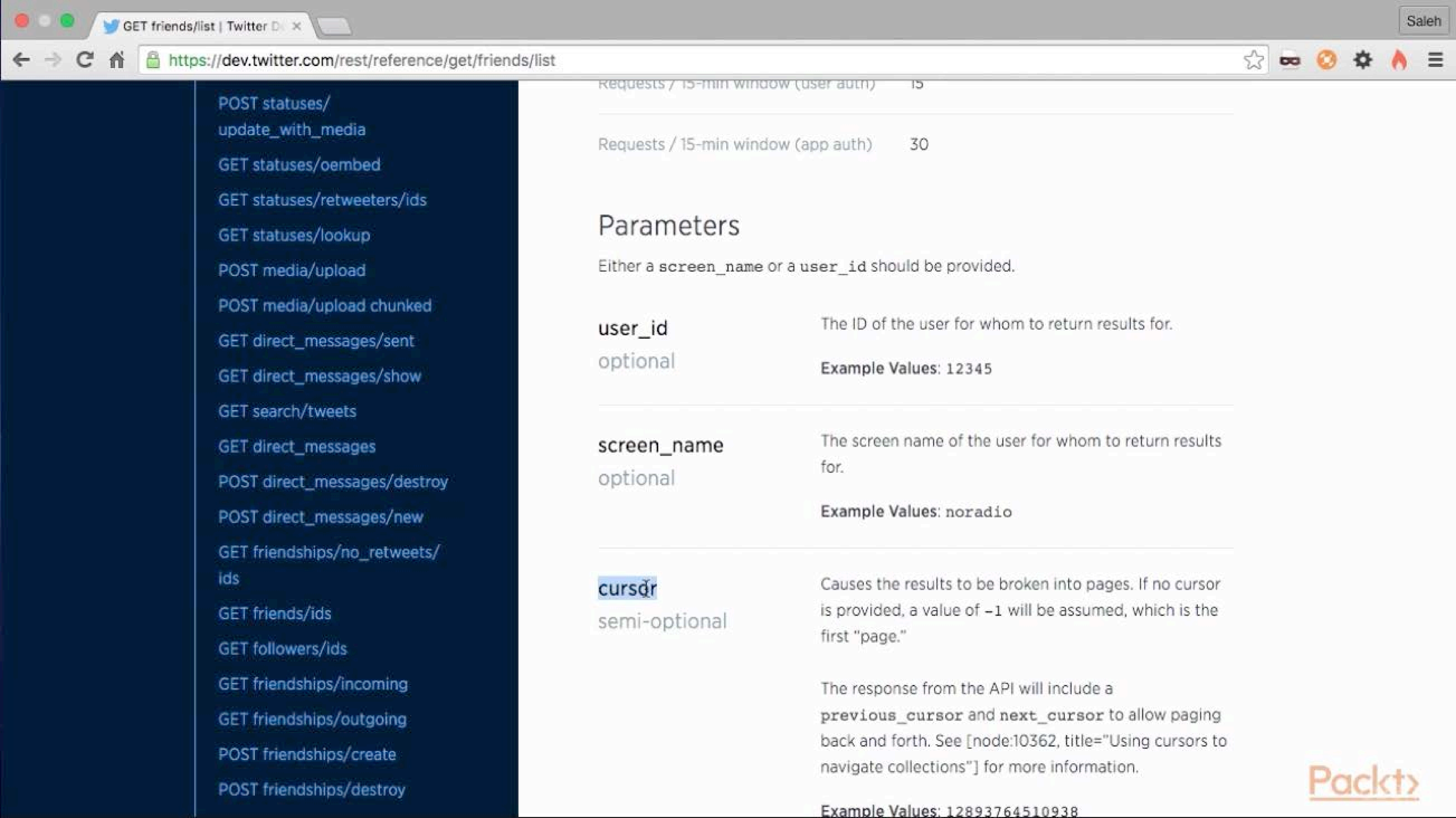
Saleh Hamadeh

Video 2.6

Accessing Cursored Collections with Async.js

In this Video, we are going to take a look at…

- Twitter's /ids and /lookup endpoints
- Designing an asynchronous request handler
- Using async.js to combine responses

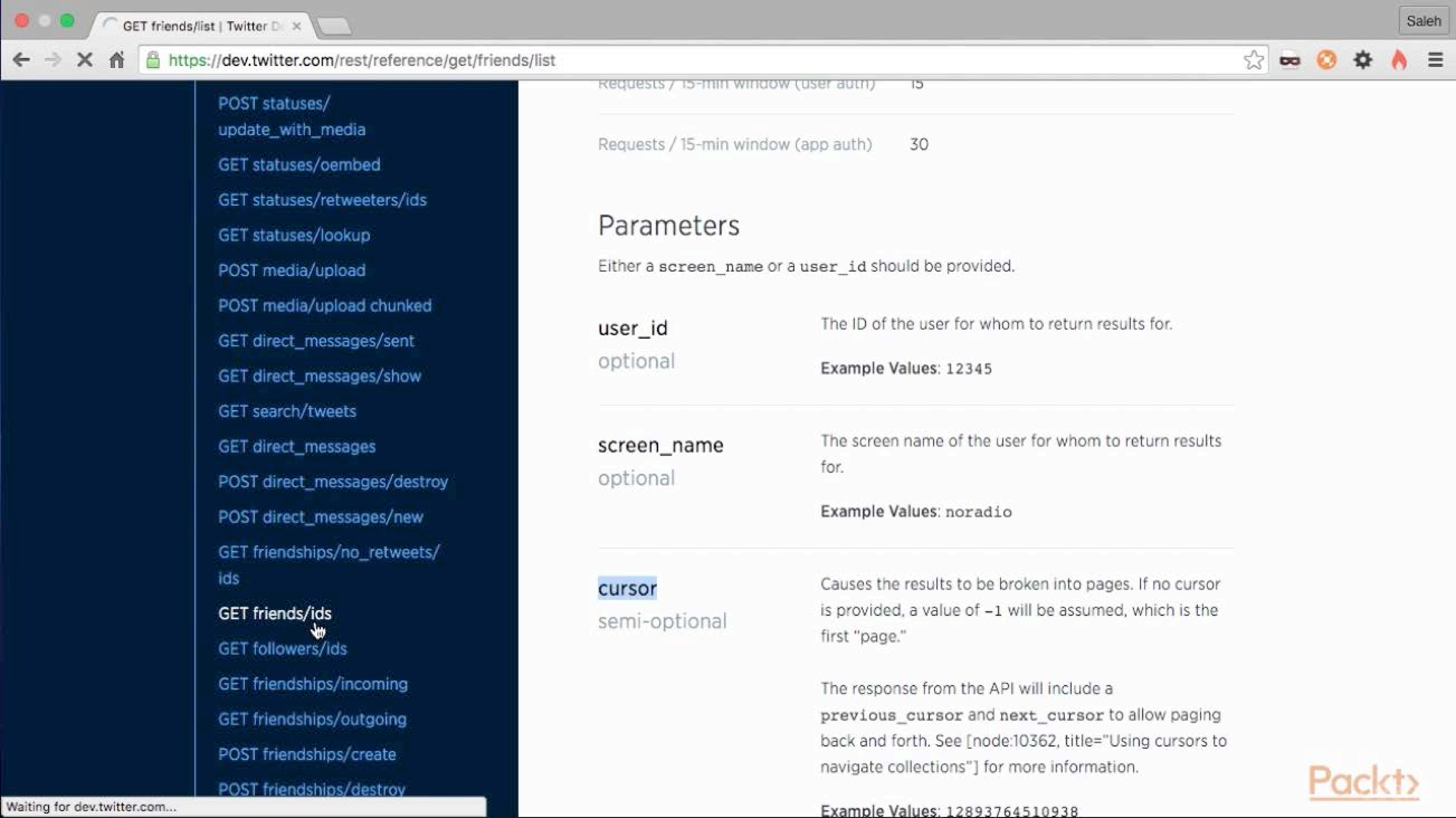

GET friends/list | Twitter D
https://dev.twitter.com/rest/reference/get/friends/list
Saleh

Requests / 15-min window (user auth)	15
Requests / 15-min window (app auth)	30

Parameters

Either a `screen_name` or a `user_id` should be provided.

user_id optional	The ID of the user for whom to return results for. **Example Values**: `12345`
screen_name optional	The screen name of the user for whom to return results for. **Example Values**: `noradio`
cursor semi-optional	Causes the results to be broken into pages. If no cursor is provided, a value of `-1` will be assumed, which is the first "page." The response from the API will include a `previous_cursor` and `next_cursor` to allow paging back and forth. See [node:10362, title="Using cursors to navigate collections"] for more information. **Example Values**: `12893764510938`


GET friends/list | Twitter D
Saleh
https://dev.twitter.com/rest/reference/get/friends/list

POST statuses/update_with_media
GET statuses/oembed
GET statuses/retweeters/ids
GET statuses/lookup
POST media/upload
POST media/upload chunked
GET direct_messages/sent
GET direct_messages/show
GET search/tweets
GET direct_messages
POST direct_messages/destroy
POST direct_messages/new
GET friendships/no_retweets/ids
GET friends/ids
GET followers/ids
GET friendships/incoming
GET friendships/outgoing
POST friendships/create
POST friendships/destroy

Requests / 15-min window (user auth)	15
Requests / 15-min window (app auth)	30

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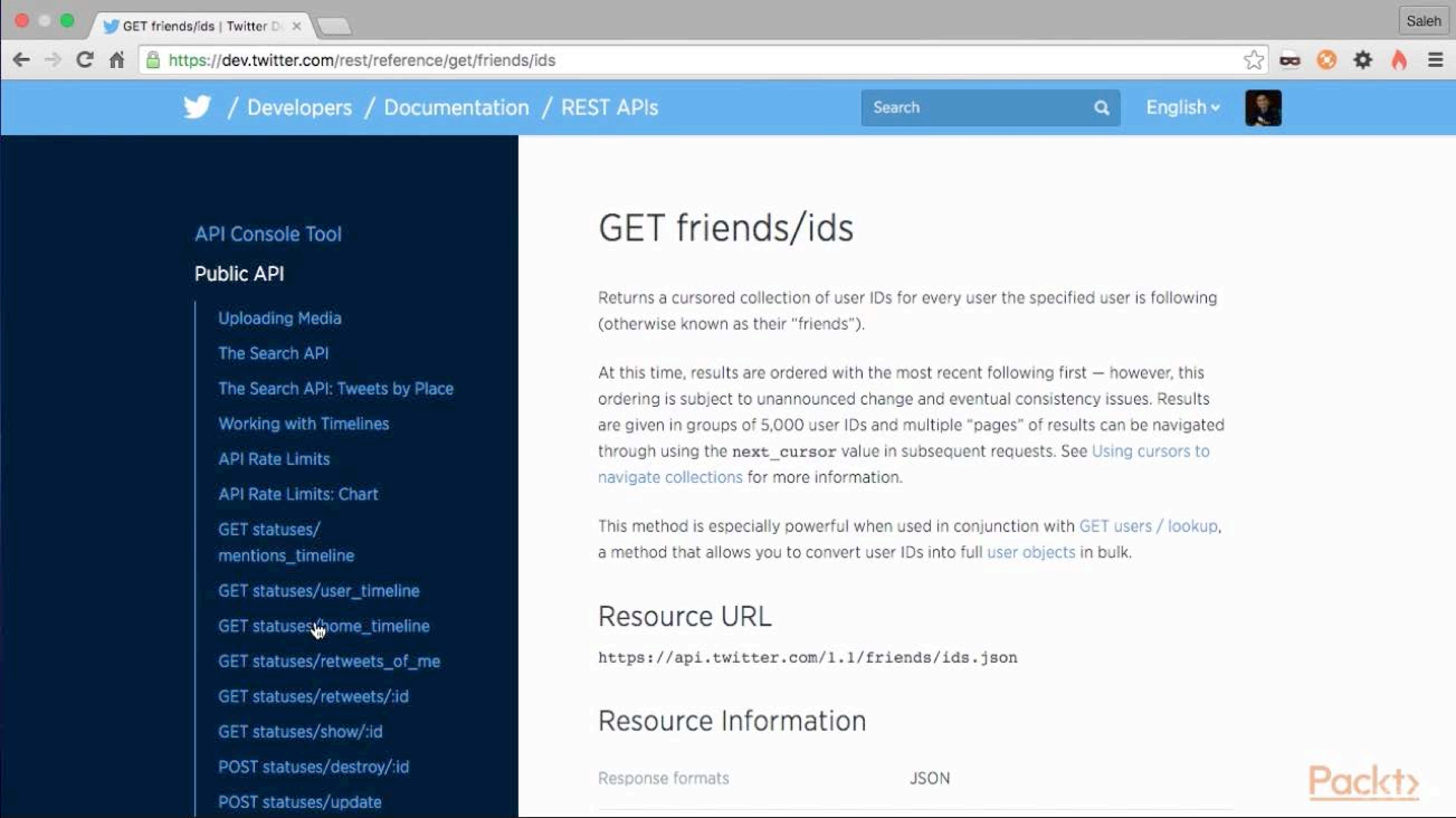
GET friends/ids | Twitter D
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https://dev.twitter.com/rest/reference/get/friends/ids
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API Console Tool

Public API

- Uploading Media
- The Search API
- The Search API: Tweets by Place
- Working with Timelines
- API Rate Limits
- API Rate Limits: Chart
- GET statuses/mentions_timeline
- GET statuses/user_timeline
- GET statuses/home_timeline
- GET statuses/retweets_of_me
- GET statuses/retweets/:id
- GET statuses/show/:id
- POST statuses/destroy/:id
- POST statuses/update

GET friends/ids

Returns a cursored collection of user IDs for every user the specified user is following (otherwise known as their "friends").

