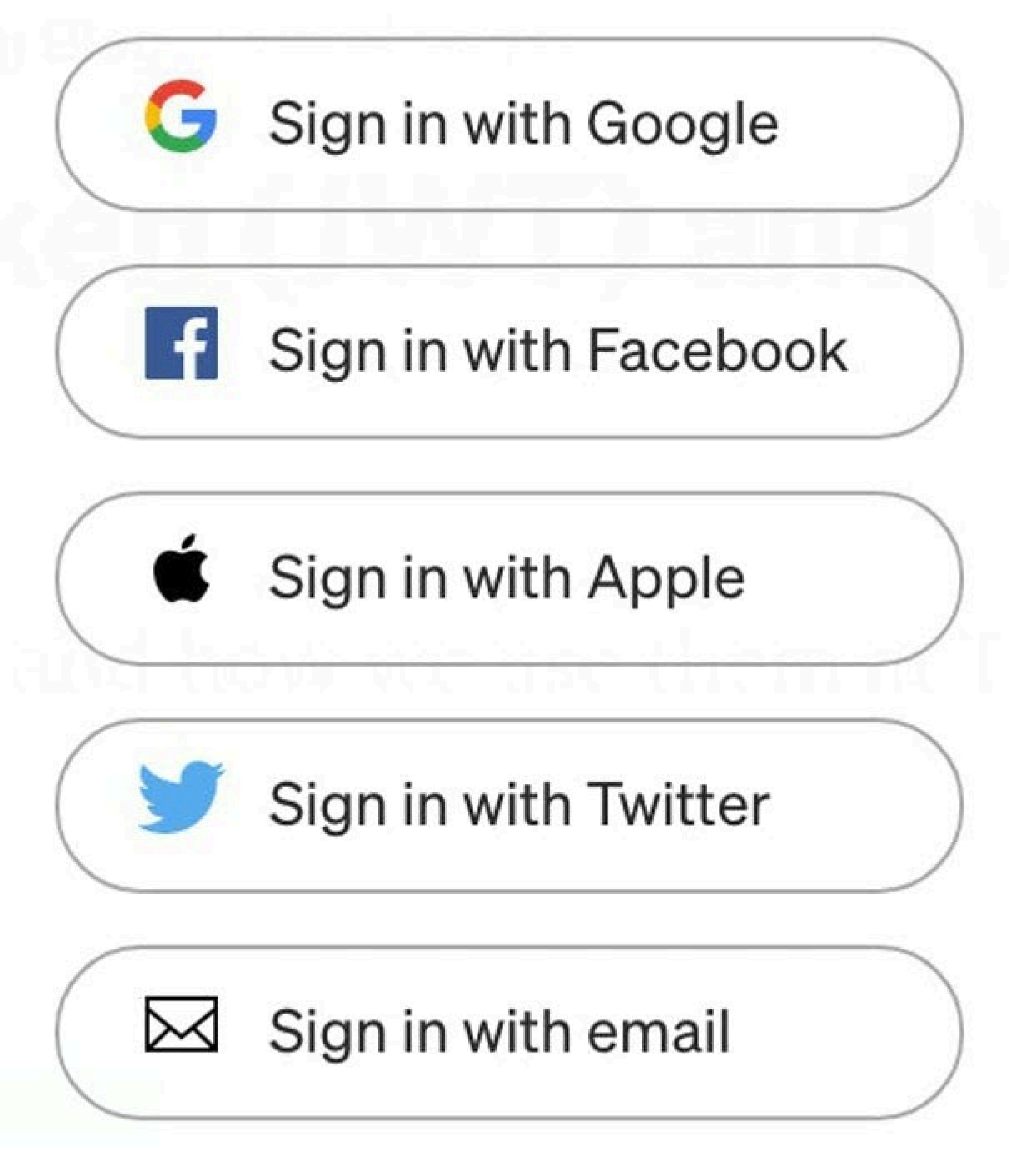
Fullstack Development

Authentication / Authorization

Part 2: Social signing up/in

Something like this

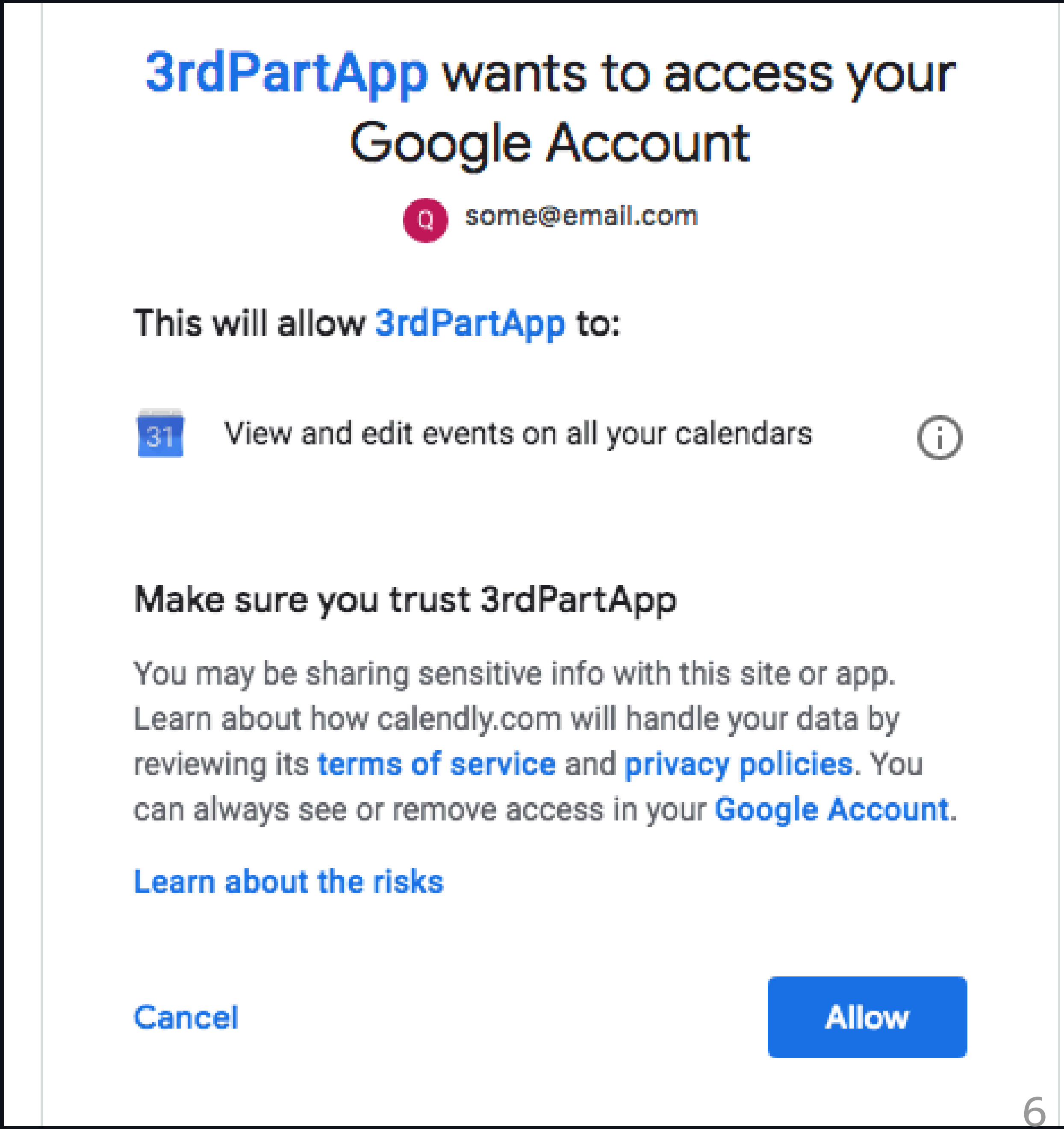
We need OAuth 2.0.



> Part 2: Social signing up/in

Section 2A: OAuth 2.0

OAuth 2.0



3rdPartApp wants to access your Google Account

Q some@email.com

This will allow 3rdPartApp to:

31 View and edit events on all your calendars ⓘ

Make sure you trust 3rdPartApp

You may be sharing sensitive info with this site or app. Learn about how calendly.com will handle your data by reviewing its terms of service and privacy policies. You can always see or remove access in your Google Account.

Learn about the risks

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`?

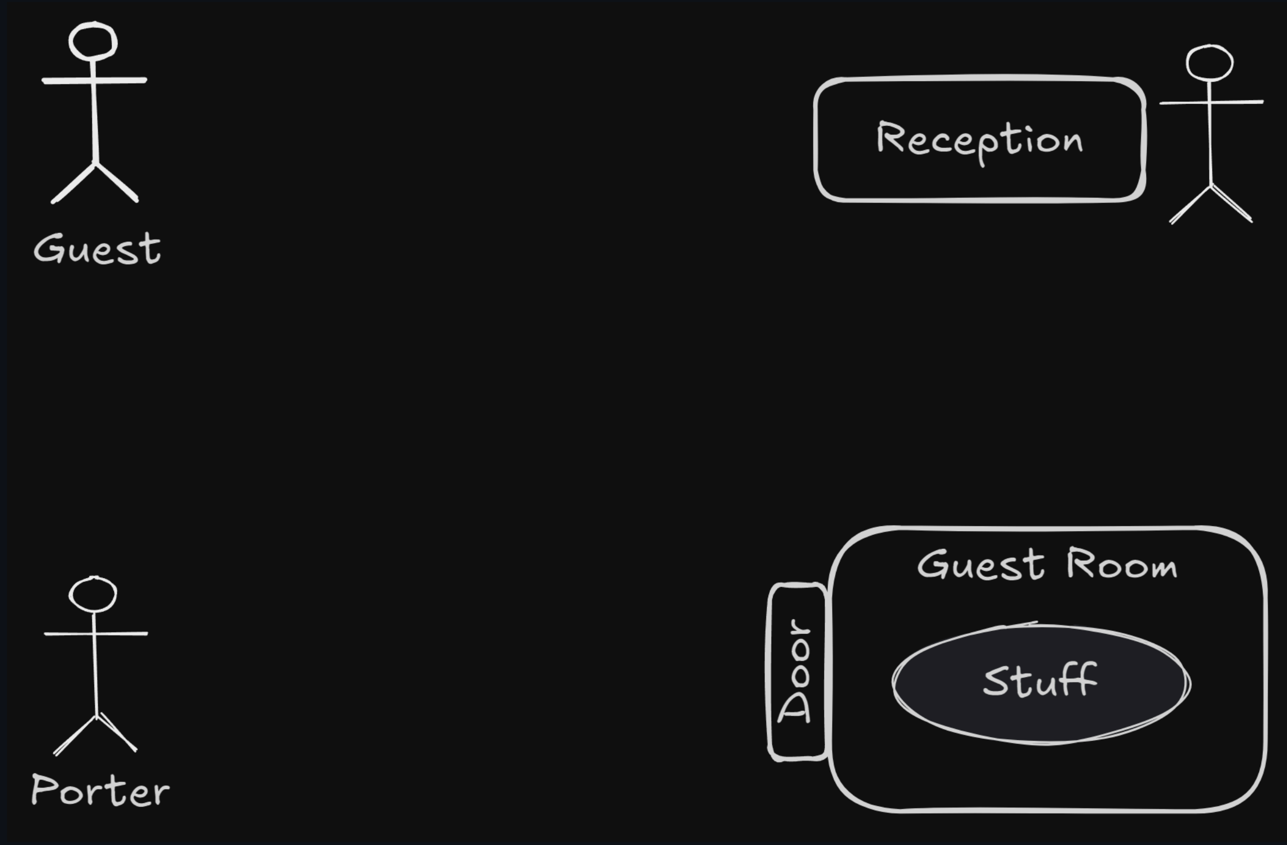
> Yes, we kind of "misusing" it.

