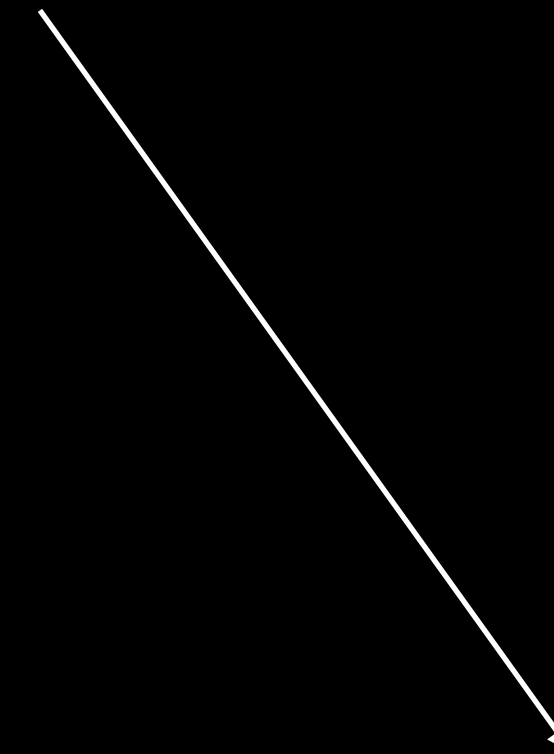
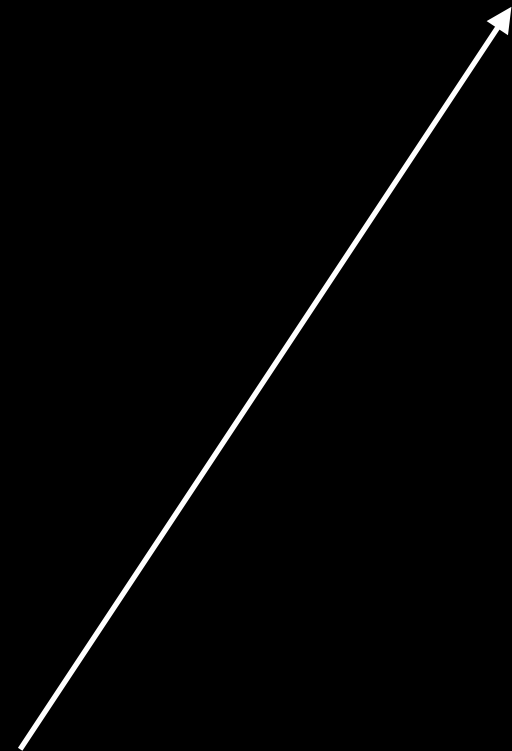


