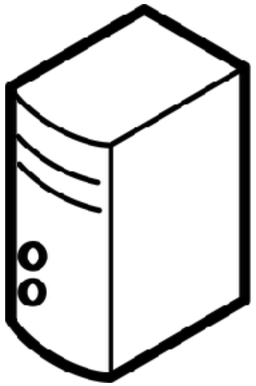
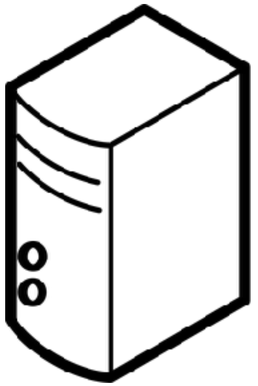
FULL STACK DATA FLOW

There and back again

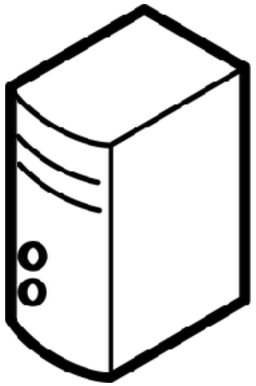




Server

“Internet”

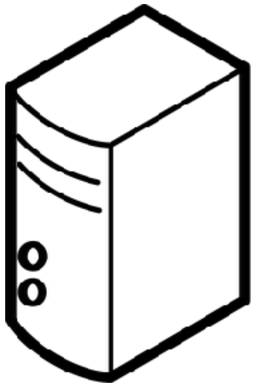
Client



Server

“Internet”

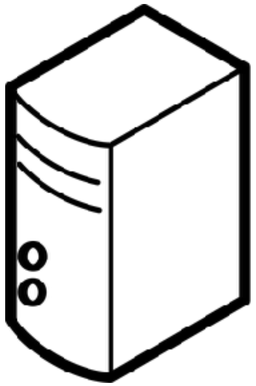
Client



Server

“Internet”

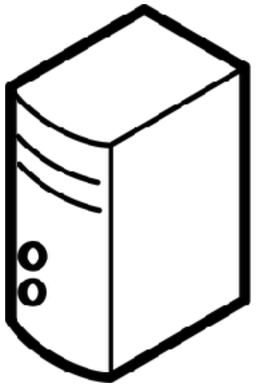
Client



Server

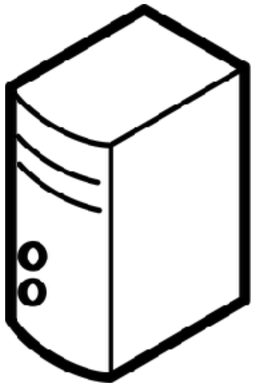
“Internet”

Client

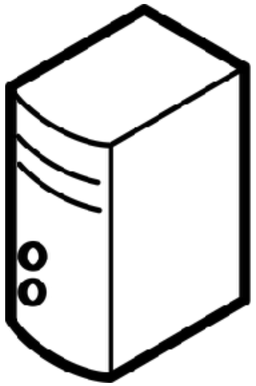


node
JS

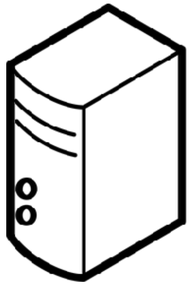
PostgreSQL

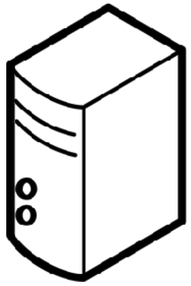


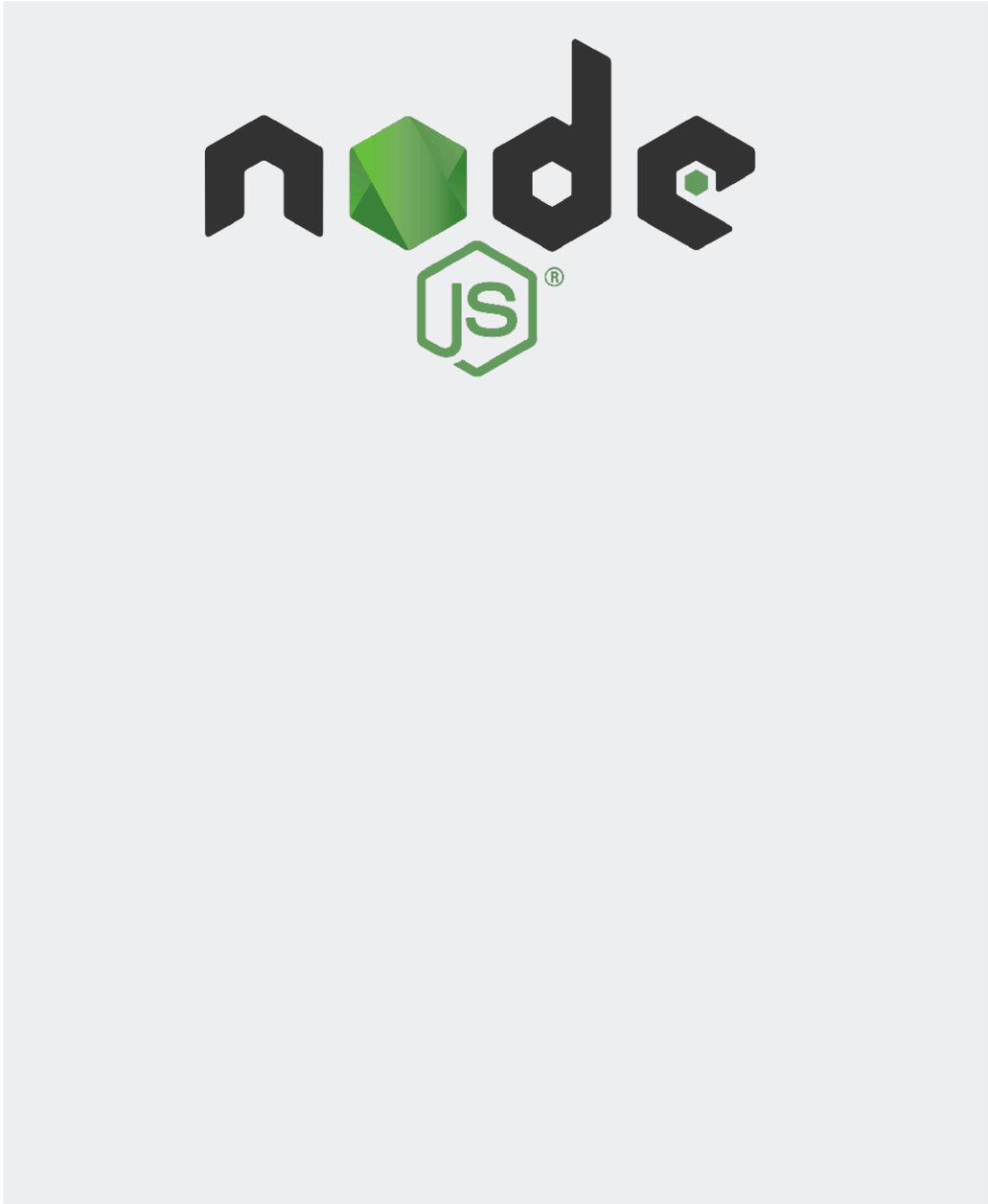
- A JavaScript runtime built on Chrome's V8 JS engine
- Allows execution of JS on an operating system