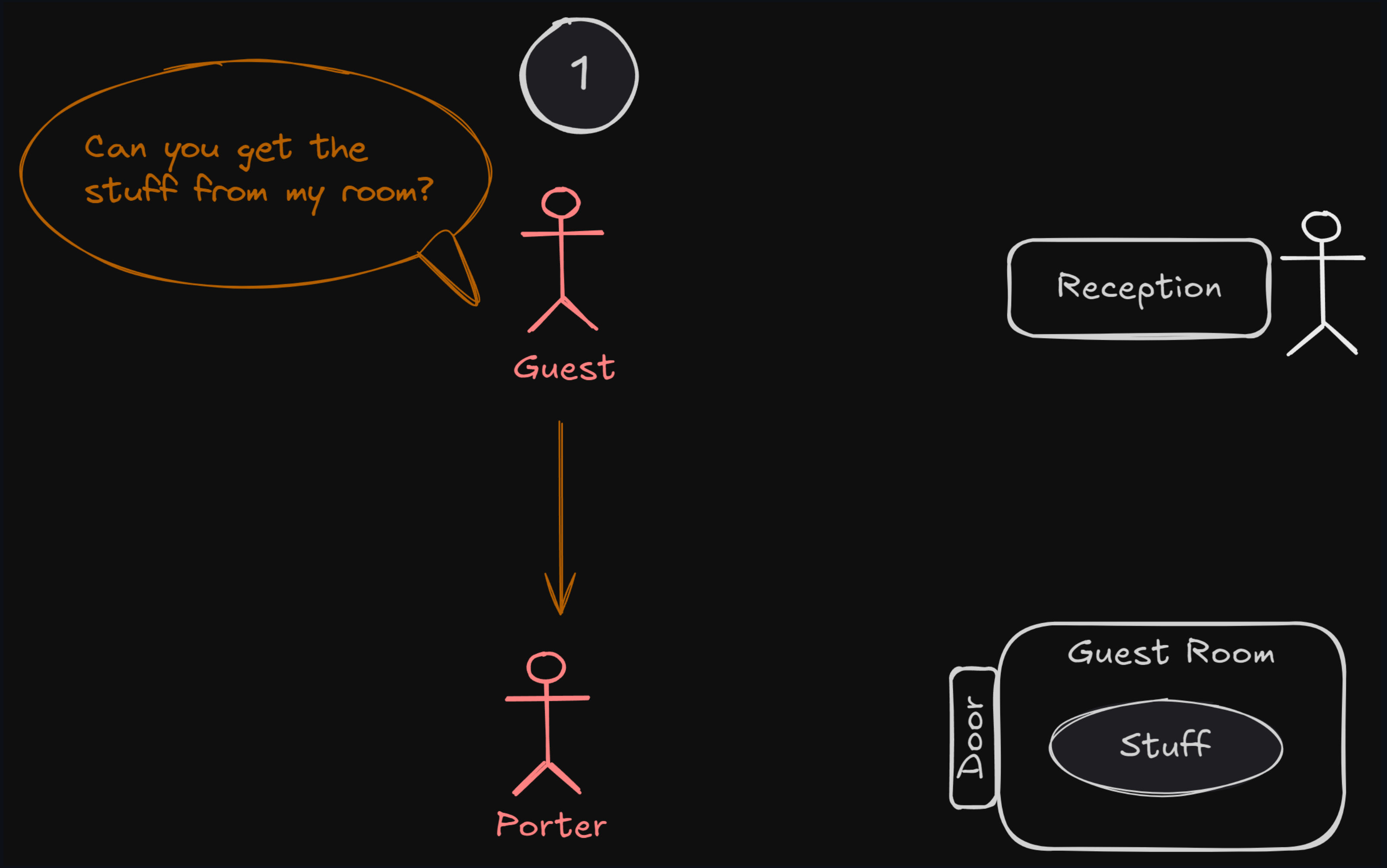
Authorization code flow

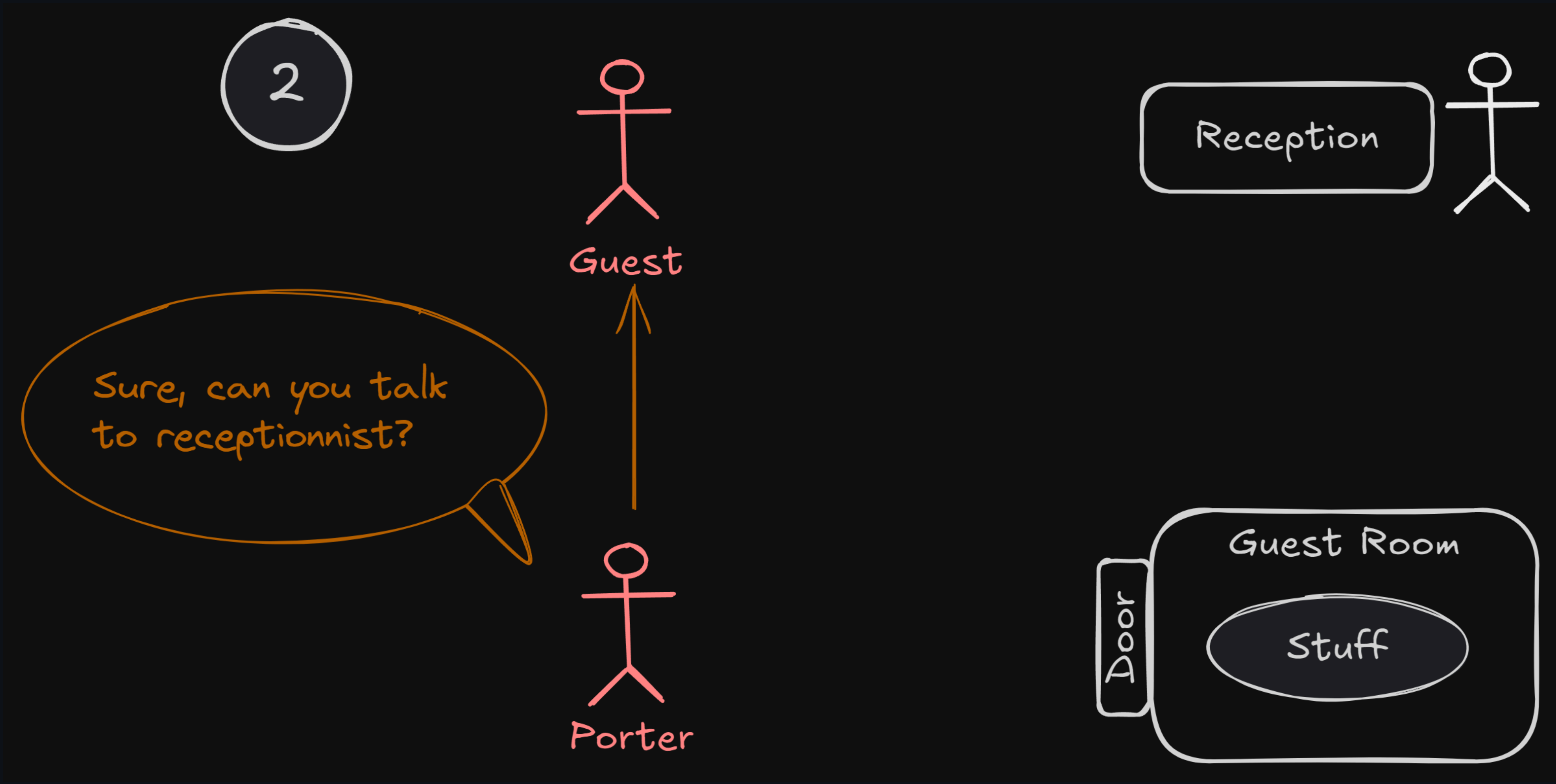
> In real life

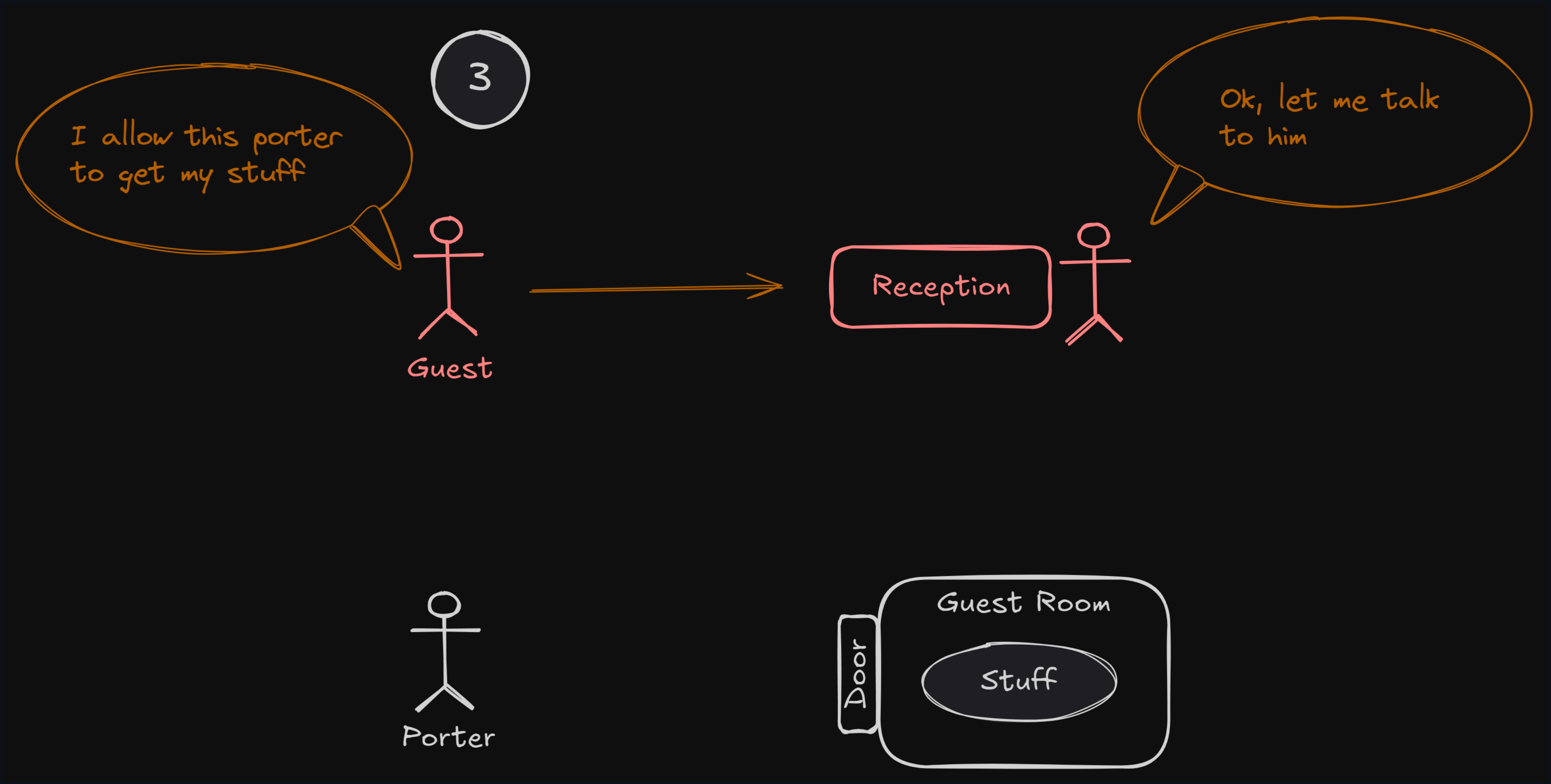
Setup

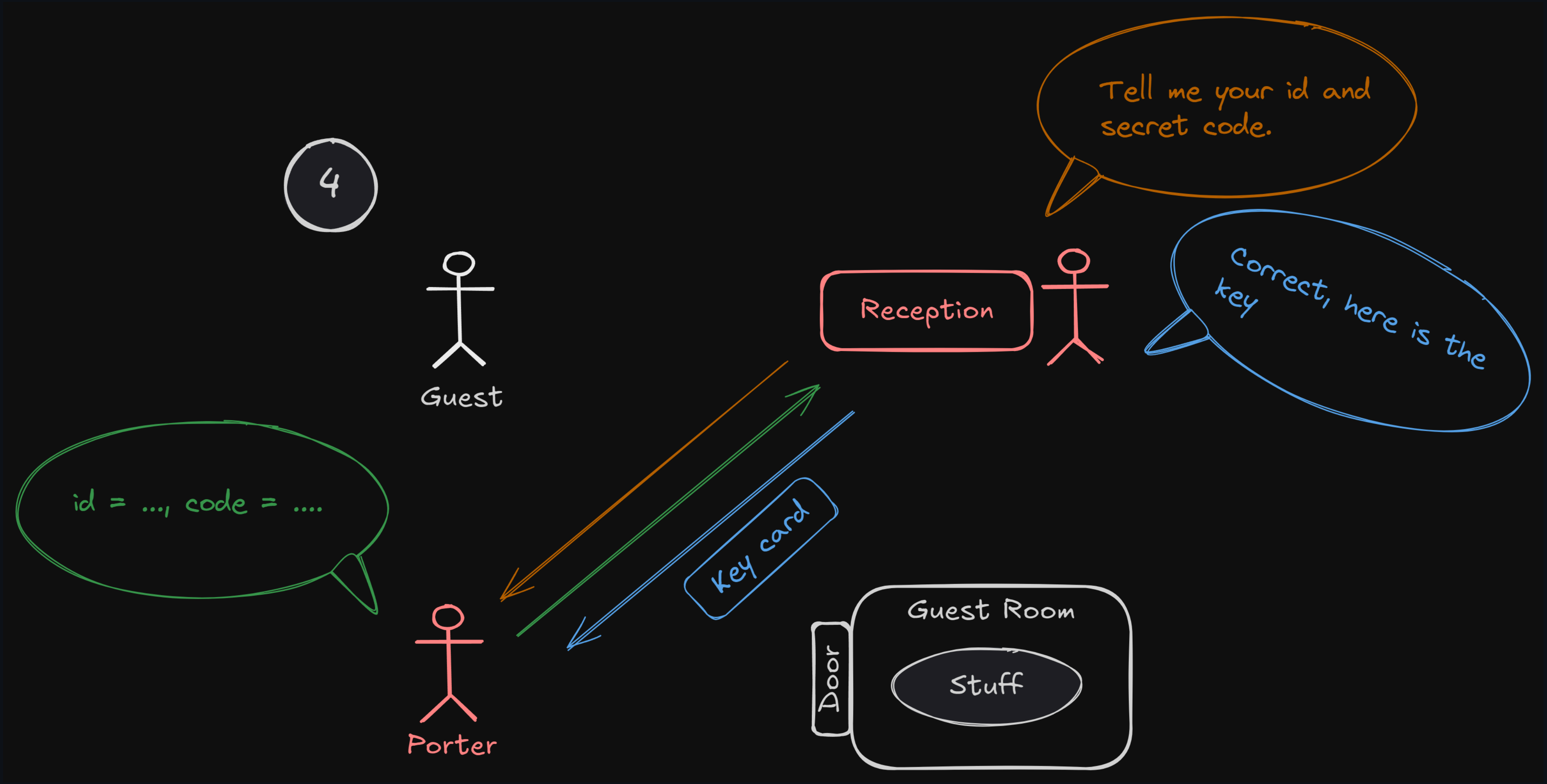
- You are a guest at a hotel.
- You already checked out.
- You forgot your stuff in the room.
- You want a porter to get your stuff for you.