# MongoDB deep dive

Understanding CRUD, mongoose and building an end to end  
authenticated app



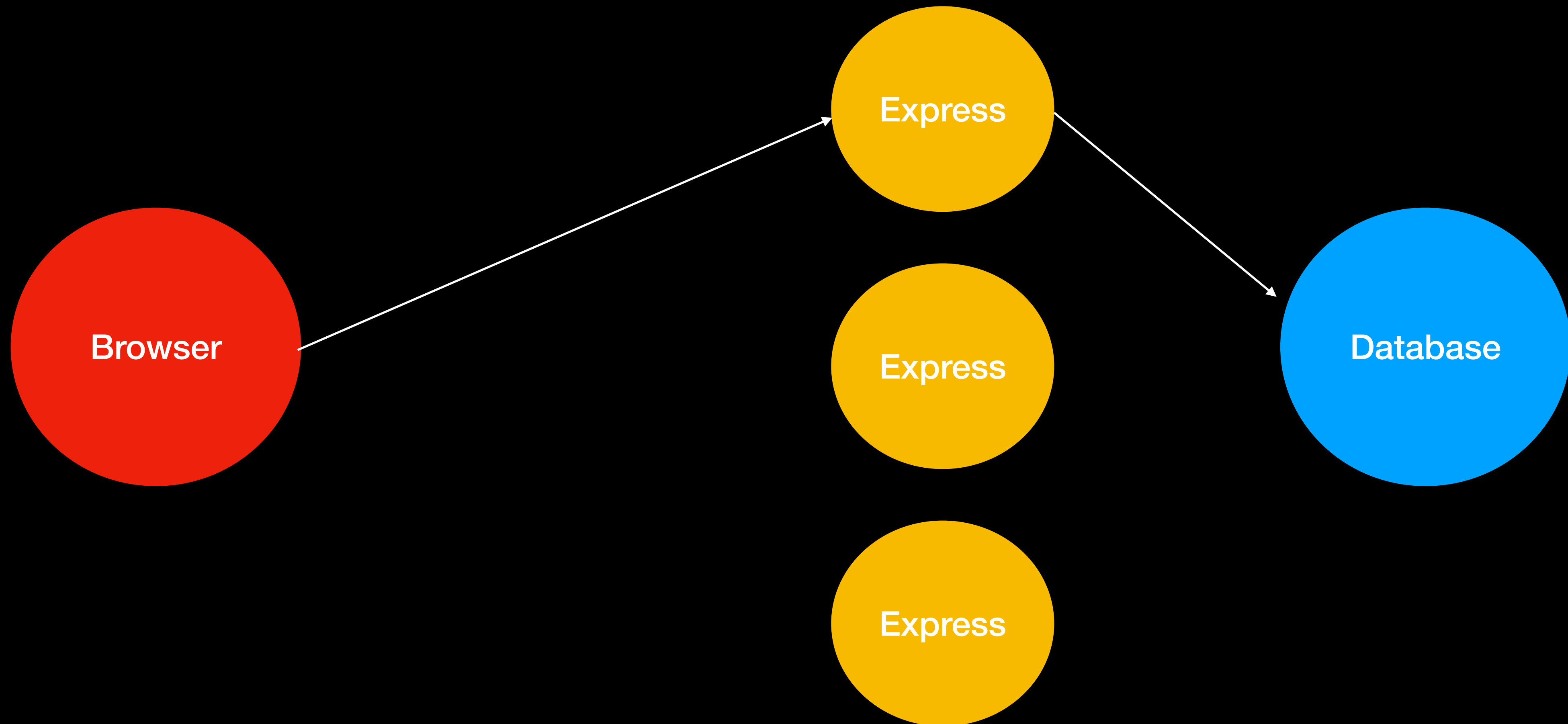
# Supreme Court example





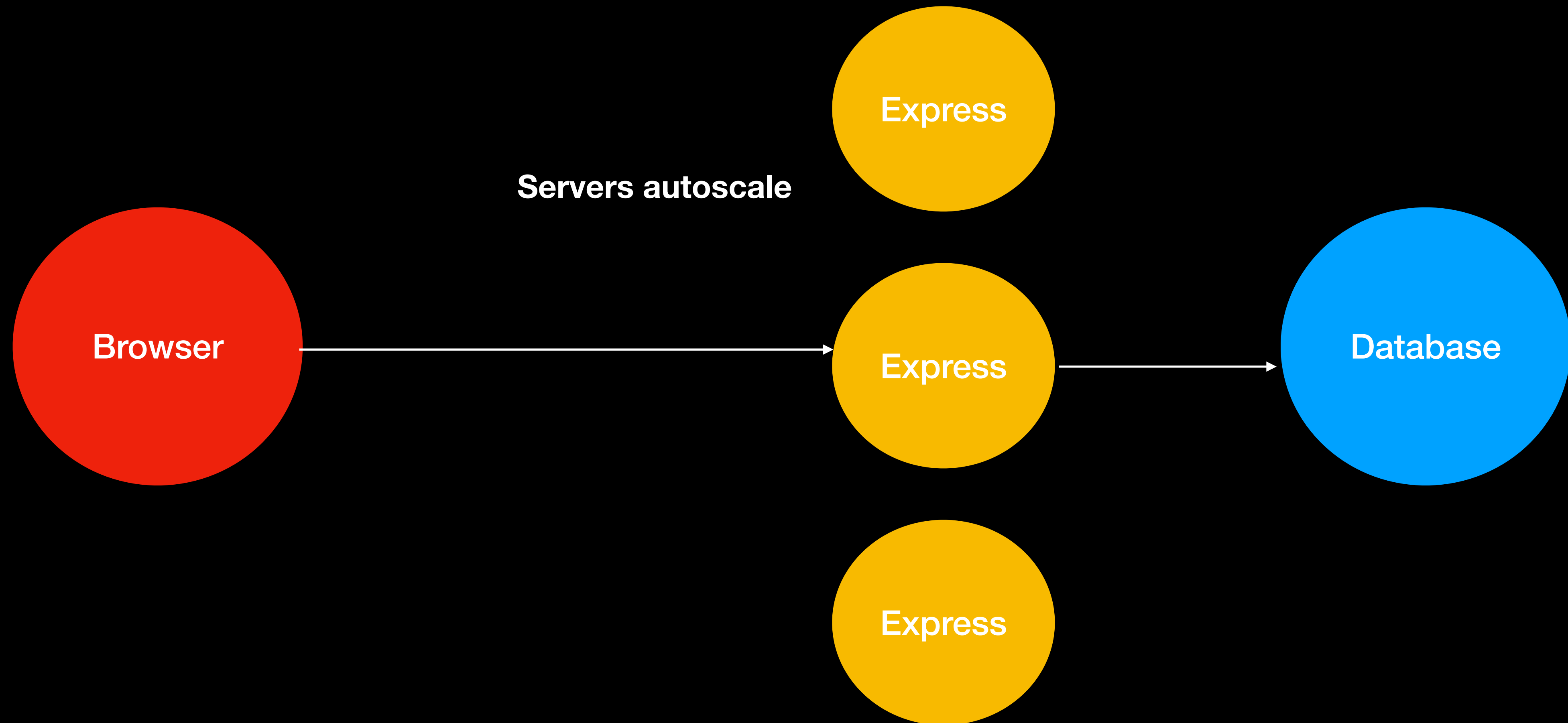