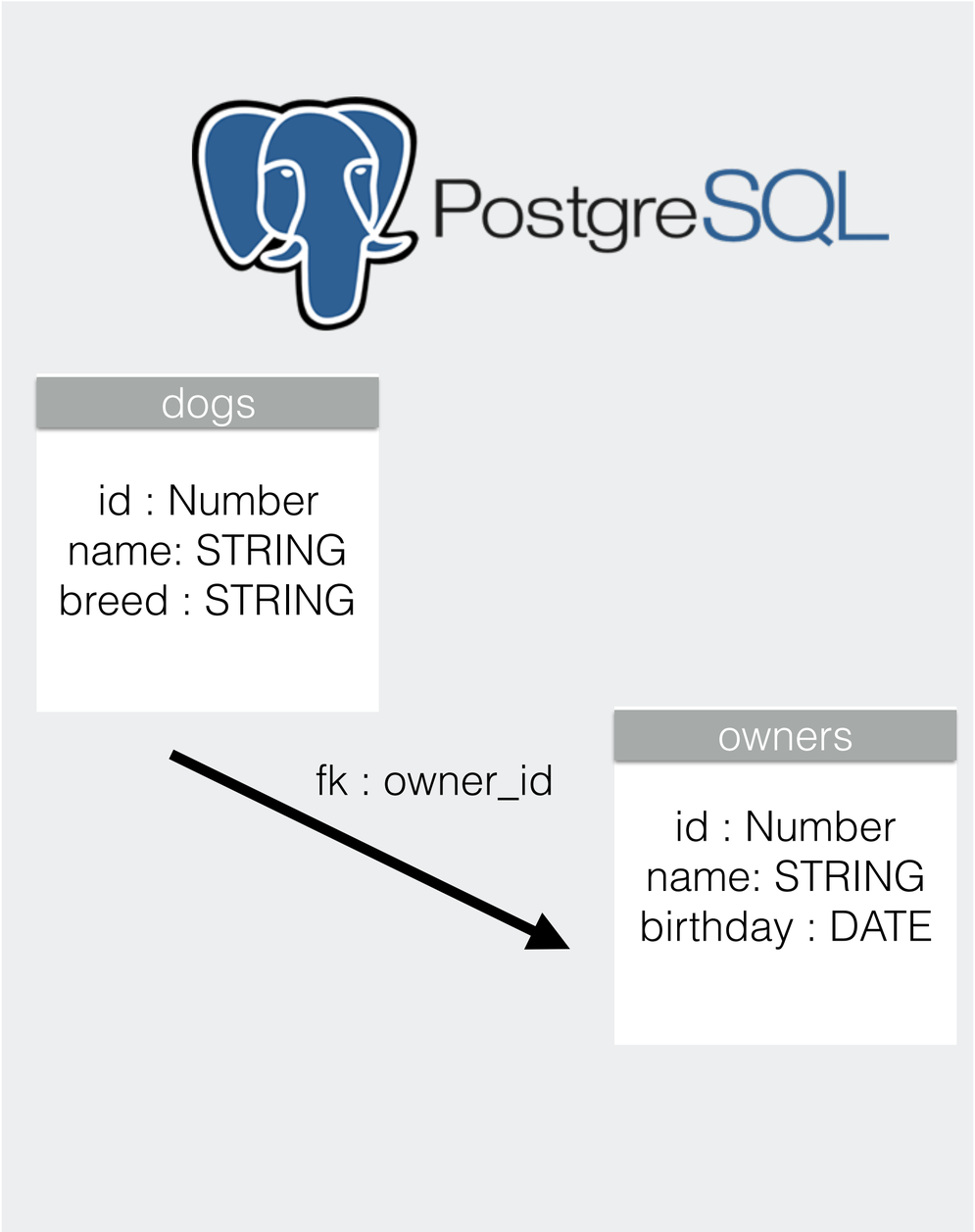


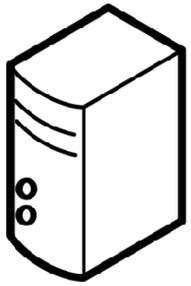
- **An open source, object-relational database system**








dogs
id : Number
name: STRING
breed : STRING
fk : owner_id
owners
id : Number
name: STRING
birthday : DATE

