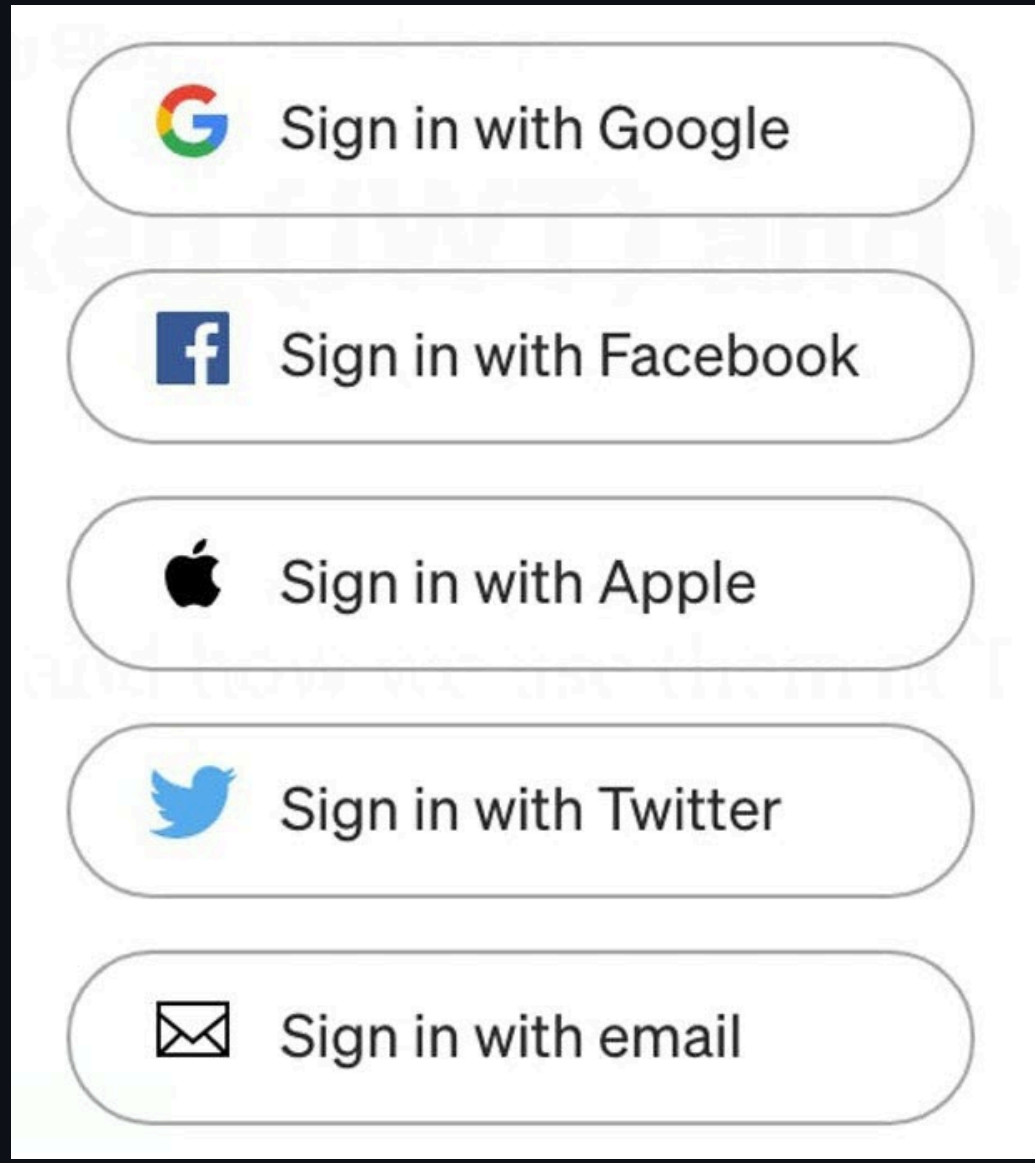
Fullstack Development

Authentication / Authorization

Part 2: Social signing up/in

Something like this

We need OAuth 2.0.

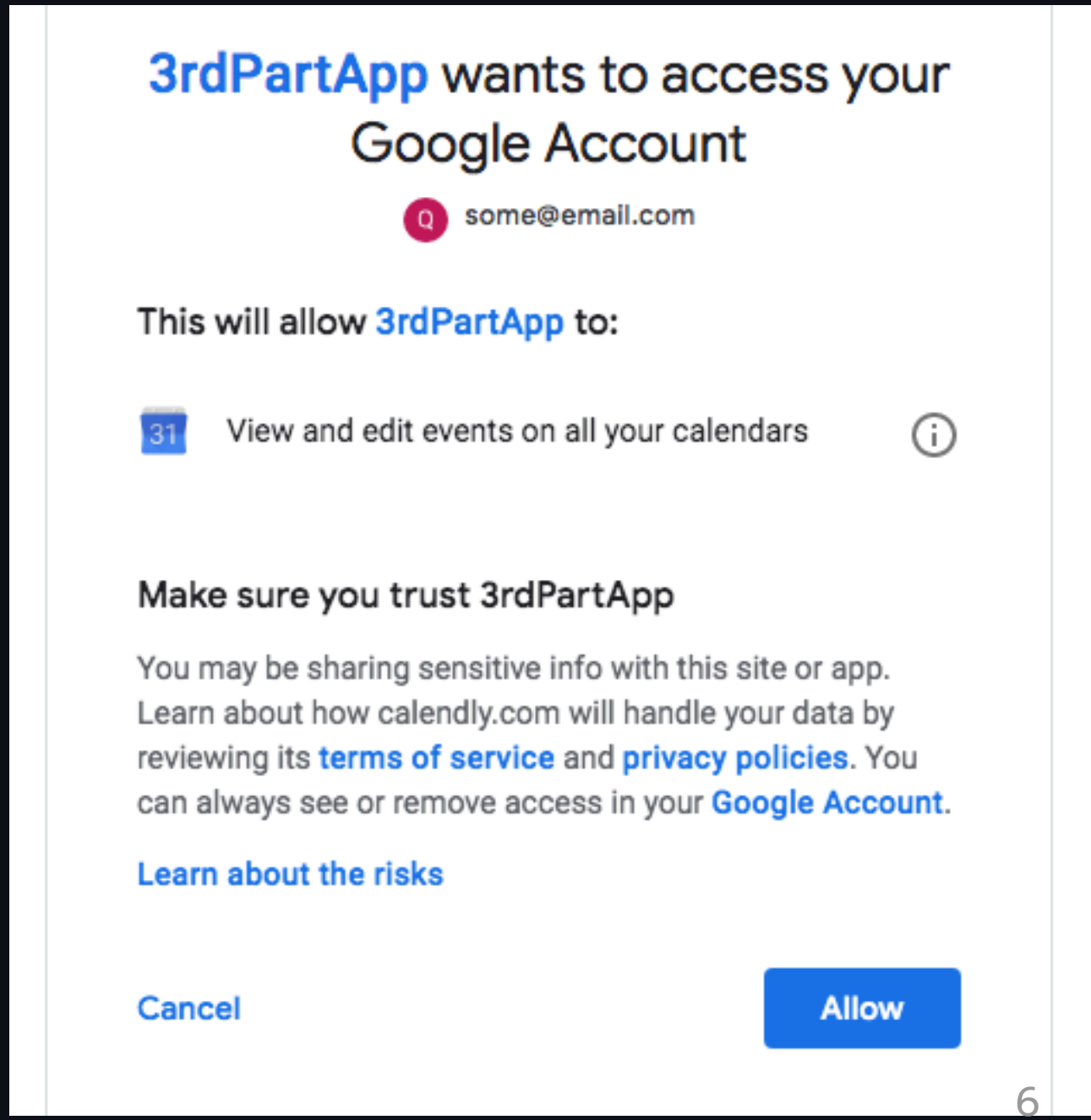


Part 2: Social signing up/in

Section 2A: OAuth 2.0

OAuth 2.0

Example of consent screen



OAuth 2.0

- "Open Authorization"
- Standard designed to allow application to access resources hosted by other web apps on behalf of a user.
  - Standard for `author`
  - Not for `authen`
- Replaced OAuth 1.0 in 2012.

OAuth 2.0

- Specifies many "flows"
  - **Authorization Code Flow**
  - Client Credentials Flow
  - Refresh Token Flow
  - JWT Bearer Flow
  - Device Code Flow
- We will use "Authorization Code Flow" for social login.

Recommended resources

- https://engineering.backmarket.com/oauth2-explained-with-cute-shapes-7eae51f20d38
- https://developer.okta.com/blog/2019/10/21/illustrated-guide-to-oauth-and-oidc?utm_source=pocket_shared
- https://youtu.be/8aCyojTIW6U?si=YPxkcLPcAoK5jixI
- https://youtu.be/t18YB3xDfXI?si=pD1JnFP0GrnBXW2v

Wait

> Are we using OAuth (standard for `author`) and **authorization** code flow for `authen`?

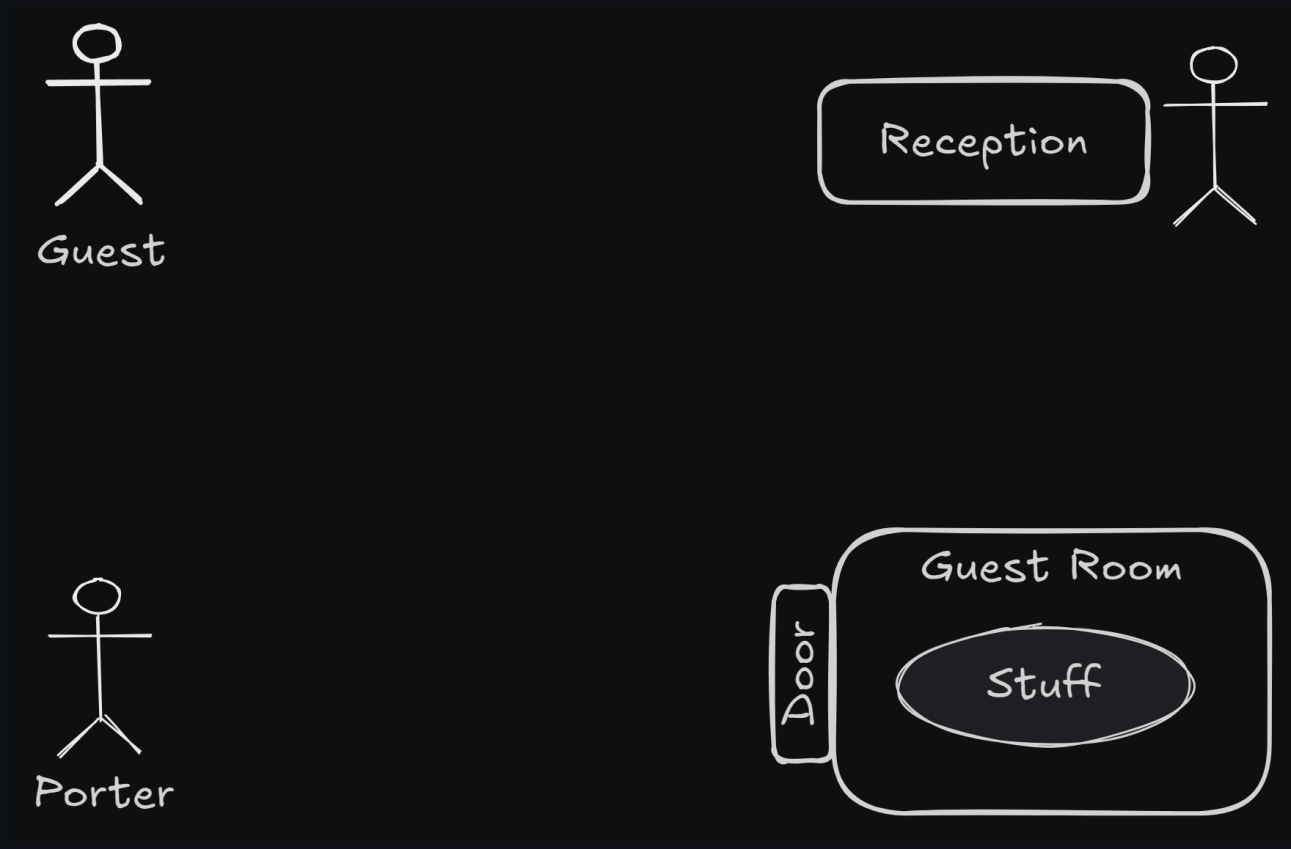
> Yes, we kind of "misusing" it.