# What is a database

It is a place where data is stored persistently



# What is a database

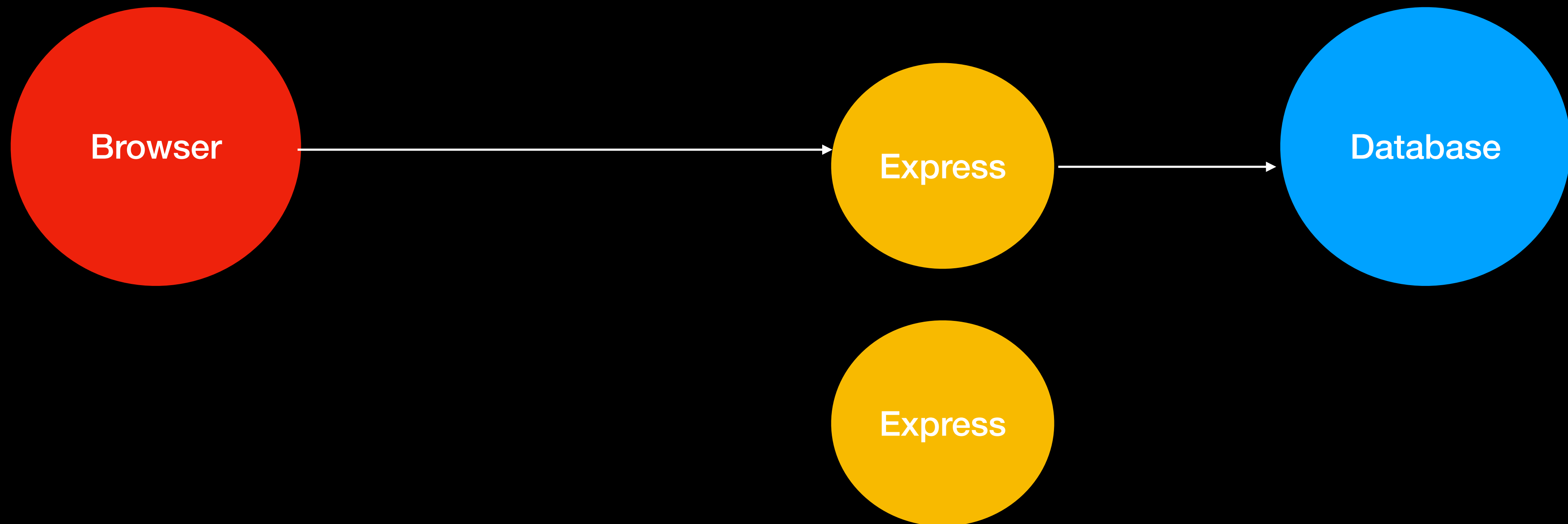
It is a place where data is stored persistently