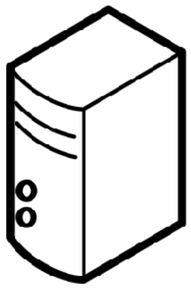


dogs
id : Number name: STRING breed : STRING

fk : owner_id

owners
id : Number name: STRING birthday : DATE

```
listening on port 5432
```



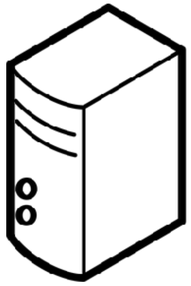
dogs
id : Number name: STRING breed : STRING

fk : owner_id

owners
id : Number name: STRING birthday : DATE

postgres://

listening on port 5432



express

PostgreSQL

dogs
id : Number name: STRING breed : STRING

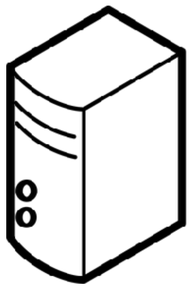
fk : owner_id

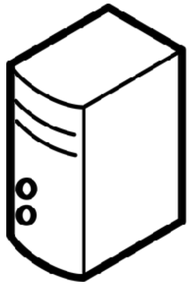
owners
id : Number name: STRING birthday : DATE

```
listening on port 5432
```

express

- A application written with Node.js
- Provides a framework for writing web servers





express

PostgreSQL

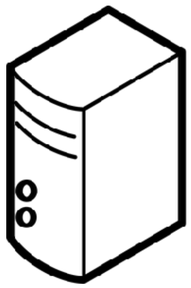
dogs
id : Number name: STRING breed : STRING

fk : owner_id

owners
id : Number name: STRING birthday : DATE

```
listening on port 5432
```

```
server/
   index.js
```



express

PostgreSQL

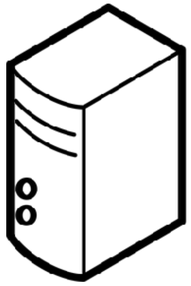
dogs
id : Number name: STRING breed : STRING

fk : owner_id

owners
id : Number name: STRING birthday : DATE

```
listening on port 5432
```

```
server/
   index.js
```



express

listening on port 8080

PostgreSQL

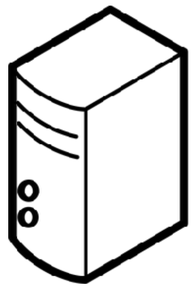
dogs
id : Number name: STRING breed : STRING

fk : owner_id

owners
id : Number name: STRING birthday : DATE

listening on port 5432

```
server/
   index.js
```



http://

listening on port 8080

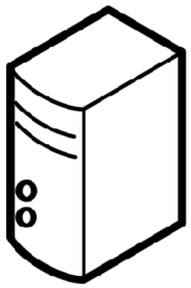
dogs
id : Number name: STRING breed : STRING

fk : owner_id

owners
id : Number name: STRING birthday : DATE

listening on port 5432

```
server/
   index.js
public/
   index.html
   style.css
```



express

listening on port 8080

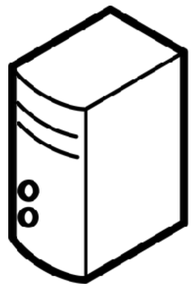
dogs
id : Number name: STRING breed : STRING

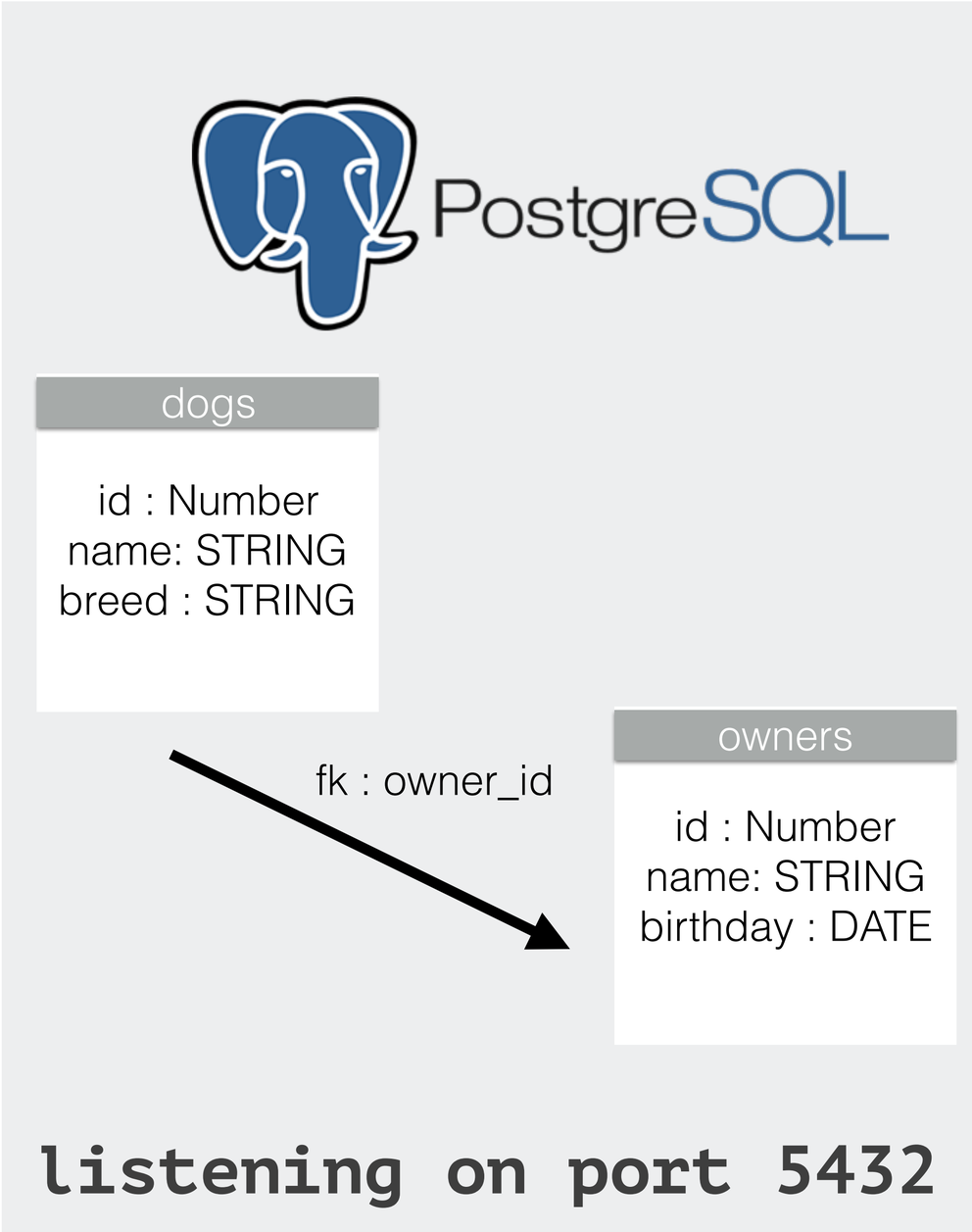
fk : owner_id

owners
id : Number name: STRING birthday : DATE

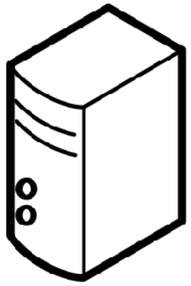
listening on port 5432

```
server/
  index.js
public/
  index.html
  style.css
```