At this time, results are ordered with the most recent following first — however, this ordering is subject to unannounced change and eventual consistency issues. Results are given in groups of 5,000 user IDs and multiple "pages" of results can be navigated through using the `next_cursor` value in subsequent requests. See Using cursors to navigate collections for more information.

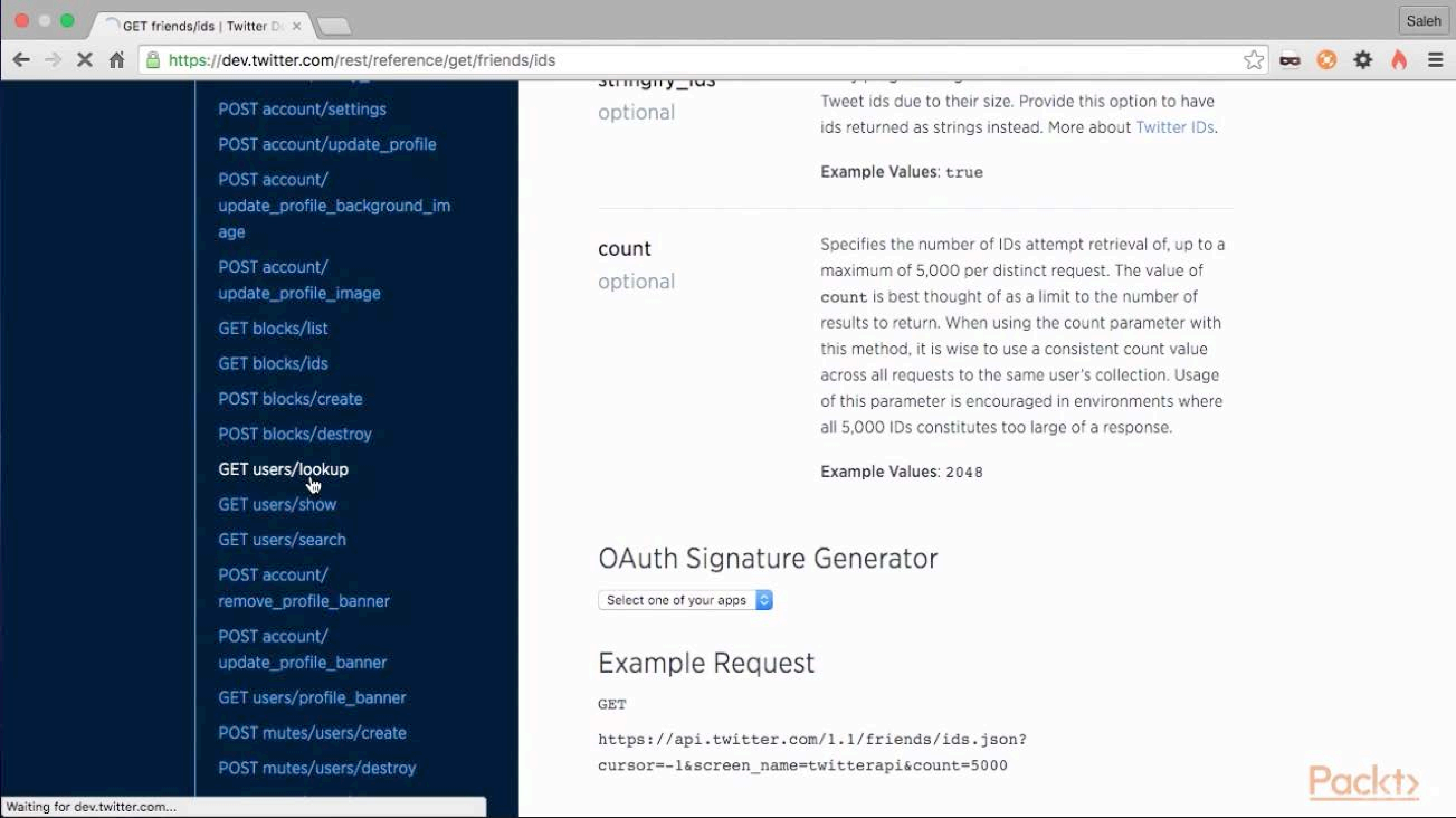
This method is especially powerful when used in conjunction with GET users / lookup, a method that allows you to convert user IDs into full user objects in bulk.

Resource URL

```
https://api.twitter.com/1.1/friends/ids.json
```

Resource Information

Response formats	JSON


GET friends/ids | Twitter D
Saleh
https://dev.twitter.com/rest/reference/get/friends/ids

POST account/settings
POST account/update_profile
POST account/update_profile_background_image
POST account/update_profile_image
GET blocks/list
GET blocks/ids
POST blocks/create
POST blocks/destroy
GET users/lookup
GET users/show
GET users/search
POST account/remove_profile_banner
POST account/update_profile_banner
GET users/profile_banner
POST mutes/users/create
POST mutes/users/destroy

stringify_ids
optional

Tweet ids due to their size. Provide this option to have ids returned as strings instead. More about Twitter IDs.

Example Values: `true`

count
optional

Specifies the number of IDs attempt retrieval of, up to a maximum of 5,000 per distinct request. The value of `count` is best thought of as a limit to the number of results to return. When using the count parameter with this method, it is wise to use a consistent count value across all requests to the same user's collection. Usage of this parameter is encouraged in environments where all 5,000 IDs constitutes too large of a response.

Example Values: `2048`

OAuth Signature Generator

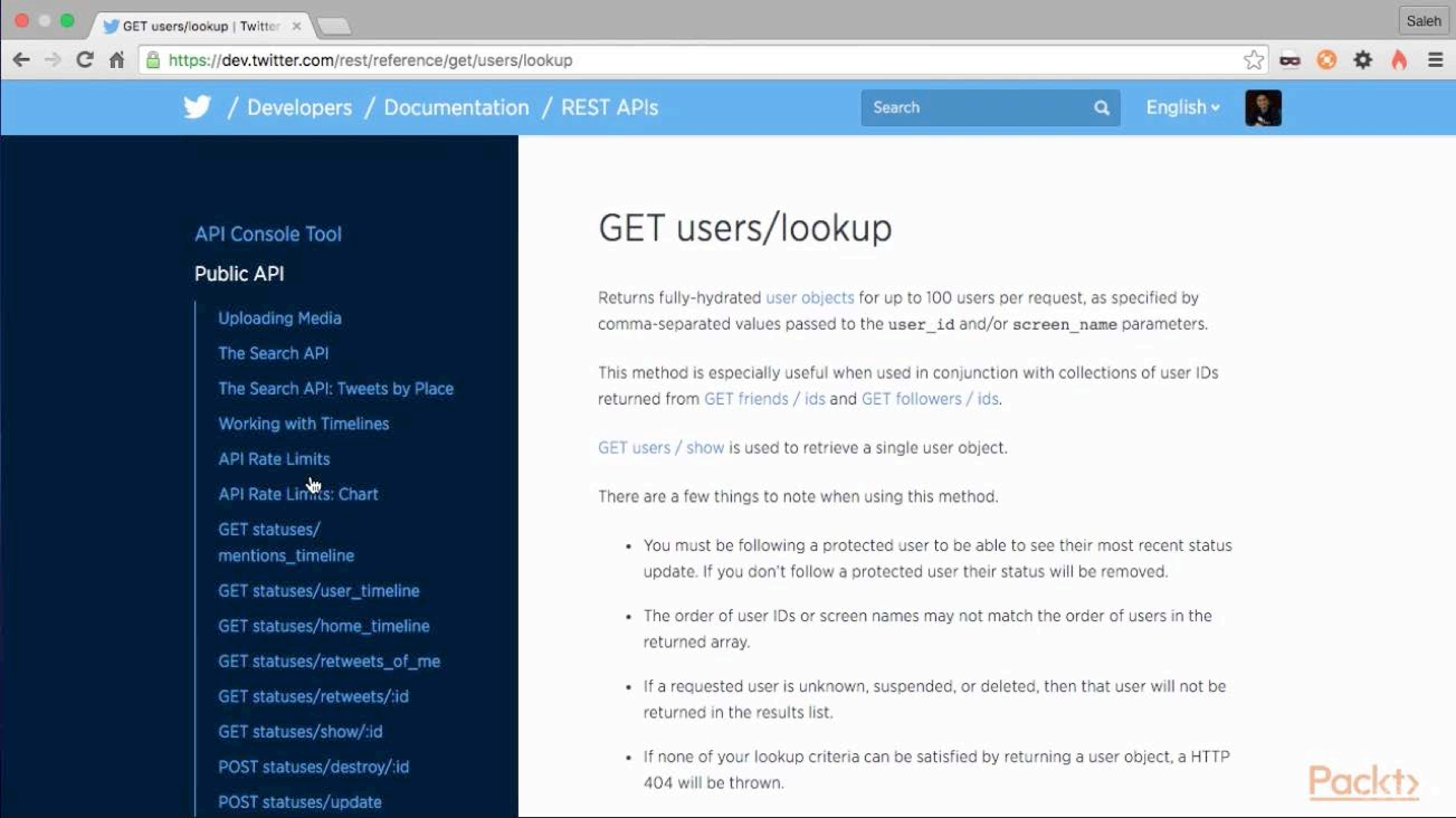
Select one of your apps

Example Request

```
GET

https://api.twitter.com/1.1/friends/ids.json?
cursor=-1&screen_name=twitterapi&count=5000
```

Waiting for dev.twitter.com...



GET users/lookup | Twitter
Saleh
https://dev.twitter.com/rest/reference/get/users/lookup
/ Developers / Documentation / REST APIs
Search
English
Packt>

GET users/lookup

Returns fully-hydrated user objects for up to 100 users per request, as specified by comma-separated values passed to the `user_id` and/or `screen_name` parameters.

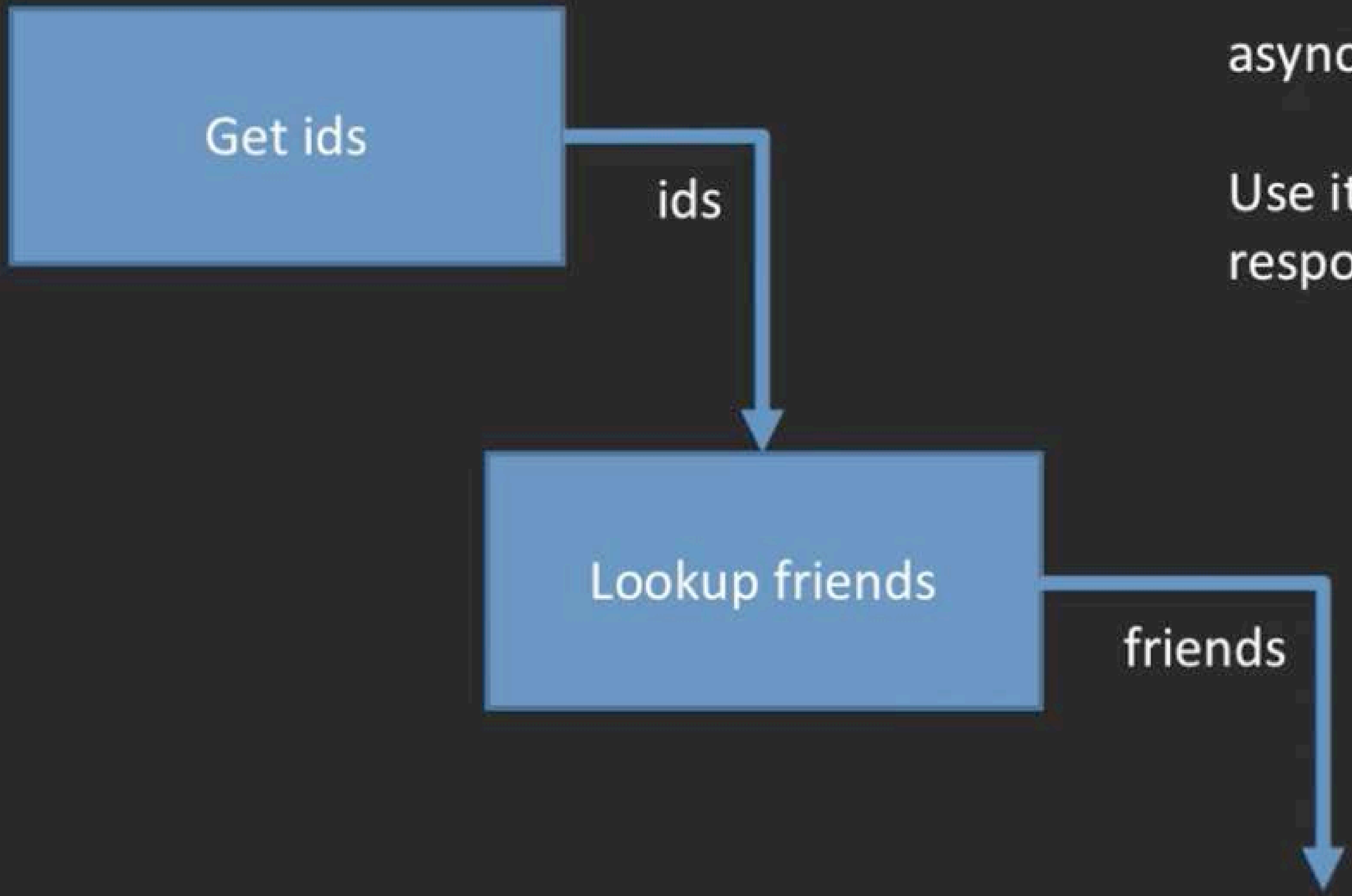
This method is especially useful when used in conjunction with collections of user IDs returned from GET friends / ids and GET followers / ids.