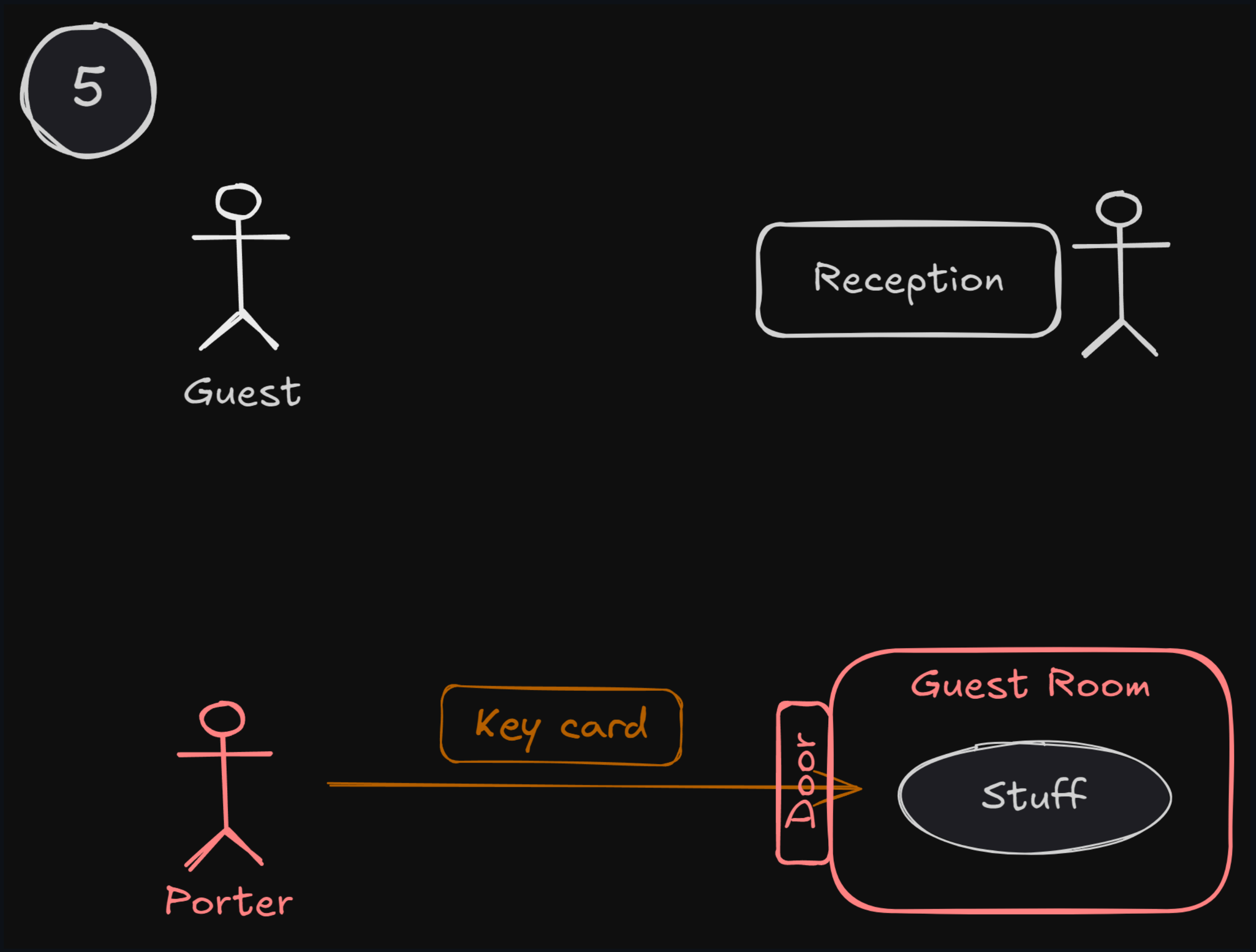



1
Can you get the stuff from my room?
Guest
Porter
Reception
Guest Room
Door
Stuff


2
Guest
Reception
Sure, can you talk to receptionnist?
Porter
Guest Room
Door
Stuff


3
I allow this porter to get my stuff
Guest
Reception
Ok, let me talk to him
Porter
Door
Guest Room
Stuff


4
Guest
Reception
Tell me your id and secret code.
Correct, here is the key
id = ..., code = ...
Key card
Porter
Guest Room
Door
Stuff

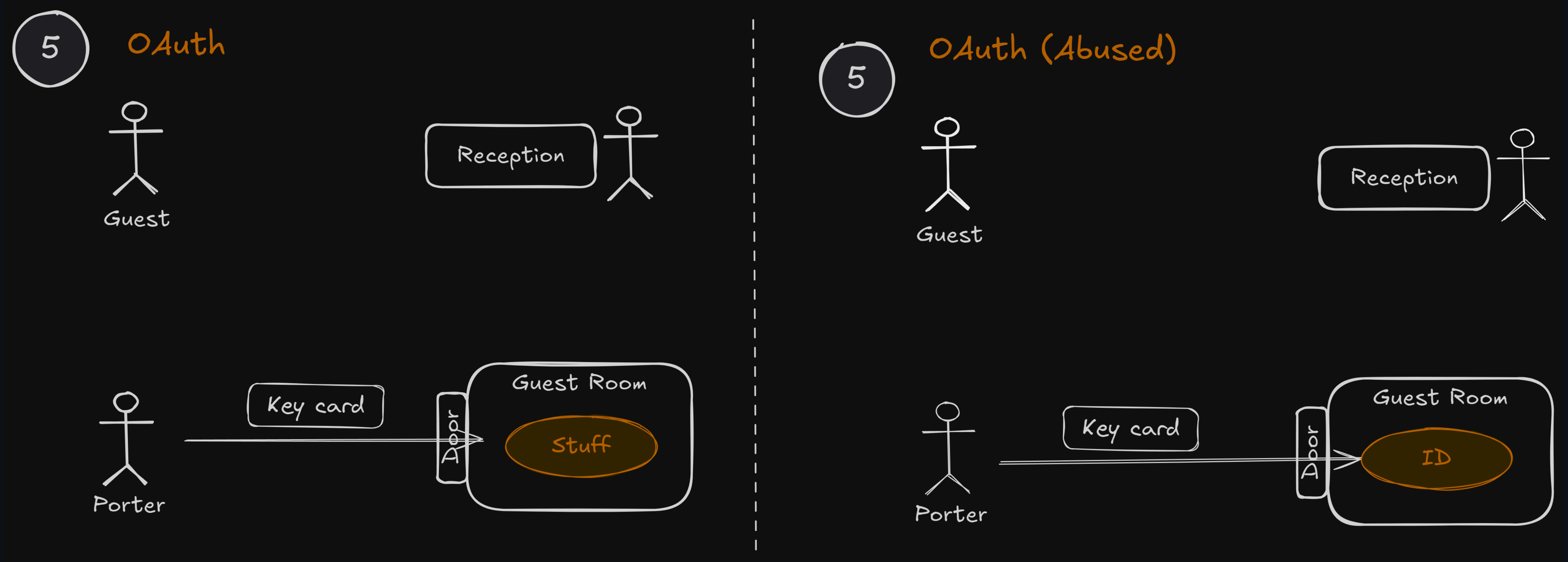

5
Guest
Reception
Porter
Key card
Door
Guest Room
Stuff

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.

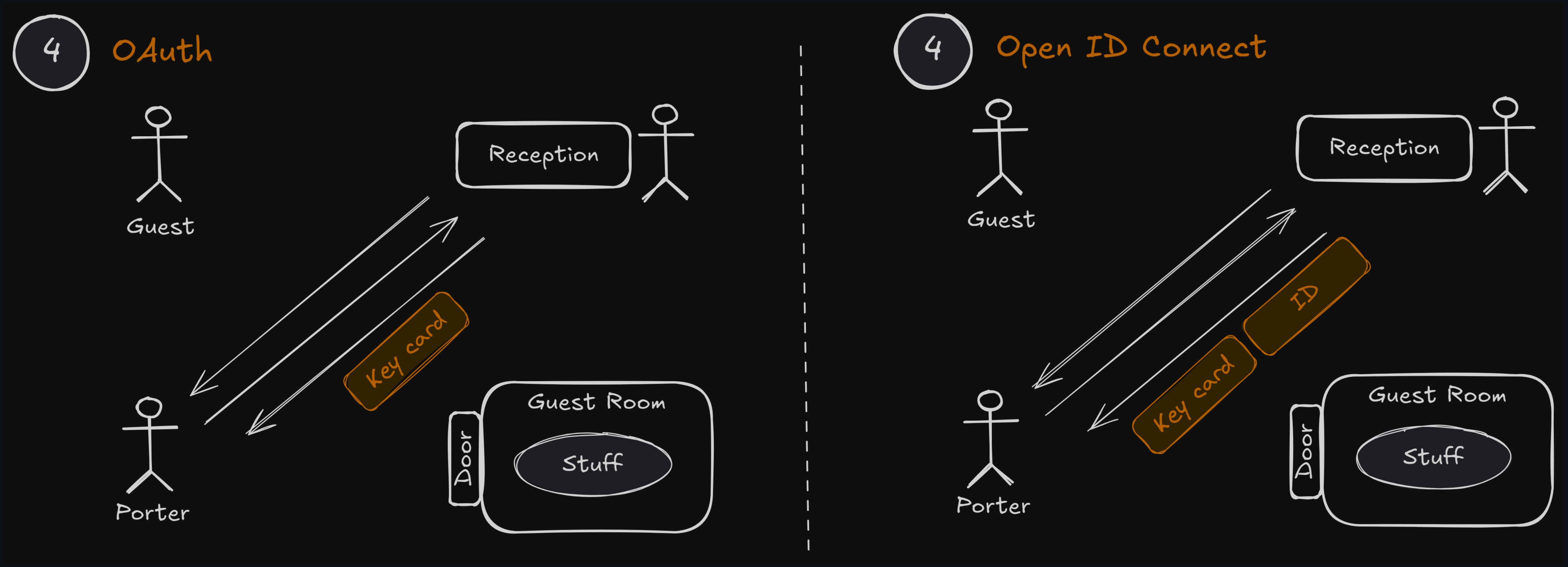
Authentication?

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



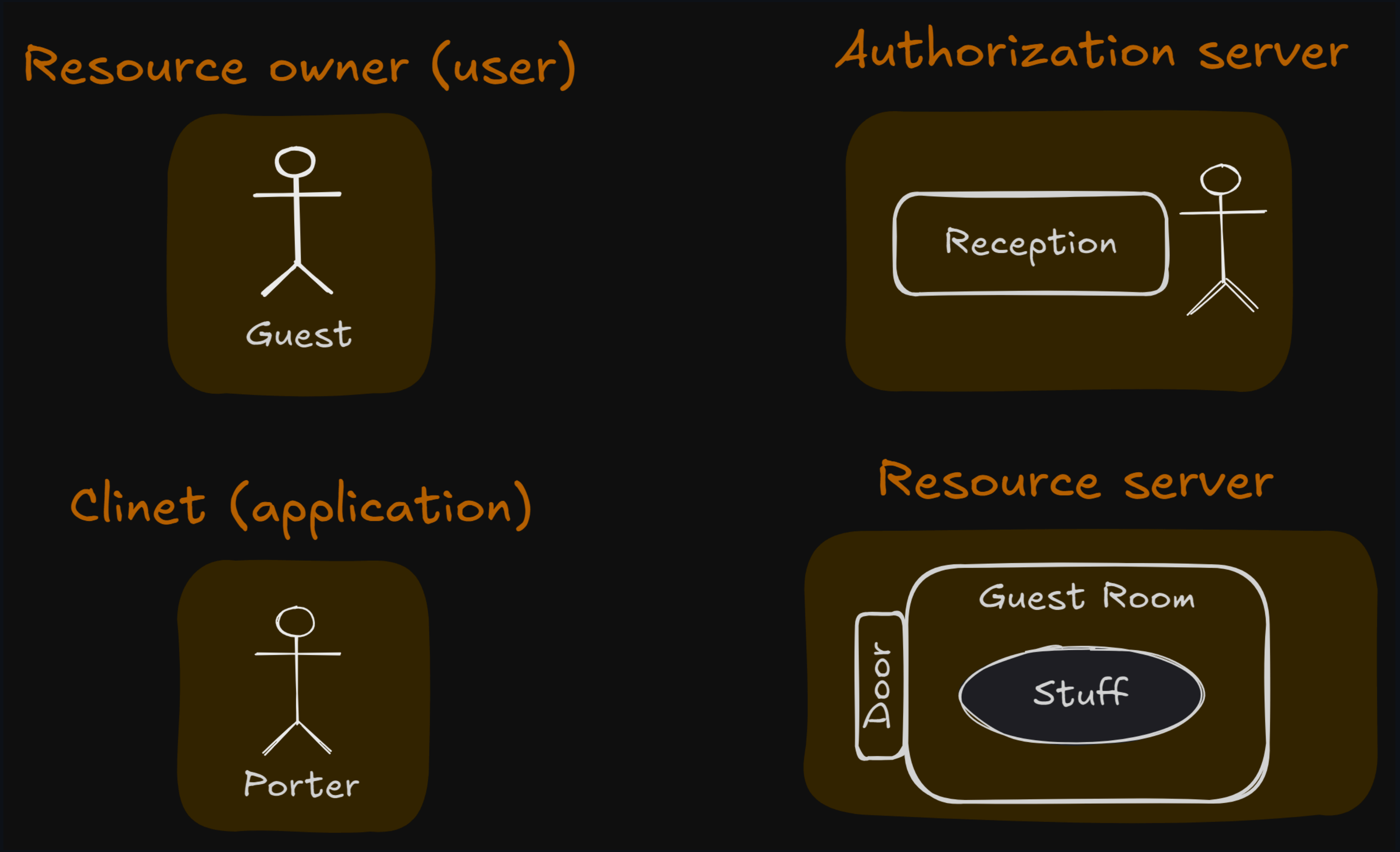
This is what we are using.