Authorization code flow

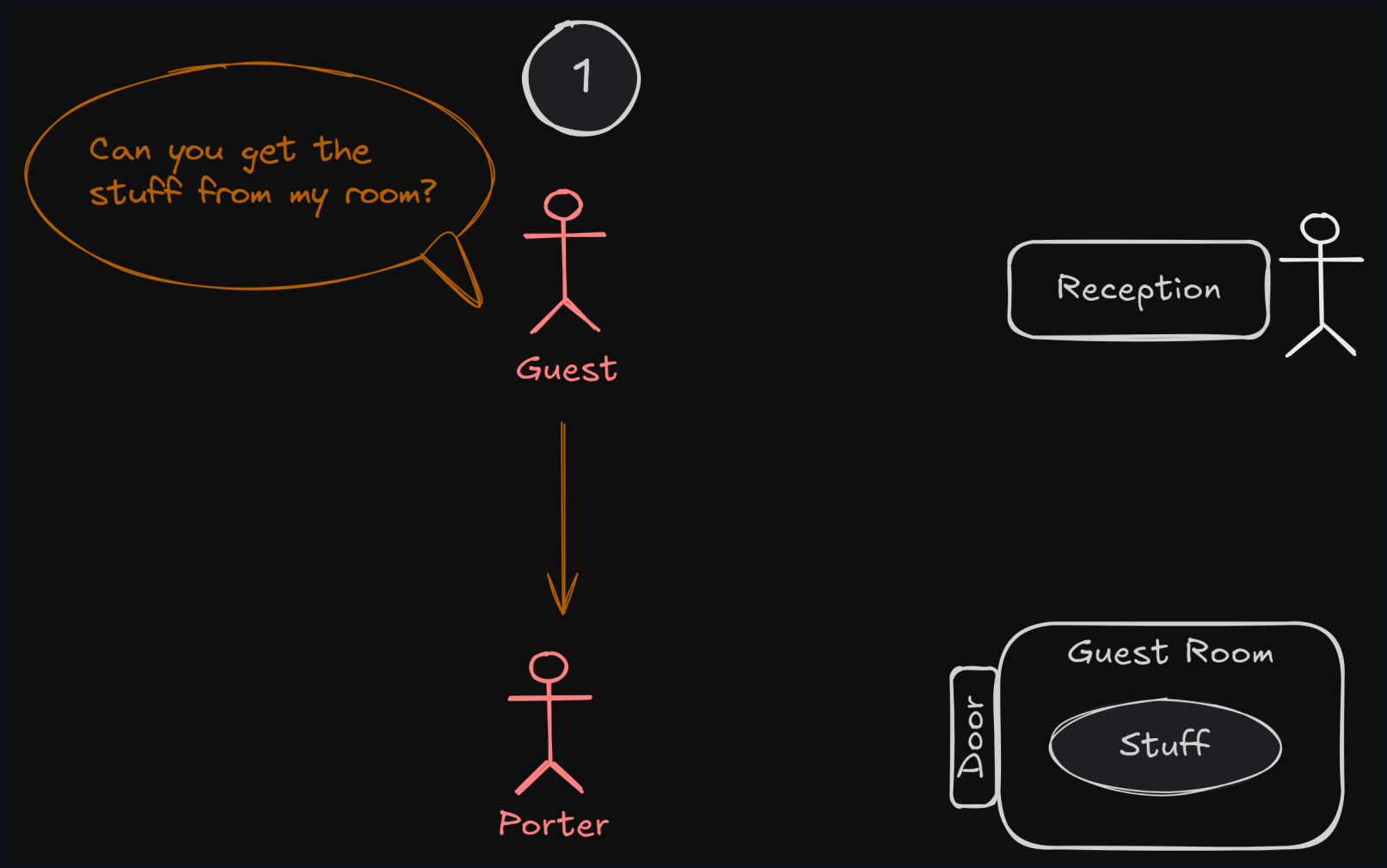
> In real life

Setup

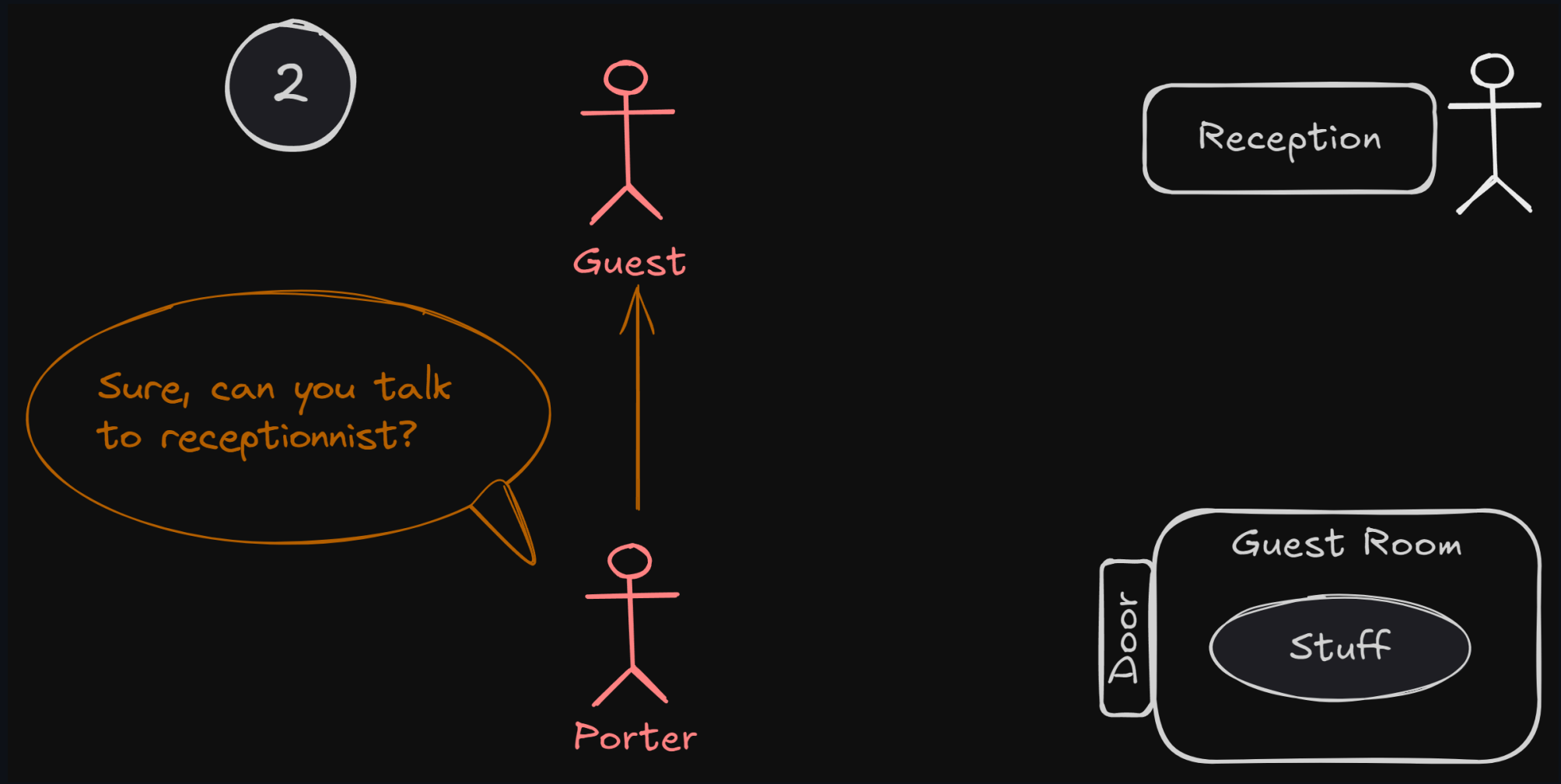
- You are a guest at a hotel.
- You already checked out.
- You forgot your stuff in the room.
- You want a porter to get your stuff for you.