GET users / show is used to retrieve a single user object.

There are a few things to note when using this method.

- You must be following a protected user to be able to see their most recent status update. If you don't follow a protected user their status will be removed.
- The order of user IDs or screen names may not match the order of users in the returned array.
- If a requested user is unknown, suspended, or deleted, then that user will not be returned in the results list.
- If none of your lookup criteria can be satisfied by returning a user object, a HTTP 404 will be thrown.

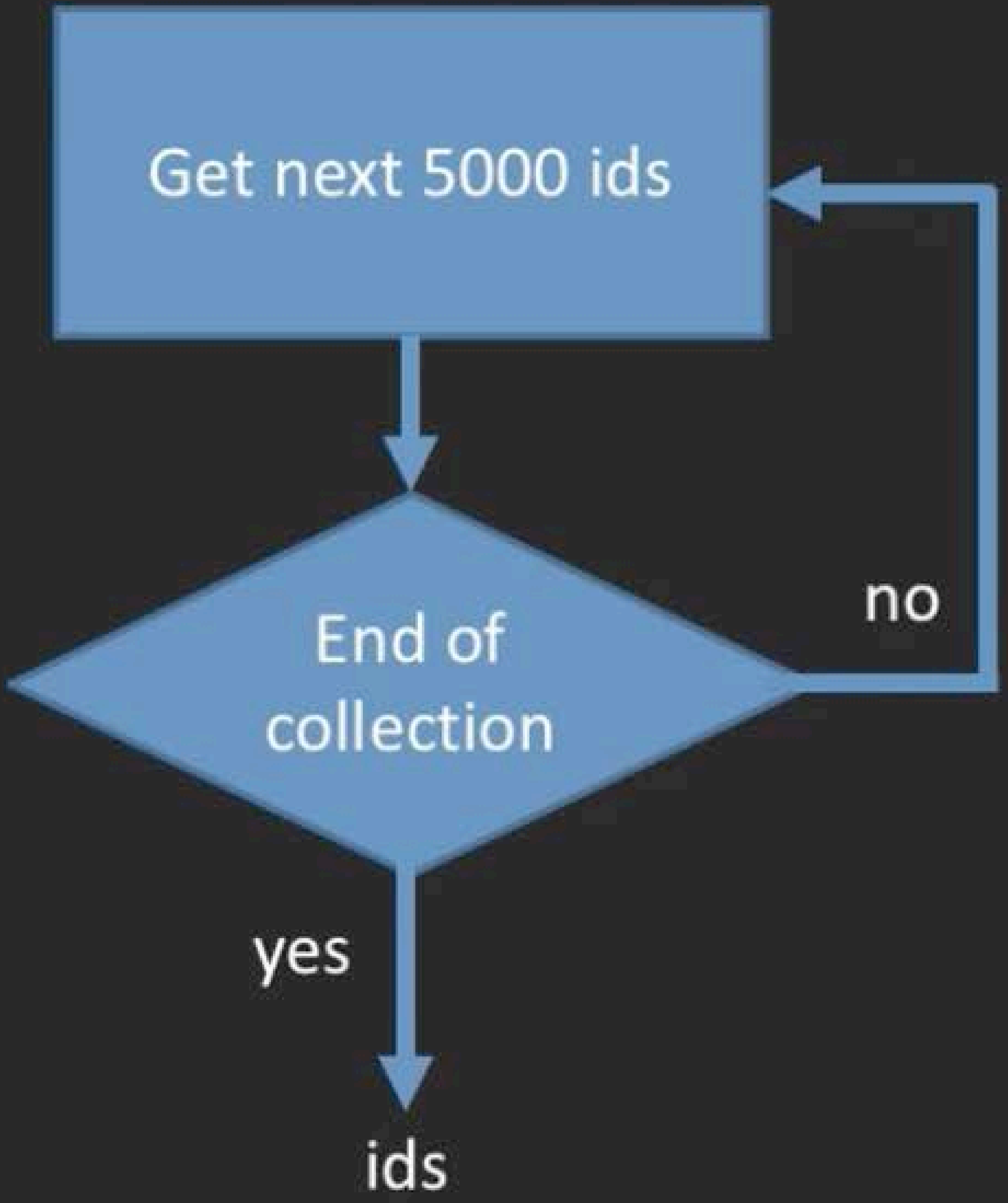
The Waterfall



async.waterfall()

Use it when a request depends on the response of another request.

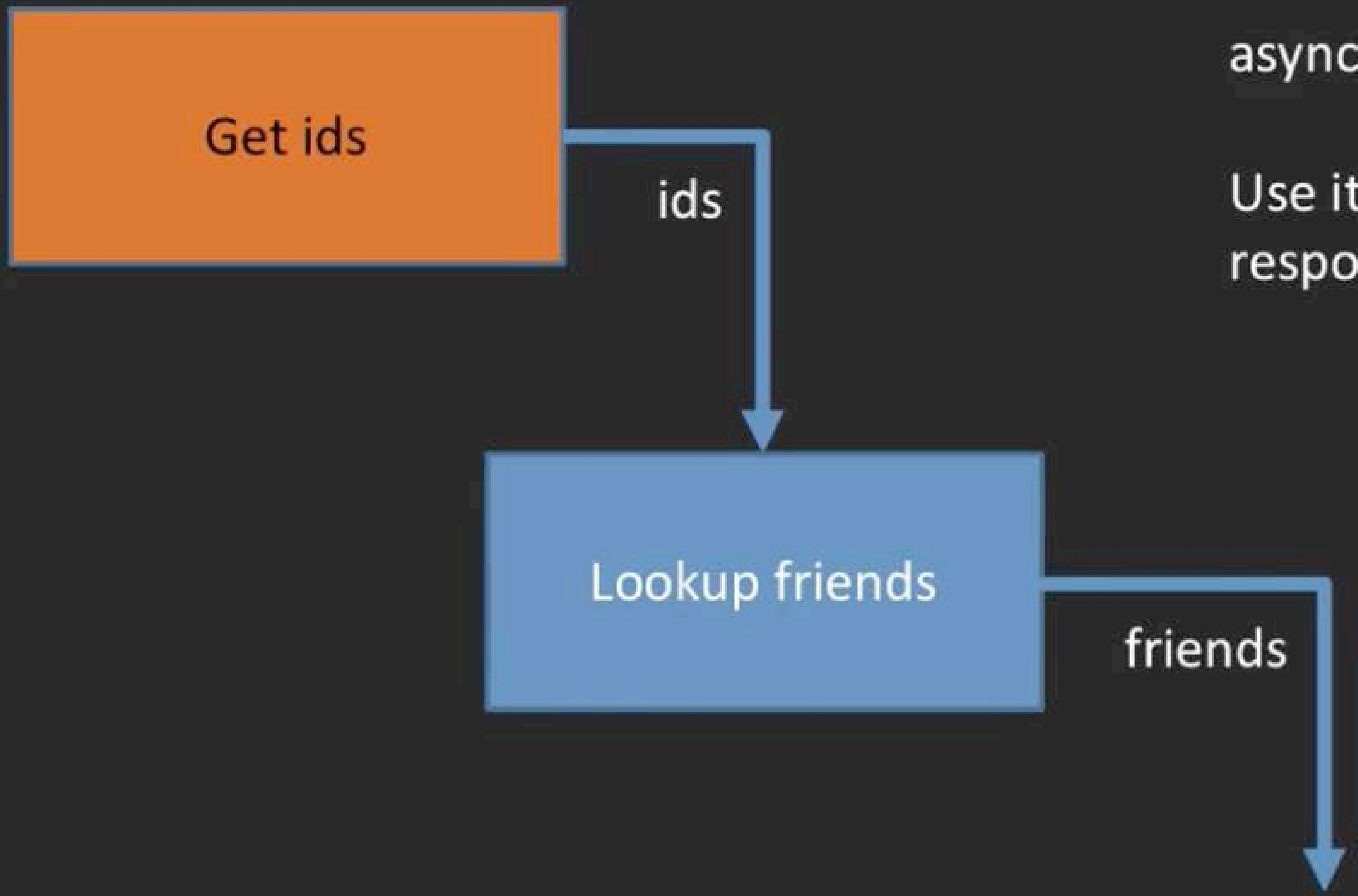
The Whilst



async.whilst()

Use it when a loop depends on a request's response.

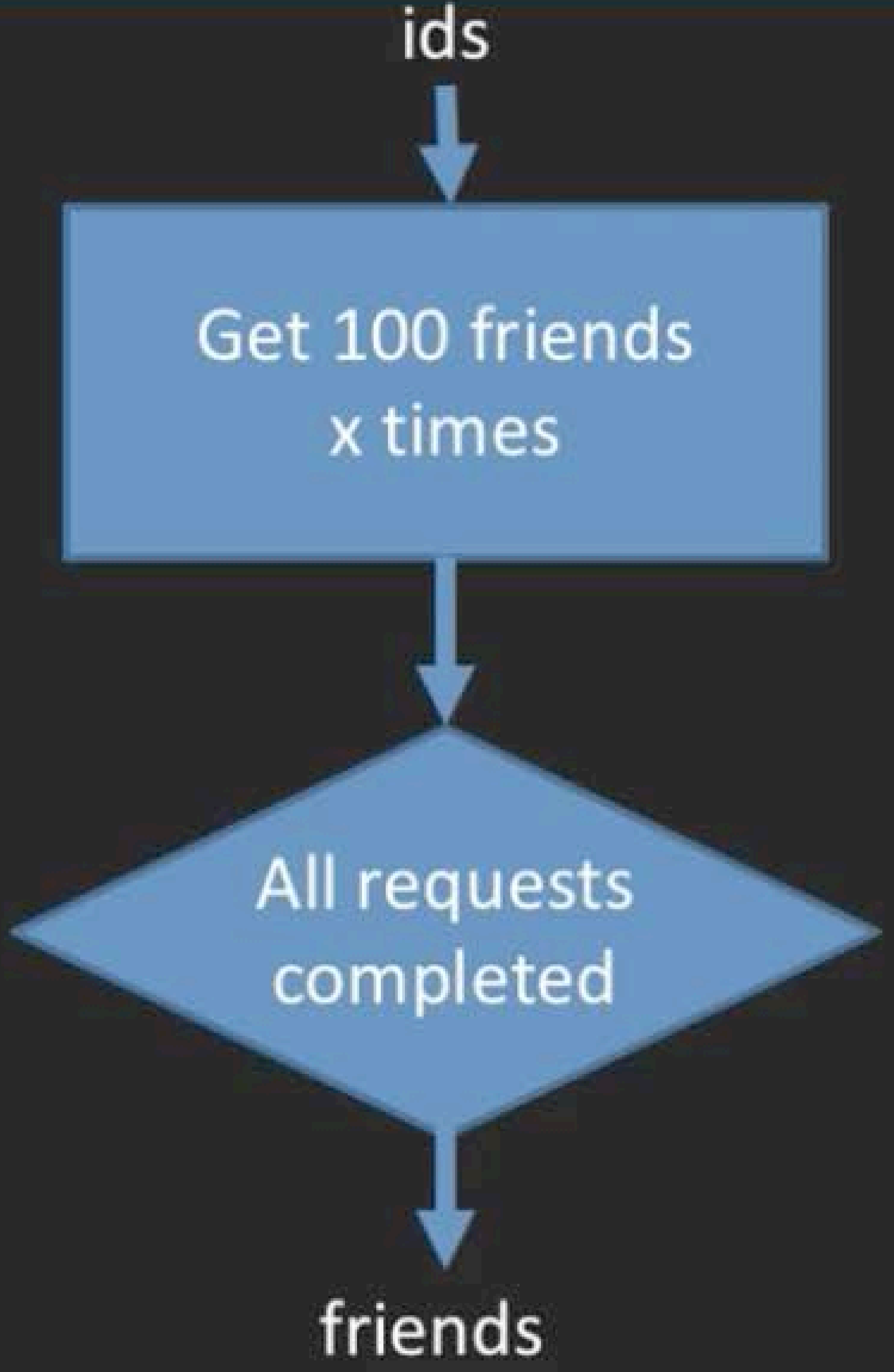
The Waterfall



async.waterfall()

Use it when a request depends on the response of another request.