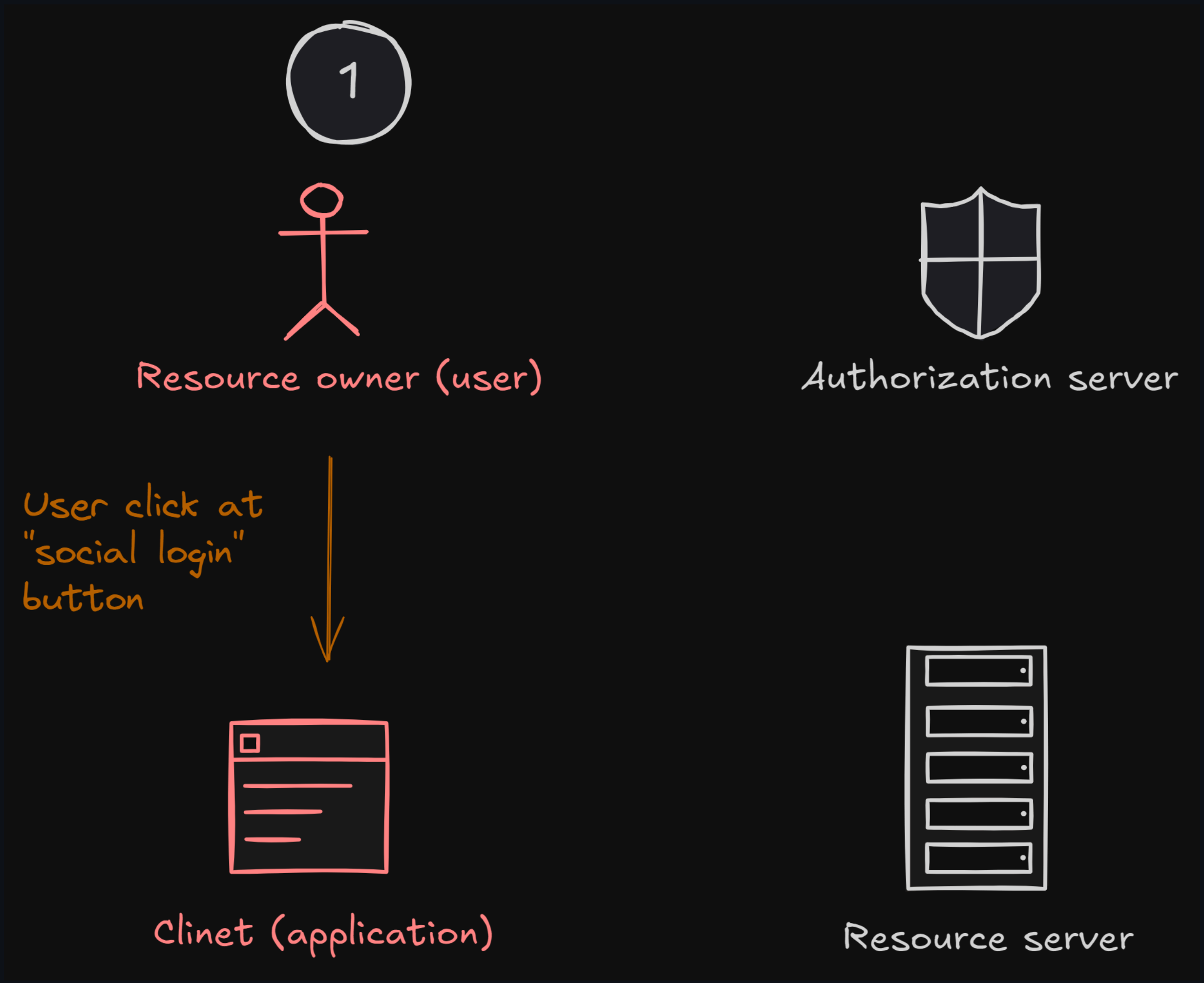
Is there a better way?

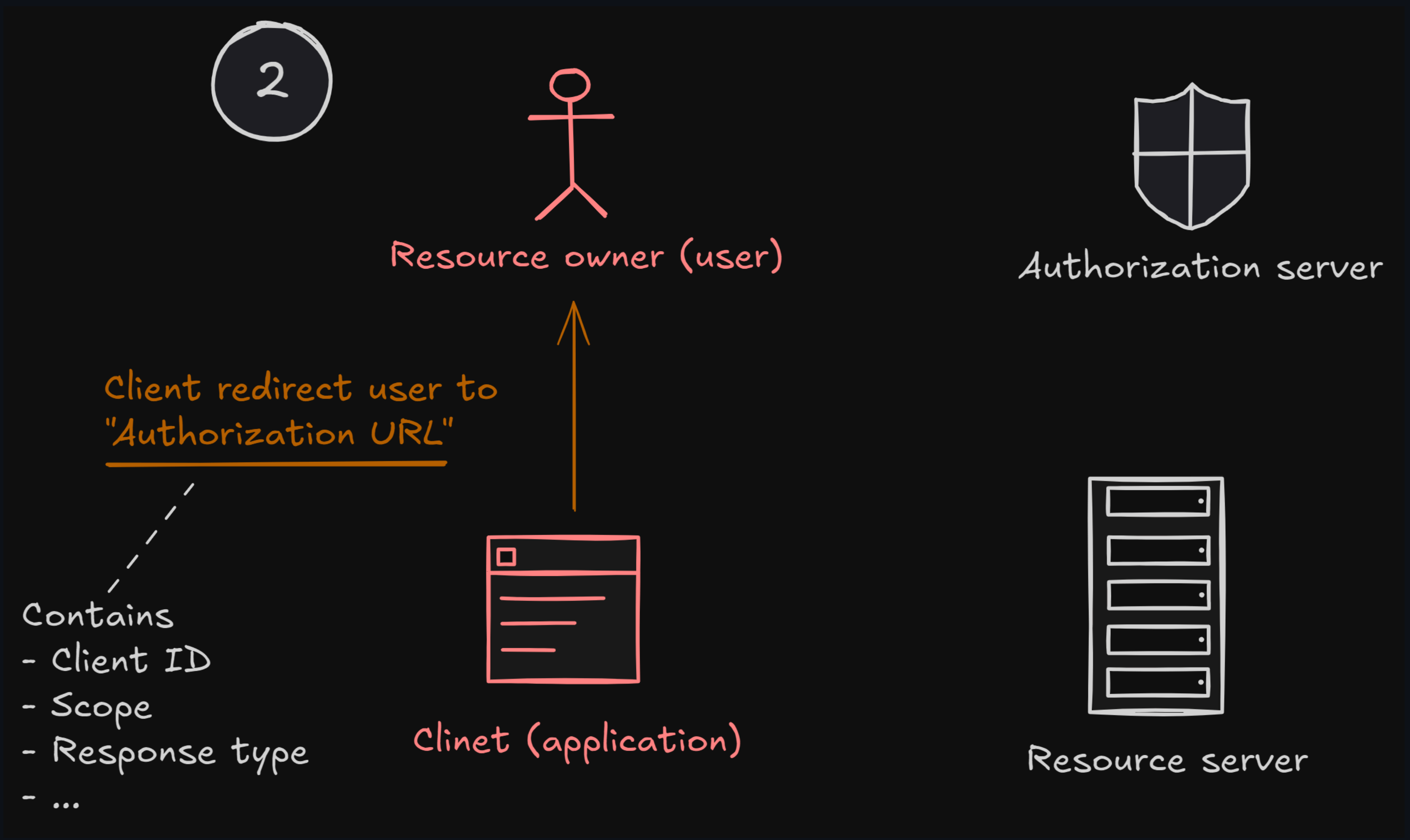

4
OAuth
Guest
Reception
Porter
Key card
Door
Guest Room
Stuff
4
Open ID Connect
Guest
Reception
Porter
ID
Key card
Door
Guest Room
Stuff

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.


Resource owner (user)
Guest
Authorization server
Reception
Clinet (application)
Porter
Resource server
Guest Room
Door
Stuff


1
Resource owner (user)
Authorization server
User click at "social login" button
Clinet (application)
Resource server



2

Resource owner (user)

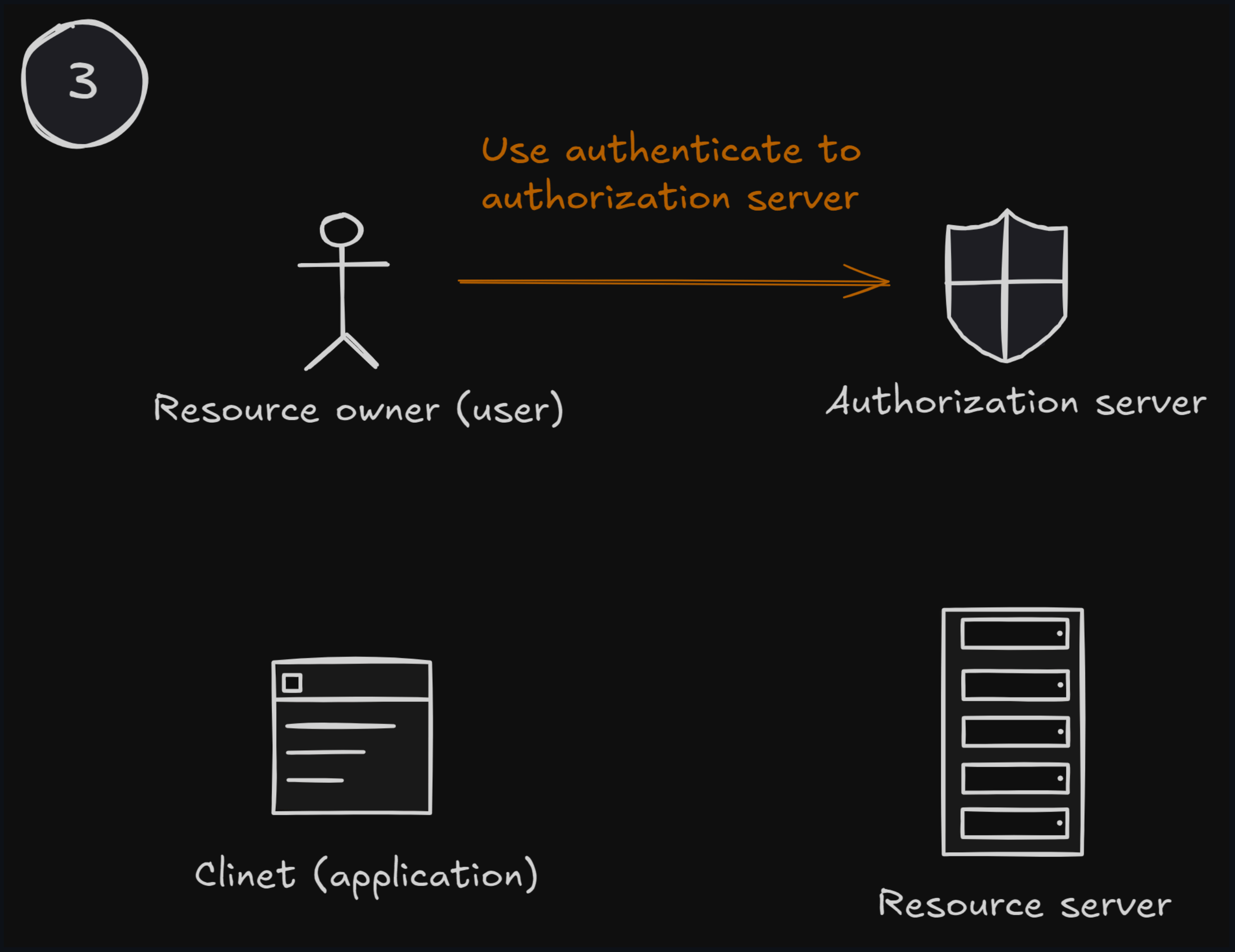
Authorization server

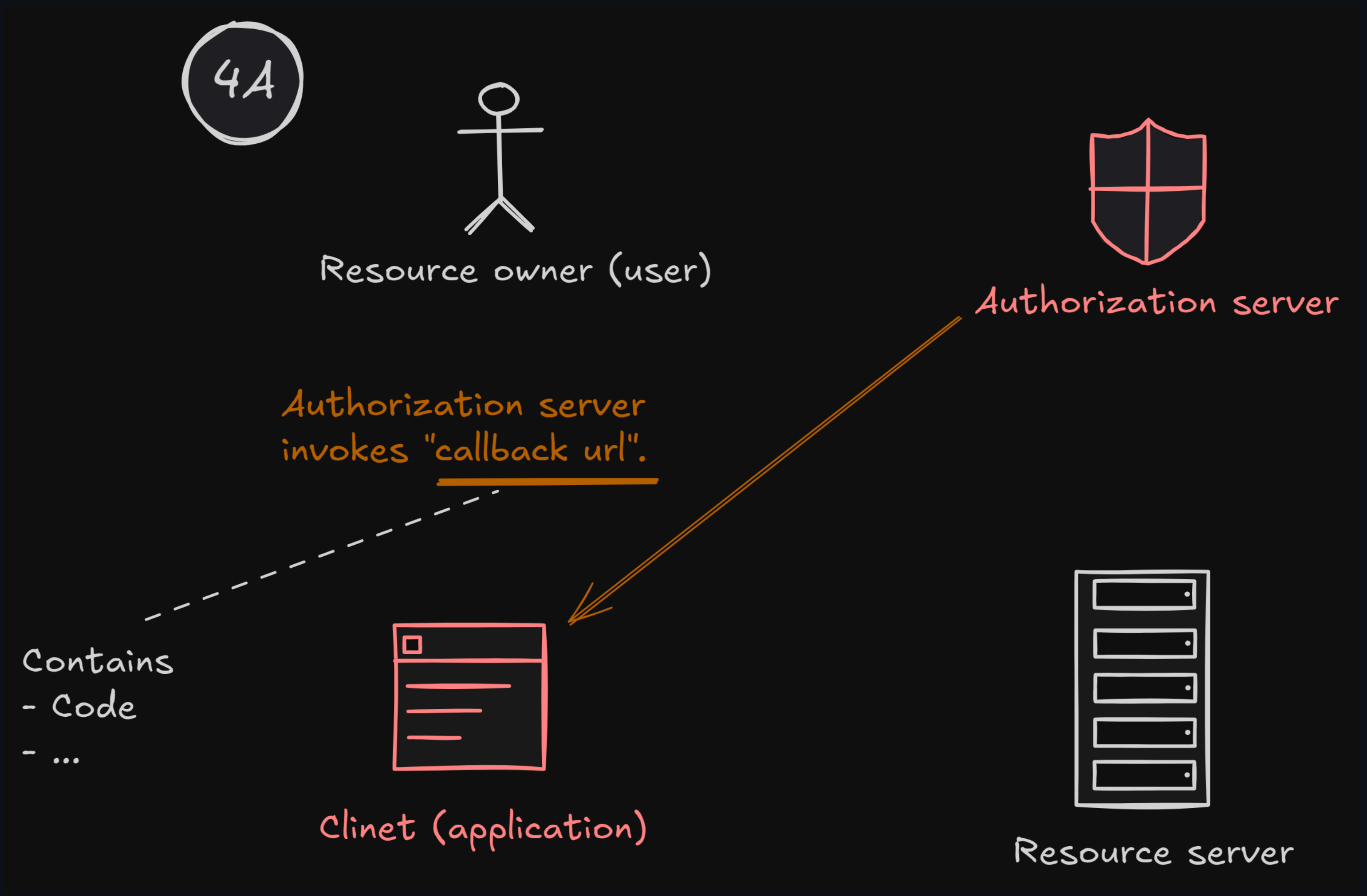
Client redirect user to "Authorization URL"