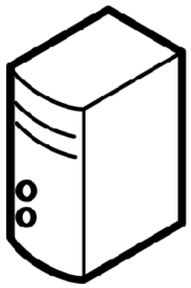


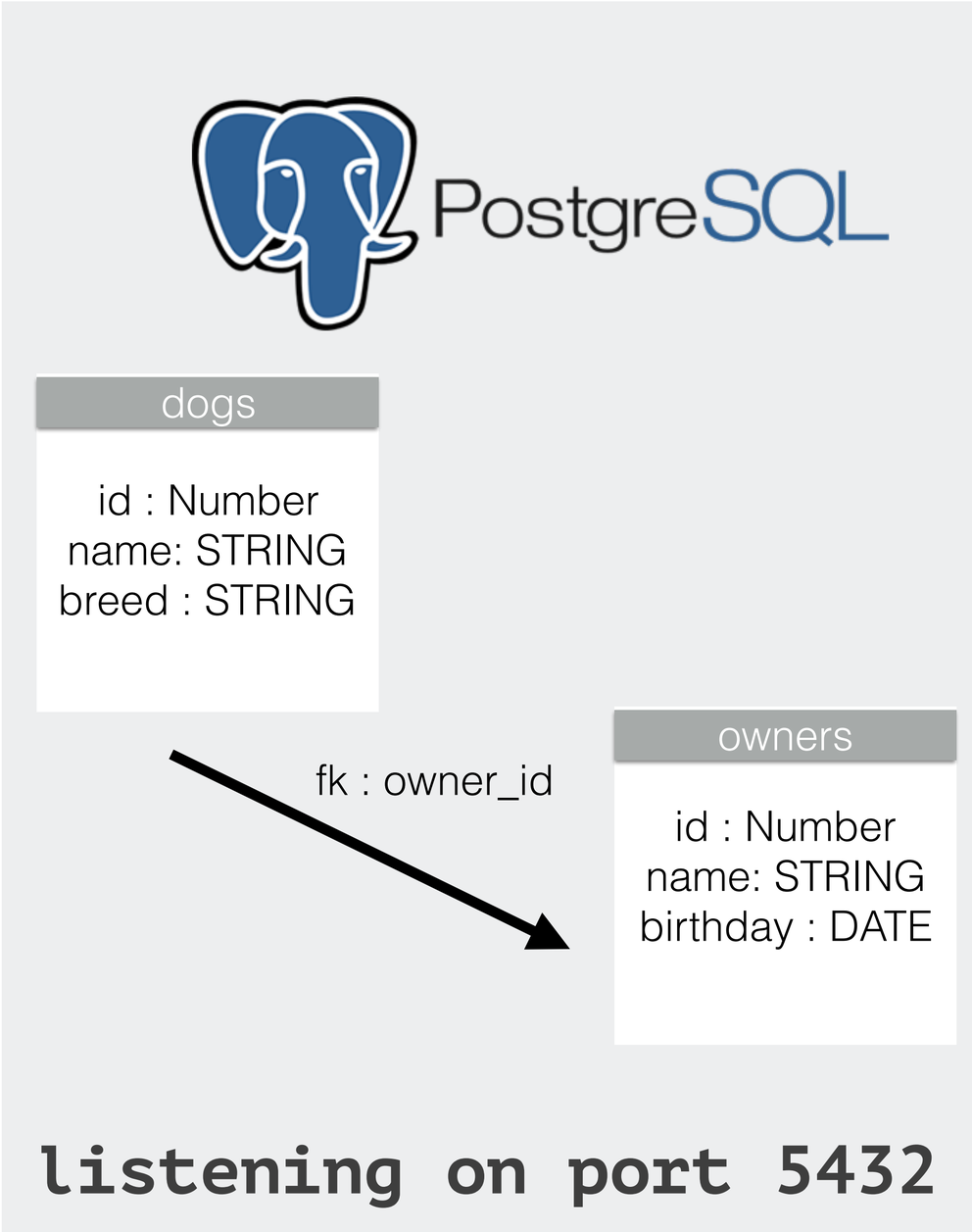


- A application written with Node.js
- Provides a framework for interacting with a database from a Node application

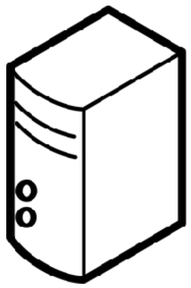


```
server/
  index.js
public/
  index.html
  style.css
```





```
server/
   index.js
   db.js
public/
   index.html
   style.css
```



express

listening on port 8080

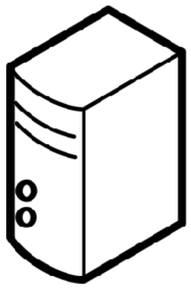
dogs
id : Number name: STRING breed : STRING

fk : owner_id

owners
id : Number name: STRING birthday : DATE

listening on port 5432

```
server/
   index.js
   db.js
public/
   index.html
   style.css
```



express

dogs

id : Number
name: STRING
breed : STRING

fk : owner_id

owners

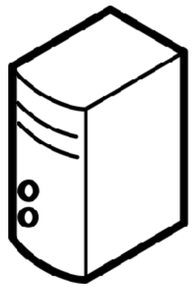
id : Number
name: STRING
birthday : DATE

listening on port 8080

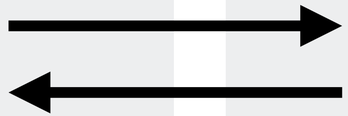
listening on port 5432

```
server/
   index.js
   db.js
public/
   index.html
   style.css

client/
   Footer.js
   Header.js
```



express



dogs
id : Number name: STRING breed : STRING

fk : owner_id

owners
id : Number name: STRING birthday : DATE

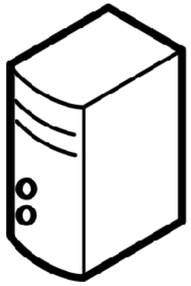
listening on port 8080

listening on port 5432

```
server/
   index.js
   db.js
public/
   index.html
   style.css

client/
   Footer.js
   Header.js
```