The Times

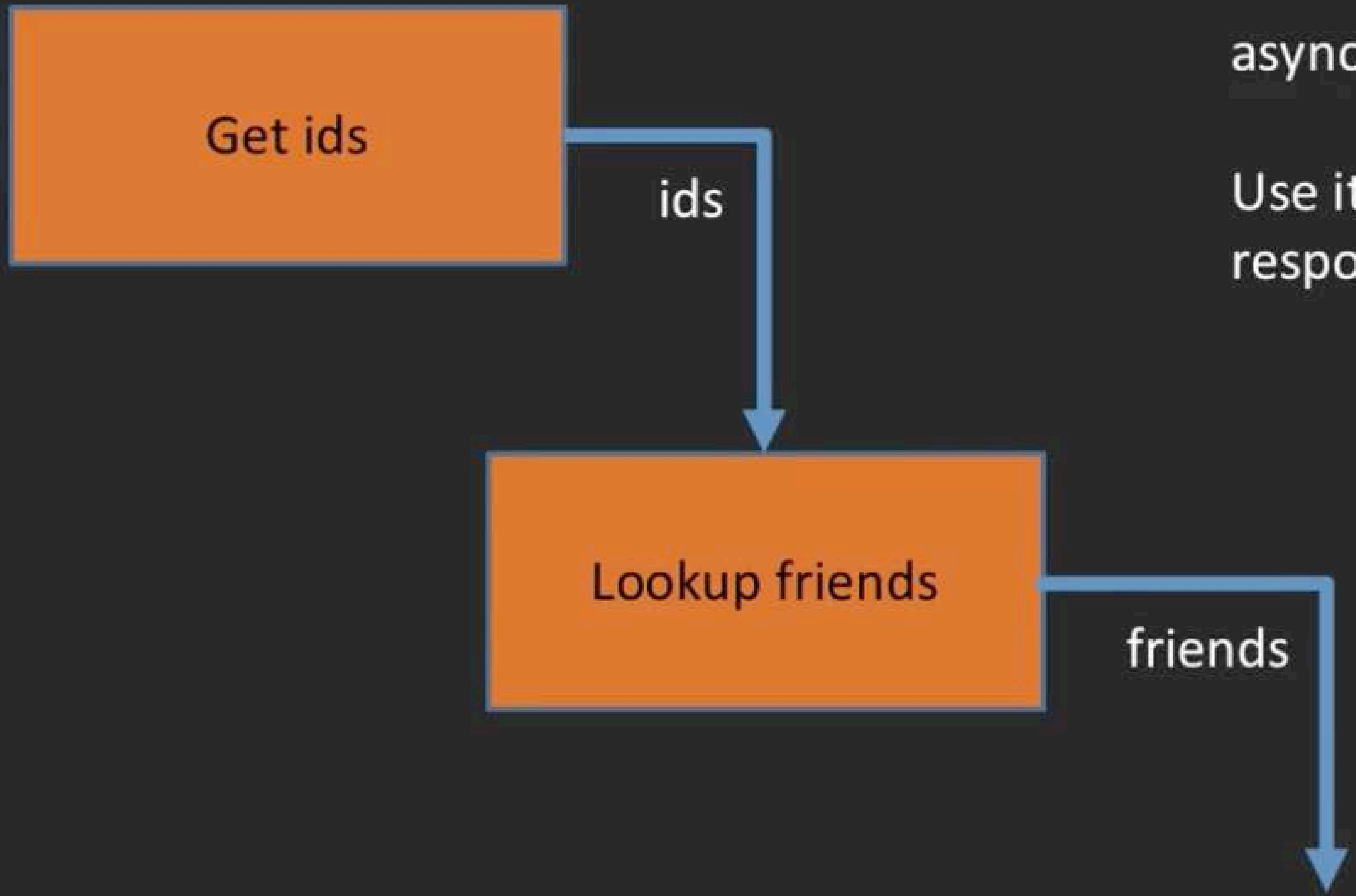


async.times()

Use it to call make request a fixed number of times.

$$x \text{ requests} = ceil\left(\frac{n \text{ friends}}{100\,\frac{\text{friends}}{\text{request}}}\right)$$

The Waterfall

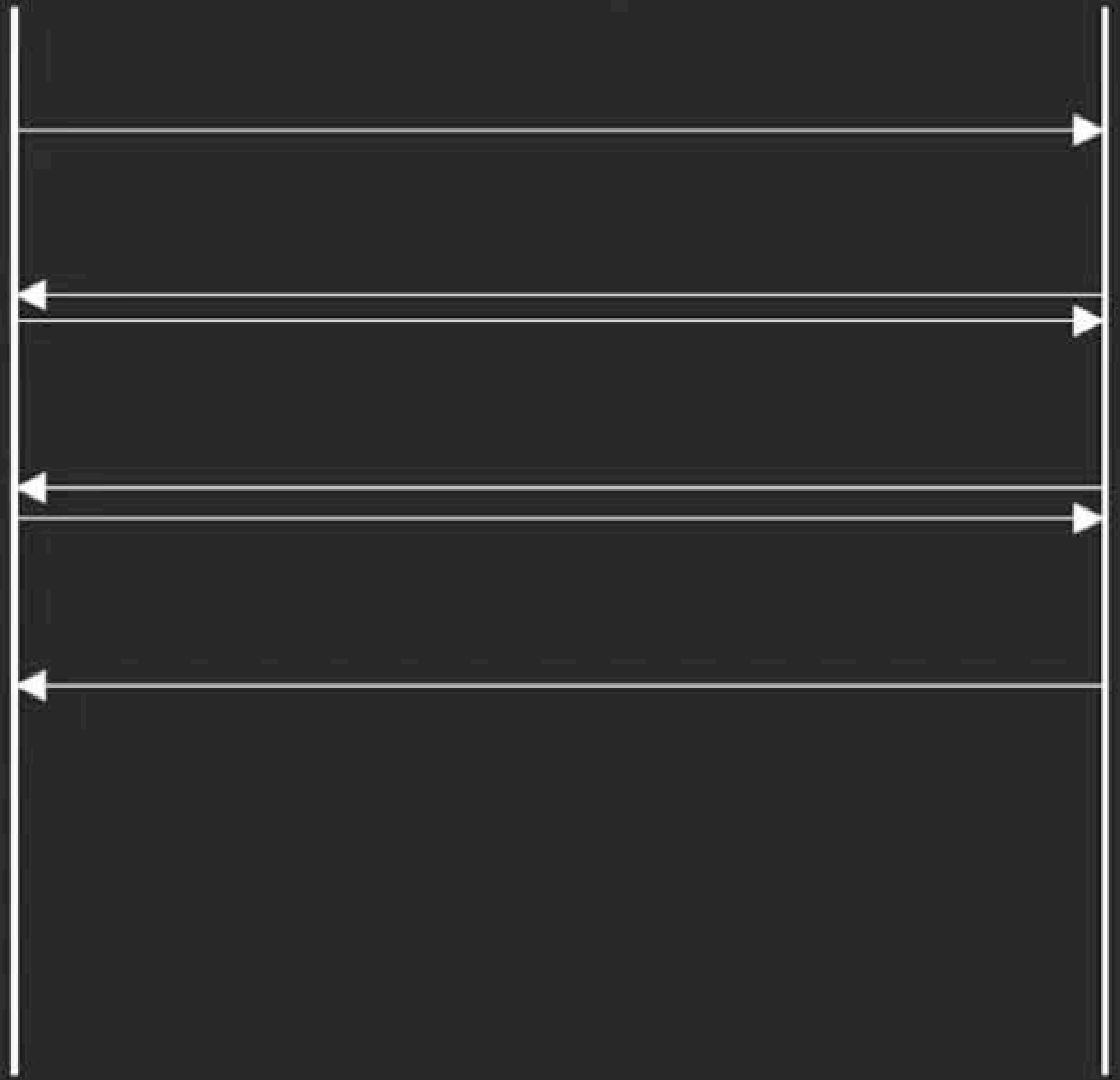


async.waterfall()

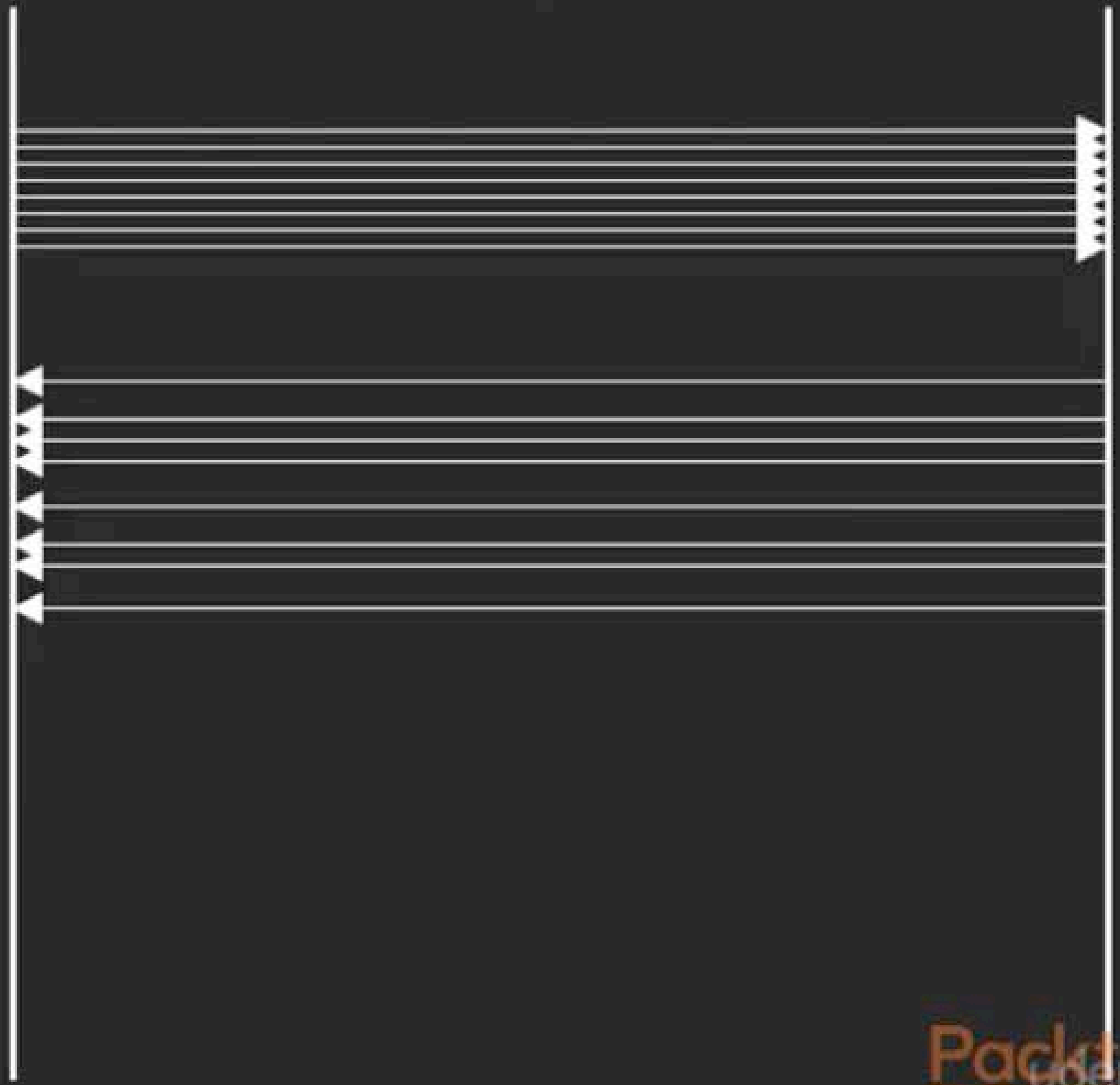
Use it when a request depends on the response of another request.