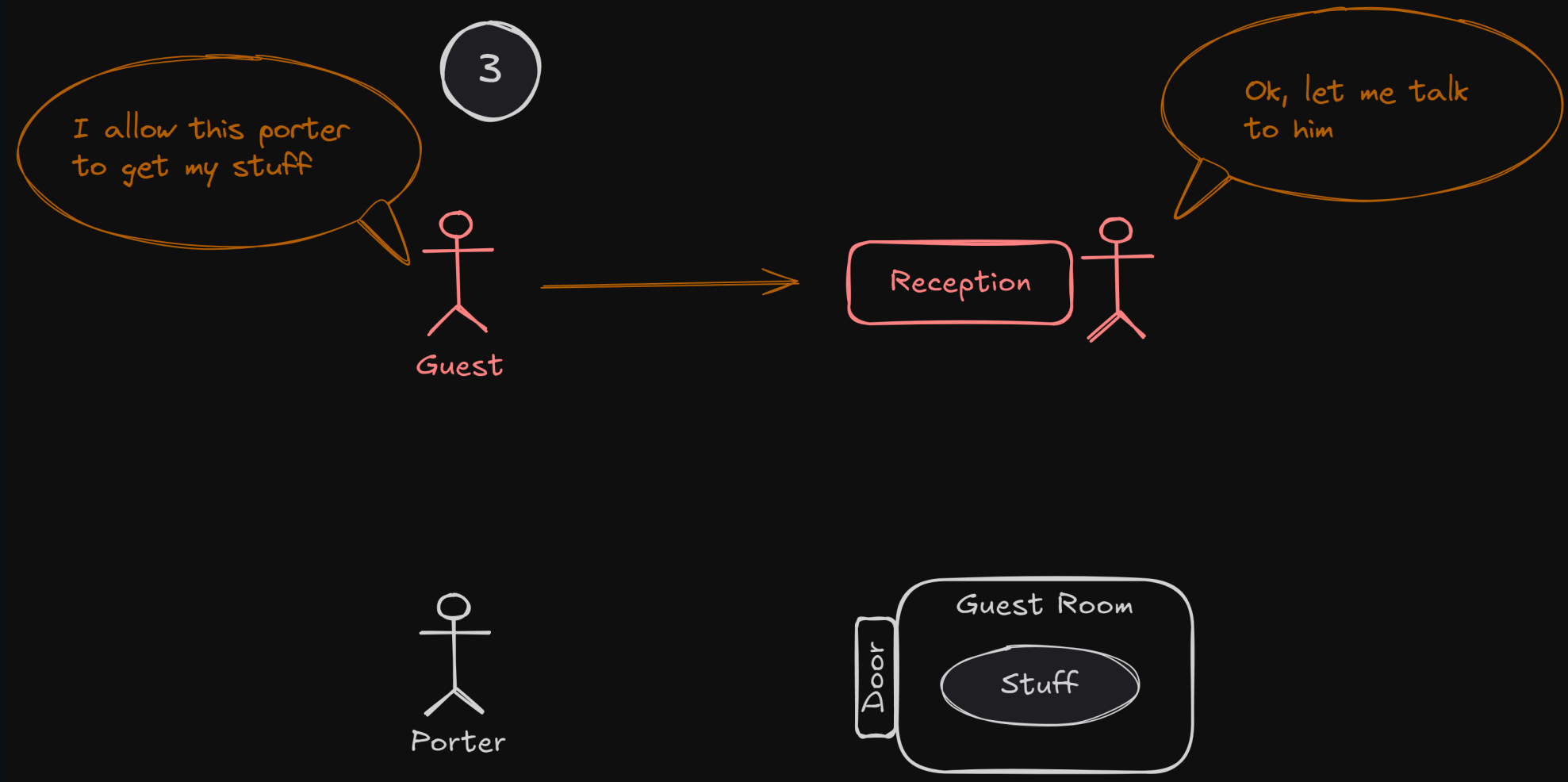
OAuth 2.0 in real life



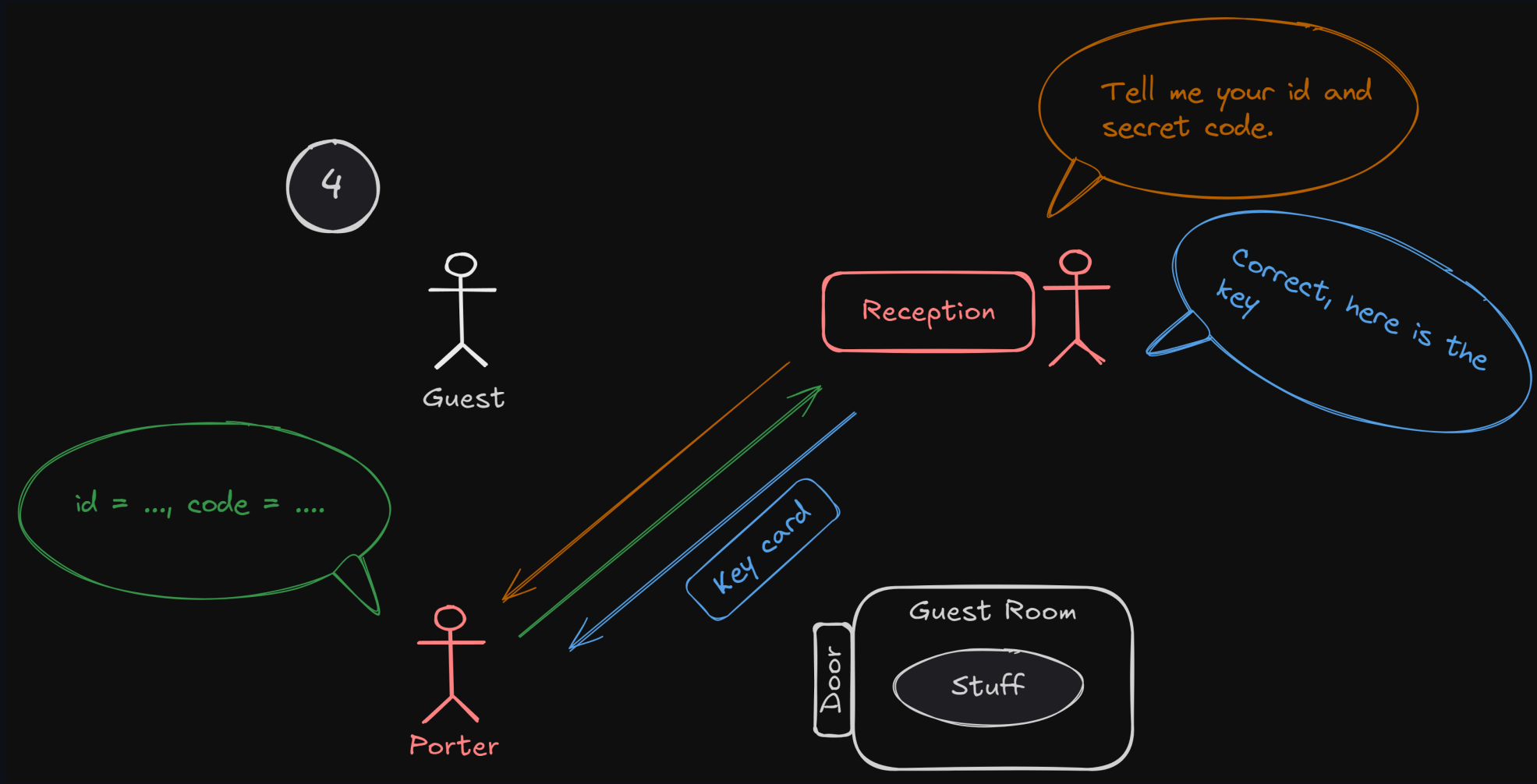
OAuth 2.0 in real life



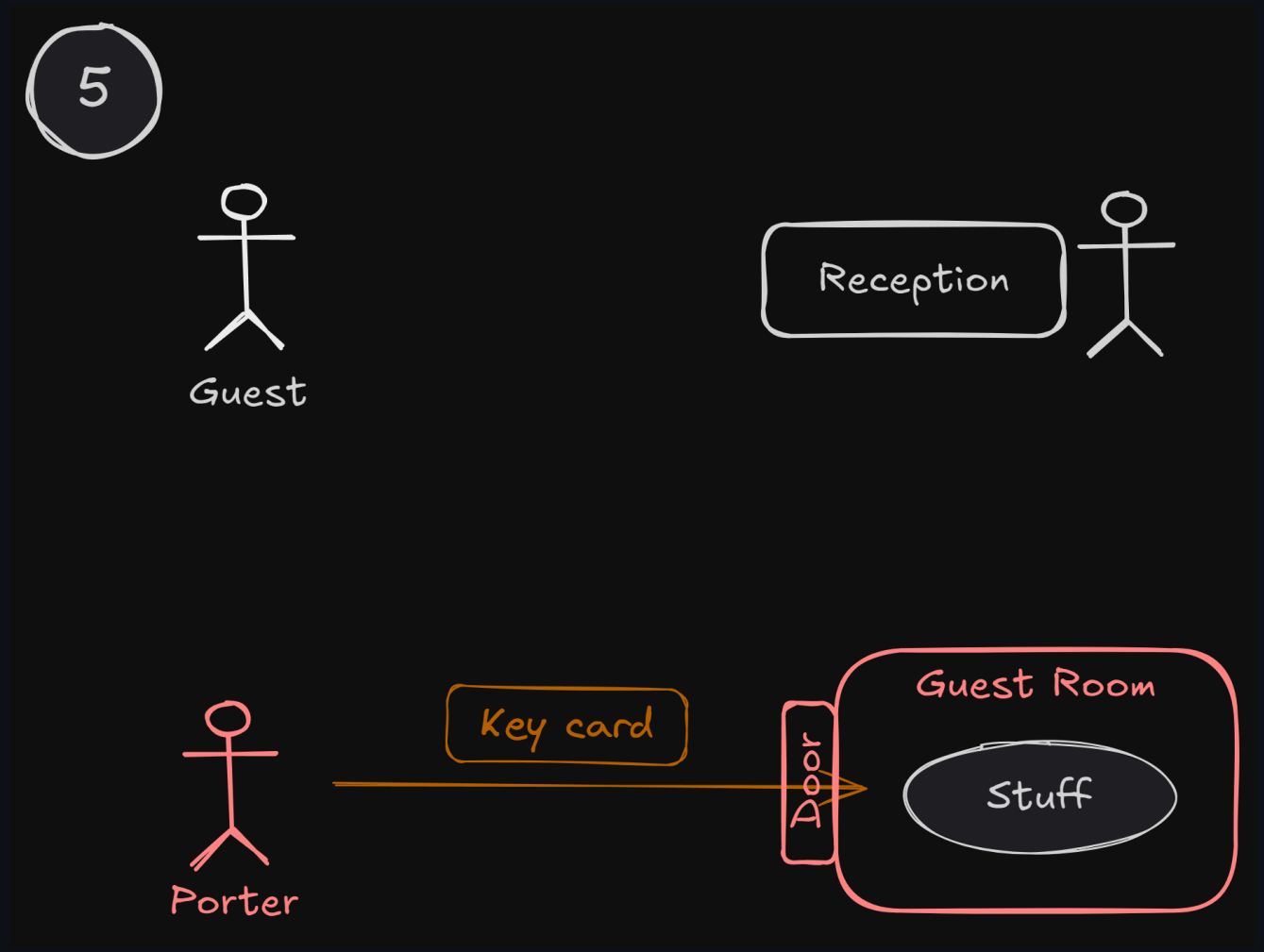
OAuth 2.0 in real life



OAuth 2.0 in real life



OAuth 2.0 in real life



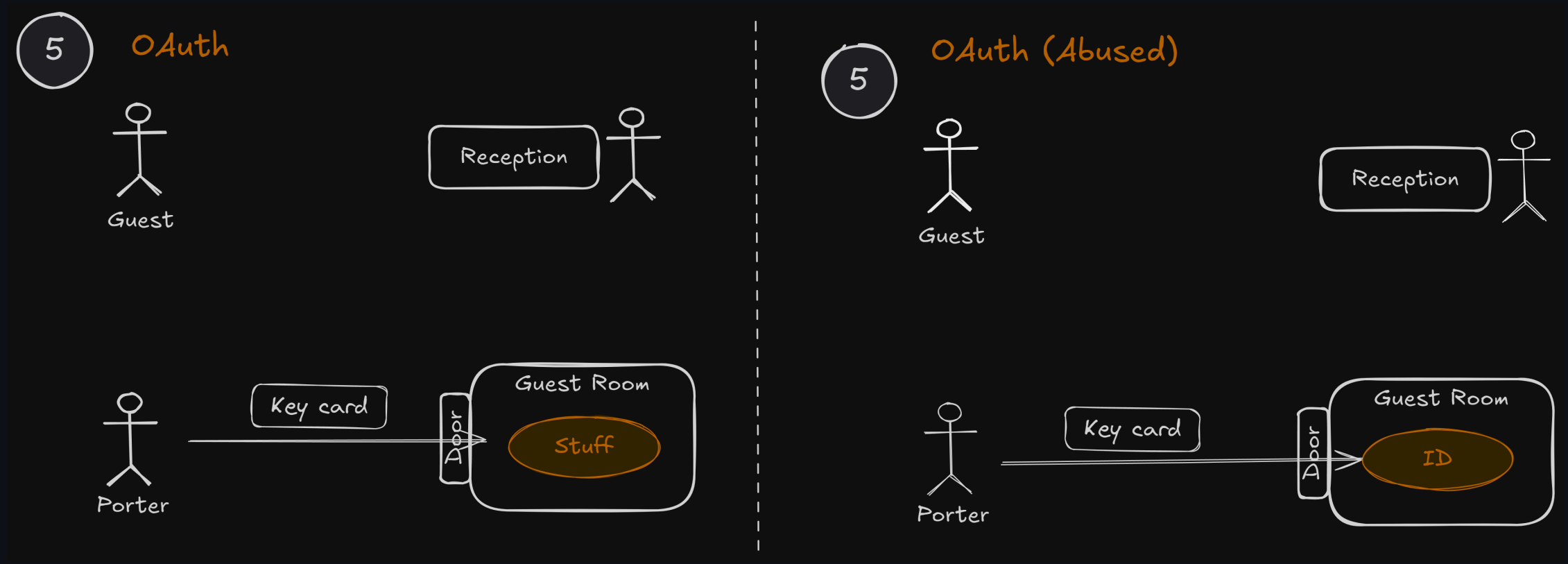
Authorization code flow

- You (`guest`) authorize `porter` to access your resource.
- `porter` does not need to know who you are.
- The keycard reader at the door also doesn't need to have your information.

Authentication?

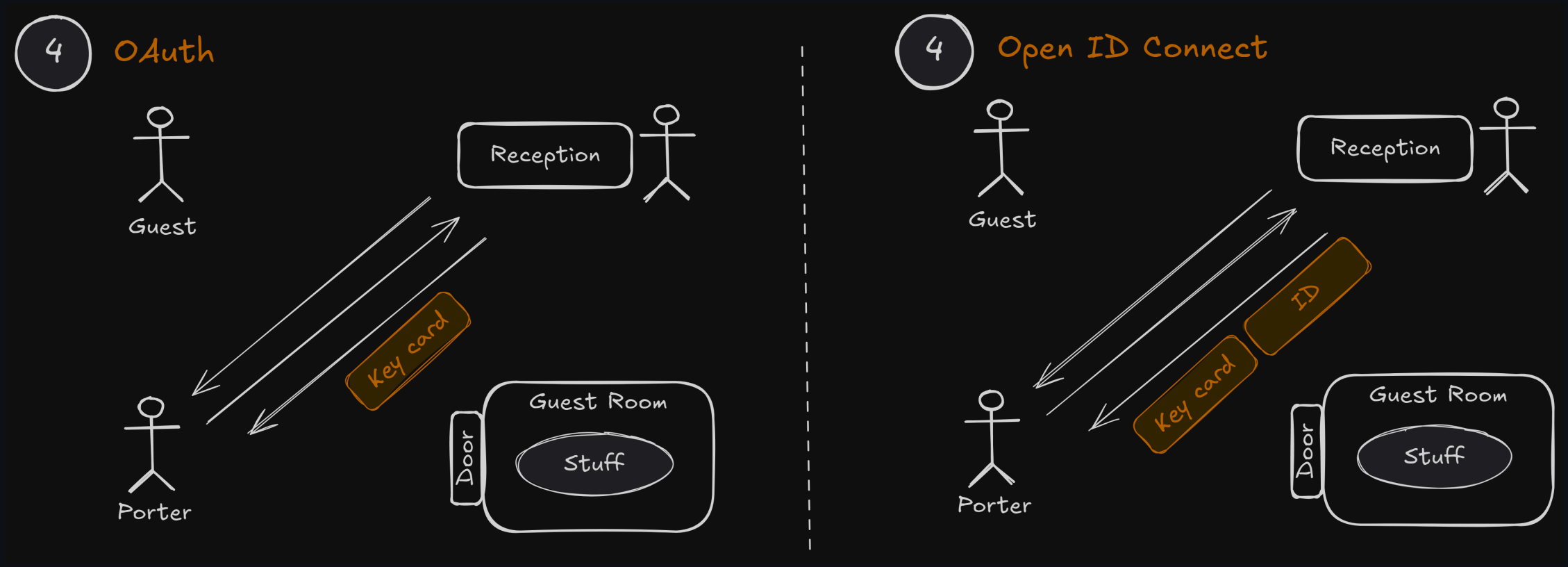
- But what if the porter wants to know who you are.
- There are two ways.

Oauth 2.0 in real life



This is what we are using, but is there a better way?

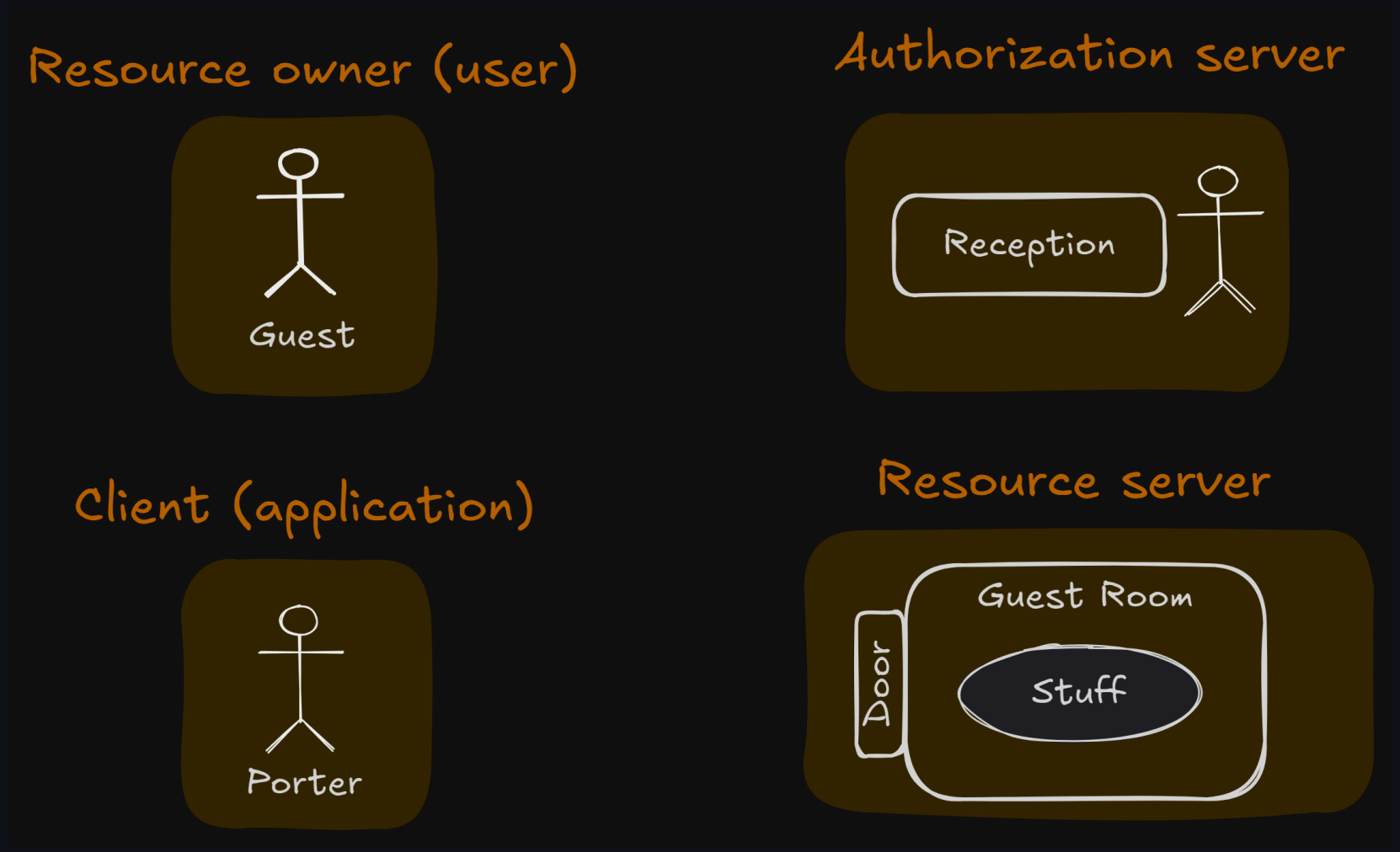
Oauth 2.0 in real life



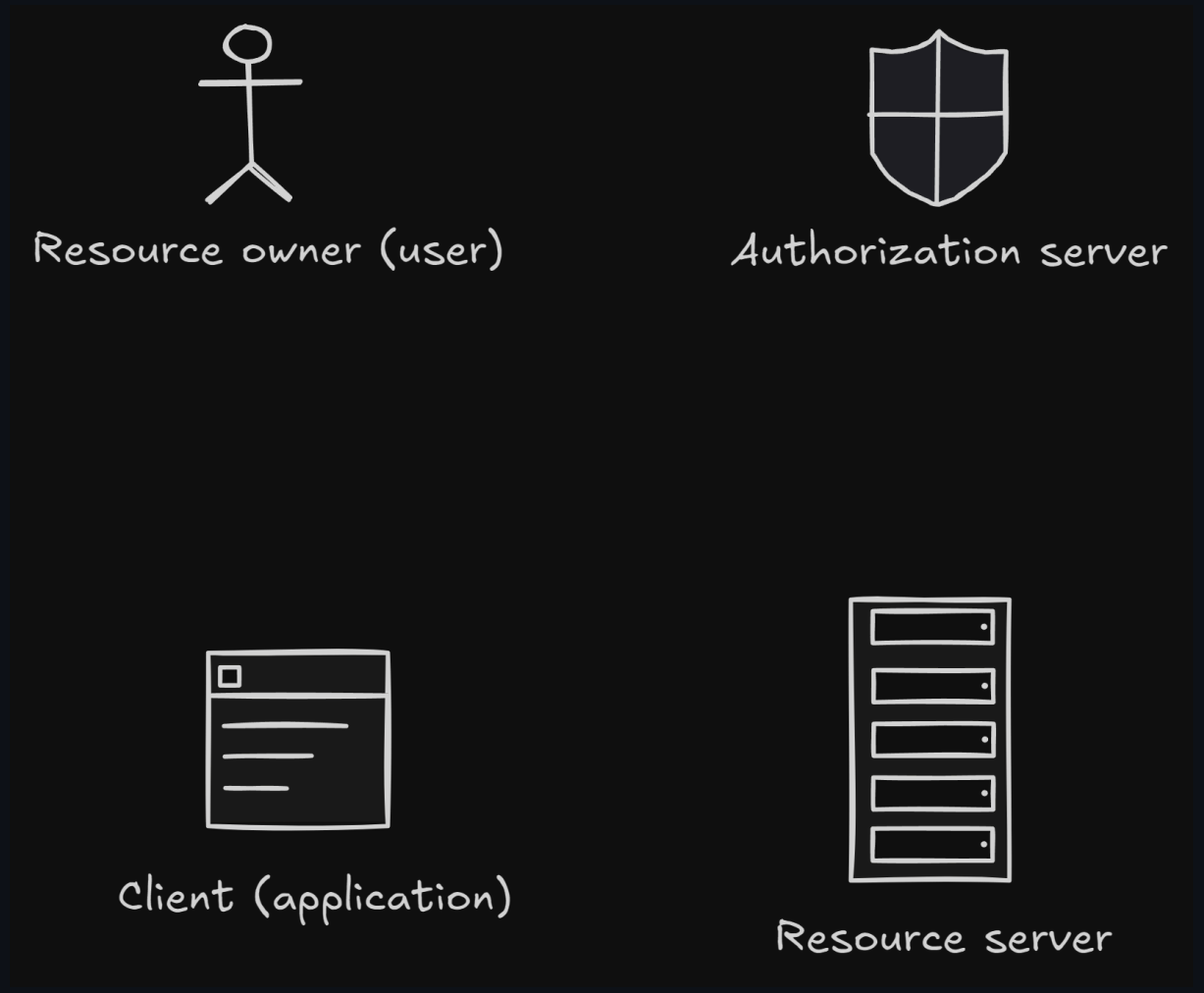
OpenID Connect (OIDC)

- Thin layer that sits on top of OAuth 2.0
  - Adds login and profile information about the person who is logged in.
- When a "Authorization Server" supports OIDC, it is sometimes called an "Identity Provider".
- Not all servers support OIDC.