# What is a database

It is a place where data is stored persistently

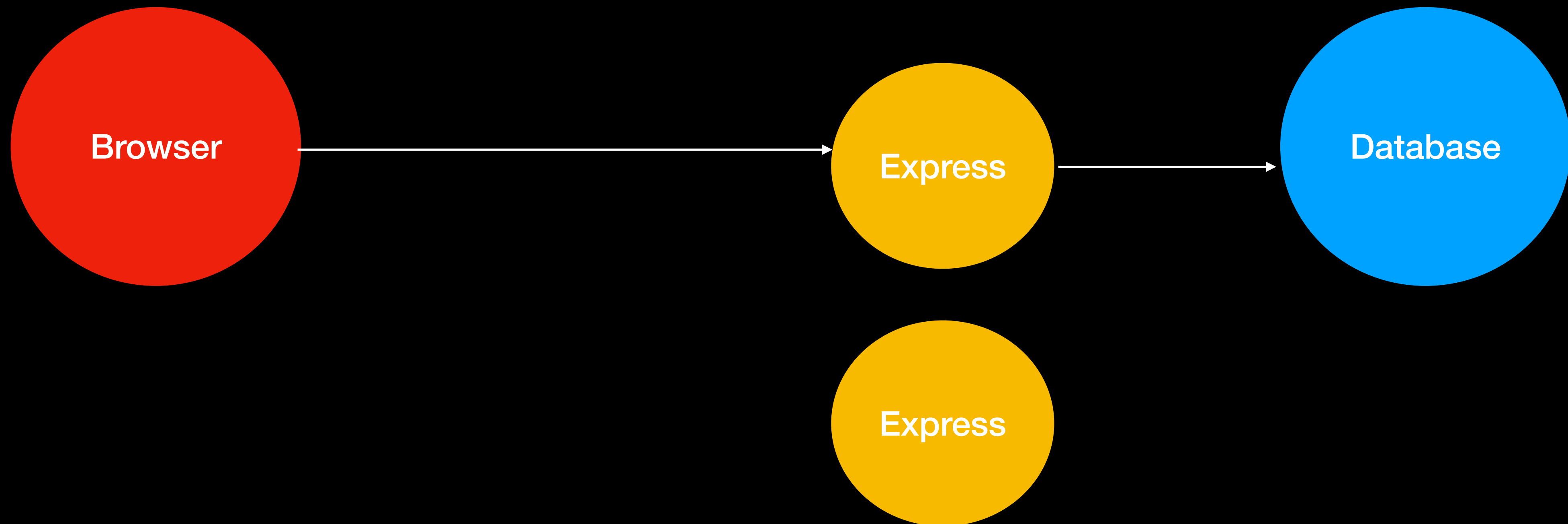
Servers are transient



# What is a database

It is a place where data is stored persistently