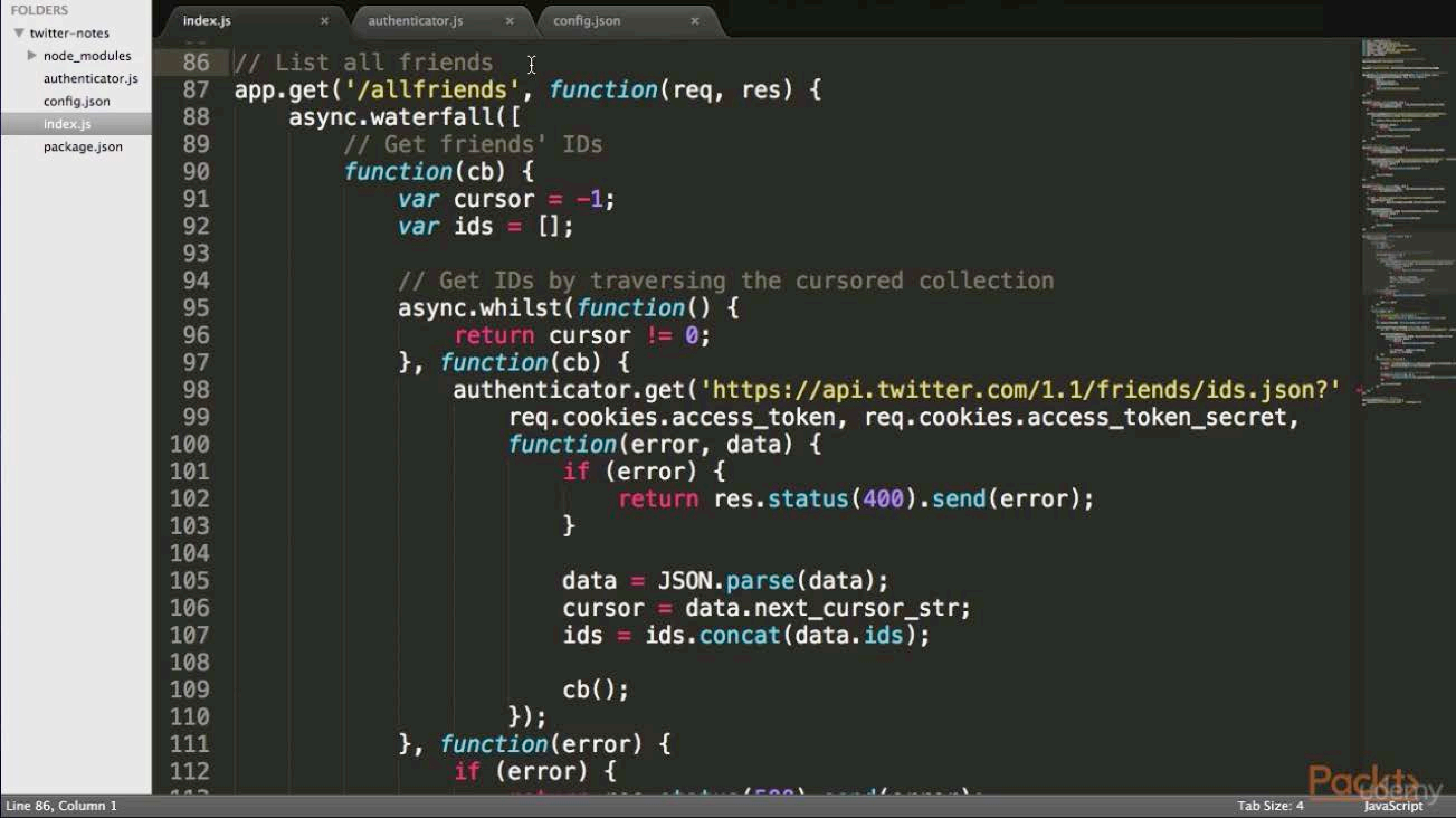
Sequence Diagram

The Whilst



The Times



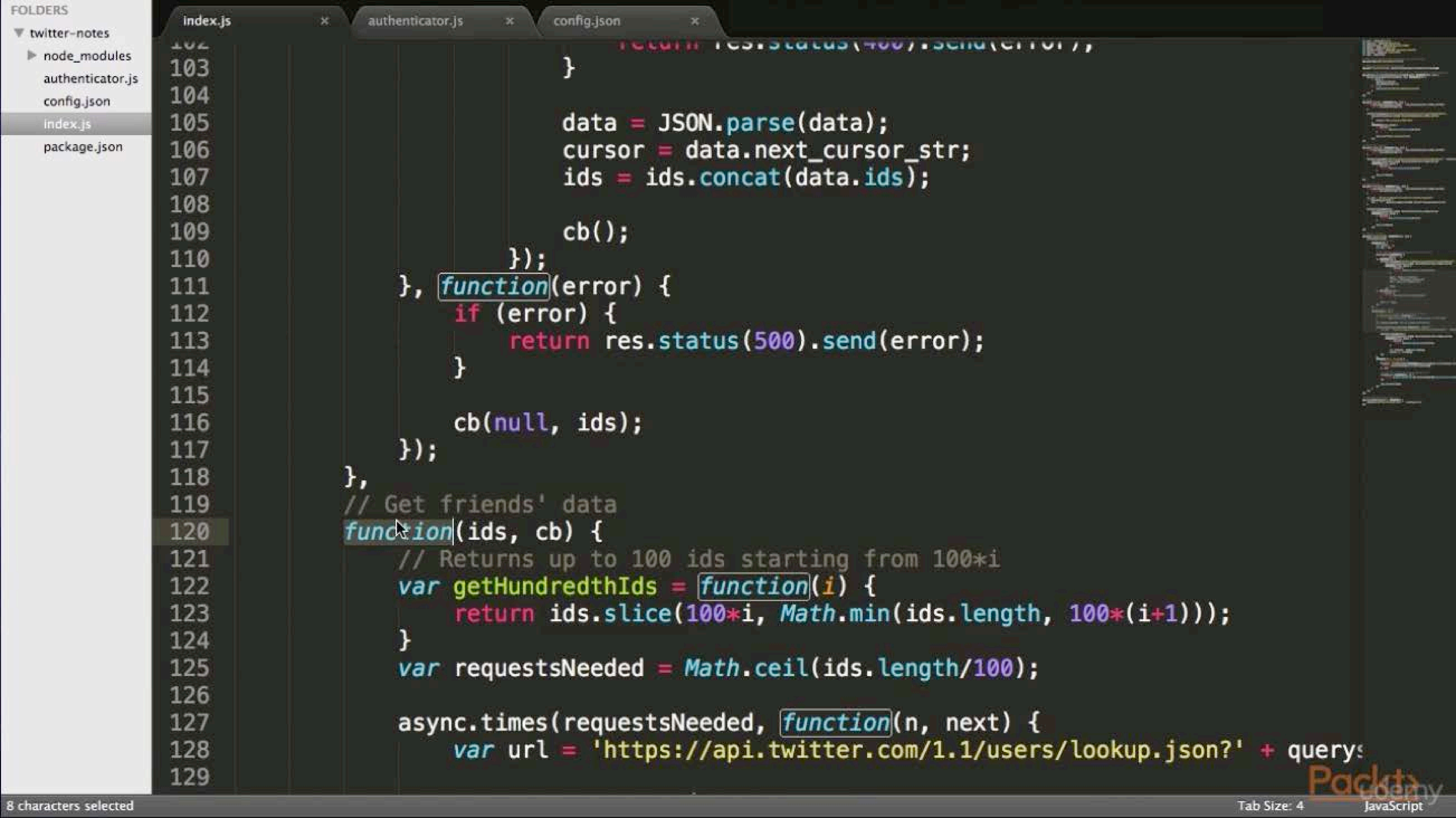


```javascript
// List all friends
app.get('/allfriends', function(req, res) {
    async.waterfall([
        // Get friends' IDs
        function(cb) {
            var cursor = -1;
            var ids = [];

            // Get IDs by traversing the cursored collection
            async.whilst(function() {
                return cursor != 0;
            }, function(cb) {
                authenticator.get('https://api.twitter.com/1.1/friends/ids.json?'
                    req.cookies.access_token, req.cookies.access_token_secret,
                    function(error, data) {
                        if (error) {
                            return res.status(400).send(error);
                        }

                        data = JSON.parse(data);
                        cursor = data.next_cursor_str;
                        ids = ids.concat(data.ids);

                        cb();
                    });
            }, function(error) {
                if (error) {
```



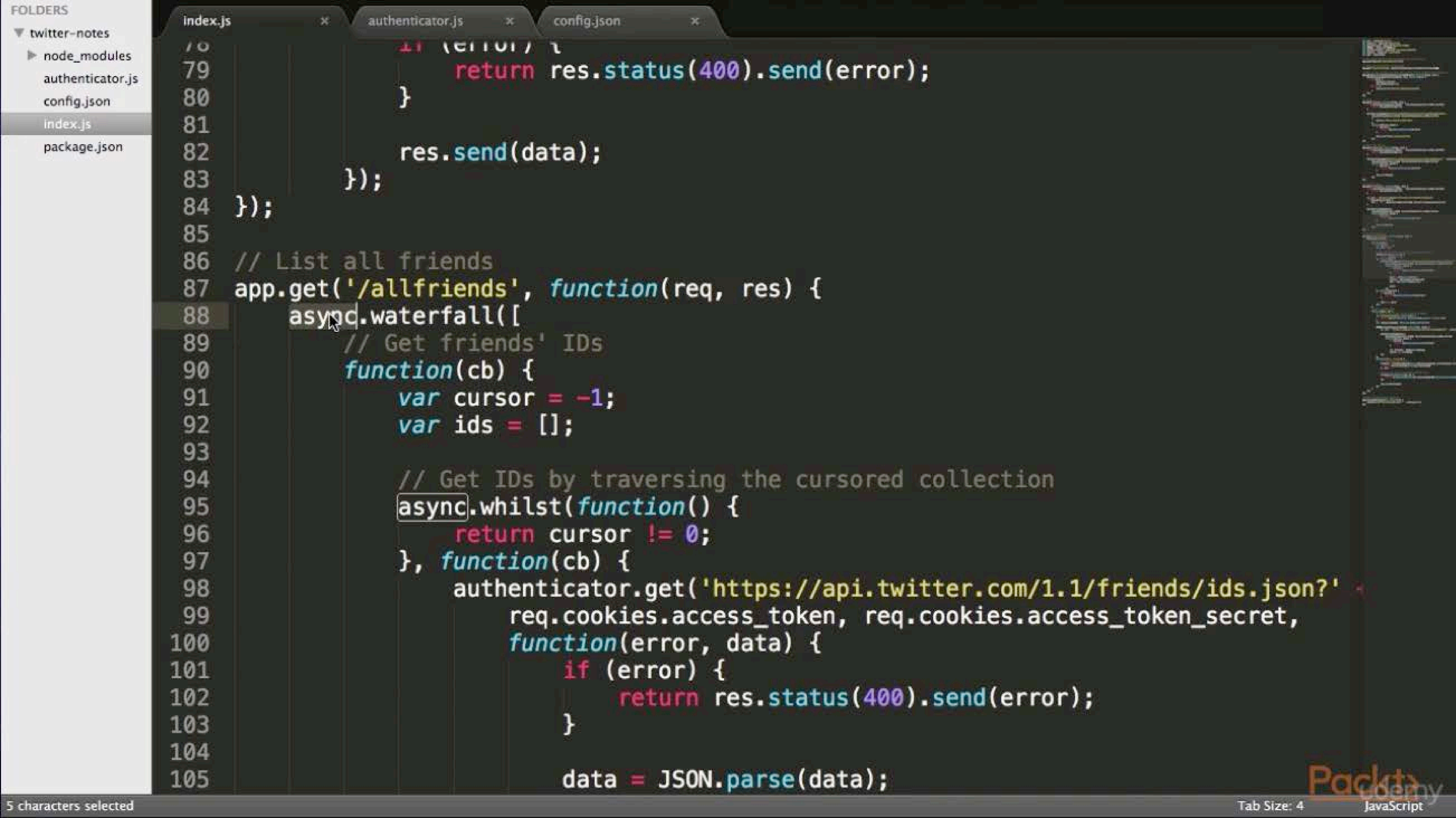
```
                            return res.status(400).send(error);
                        }

                        data = JSON.parse(data);
                        cursor = data.next_cursor_str;
                        ids = ids.concat(data.ids);

                        cb();
                    });
            }, function(error) {
                if (error) {
                    return res.status(500).send(error);
                }

                cb(null, ids);
            });
        },
        // Get friends' data
        function(ids, cb) {
            // Returns up to 100 ids starting from 100*i
            var getHundredthIds = function(i) {
                return ids.slice(100*i, Math.min(ids.length, 100*(i+1)));
            }
            var requestsNeeded = Math.ceil(ids.length/100);

            async.times(requestsNeeded, function(n, next) {
                var url = 'https://api.twitter.com/1.1/users/lookup.json?' + querys
```