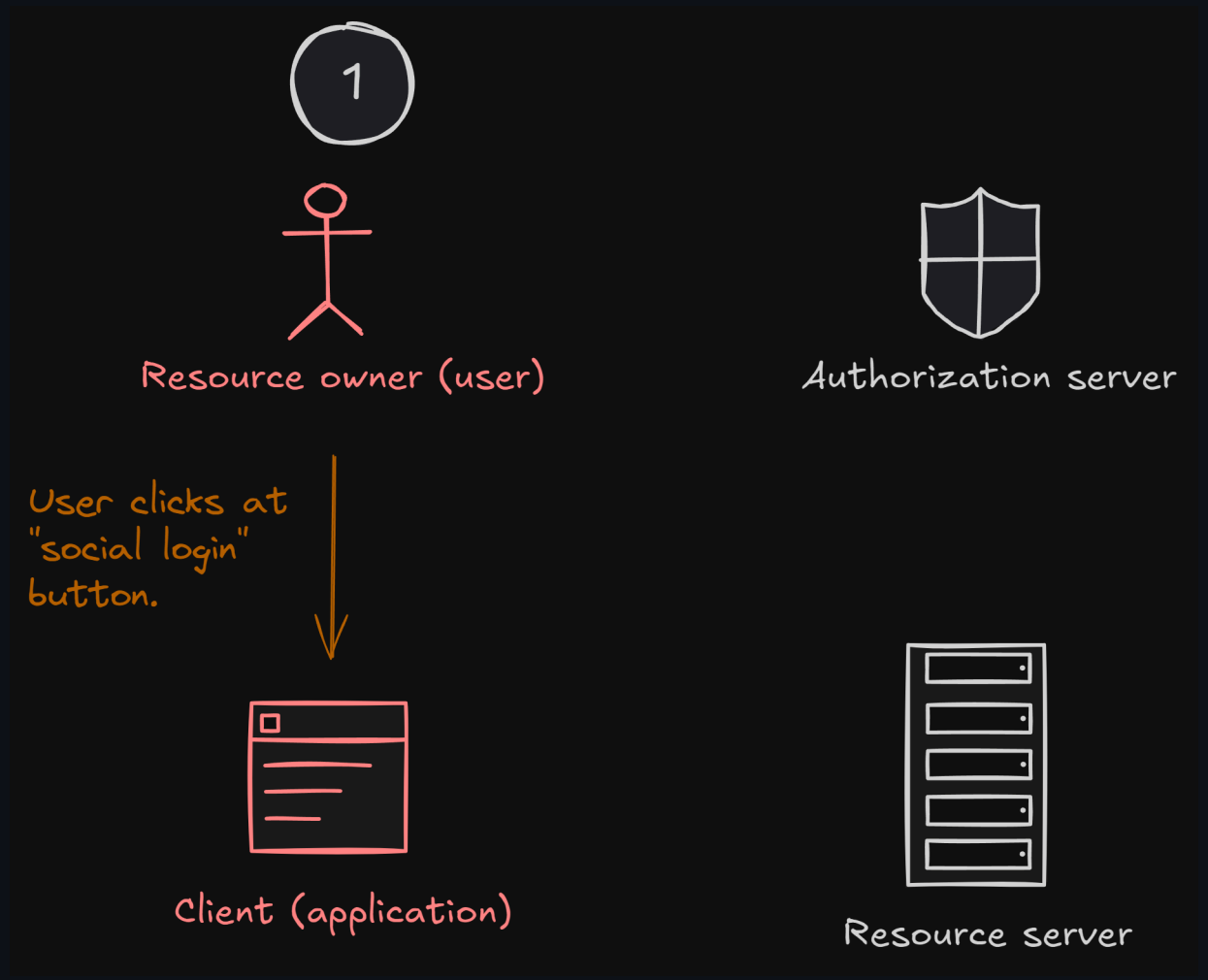
Terminology



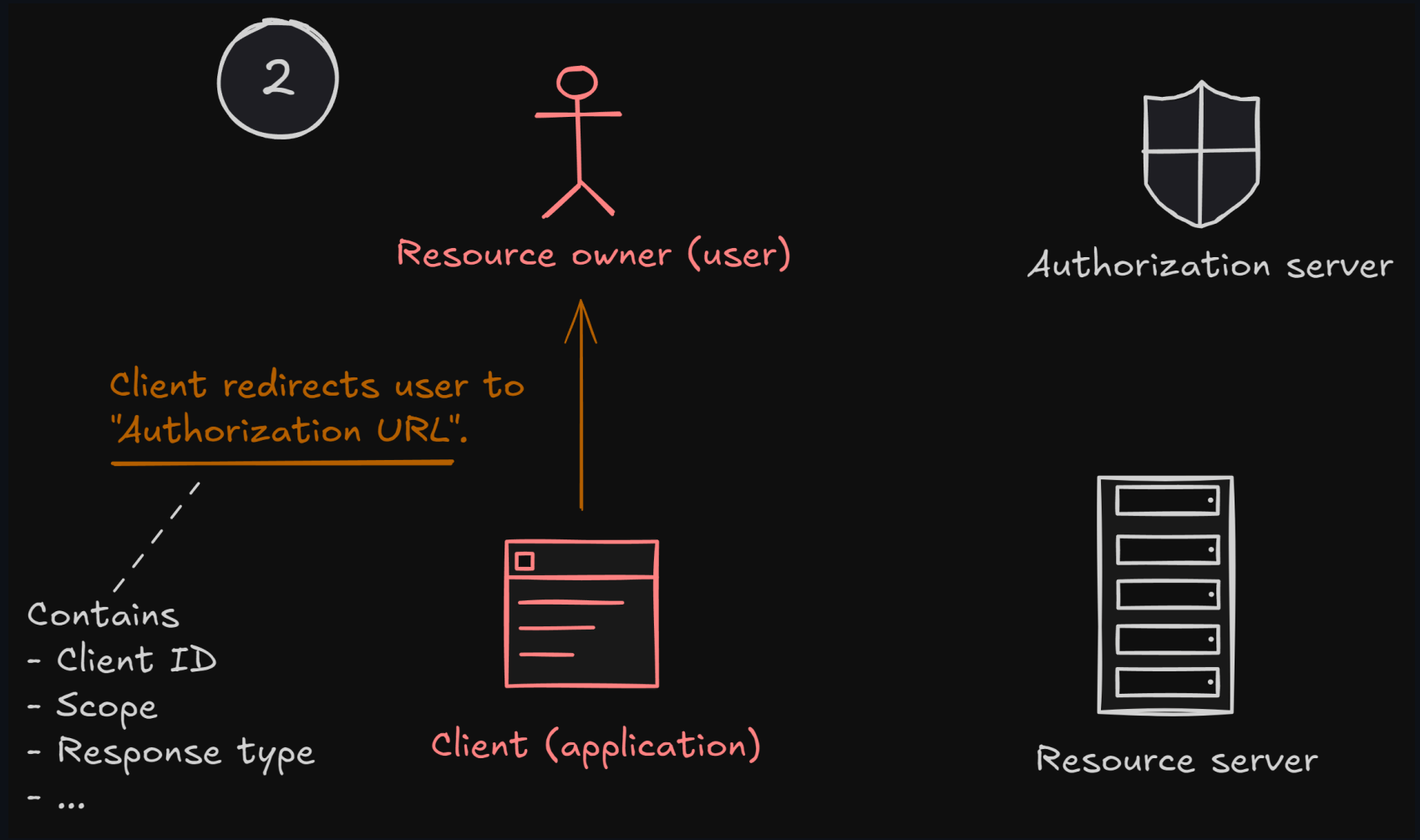
Terminology



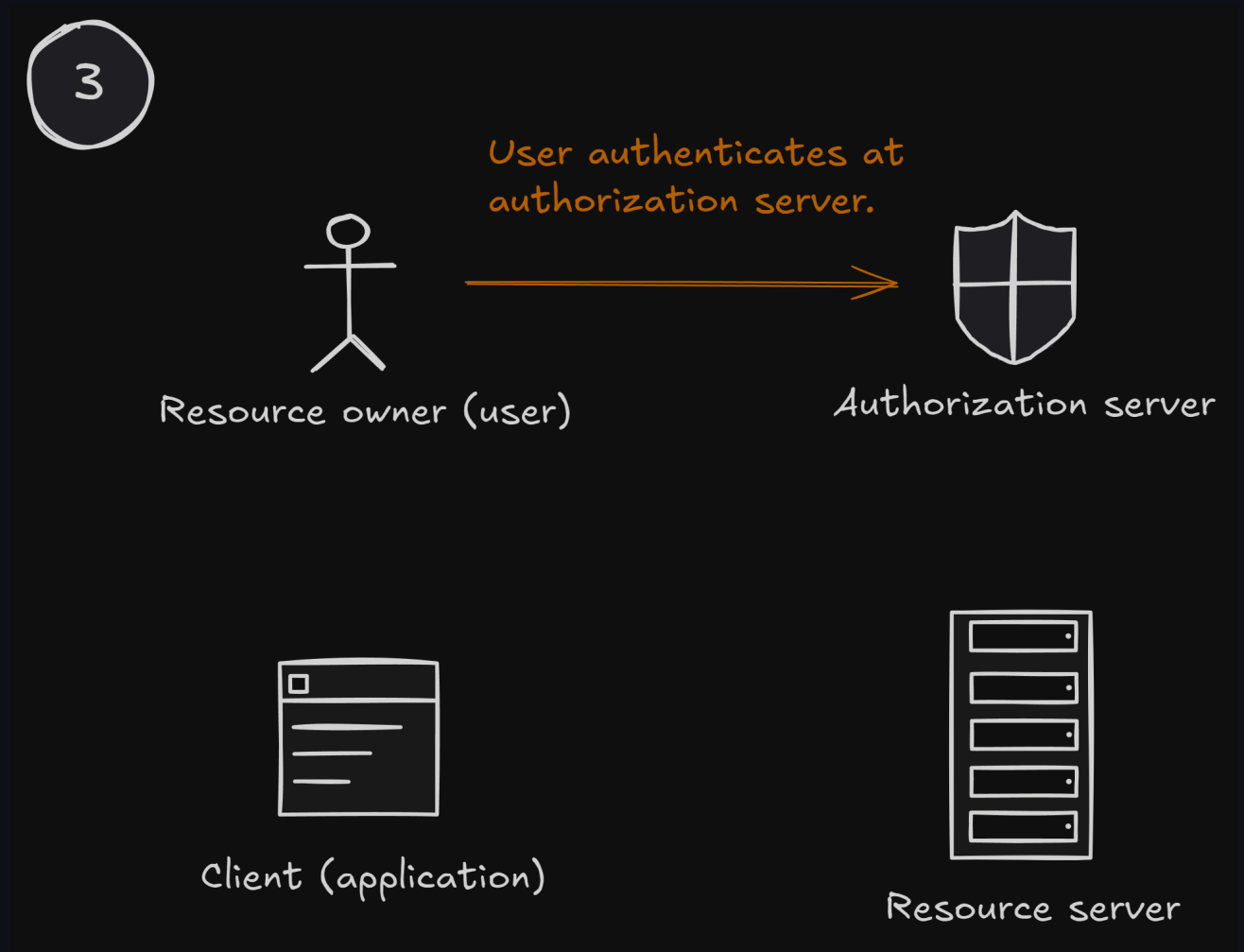
OAuth 2.0 (actual)



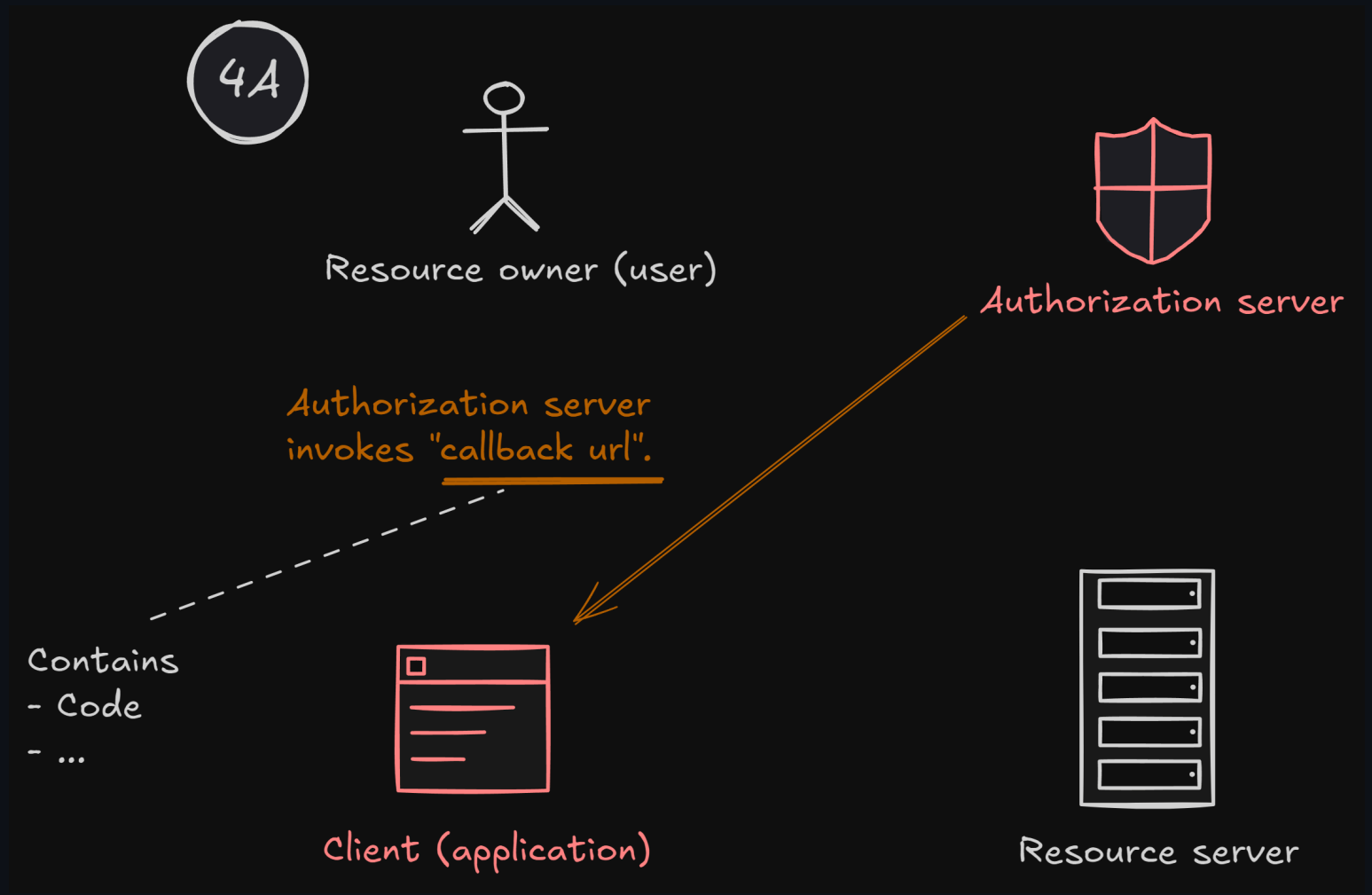
OAuth 2.0 (actual)