Database is persistent

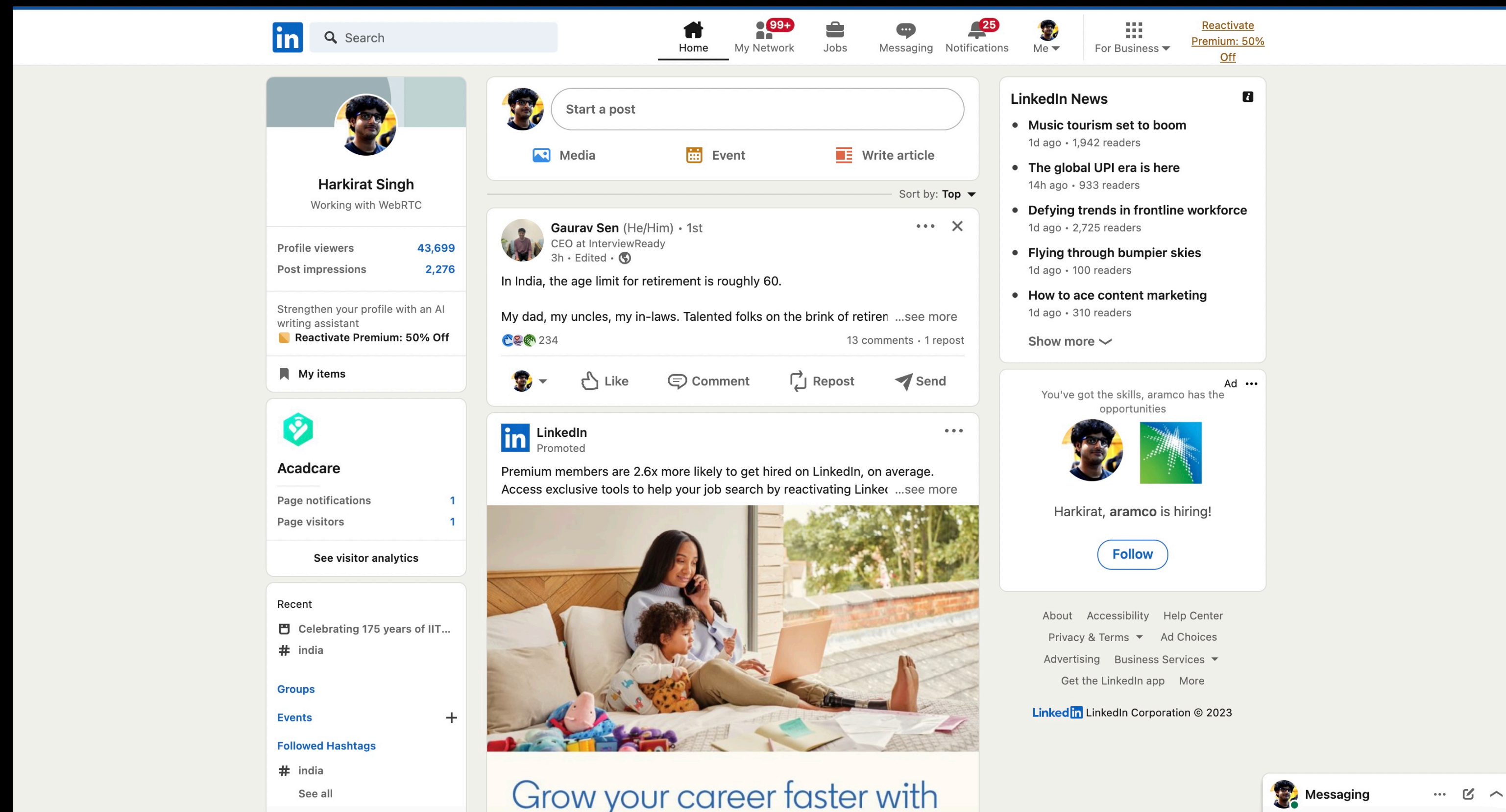


# What is a database

Examples of data stored in databases -

For LinkedIn

1. User data
2. Users posts
3. Users connection relationships
4. Messages