React



express

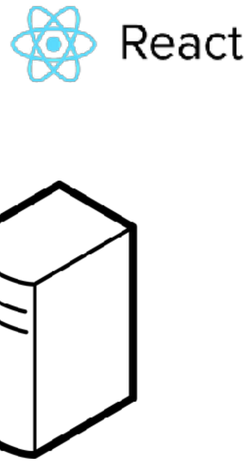
dogs
id : Number name: STRING breed : STRING

fk : owner_id

owners
id : Number name: STRING birthday : DATE

listening on port 8080

listening on port 5432

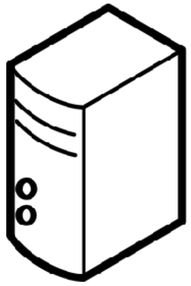


- A JavaScript library for building user interfaces
- Executed on a browser (usually)
- …But avails itself of special syntax not recognized by browsers (JSX)

```
server/
   index.js
   db.js
public/
   index.html
   style.css

client/
   Footer.js
   Header.js
```

React



express

dogs
id : Number name: STRING breed : STRING

fk : owner_id

owners
id : Number name: STRING birthday : DATE

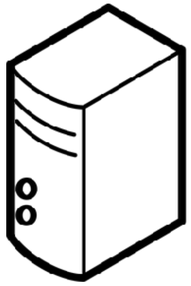
listening on port 8080

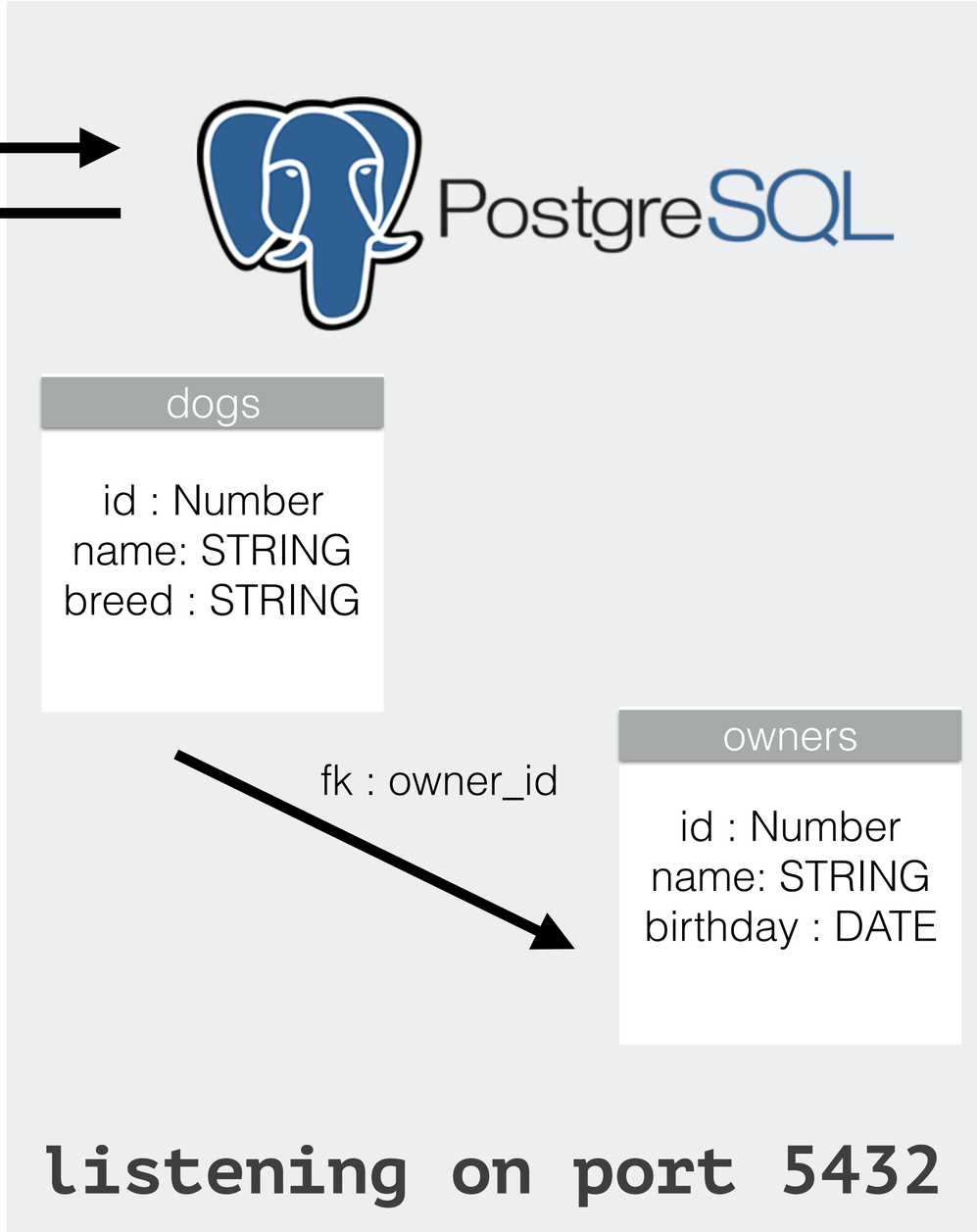
listening on port 5432

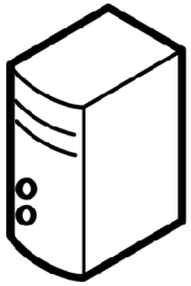
```
server/
  index.js
  db.js
public/
  index.html
  style.css

client/
  Footer.js
  Header.js
```

React





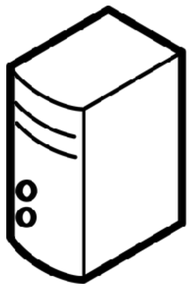


- A application written with Node.js
- Takes many .js files and “bundles” them into one
- Compiles special syntax like JSX into browser-safe JS

```
server/
   index.js
   db.js
public/
   index.html
   style.css

client/
   Footer.js
   Header.js
```