FOLDERS
- twitter-notes
  - node_modules
  - authenticator.js
  - config.json
  - index.js
  - package.json

index.js | authenticator.js | config.json

```
            if (error) {
                return res.status(400).send(error);
            }

            res.send(data);
        });
});

// List all friends
app.get('/allfriends', function(req, res) {
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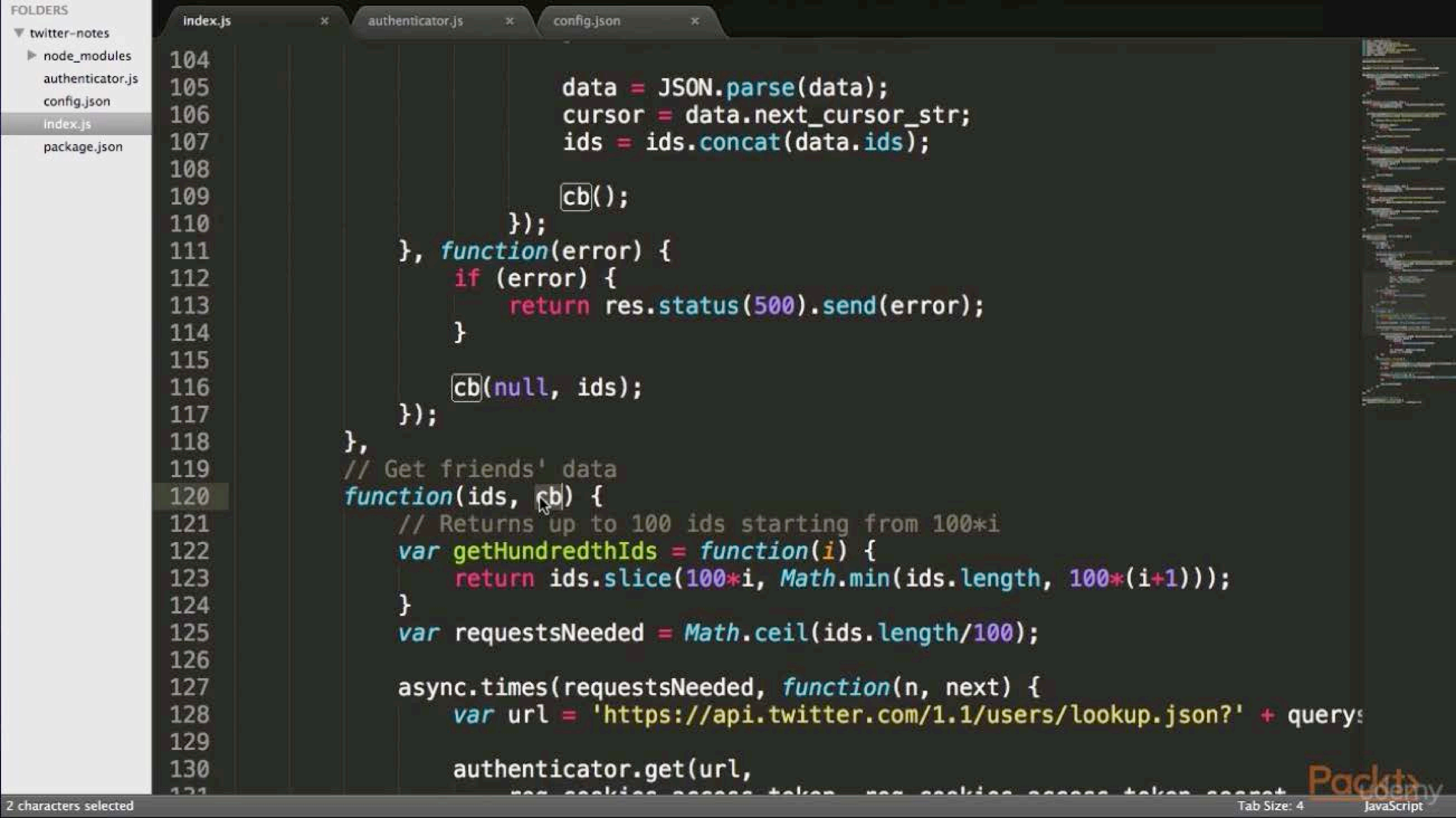
            async.whilst(function() {
                return cursor != 0;
            }, function(cb) {
                authenticator.get('https://api.twitter.com/1.1/friends/ids.json?'
                    req.cookies.access_token, req.cookies.access_token_secret,
                    function(error, data) {
                        if (error) {
                            return res.status(400).send(error);
                        }

                        data = JSON.parse(data);
```

5 characters selected   Tab Size: 4   JavaScript



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                    data = JSON.parse(data);
                    cursor = data.next_cursor_str;
                    ids = ids.concat(data.ids);

                    cb();
                });
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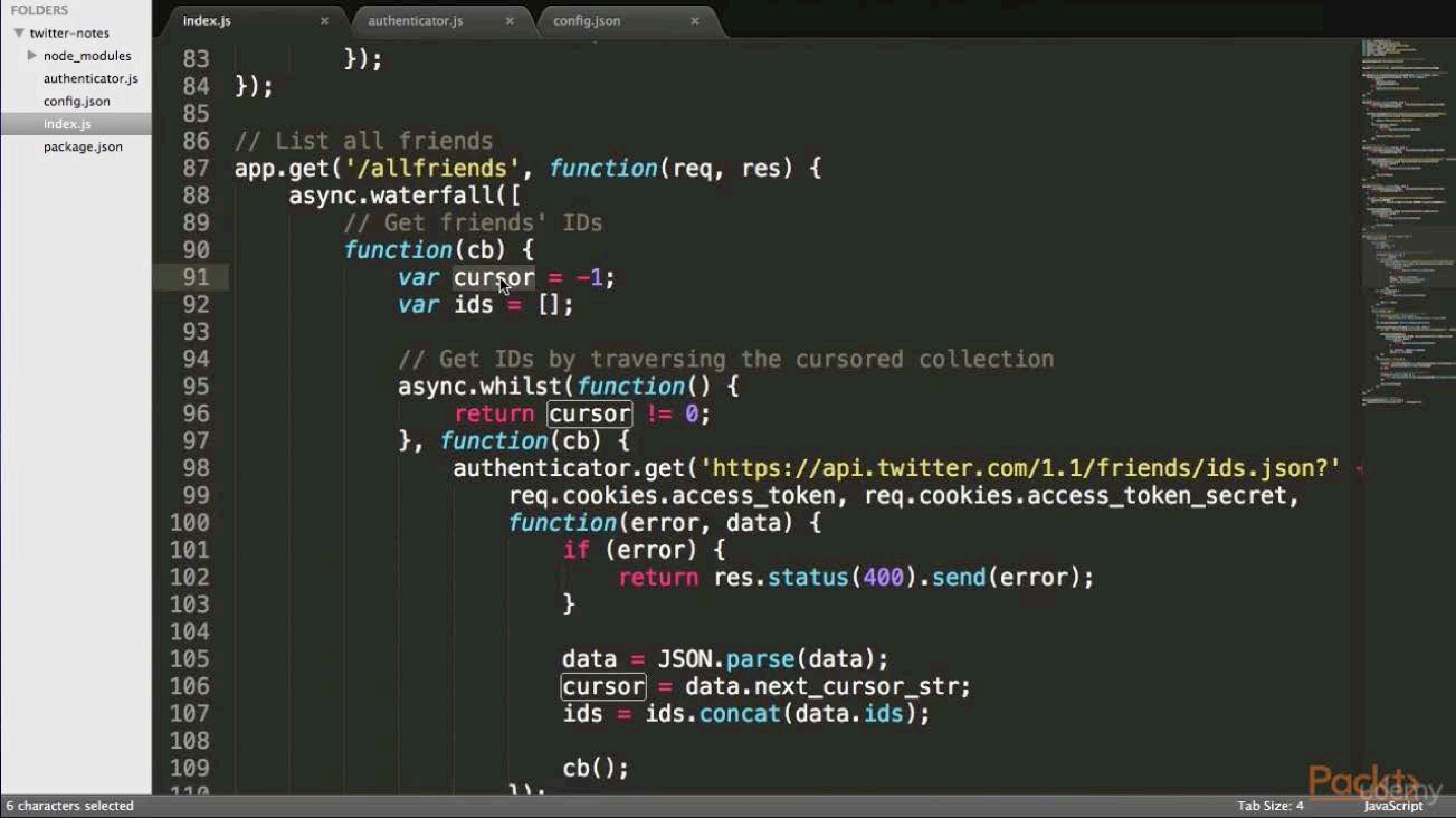

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                        }

                        data = JSON.parse(data);
                        cursor = data.next_cursor_str;
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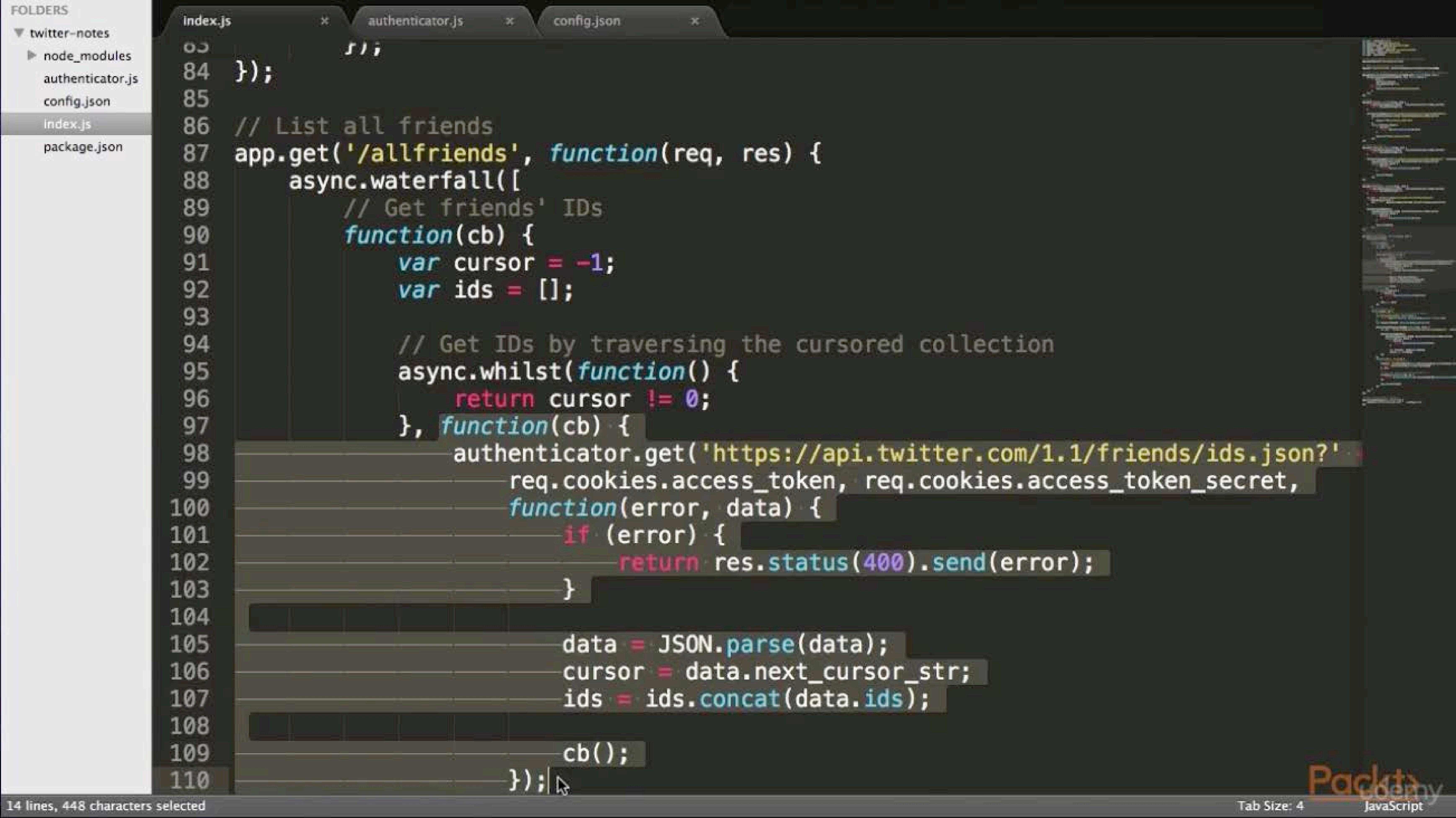

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        });
});