# What is a database

Examples of data stored in databases -



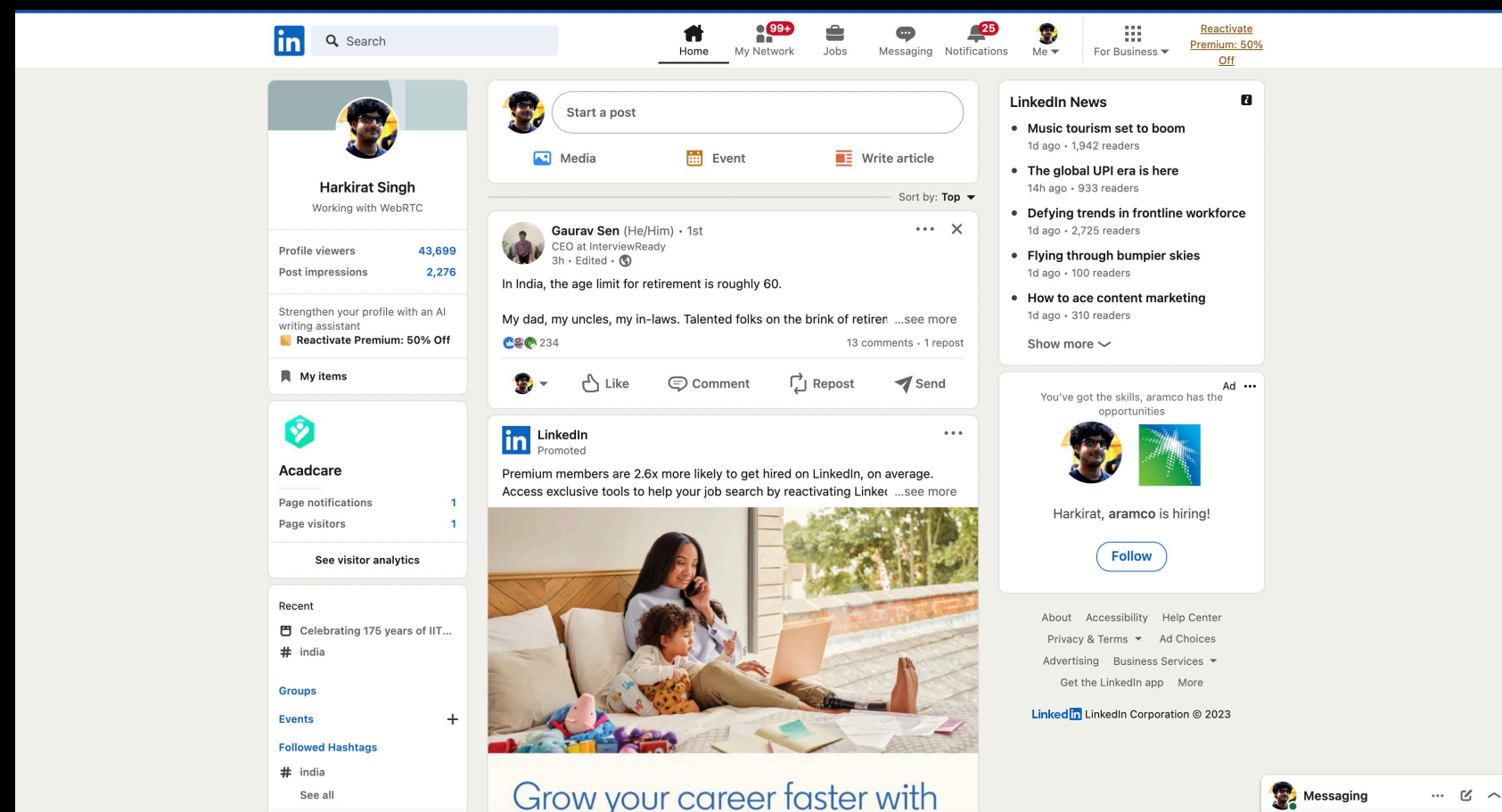


# What is a database

Good question to have at this point

Why don't we let the user hit the database directly?