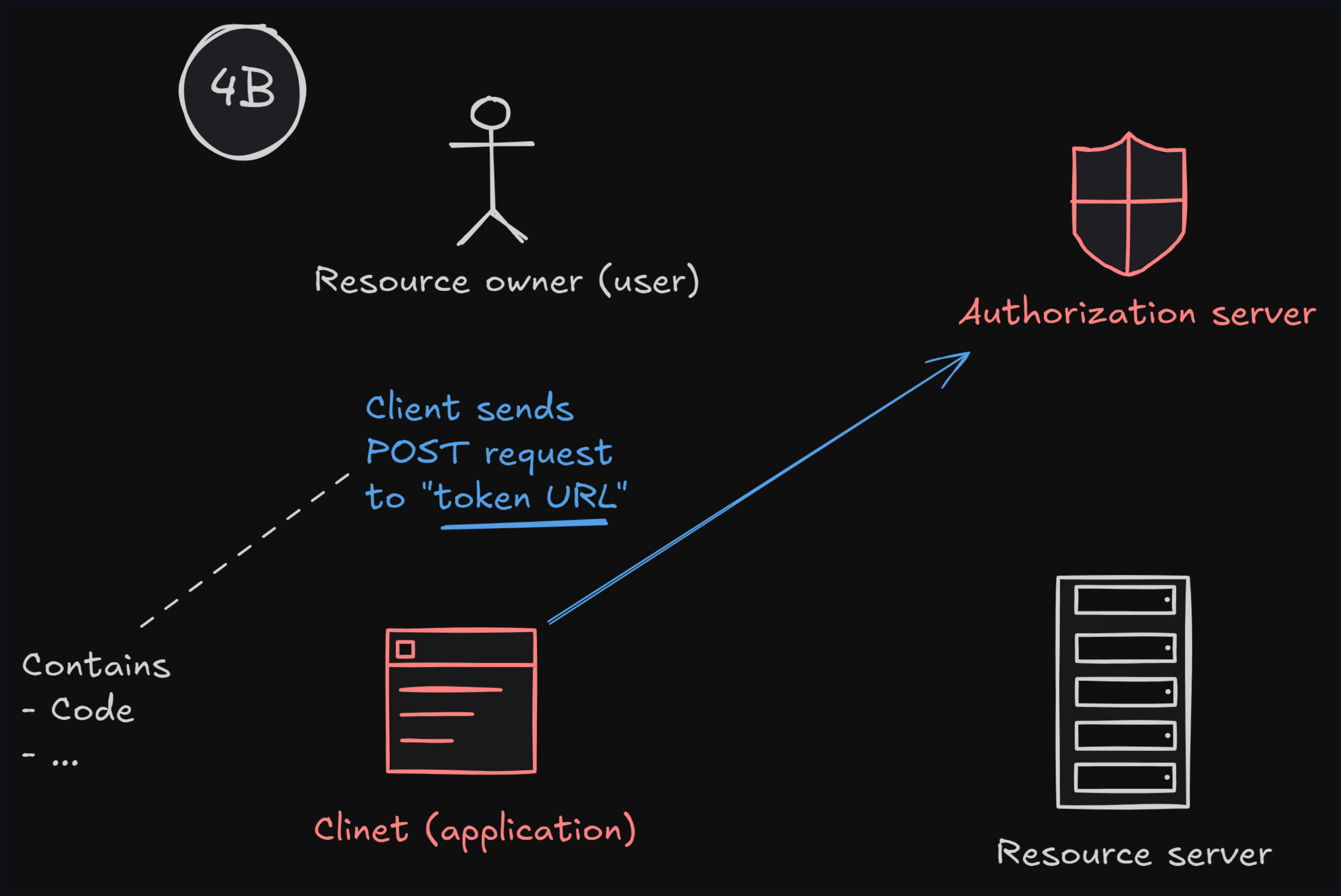
Contains
- Client ID
- Scope
- Response type
- ...

Clinet (application)

Resource server


3
Use authenticate to authorization server
Resource owner (user)
Authorization server
Clinet (application)
Resource server


4A
Resource owner (user)
Authorization server
Authorization server
invokes "callback url".
Contains
- Code
- ...
Clinet (application)
Resource server



4B

Resource owner (user)

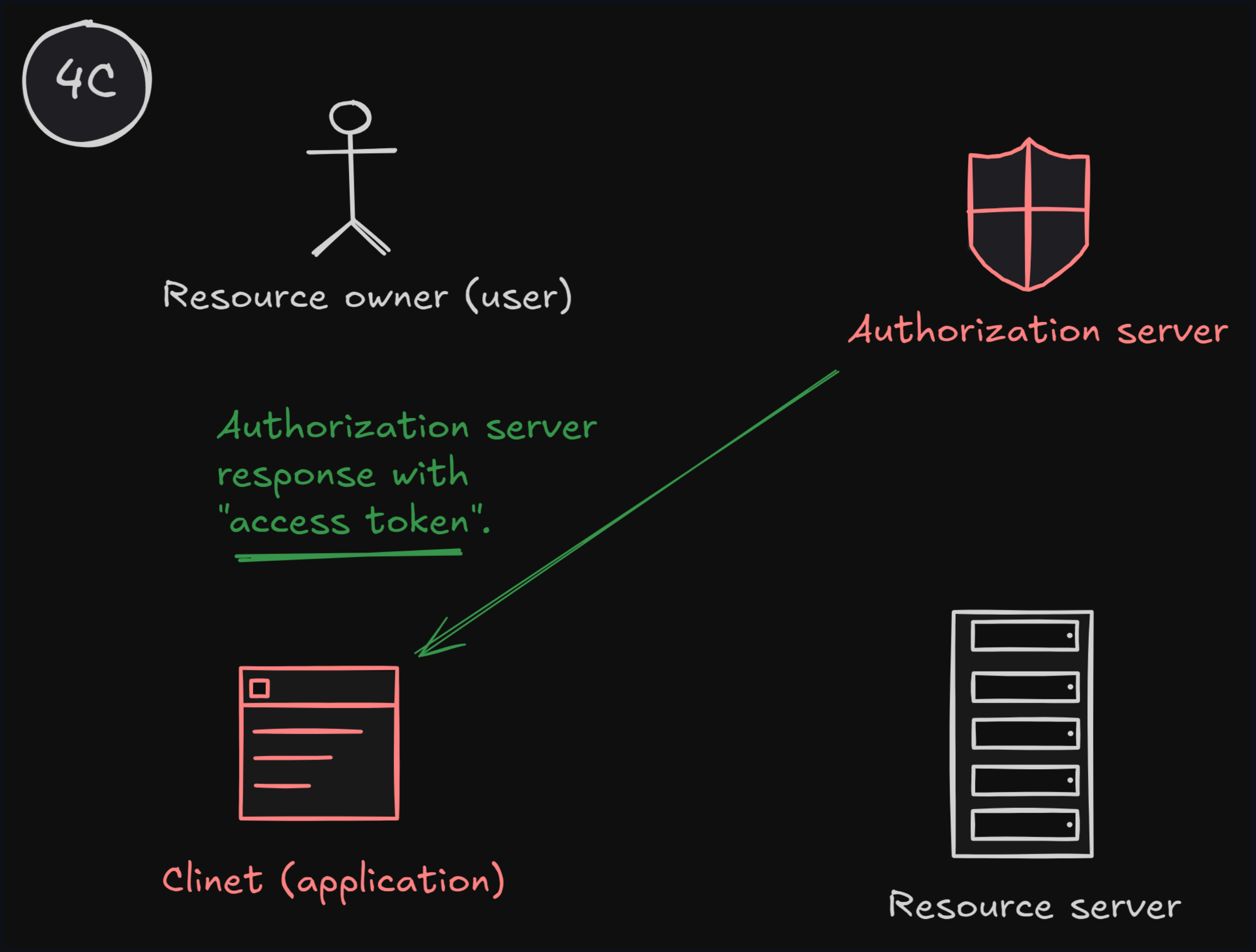
Authorization server

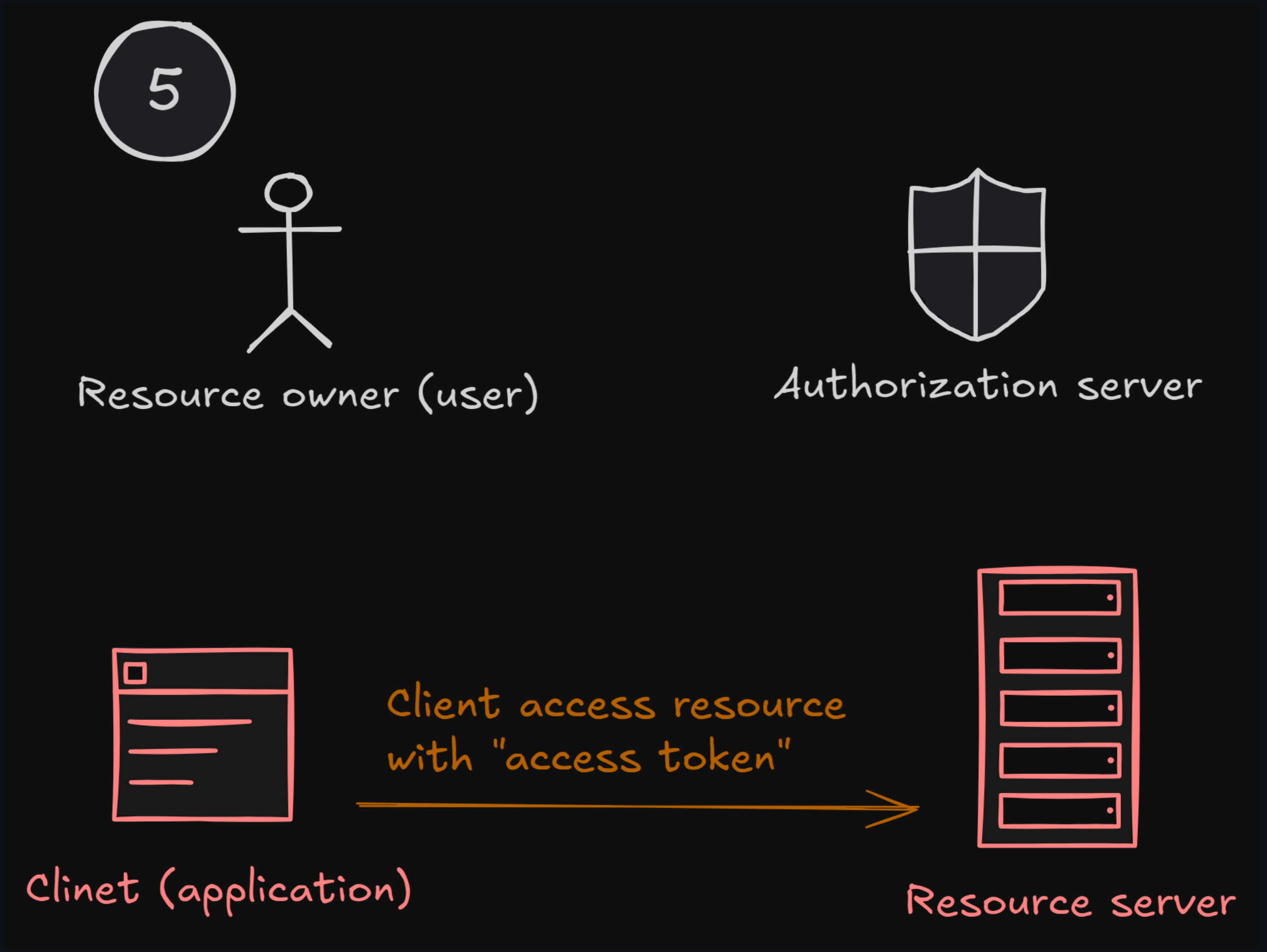
Client sends
POST request
to "token URL"

Contains
- Code
- ...