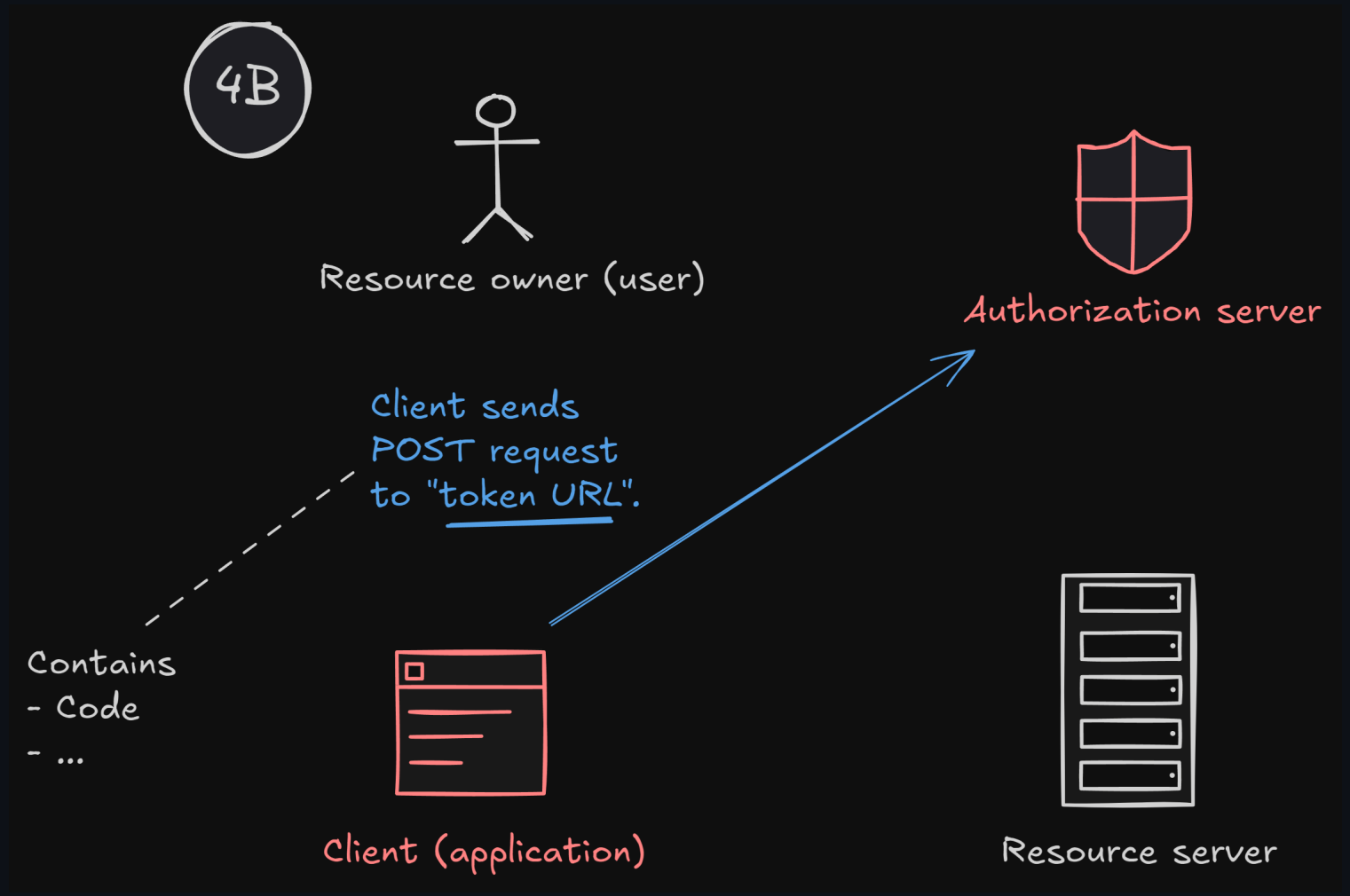
OAuth 2.0 (actual)



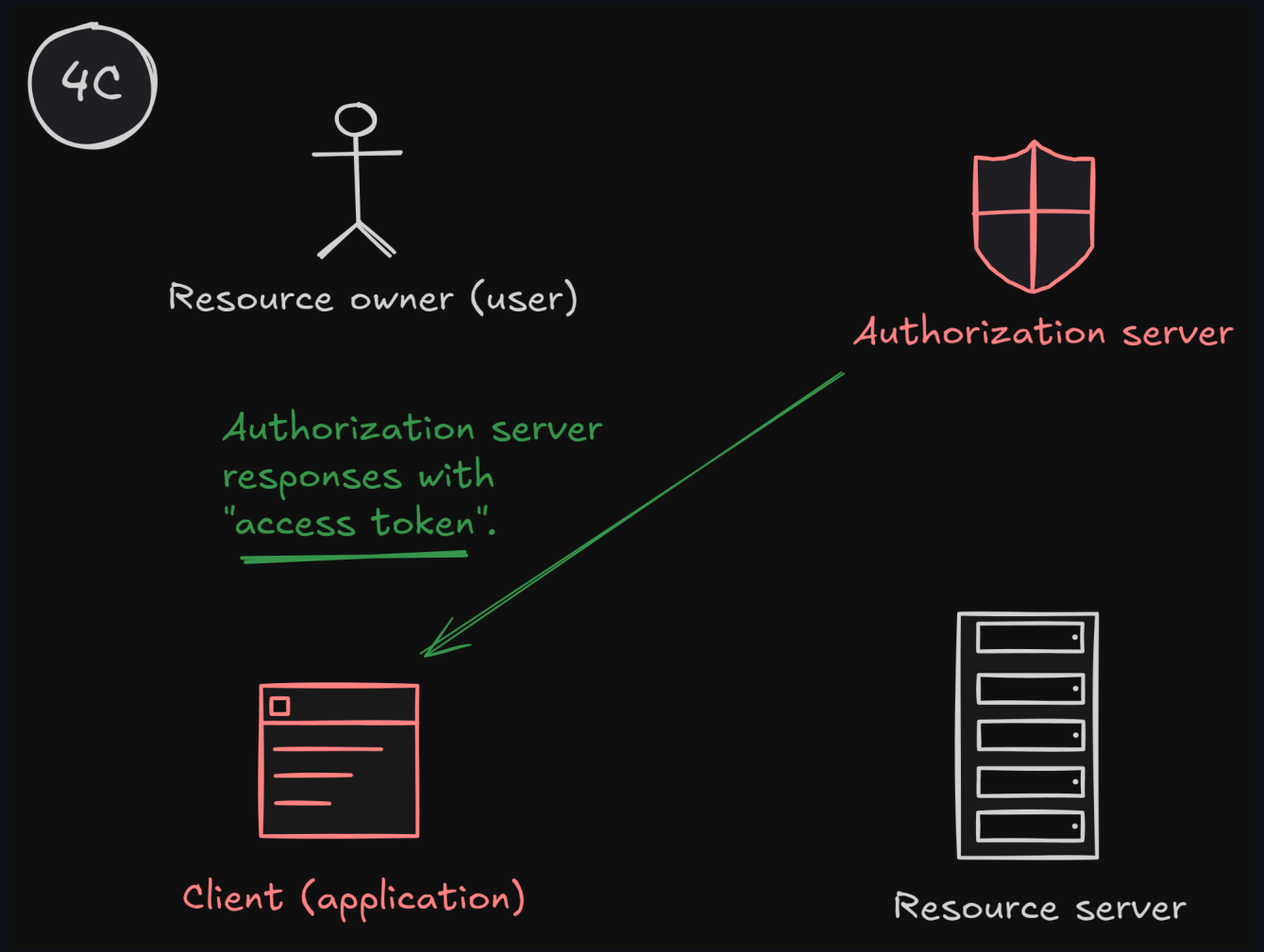
OAuth 2.0 (actual)



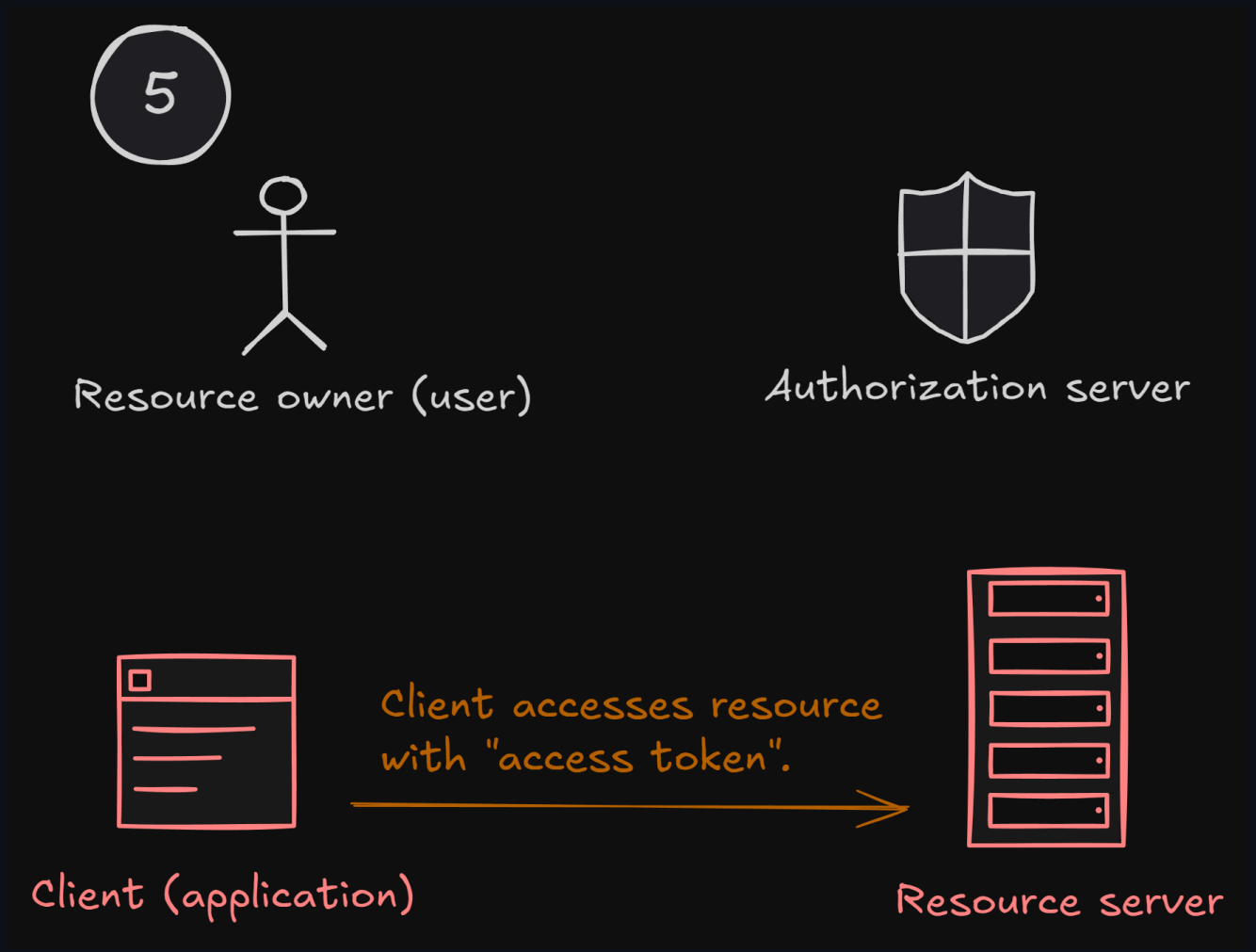
OAuth 2.0 (actual)



OAuth 2.0 (actual)



OAuth 2.0 (actual)