What extra does the http server provide exactly?



Give me all posts for myself

Database

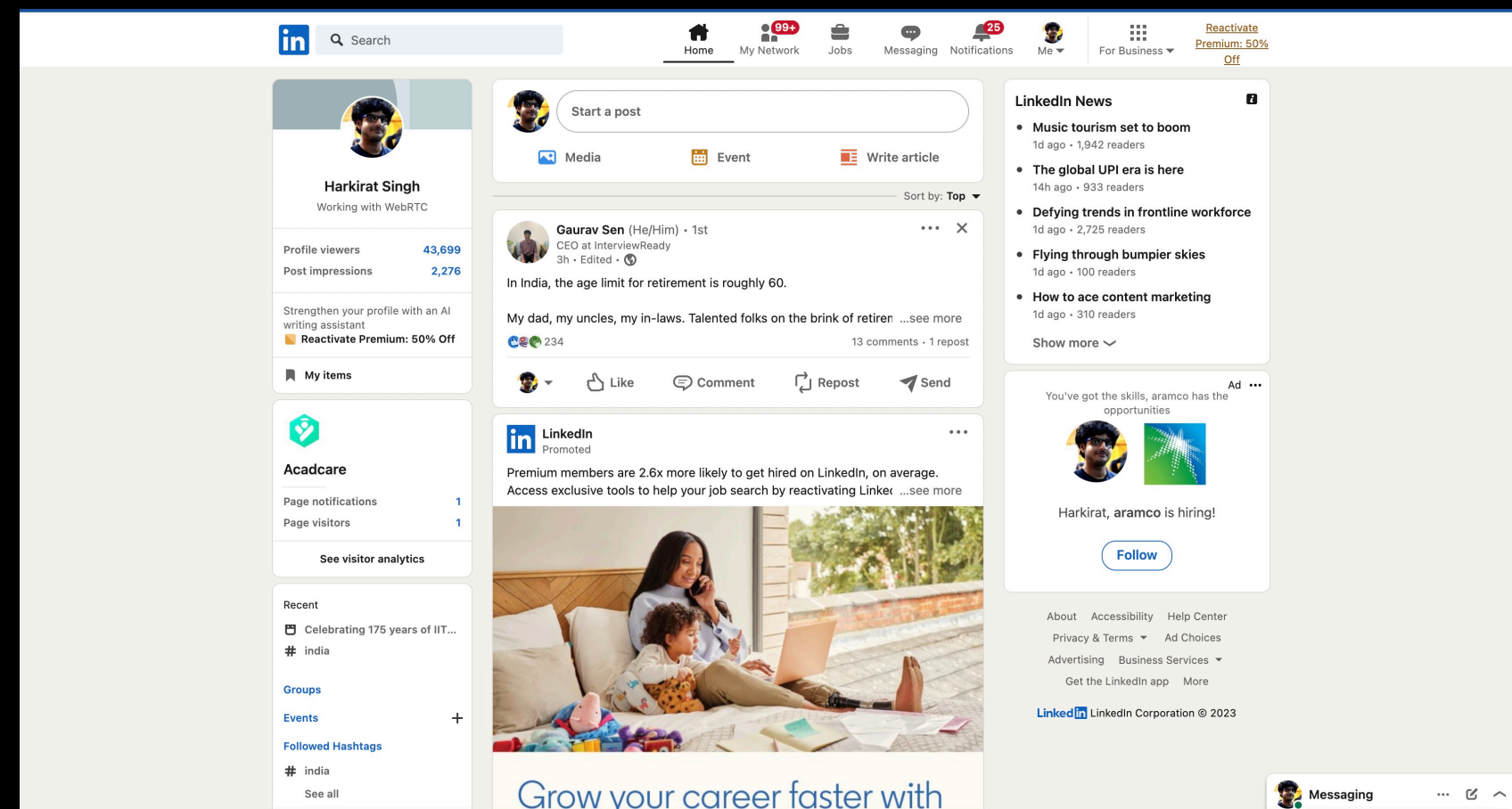
# What is a database

Good question to have at this point

Why don't we let the user hit the database directly?