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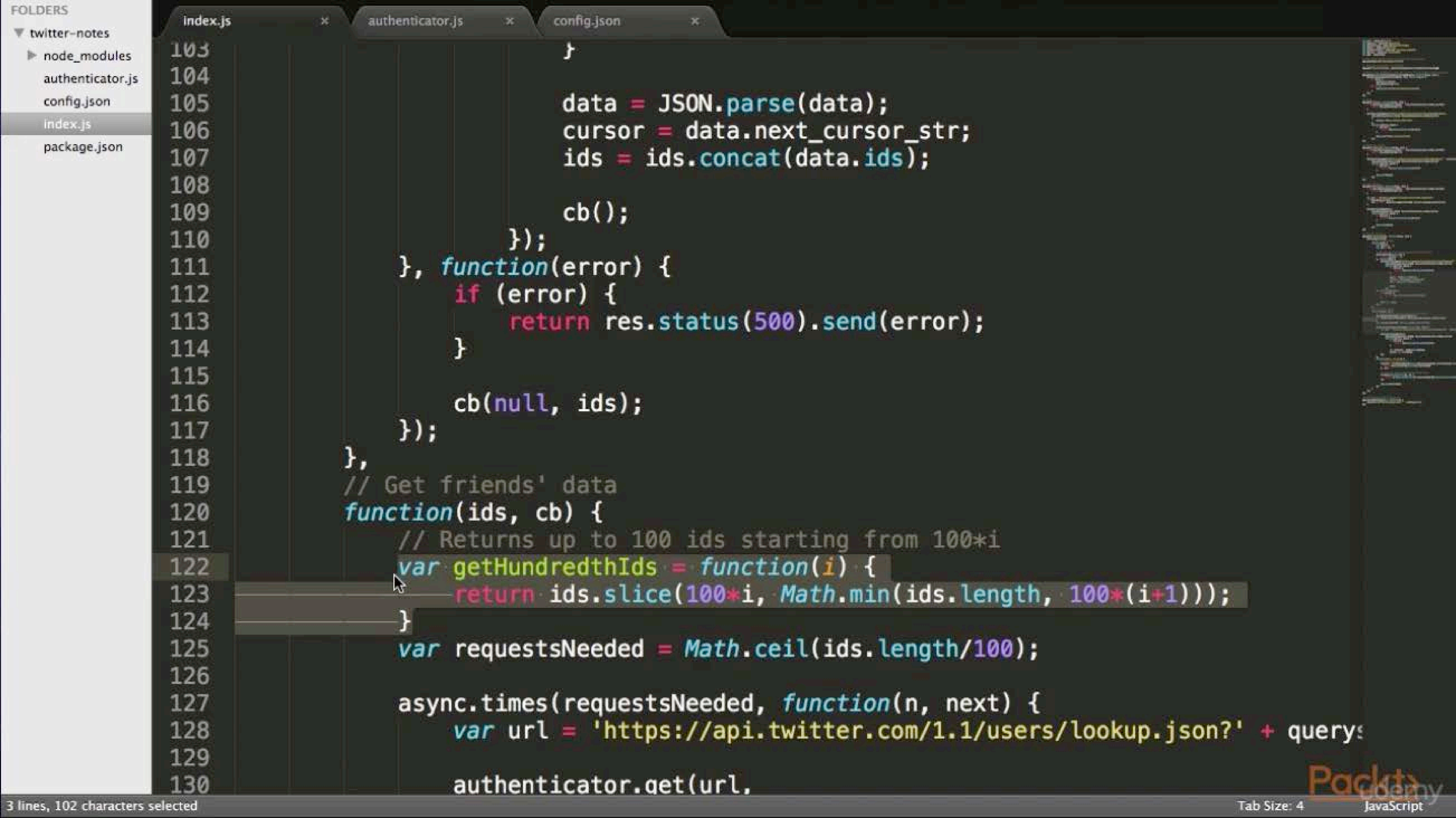

```
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                    ids = ids.concat(data.ids);

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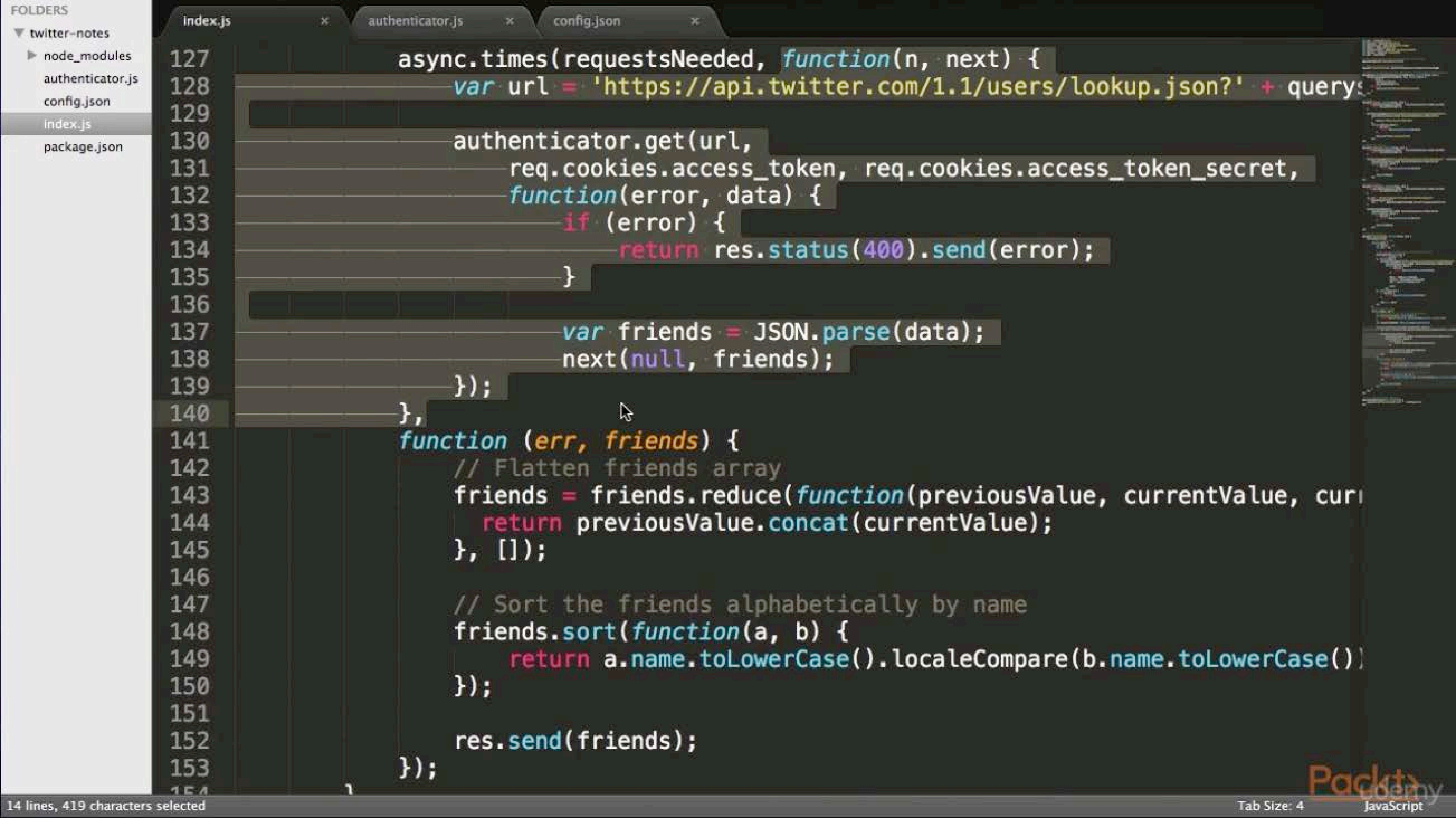
            var getHundredthIds = function(i) {
                return ids.slice(100*i, Math.min(ids.length, 100*(i+1)));
            }
            var requestsNeeded = Math.ceil(ids.length/100);

            async.times(requestsNeeded, function(n, next) {
                var url = 'https://api.twitter.com/1.1/users/lookup.json?' + querys
                
                authenticator.get(url,
```

3 lines, 102 characters selected

Tab Size: 4

JavaScript



FOLDERS
- twitter-notes
  - node_modules
  - authenticator.js
  - config.json
  - index.js
  - package.json

index.js × authenticator.js × config.json ×

```
        async.times(requestsNeeded, function(n, next) {
            var url = 'https://api.twitter.com/1.1/users/lookup.json?' + querys

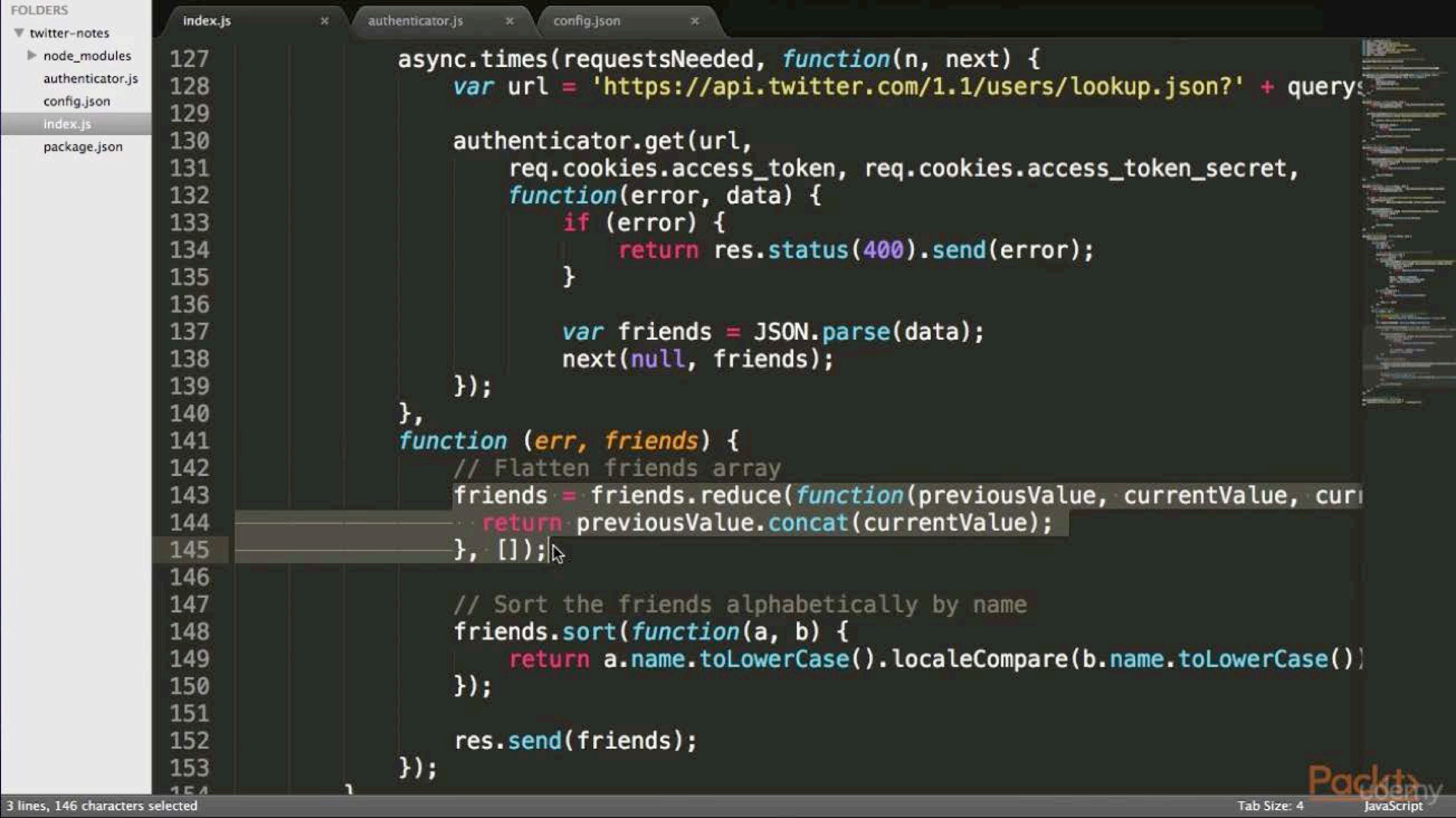
            authenticator.get(url,
                req.cookies.access_token, req.cookies.access_token_secret,
                function(error, data) {
                    if (error) {
                        return res.status(400).send(error);
                    }

                    var friends = JSON.parse(data);
                    next(null, friends);
            });
        },
        function (err, friends) {
            // Flatten friends array
            friends = friends.reduce(function(previousValue, currentValue, curr
              return previousValue.concat(currentValue);
            }, []);

            // Sort the friends alphabetically by name
            friends.sort(function(a, b) {
                return a.name.toLowerCase().localeCompare(b.name.toLowerCase()
            });

            res.send(friends);
        });
```