> Part 2: Social signing up/in

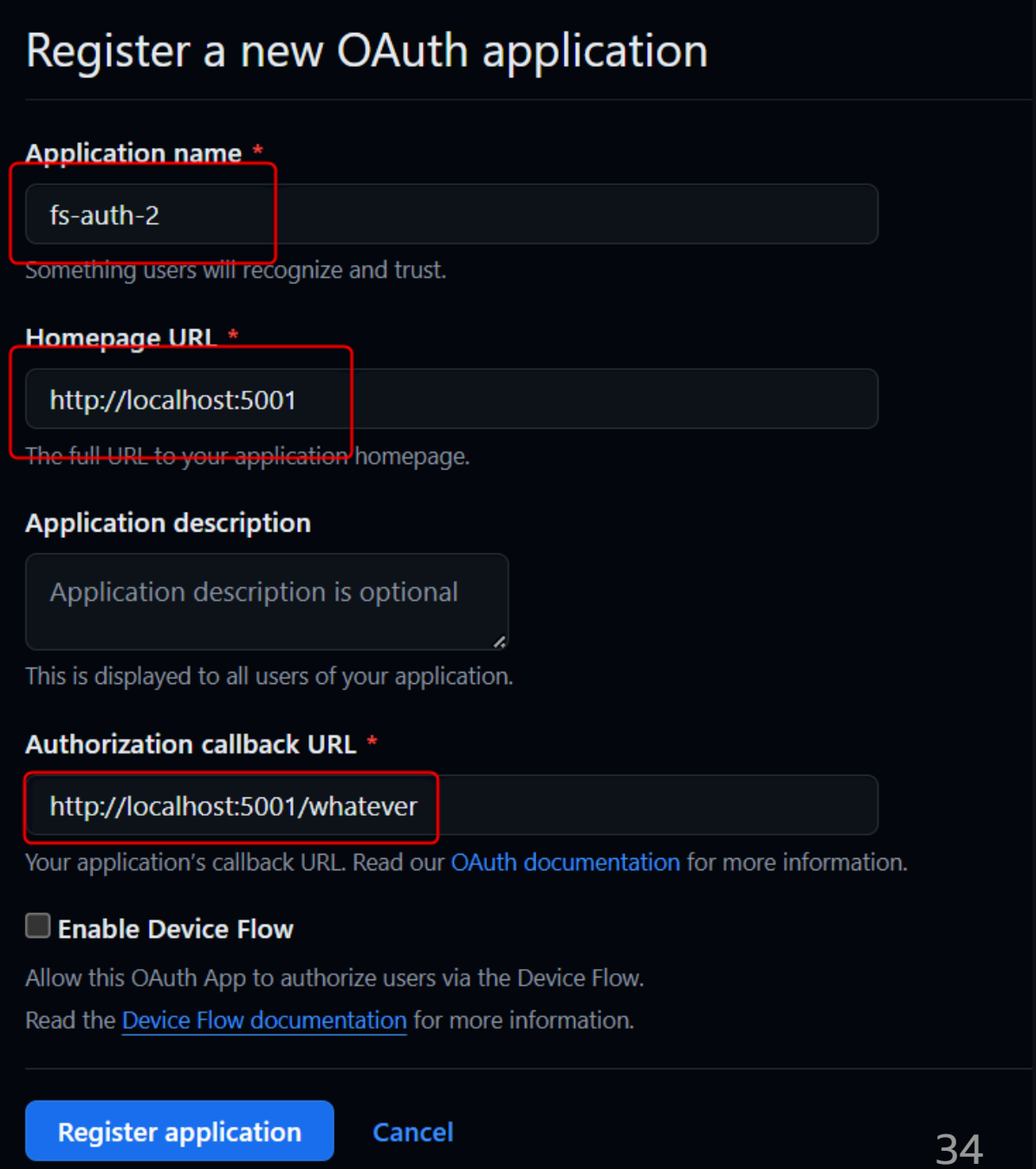
Section 2B: Oauth 2.0 with Github (Lab)

You will need

- `Client ID = ...`
- `Client Secret = ...`
- `Callback URL = http://localhost:5001/whatever`
- `Scope = ...`
- `Authoriation URL = ...`
- `Token URL = ...`
- `Resource URL`
  - `https://api.github.com/user`
  - `https://api.github.com/user/emails`
- `Access Token = ...`

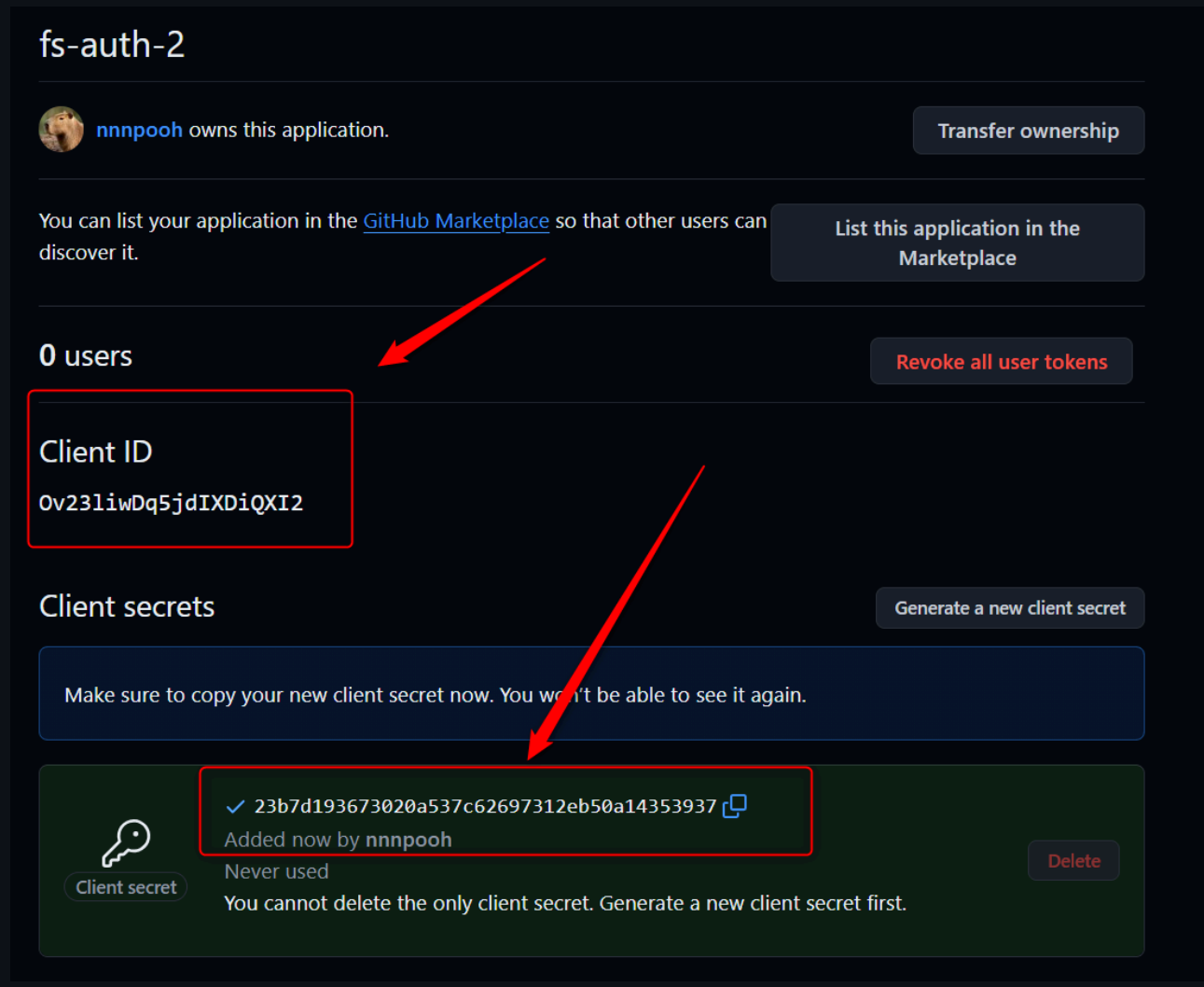
Setup

- Register your app here.
- `Homepage URL` and `Callback URL` can be whatever for now.



Setup

- Get `Client ID` and `Client Secret`



Setup

- Choose scope.
  - `scope=user,user:email`
- Contruct `Authorization URL`
  - `https://github.com/login/oauth/authorize?client_id=CLIENT_ID&redirect_uri=REDIRECT_URL&response_type=code&scope=SCOPE`

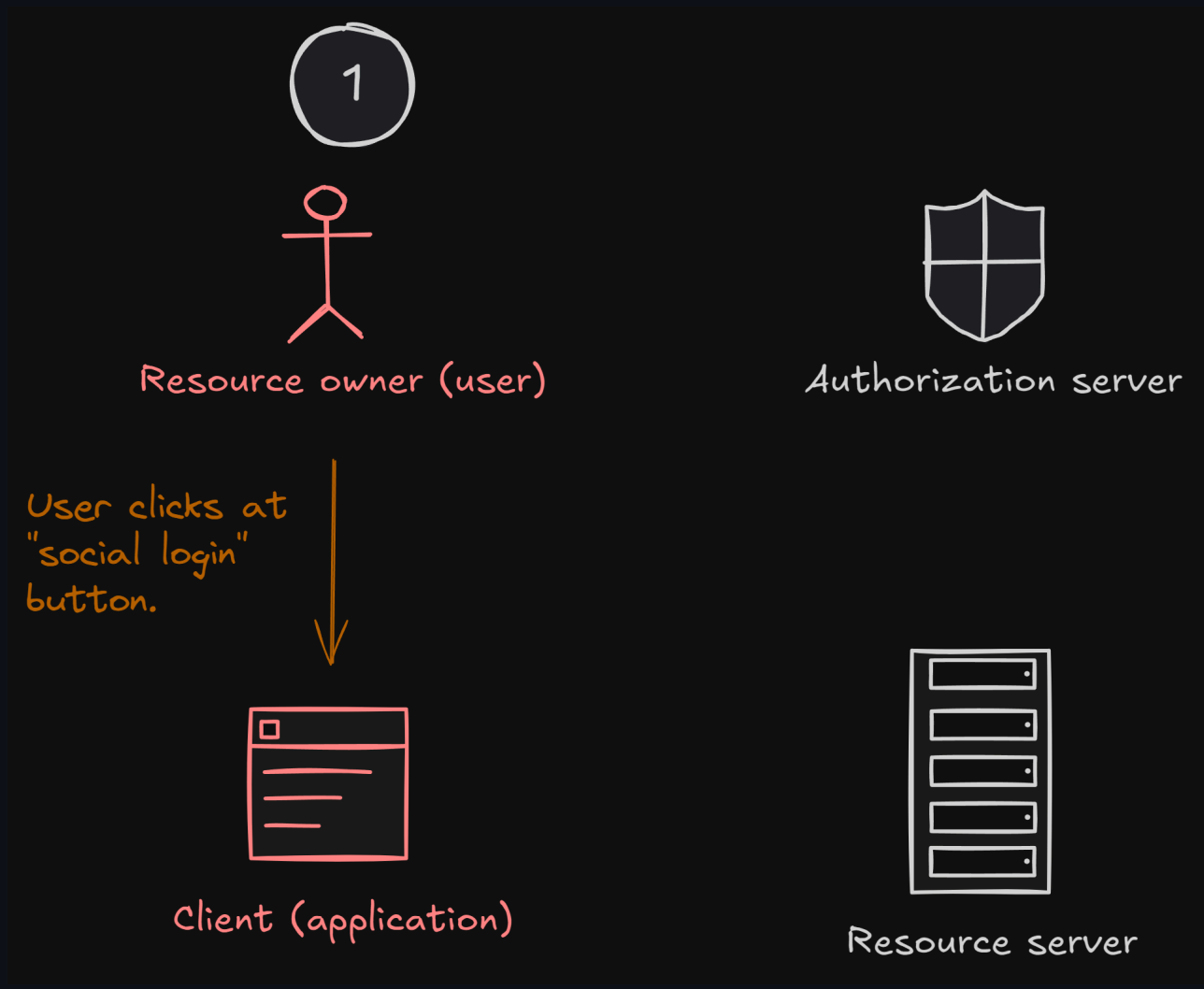
Setup

- Construct `Token URL` *(incompleted)*
  - `https://github.com/login/oauth/access_token?client_id=CLIENT_ID&client_secret=CLIENT_SECRET&code=CODE&redirect_uri=CALLBACK_URL`