Clinet (application)

Resource server


4C
Resource owner (user)
Authorization server
Authorization server response with "access token".
Clinet (application)
Resource server


5
Resource owner (user)
Authorization server
Clinet (application)
Client access resource
with "access token"
Resource server

> Part 2: Social signing up/in

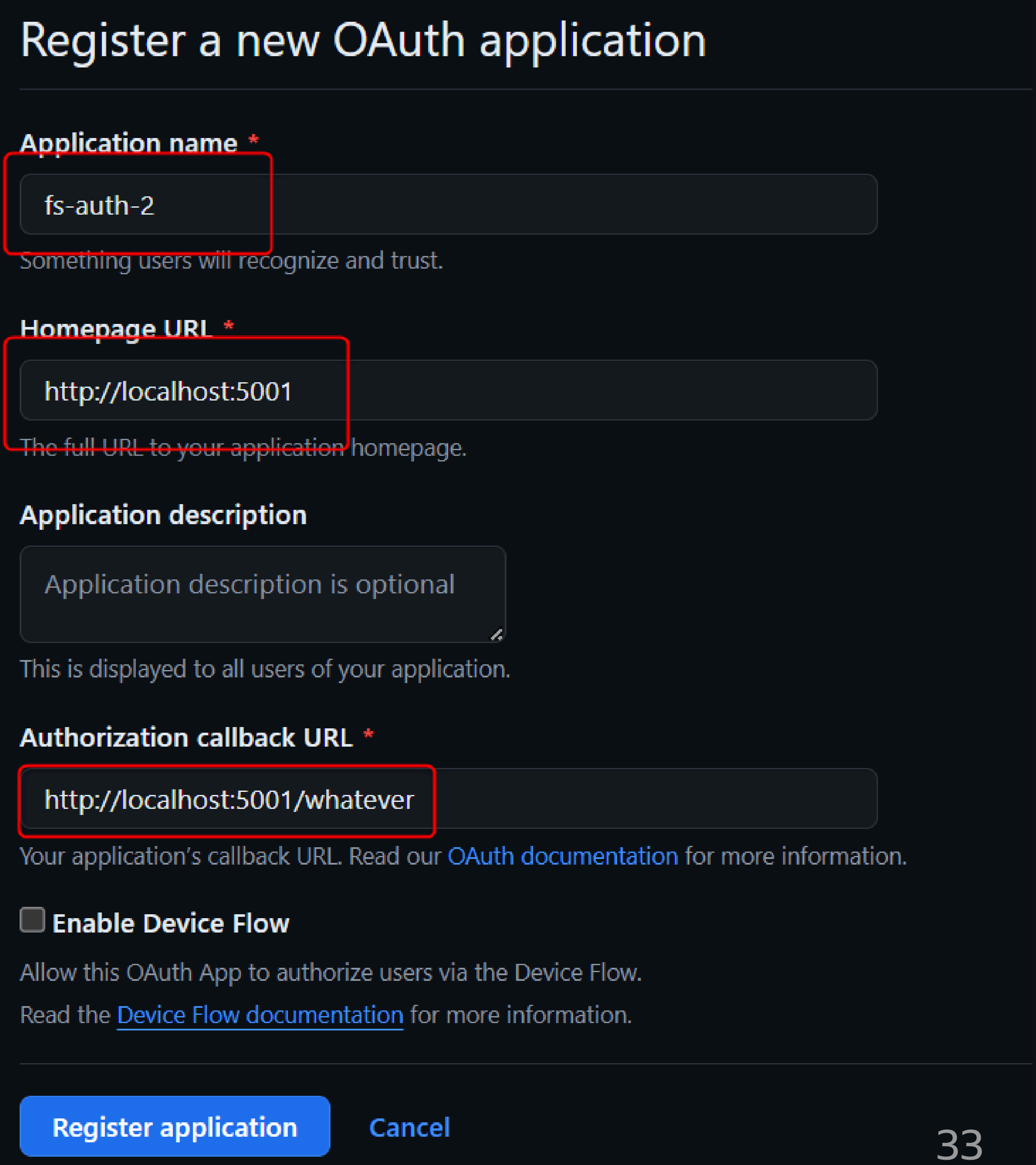
Section 2B: Oauth 2.0 with Github (Lab)

You will need

- `Client ID = ...`
- `Client Secret = ...`
- `Callback URL = http://localhost:5001/whatever`
- `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.



Register a new OAuth application

Application name *

fs-auth-2

Something users will recognize and trust.

Homepage URL *

http://localhost:5001

The full URL to your application homepage.

Application description

Application description is optional

This is displayed to all users of your application.

Authorization callback URL *

http://localhost:5001/whatever

Your application's callback URL. Read our OAuth documentation for more information.

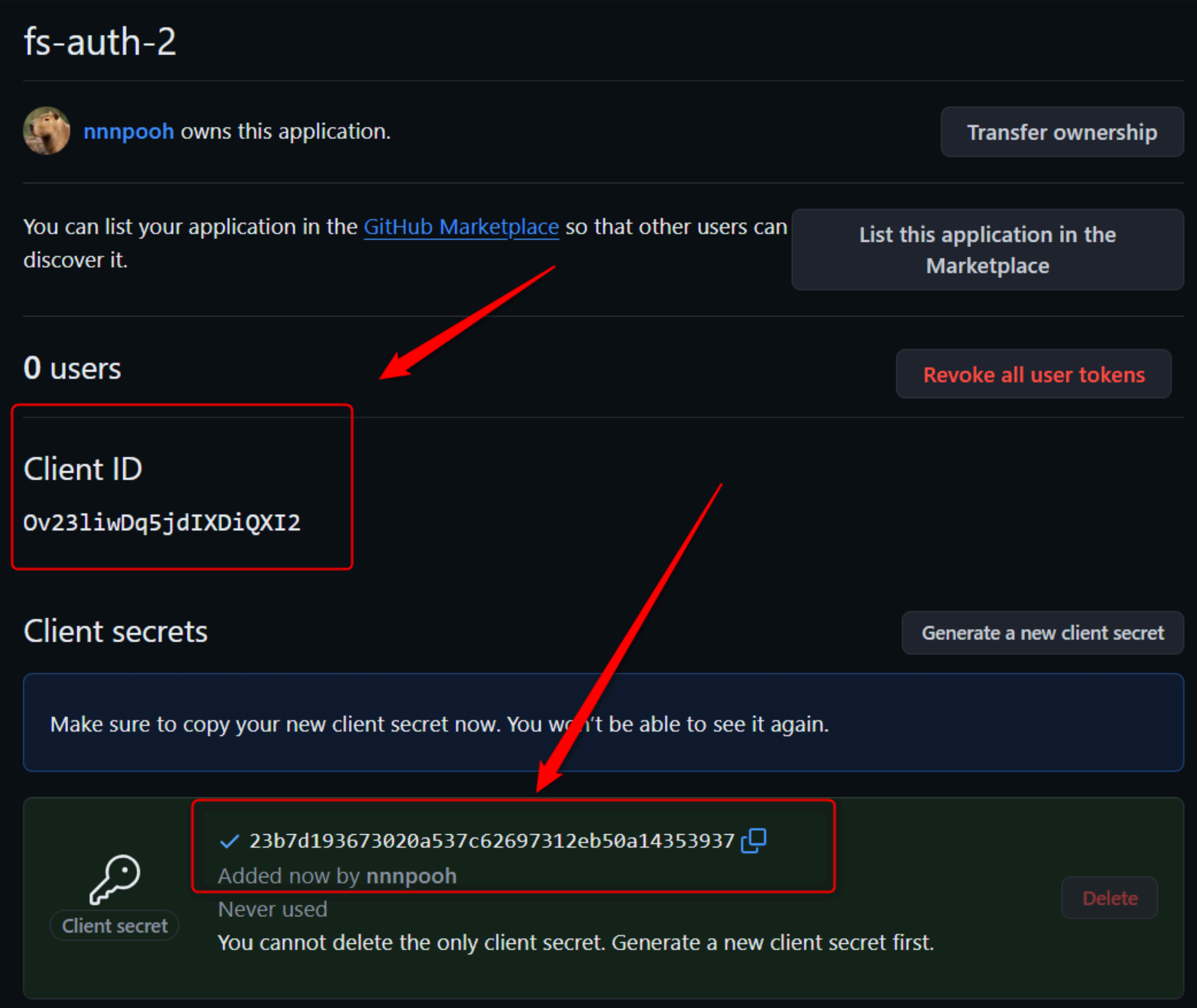
☐ **Enable Device Flow**

Allow this OAuth App to authorize users via the Device Flow.

Read the Device Flow documentation for more information.

Setup

- Get `Client ID` and `Client Secret`



fs-auth-2

nnnpooh owns this application.

You can list your application in the GitHub Marketplace so that other users can discover it.

List this application in the Marketplace

0 users

Client ID

Ov23liwDq5jdIXDiQXI2

Client secrets

Generate a new client secret

Make sure to copy your new client secret now. You won't be able to see it again.

✓ 23b7d193673020a537c62697312eb50a14353937

Added now by nnnpooh

Never used

You cannot delete the only client secret. Generate a new client secret first.