React



express

webpack
MODULE BUNDLER

listening on port 8080

dogs
id : Number name: STRING breed : STRING

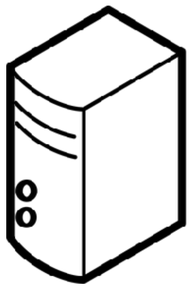
fk : owner_id

owners
id : Number name: STRING birthday : DATE

listening on port 5432

```
server/
   index.js
   db.js
public/
   index.html
   style.css
   bundle.js
client/
   Footer.js
   Header.js
```

React



express

webpack
MODULE BUNDLER

listening on port 8080

dogs
id : Number name: STRING breed : STRING

fk : owner_id

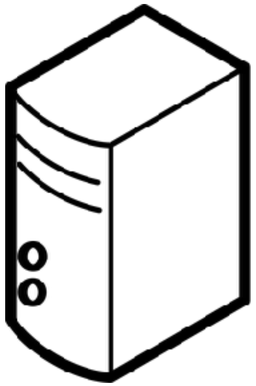
owners
id : Number name: STRING birthday : DATE

listening on port 5432

`index.html`

`style.css`

`bundle.js`



Server

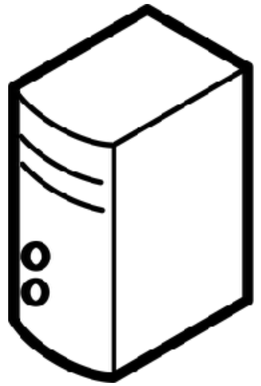
“Internet”

Client

index.html

style.css

bundle.js



HTTP GET /

Server

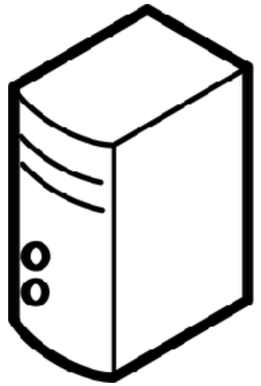
“Internet”

Client

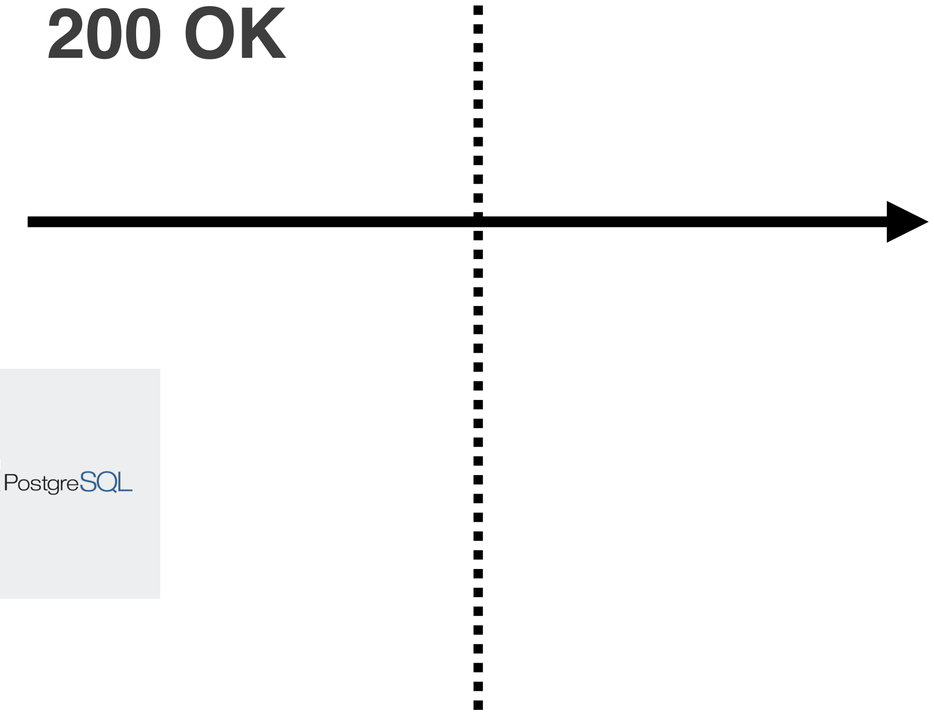
index.html

style.css

bundle.js



200 OK



Server

“Internet”

Client

```
<!DOCTYPE html>
<html>
  <head>
    <link rel="stylesheet" href="/style.css" />
    <script defer src="/bundle.js"></script>
  </head>
  <body>
    <div id=“app"></div>
  </body>
</html>
```

```
<!DOCTYPE html>
<html>
  <head>
    <link rel="stylesheet" href="/style.css" />
    <script defer src="/bundle.js"></script>
  </head>
  <body>
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  <body>
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  </body>
</html>
```
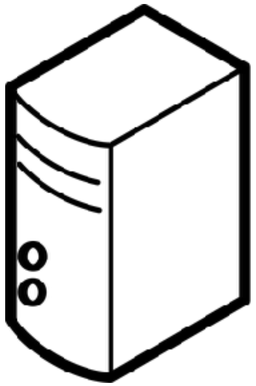

index.html

style.css

bundle.js



node

PostgreSQL

Server

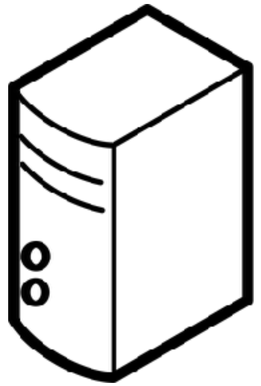
“Internet”

Client

index.html

style.css

bundle.js



HTTP GET /style.css

Server

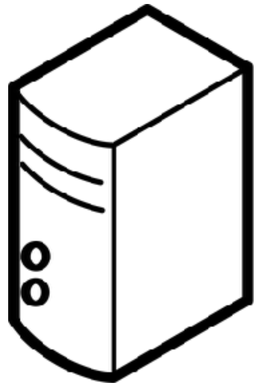
“Internet”