14 lines, 419 characters selected   Tab Size: 4   JavaScript



```
    async.times(requestsNeeded, function(n, next) {
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        authenticator.get(url,
            req.cookies.access_token, req.cookies.access_token_secret,
            function(error, data) {
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                }

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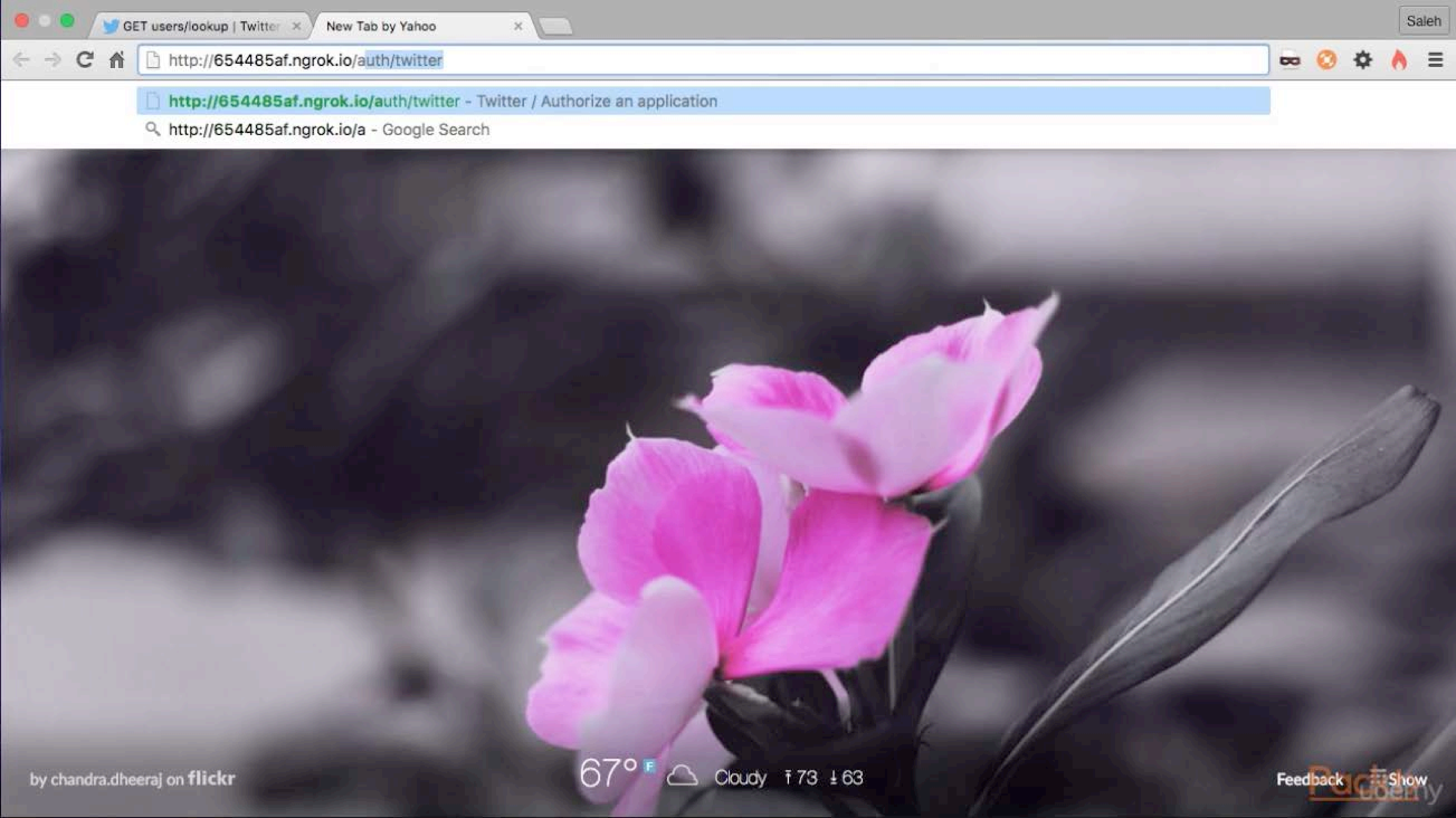
        });

        res.send(friends);
    });
}
```

```
Salehs-Macintosh:twitter-notes saleh$ node index.js
```



GET users/lookup | Twitter

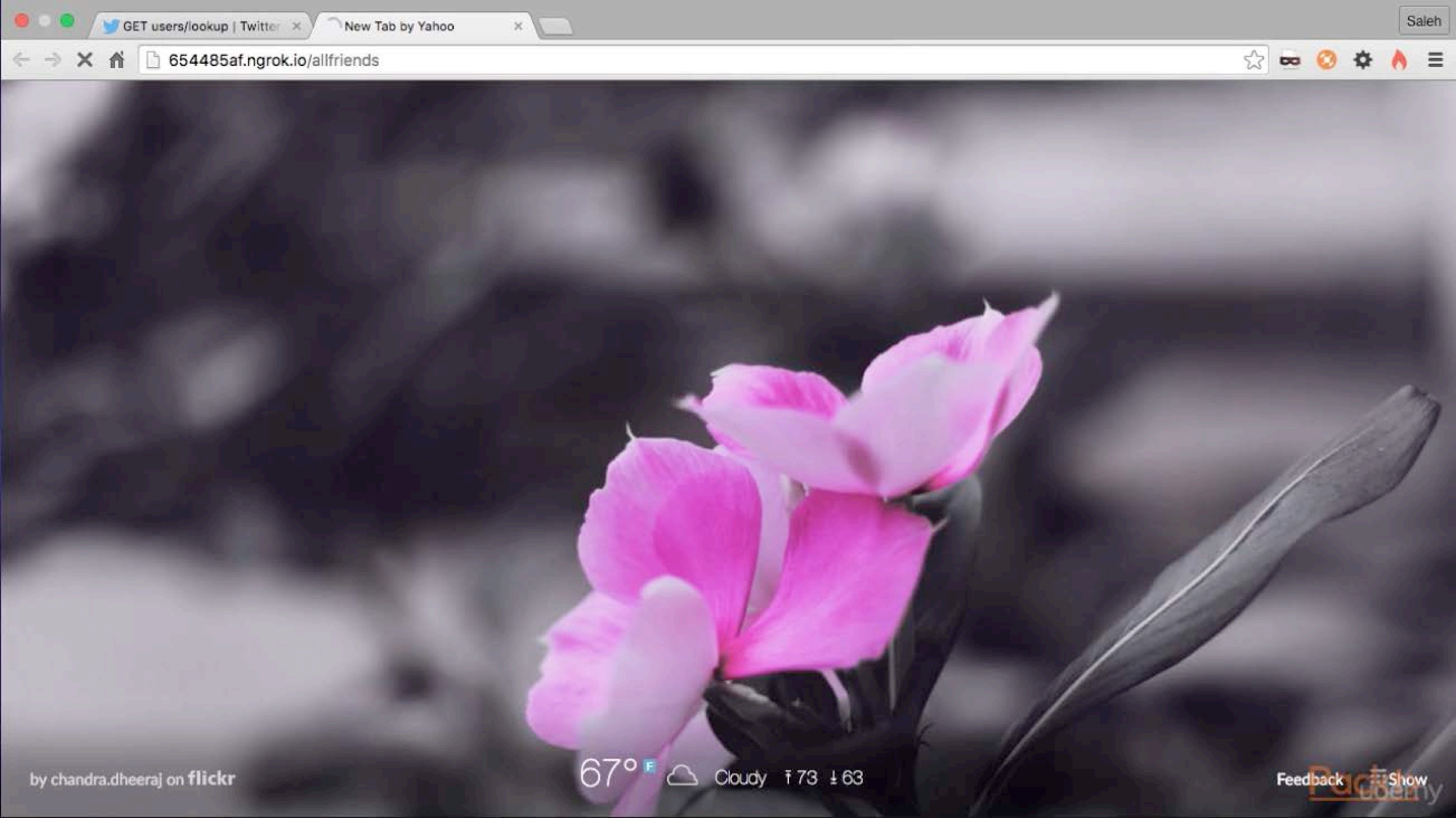
New Tab by Yahoo

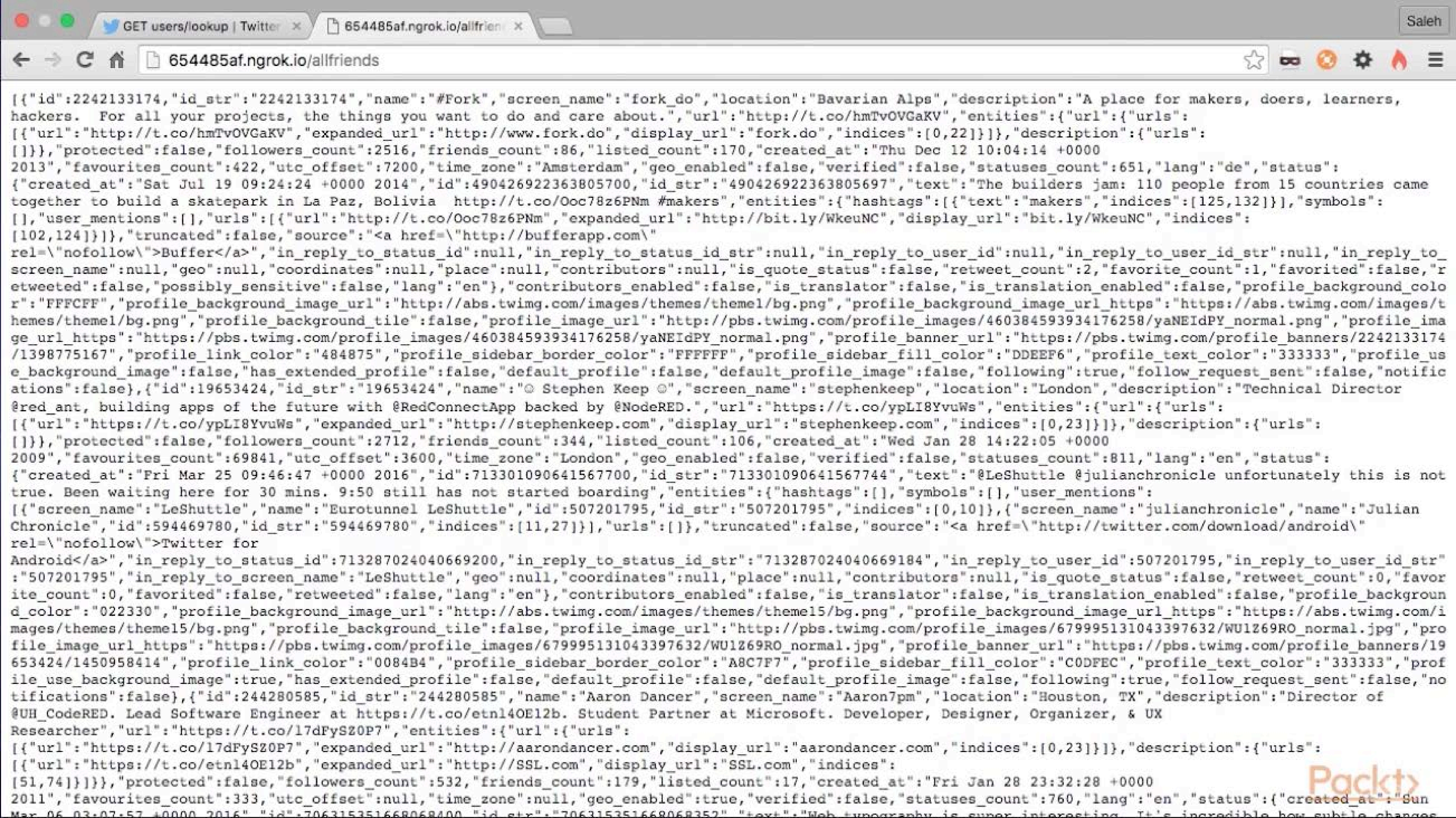
Saleh

http://654485af.ngrok.io/auth/twitter

http://654485af.ngrok.io/auth/twitter - Twitter / Authorize an application

http://654485af.ngrok.io/a - Google Search


GET users/lookup | Twitter
New Tab by Yahoo
Saleh
654485af.ngrok.io/allfriends
by chandra.dheeraj on flickr
67°
Cloudy
73
63
Feedback
Show


GET users/lookup | Twitter
654485af.ngrok.io/allfrien
Saleh
654485af.ngrok.io/allfriends
Packt>

```
[{"id":2242133174,"id_str":"2242133174","name":"#Fork","screen_name":"fork_do","location":"Bavarian Alps","description":"A place for makers, doers, learners,
hackers.  For all your projects, the things you want to do and care about.","url":"http://t.co/hmTvOVGaKV","entities":{"url":{"urls":
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[]}},"protected":false,"followers_count":2516,"friends_count":86,"listed_count":170,"created_at":"Thu Dec 12 10:04:14 +0000
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rel=\"nofollow\">Buffer</a>","in_reply_to_status_id":null,"in_reply_to_status_id_str":null,"in_reply_to_user_id":null,"in_reply_to_user_id_str":null,"in_reply_to_
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r":"FFFCFF","profile_background_image_url":"http://abs.twimg.com/images/themes/theme1/bg.png","profile_background_image_url_https":"https://abs.twimg.com/images/t
hemes/theme1/bg.png","profile_background_tile":false,"profile_image_url":"http://pbs.twimg.com/profile_images/460384593934176258/yaNEIdPY_normal.png","profile_ima
ge_url_https":"https://pbs.twimg.com/profile_images/460384593934176258/yaNEIdPY_normal.png","profile_banner_url":"https://pbs.twimg.com/profile_banners/2242133174
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