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`

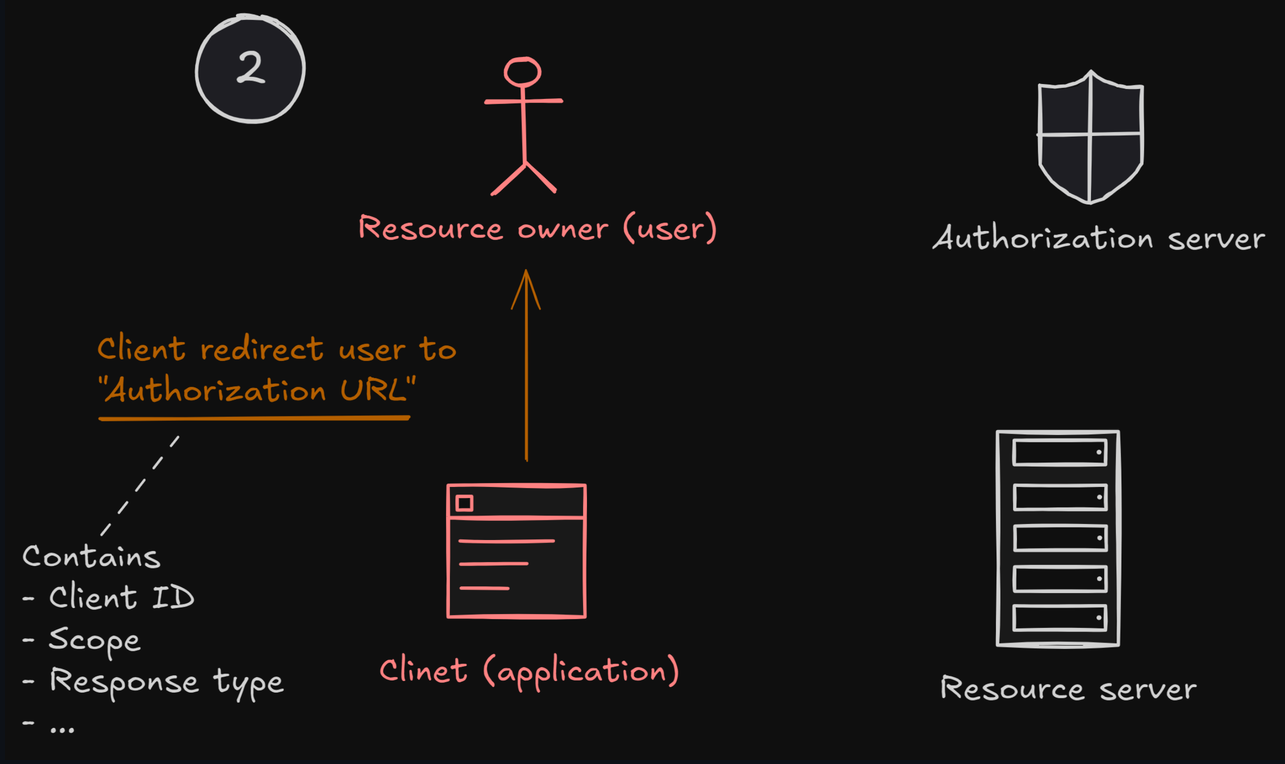
Setup

- 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

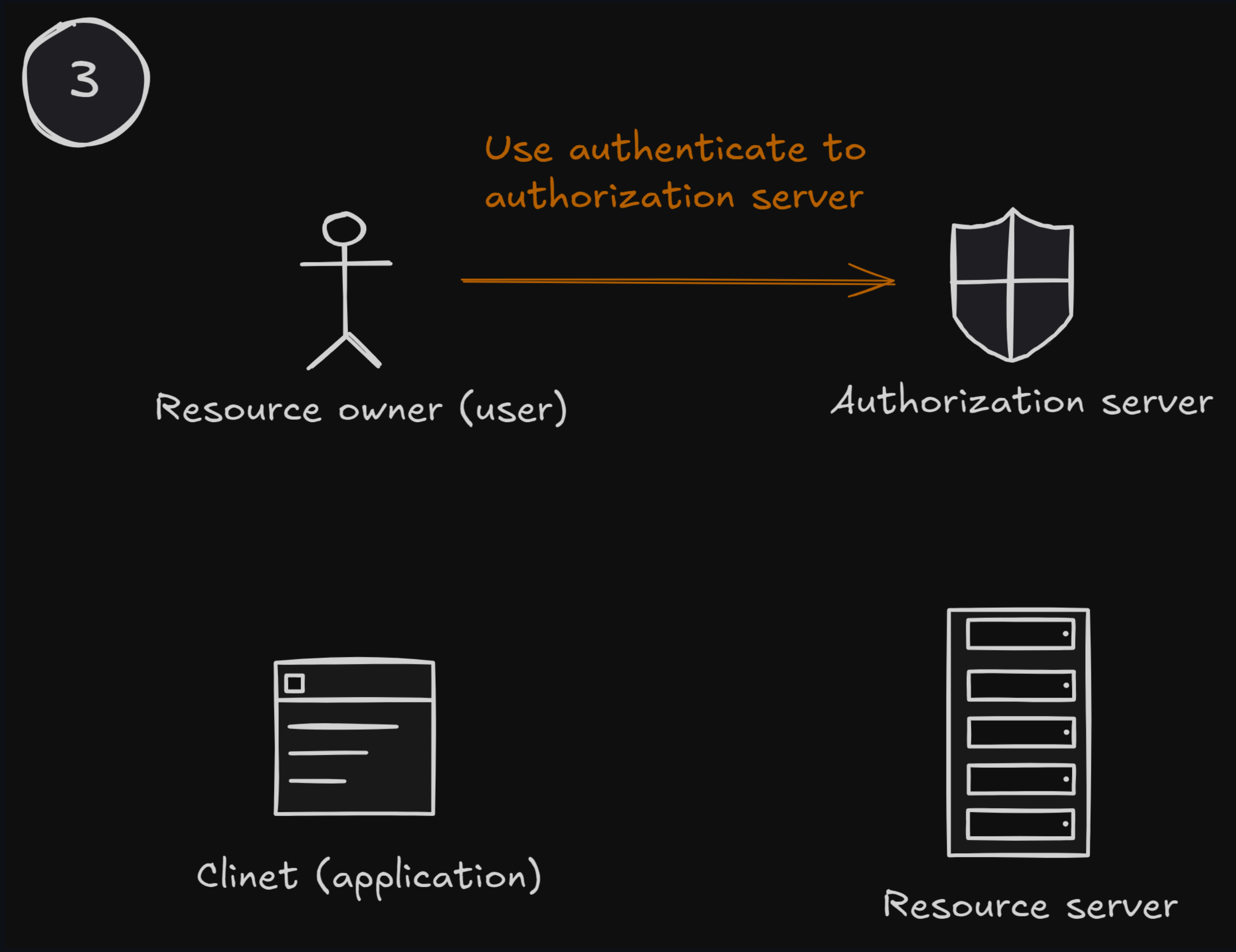
Step 2

- *(Skip 1 for now since there is no app.)*
- Goto at `Authorization URL`



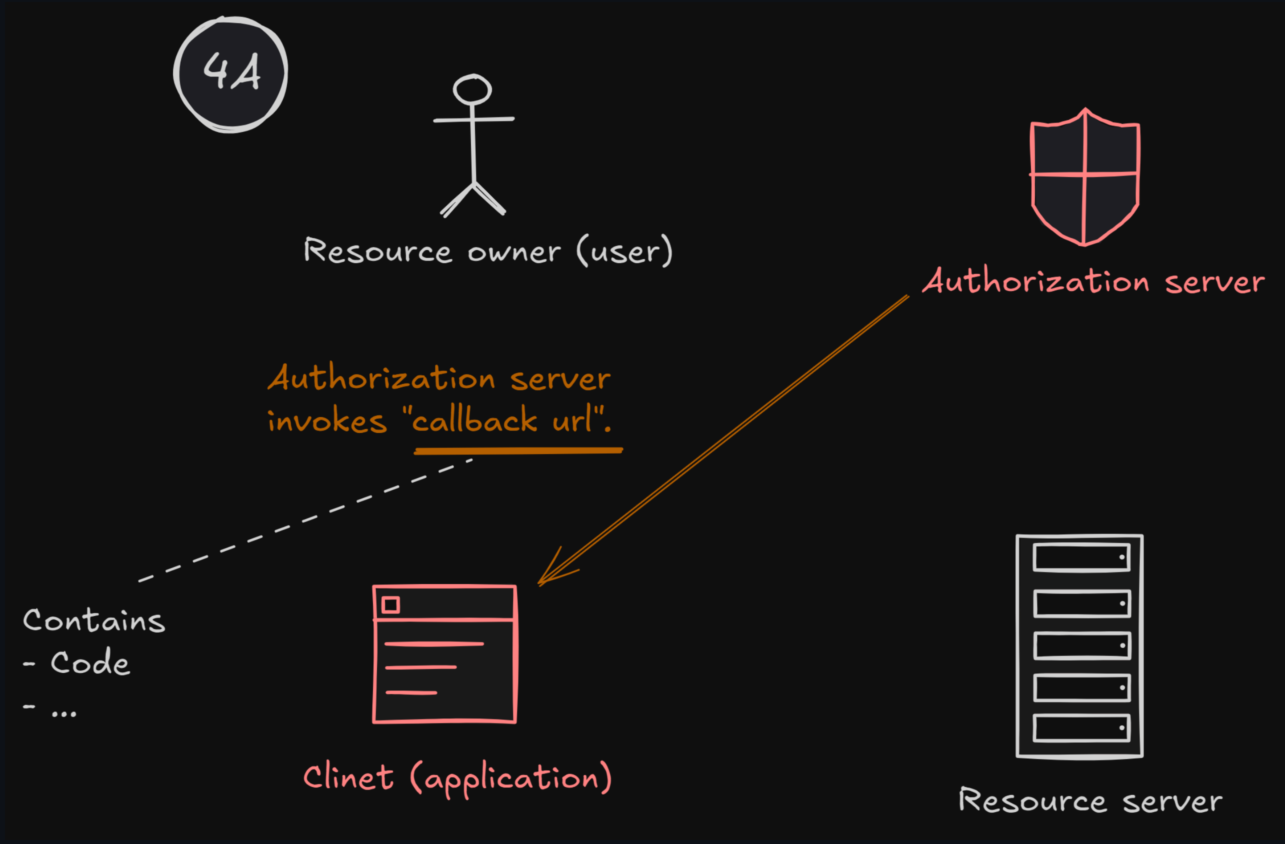
Step 3

- Authenticate with Github



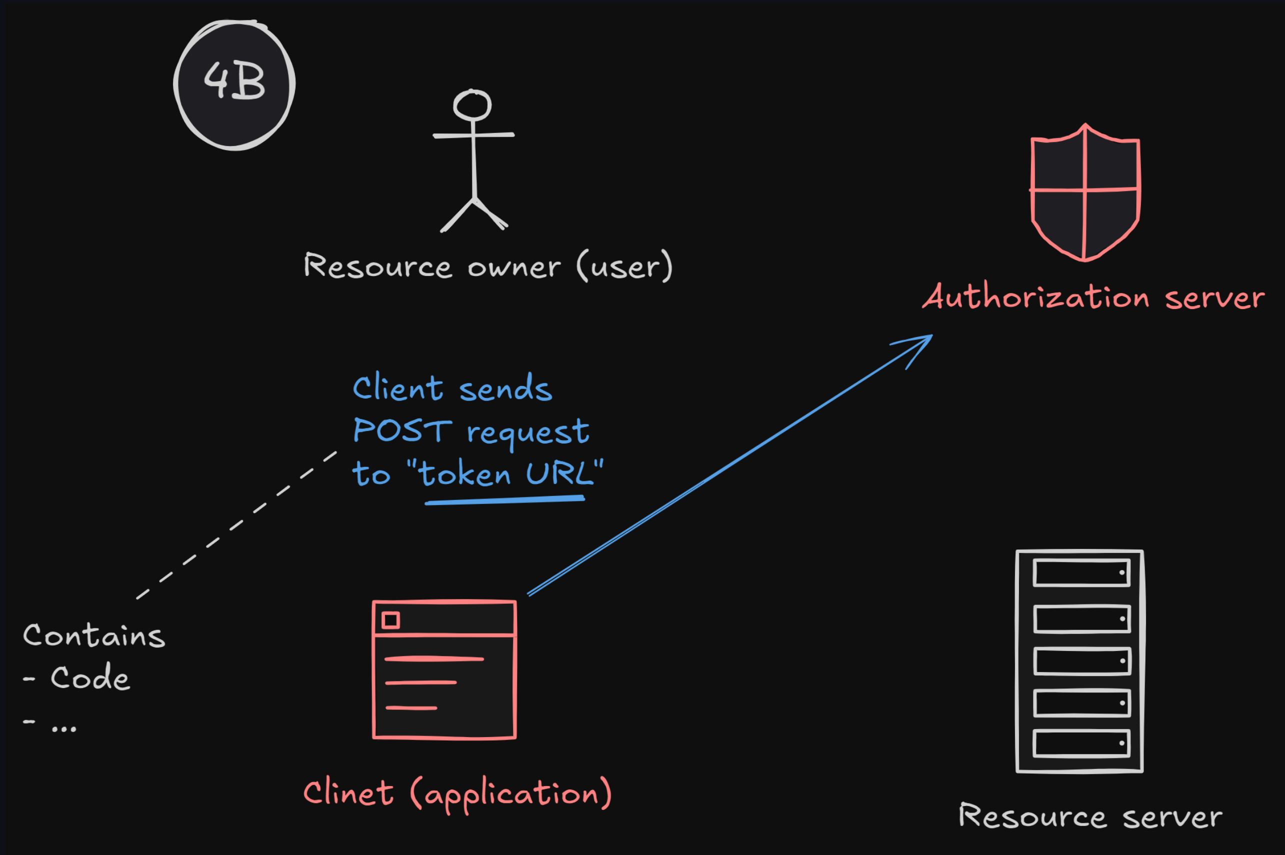
Step 4A

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



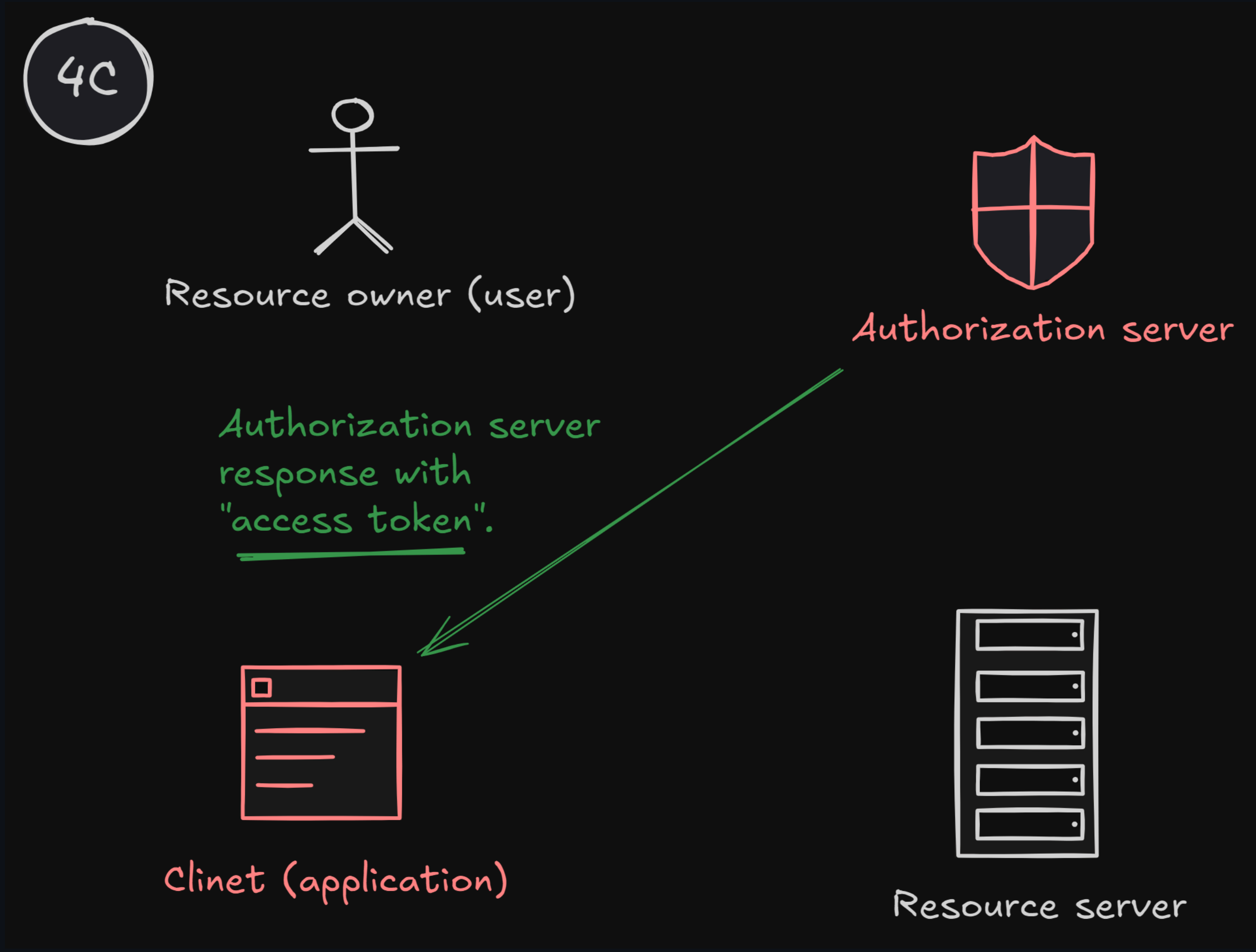
Step 4B

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



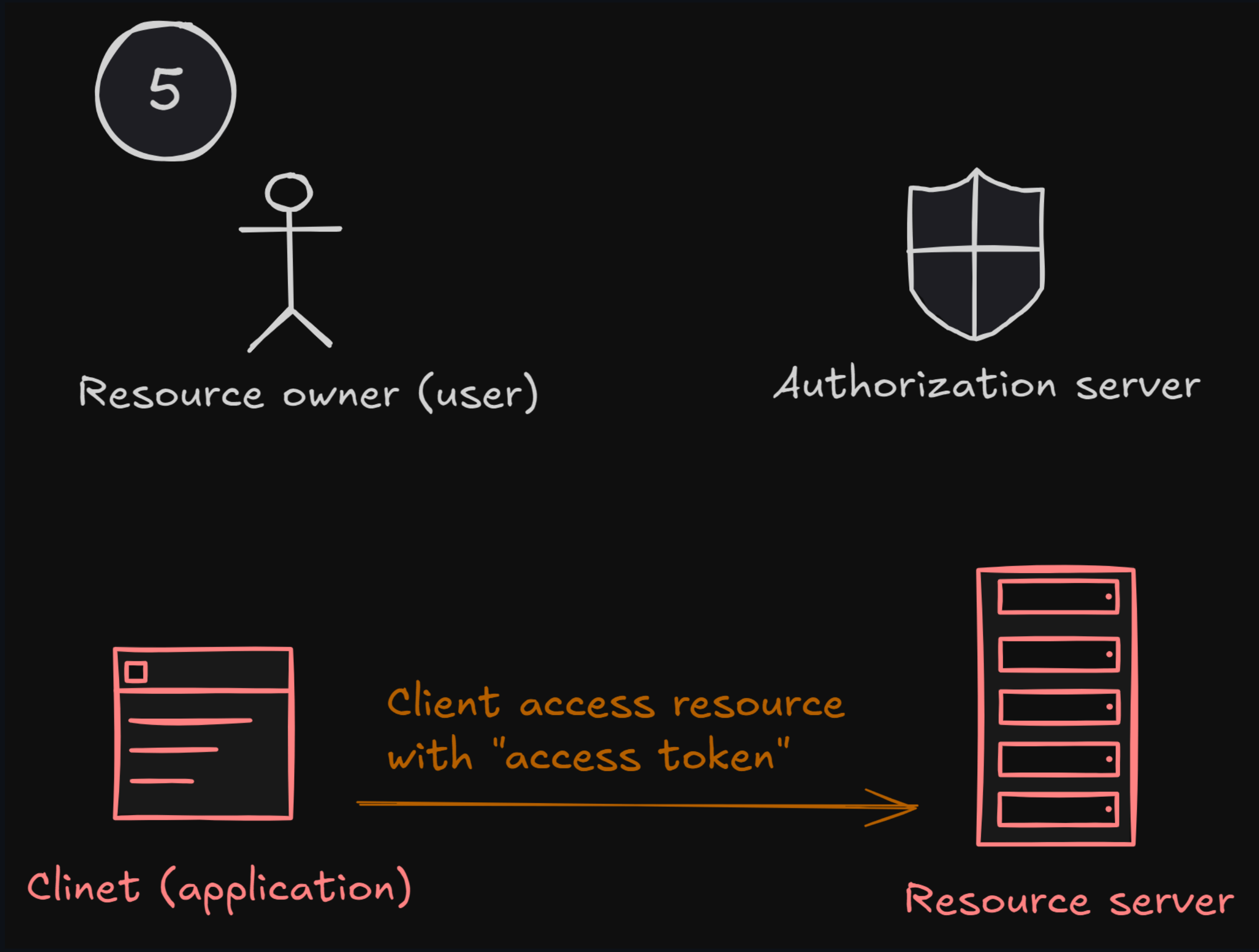
Step 4C

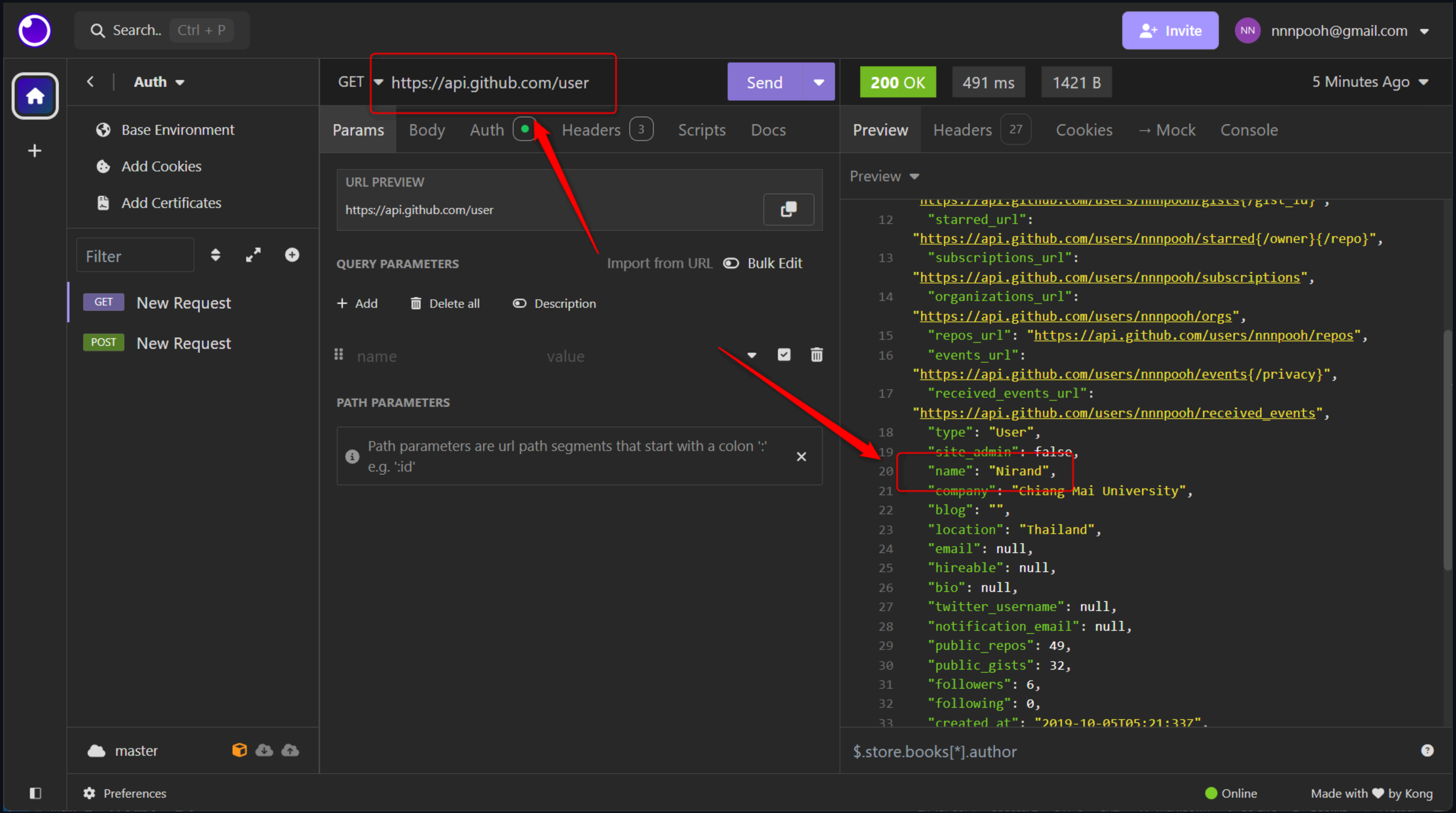
- Keep `Access Token` from the response.



Step 5

- Send `GET` requestion to resouces.
- Use `Access Token` as bearer token.
- Reference





GET https://api.github.com/user

200 OK 491 ms 1421 B 5 Minutes Ago

URL PREVIEW

https://api.github.com/user

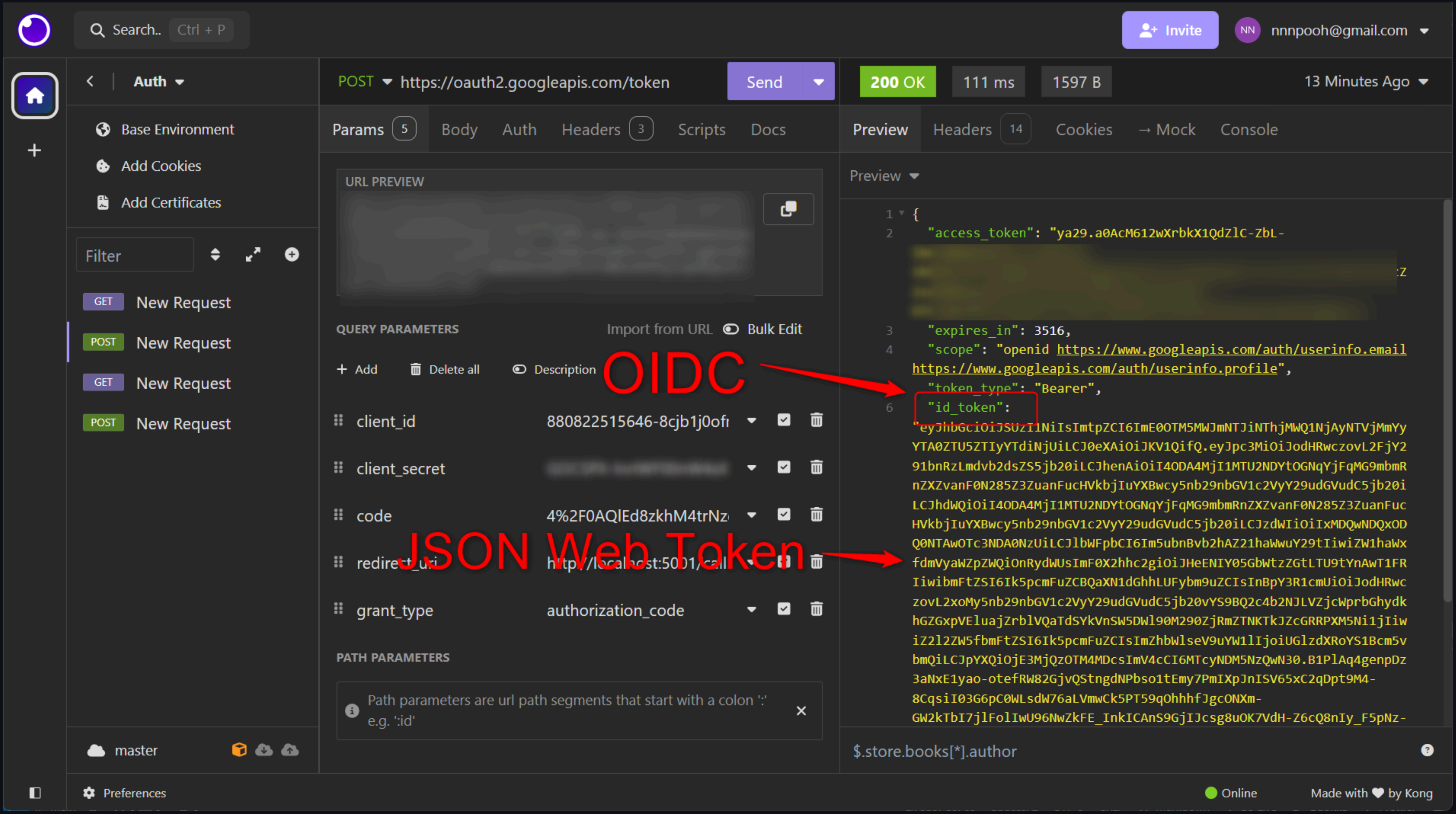
Path parameters are url path segments that start with a colon ':' e.g. ':id'

```
 "https://api.github.com/users/nnnpooh/gists{/gist_id}",
  "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",
  "repos_url": "https://api.github.com/users/nnnpooh/repos",
  "events_url":
"https://api.github.com/users/nnnpooh/events{/privacy}",
  "received_events_url":
"https://api.github.com/users/nnnpooh/received_events",
  "type": "User",
  "site_admin": false,
  "name": "Nirand",
  "company": "Chiang Mai University",
  "blog": "",
  "location": "Thailand",
  "email": null,
  "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",
```

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`.



POST https://oauth2.googleapis.com/token

200 OK 111 ms 1597 B 13 Minutes Ago

URL PREVIEW

[redacted]

QUERY PARAMETERS Import from URL Bulk Edit

+ Add Delete all Description

client_id	880822515646-8cjb1j0ofı
client_secret	[redacted]