Client

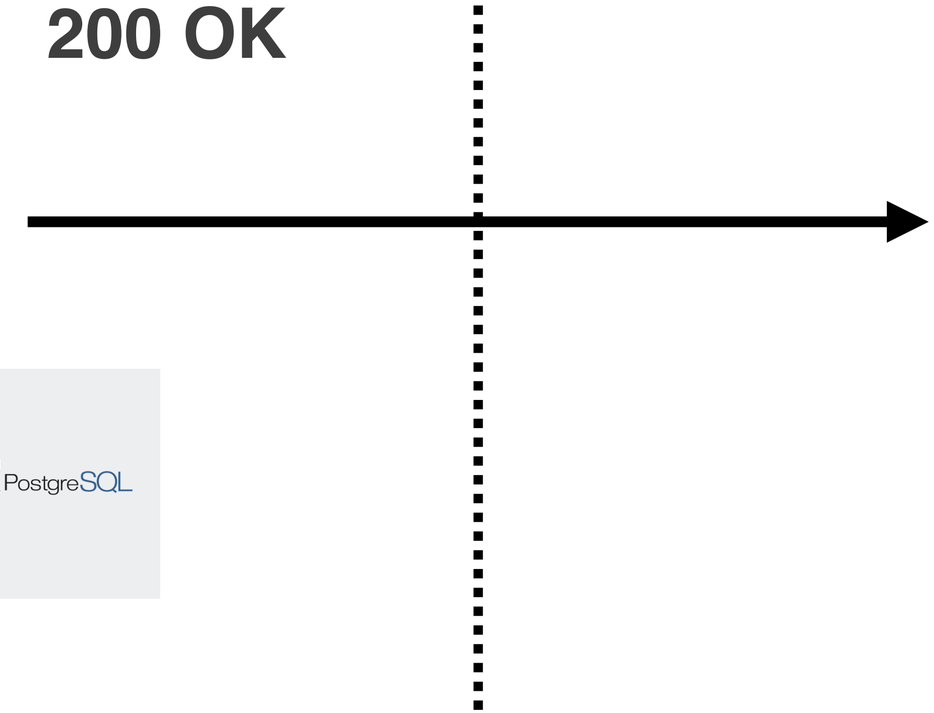
index.html

style.css

bundle.js



200 OK



Server

“Internet”

Client

```
<!DOCTYPE html>
<html>
  <head>
    <link rel="stylesheet" href="/style.css" />
    <script defer src="/bundle.js"></script>
  </head>
  <body>
    <div id=“app"></div>
  </body>
</html>
```

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<!DOCTYPE html>
<html>
  <head>
    <link rel="stylesheet" href="/style.css" />
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  </head>
  <body>
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  </body>
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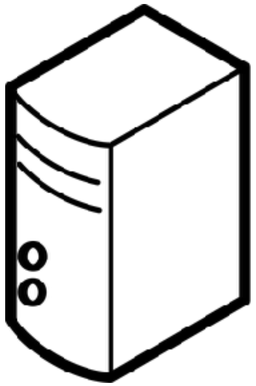
index.html

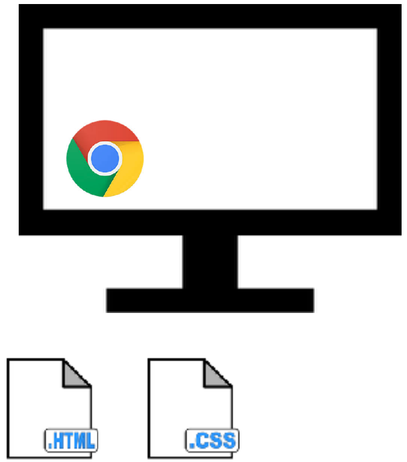
style.css

bundle.js



node

PostgreSQL



Server

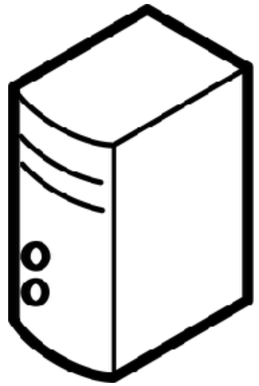
“Internet”

Client

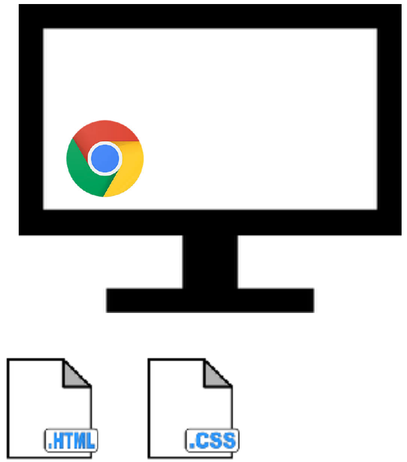
index.html

style.css

bundle.js



HTTP GET /bundle.js



Server

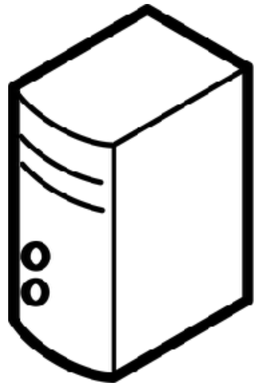
“Internet”