Let's go

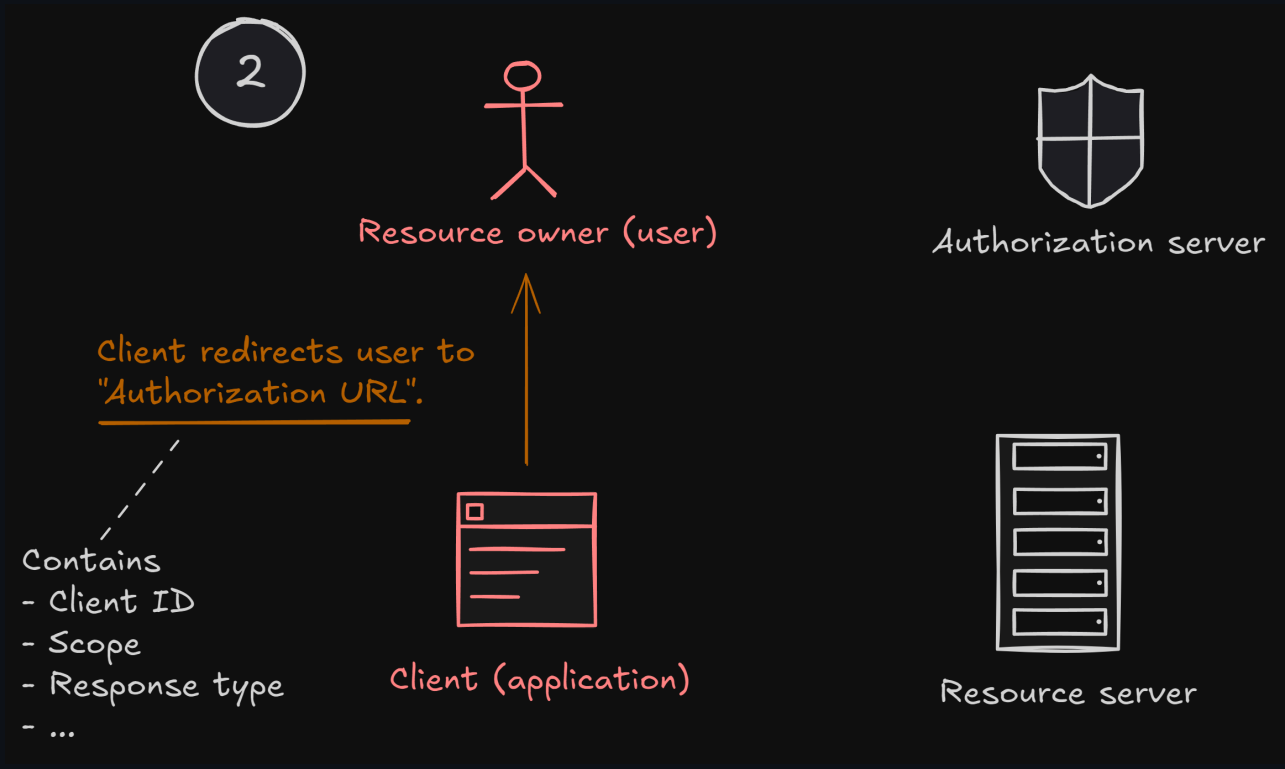
Step 1

- Do nothing.
- *Pretend that your app has social signin button.*



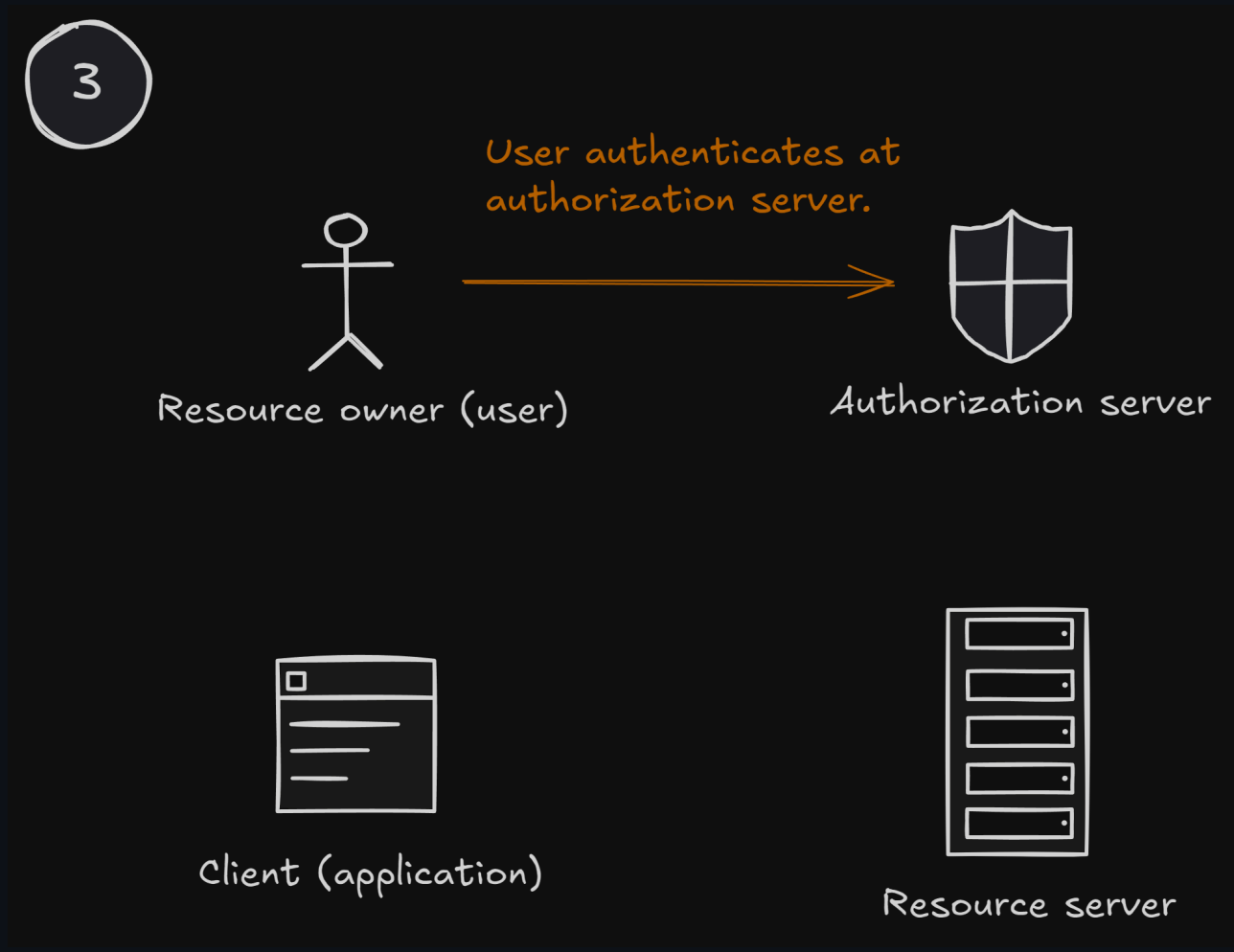
Step 2

- Paste the `Authorization URL` in the address bar.
- *Pretend that this is done from url redirection.*



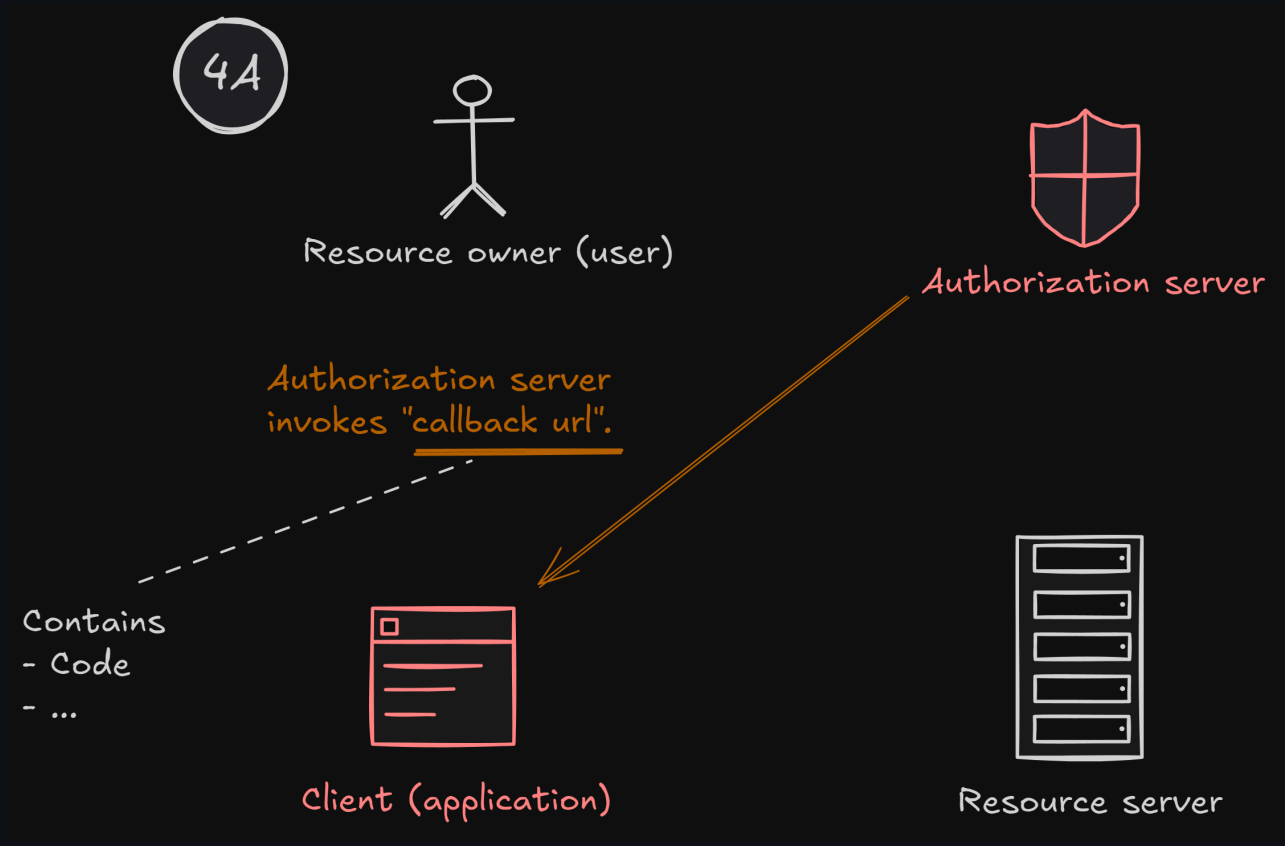
Step 3

- Authenticate at Github.



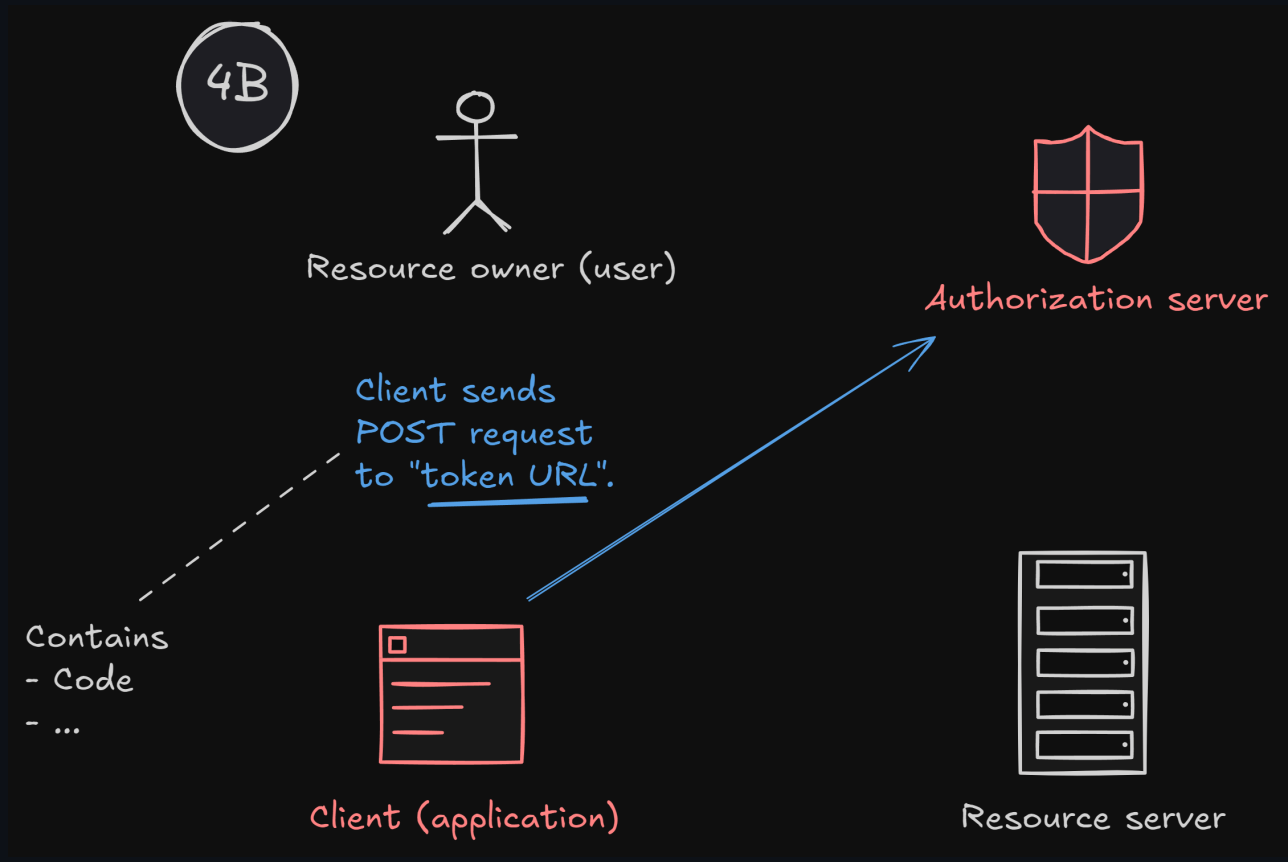
Step 4A

- Extract `Code` and keep it.
- `Code` is usually very short-lived.