code	4%2F0AQlEd8zkhM4trNz
redirect_uri	http://localhost:5001/call
grant_type	authorization_code

PATH PARAMETERS

Path parameters are url path segments that start with a colon ':' e.g. ':id'

OIDC

JSON Web Token

```
{
  "access_token": "ya29.a0AcM612wXrbkX1QdZlC-ZbL-
[redacted]
  "expires_in": 3516,
  "scope": "openid https://www.googleapis.com/auth/userinfo.email
https://www.googleapis.com/auth/userinfo.profile",
  "token_type": "Bearer",
  "id_token":
"eyJhbGciOiJSUzI1NiIsImtpZCI6ImE0OTM5MWJmNTJiNThjMWQ1NjAyNTVjMmYy
YTA0ZTU5ZTIyYTdiNjUiLCJ0eXAiOiJKV1QifQ.eyJpc3MiOiJodHRwczovL2FjY2
91bnRzLmdvb2dsZS5jb20iLCJhenAiOiI4ODA4MjI1MTU2NDYtOGNqYjFqMG9mbmR
nZXZvanF0N285Z3ZuanFucHVkbjIuYXBwcy5nb29nbGV1c2VyY29udGVudC5jb20i
LCJhdWQiOiI4ODA4MjI1MTU2NDYtOGNqYjFqMG9mbmRnZXZvanF0N285Z3ZuanFuc
HVkbjIuYXBwcy5nb29nbGV1c2VyY29udGVudC5jb20iLCJzdWIiOiIxMDQwNDQxOD
Q0NTAwOTc3NDA0NzUiLCJlbWFpbCI6Im5ubnBvb2hAZ21haWwuY29tIiwiZW1haWx
fdmVyaWZpZWQiOnRydWUsImF0X2hhc2giOiJHeENIY05GbWtzZGtLTU9tYnAwT1FR
IiwibmFtZSI6Ik5pcmFuZCBQaXN1dGhhLUFybm9uZCIsInBpY3R1cmUiOiJodHRwc
zovL2xoMy5nb29nbGV1c2VyY29udGVudC5jb20vYS9BQ2c4b2NJLVZjcWprbGhydk
hGZGxpVEluajZrblVQaTdSYkVnSW5DWl90M290ZjRmZTNKTkJZcGRRPXM5Ni1jIiw
iZ2l2ZW5fbmFtZSI6Ik5pcmFuZCIsImZhbWlseV9uYW1lIjoiUGlzdXRoYS1Bcm5v
bmQiLCJpYXQiOjE3MjQzOTM4MDcsImV4cCI6MTcyNDM5NzQwN30.B1PlAq4genpDz
3aNxE1yao-otefRW82GjvQStngdNPbso1tEmy7PmIXpJnISV65xC2qDpt9M4-
8CqsiI03G6pC0WLsdW76aLVmwCk5PT59qOhhhfJgcONXm-
GW2kTbI7jlFolIwU96NwZkFE_InkICAnS9GjIJcsg8uOK7VdH-Z6cQ8nIy_F5pNz-
```

$.store.books[*].author

> 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`
- `pnpm i`
- `npm run db:reset`
- `npm run dev`

Note

- Database tables
- Types of response objects
- Add type definition to `req.user`.

Highlighed packages

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

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

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