Client

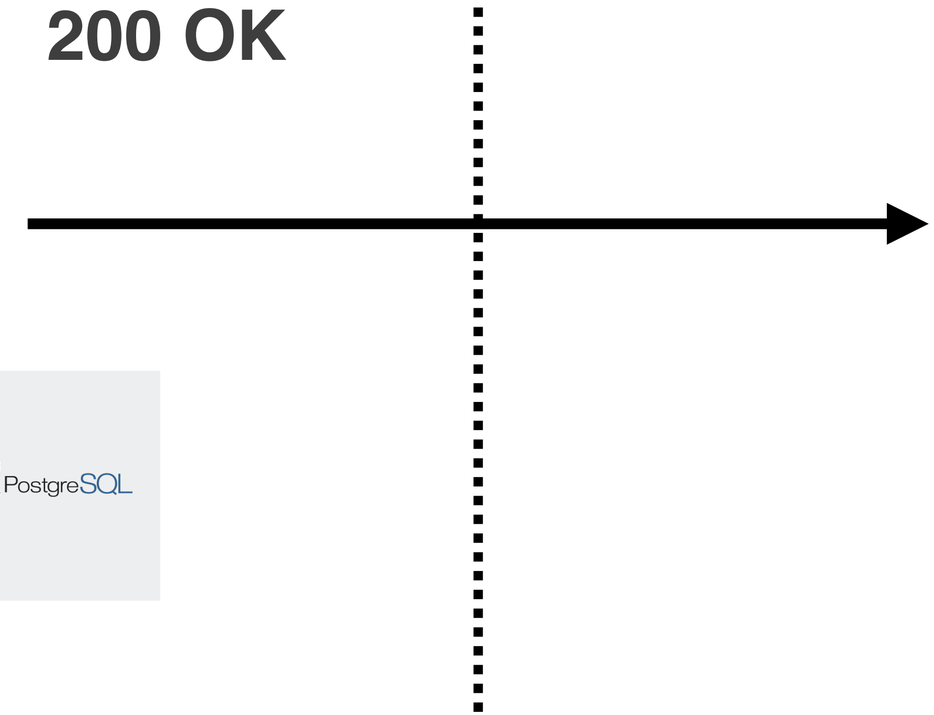
index.html

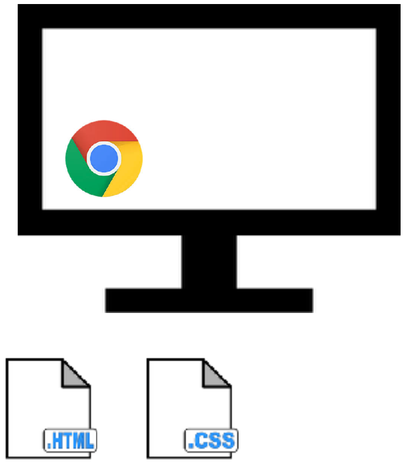
style.css

bundle.js



200 OK





Server

“Internet”

Client

```
<!DOCTYPE html>
<html>
  <head>
    <link rel="stylesheet" href="/style.css" />
    <script defer src="/bundle.js"></script>
  </head>
  <body>
    <div id=“app"></div>
  </body>
</html>
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  <head>
    <link rel="stylesheet" href="/style.css" />
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    <div id=“app"></div>
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  </head>
  <body>
    <div id=“app"></div>
  </body>
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<html>
  <head>
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    <script defer src="/bundle.js"></script>
  </head>
  <body>
    <div id=“app"></div>
  </body>
</html>
```
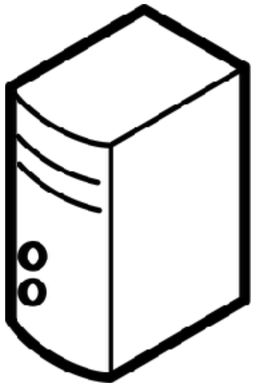
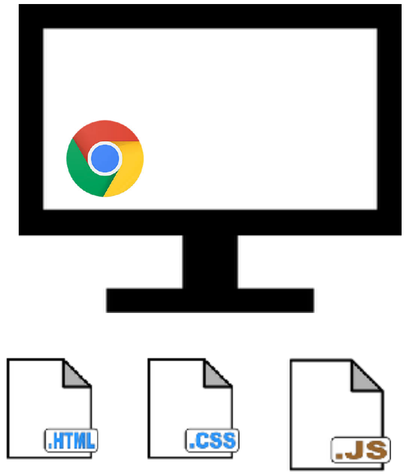
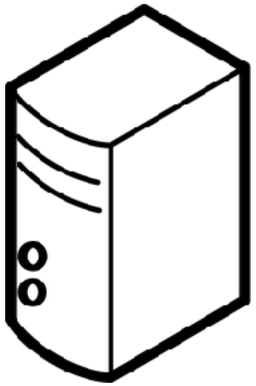
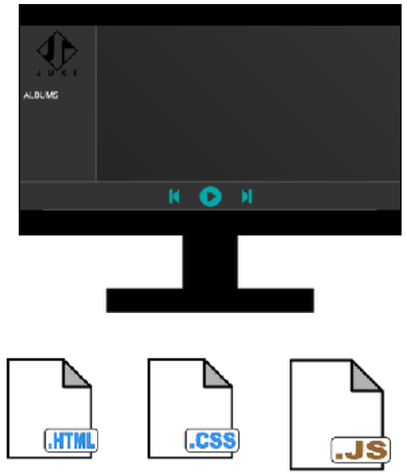

Time to execute this bundle.js file!





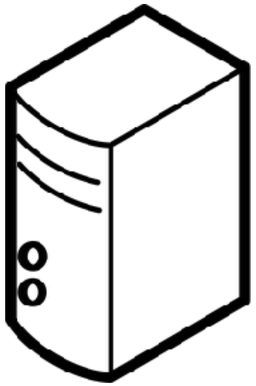
Server **“Internet”** **Client**





Server **“Internet”** **Client**

```
this.state = {
  albums: []
}
```



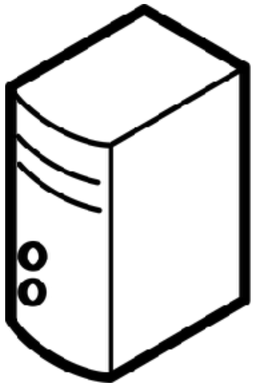
Server

“Internet”

Client

```
this.state = {
  albums: []
}
```

HTTP GET /api/albums



Server

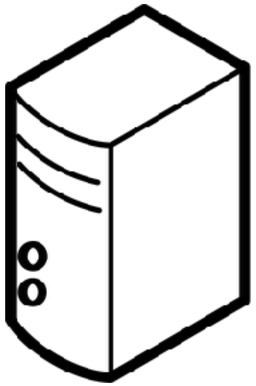
“Internet”

Client

```
this.state = {
  albums: []
}
```

```
[{…}, {…}, {…}]
```

200 OK

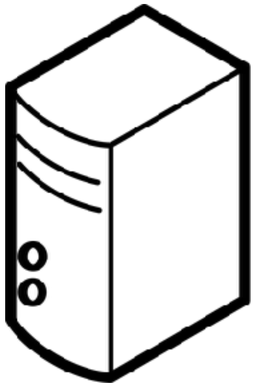


Server

“Internet”

Client

```
this.state = {
  albums: [
    {...},
    {...}
  ]
}
```



Server

“Internet”

Client