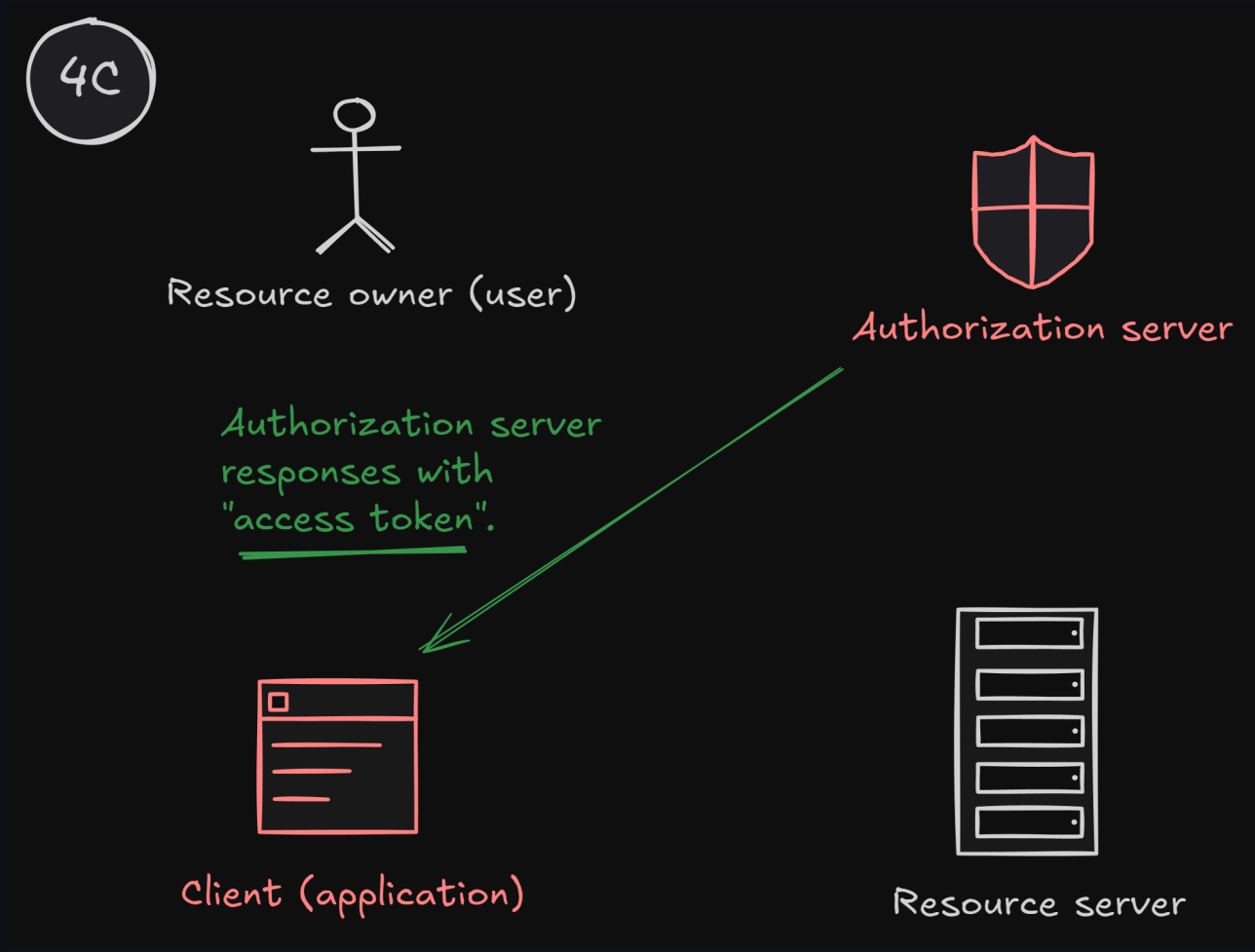
Step 4B

- Send `POST` request to `Token URL` with actual `Code`.
- Reference



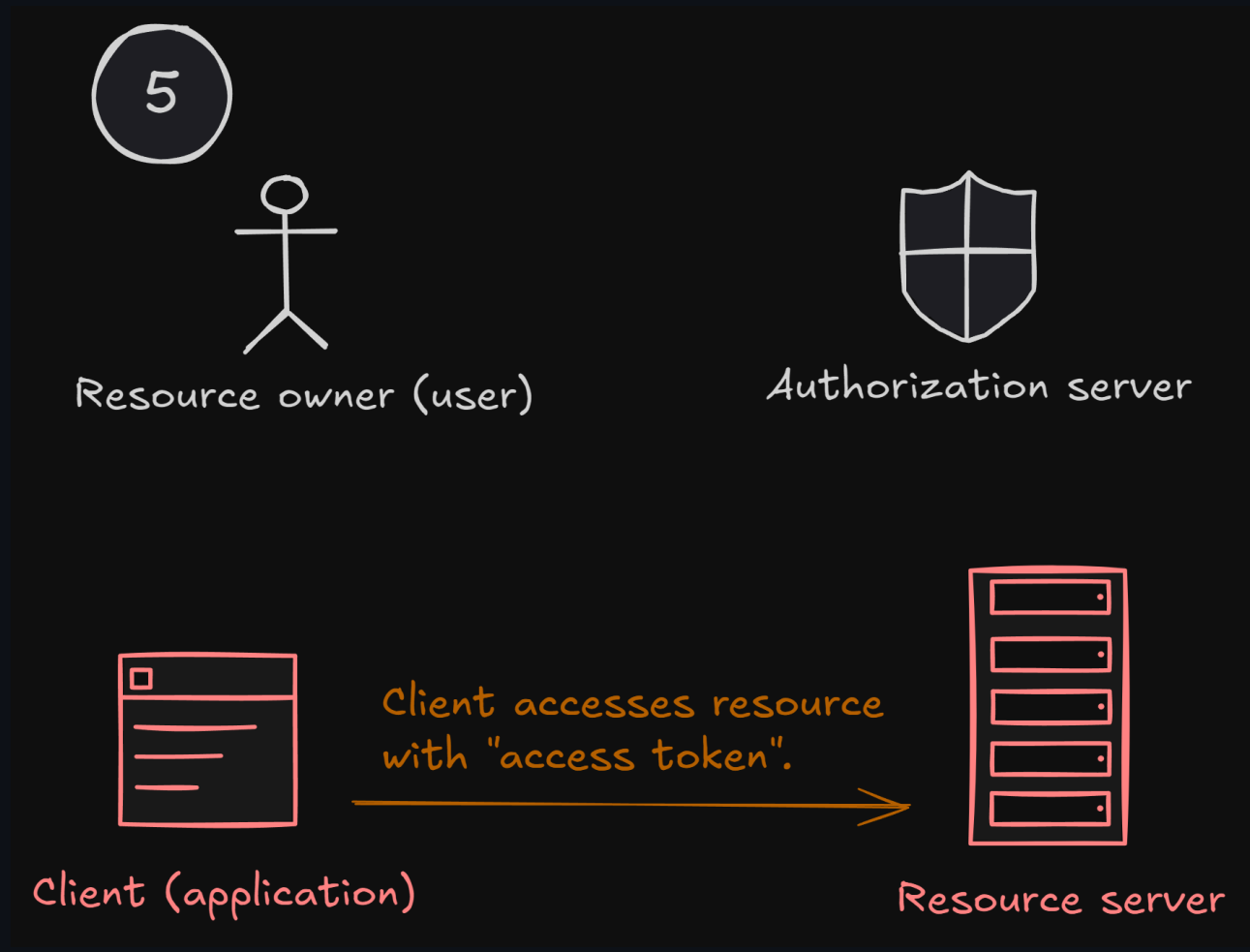
Step 4C

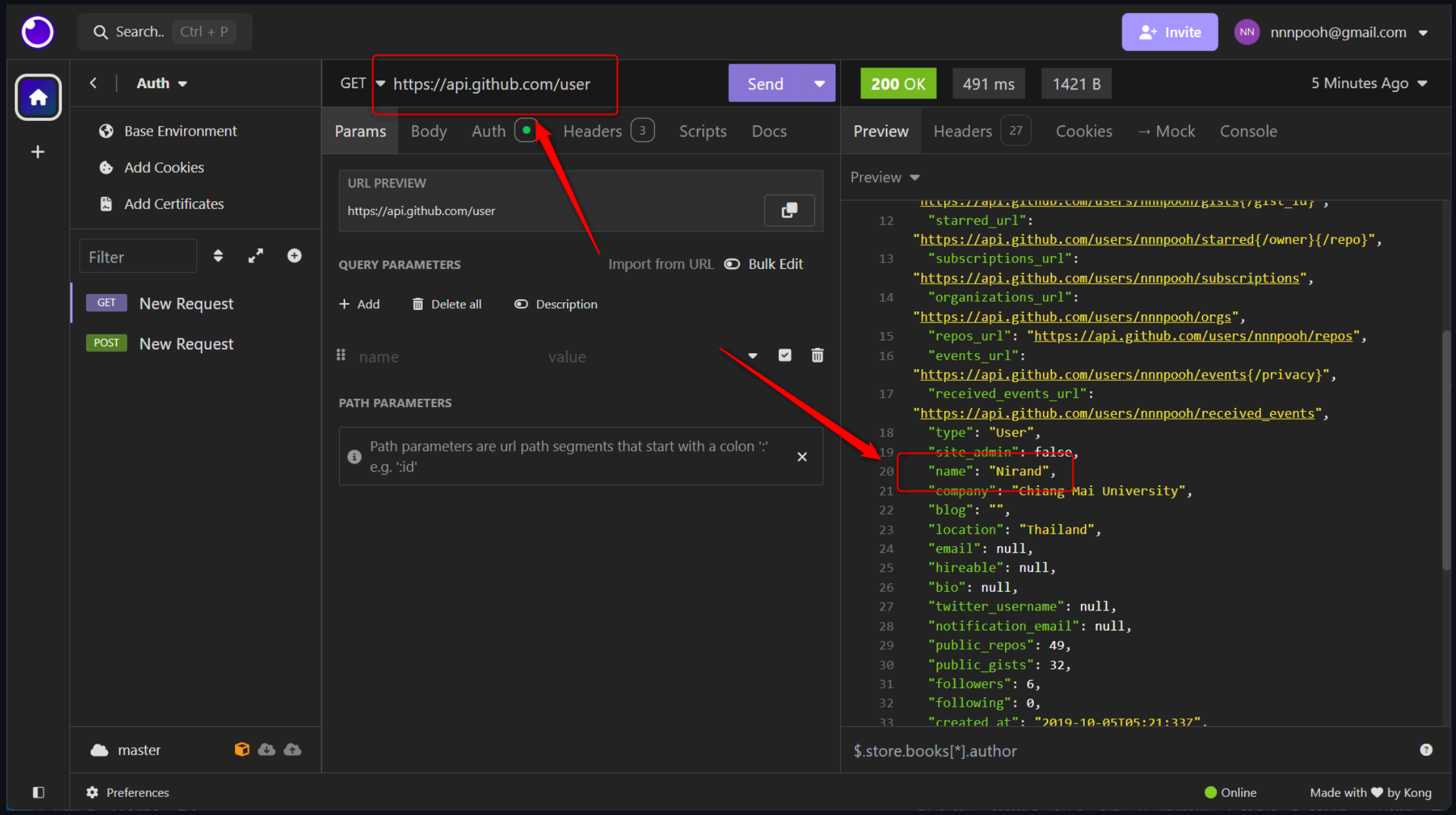
- Keep `Access Token` from the response.



Step 5

- Send `GET` request to `Resouces URL`.
- Use `Access Token` as bearer token.
- Reference




Search.. Ctrl + P
Invite
nnnpooh@gmail.com
Auth
GET https://api.github.com/user
Send
200 OK
491 ms
1421 B
5 Minutes Ago
Base Environment
Add Cookies
Add Certificates
Filter
GET New Request
POST New Request
Params
Body
Auth
Headers 3
Scripts
Docs
Preview
Headers 27
Cookies
→ Mock
Console
URL PREVIEW
https://api.github.com/user
QUERY PARAMETERS
Import from URL
Bulk Edit
+ Add
Delete all
Description
name
value
PATH PARAMETERS
Path parameters are url path segments that start with a colon ':' e.g. ':id'
Preview
"starred_url": "https://api.github.com/users/nnnpooh/starred{/owner}{/repo}",
"subscriptions_url": "https://api.github.com/users/nnnpooh/subscriptions",
"organizations_url": "https://api.github.com/users/nnnpooh/orgs",
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"events_url": "https://api.github.com/users/nnnpooh/events{/privacy}",
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"company": "Chiang Mai University",
"blog": "",
"location": "Thailand",
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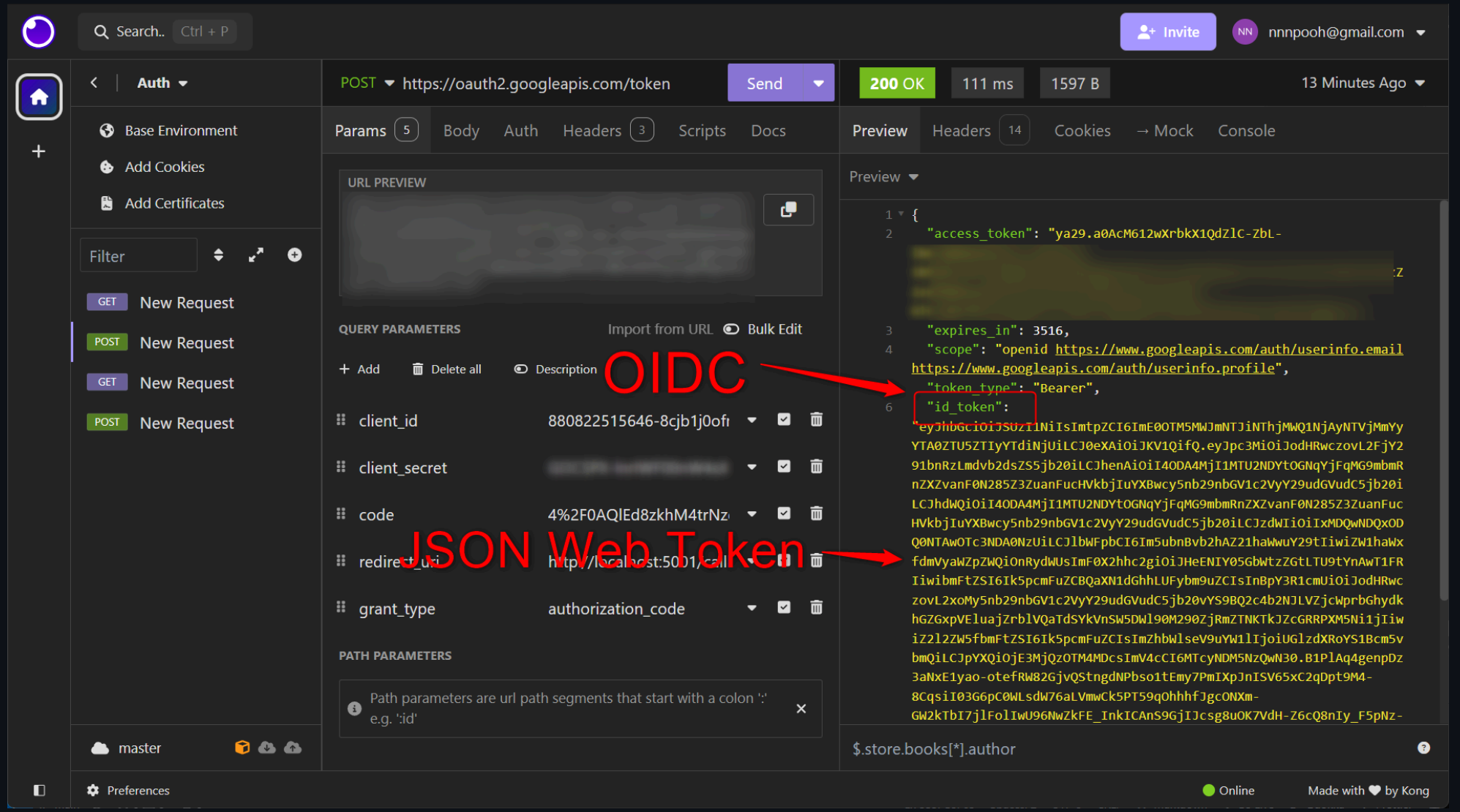
"hireable": null,
"bio": null,
"twitter_username": null,
"notification_email": null,
"public_repos": 49,
"public_gists": 32,
"followers": 6,
"following": 0,
"created_at": "2019-10-05T05:21:33Z",
$.store.books[*].author
master
Preferences
Online
Made with ♥ by Kong

Google OAuth 2.0

- `Authoriation URL = https://accounts.google.com/o/oauth2/v2/auth?client_id=CLIENT_ID&redirect_uri=REDIRECT_URI&response_type=code&scope=openid+https://www.googleapis.com/auth/userinfo.email+https://www.googleapis.com/auth/userinfo.profile`
- `Token URL = https://oauth2.googleapis.com/token?client_id=CLIENT_ID&client_secret=CLIENT_SECRET&code=CODE&redirect_uri=CALLBACK_URL&grant_type=authorization_code`
- `Resource URL = https://www.googleapis.com/oauth2/v2/userinfo`

- Google supports OIDC. You will receive `id_token`.



> Part 2: Social signing up/in

Section 2C: `passport` implementation

Setup

- `git clone -b signin-oauth https://github.com/fullstack-67/auth-mpa-v2.git auth-signin-oauth`
- Fill in `.env`
  - Make sure to update `Callback URL` in your Github Oauth app.
- `pnpm i`
- `npm run db:reset`
- `npm run dev`

Note

- Database tables
  - `users` and `accounts` tables.
  - `many-to-one` relations.
  - Composite key in `accounts` table to avoid duplicated providers / user.
- Types of response objects from API.
  - `./src/types/github.ts`
  - JSON schema, QuickType
- Add type definition to `req.user`.
  - `./src/types/express.d.ts` What?

Highlighed packages

```
{
  "passport": "^0.7.0",
  "passport-oauth2": "^1.8.0"
}
```

Middleware setup

```
// * Passport
passport.use("github", github);
app.use(passport.initialize());
```

Strategy setup

```
export const github = new OAuthStrategy(
  {
    // Option
  },
  async function (
    accessToken: string,
    refreshToken: string,
    profile: any,
    done: VerifyCallback
  ) {
    // Do something with accessToken
  }
);
```

Routing

Redirect to `Authorization URL`

```
app.get("/login/oauth/github", passport.authenticate("github"));
```

Routing

Receive `code` from `Callback URL`

```
app.get(
  "/callback/github",
  passport.authenticate("github", {
    failureRedirect: "/login",
  }),
  function (req, res) {
  // If successful, do something with req.user.
);
```

Using OAuth library

- No need to construct `Authorization URL` manually.
- No need to write logic for steps `4A`, `4B` and `4C`.
- If you use `passport-github2`, you can also skip step `5`.

Shortcoming

- You will see that users need to constantly sign in to access the main page.
- We need to persist users' auth states.

Next: Part 3