What extra does the http server provide exactly?

1. Databases were are created using protocols that browsers don't understand
2. Databases don't have granual access as a first class citizen. Very hard to do user specific access in them
3. There are some databases (firebase) that let you get rid of the http server and try their best to provide granola access



Give me all posts for myself

Database

# What is a database

**Databases usually allow access to 4 primitives**

- 1. Create Data**
- 2. Read Data**
- 3. Update Data**
- 4. Delete Data**

**Popularly known as CRUD**



# What is a database

Let's see the API for the mongoose library

Eventually, we'll be using prisma (which is the industry standard way of doing this)

In mongoose, first you have to define the schema

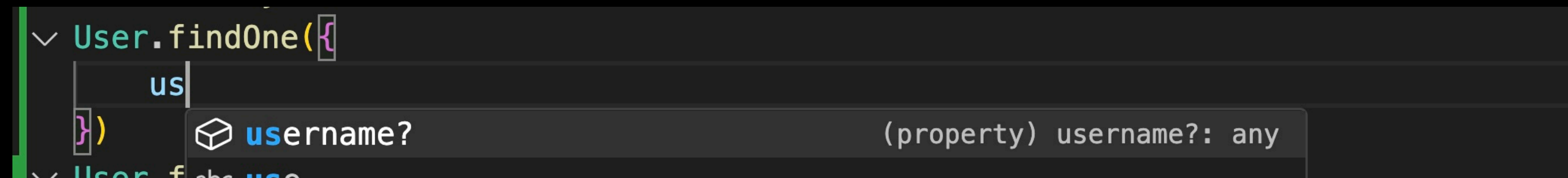
This sounds counter intuitive since mongodb is schemaless?

That is true, but mongoose makes you define schema for things like autocompletions/

Validating data before it goes in the DB to make sure you're doing things right

Schemaless Dbs can be very dangerous, using schemas in mongo makes it slightly less

Dangerous



```
✓ User.findOne({  
  username?  
})  
User.findOne({  
  username?  
})
```

The screenshot shows a code editor with a dropdown menu for the `username?` property in a Mongoose query. The dropdown lists the property name and its type: `(property) username?: any`.

# What is a database

## Defining schema

```
const UserSchema = new mongoose.Schema({
  email: String,
  password: String,
  purchasedCourses: [{
    type: mongoose.Schema.Types.ObjectId,
    ref: 'Course'
  }]
});
```

```
const CourseSchema = new mongoose.Schema({
  title: String,
  price: 5999
});
```

```
const User = mongoose.model('User', UserSchema);
const Course = mongoose.model('Course', CourseSchema);
```

# What is a database

## Create

```
const UserSchema = new mongoose.Schema({  
  username: String,  
  password: String  
});
```



```
User.create({  
  username: req.body.username,  
  password: req.body.password  
});
```

```
const User = mongoose.model('User', UserSchema);
```



# What is a database

## Read

```
const UserSchema = new mongoose.Schema({  
  username: String,  
  password: String  
});
```

```
const User = mongoose.model('User', UserSchema);
```



```
User.findById("1");  
User.findOne({  
  username: "harkirat@gmail.com"  
})  
User.find({  
  username: "harkirat96@gmail.com"  
})
```

```
User.updateOne(  
  { "id": "1" },  
  { $push: { purchasedCourses: courseId } }  
)
```

# What is a database

## Update

```
const UserSchema = new mongoose.Schema({  
  username: String,  
  password: String  
});
```

```
const User = mongoose.model('User', UserSchema);
```



```
User.updateOne({  
  id: "1"  
}, {  
  password: "newPassword"  
})
```

```
User.update({}, {  
  premium: true  
})
```

# What is a database

## Delete

```
const UserSchema = new mongoose.Schema({  
  username: String,  
  password: String  
});
```

```
const User = mongoose.model('User', UserSchema);
```



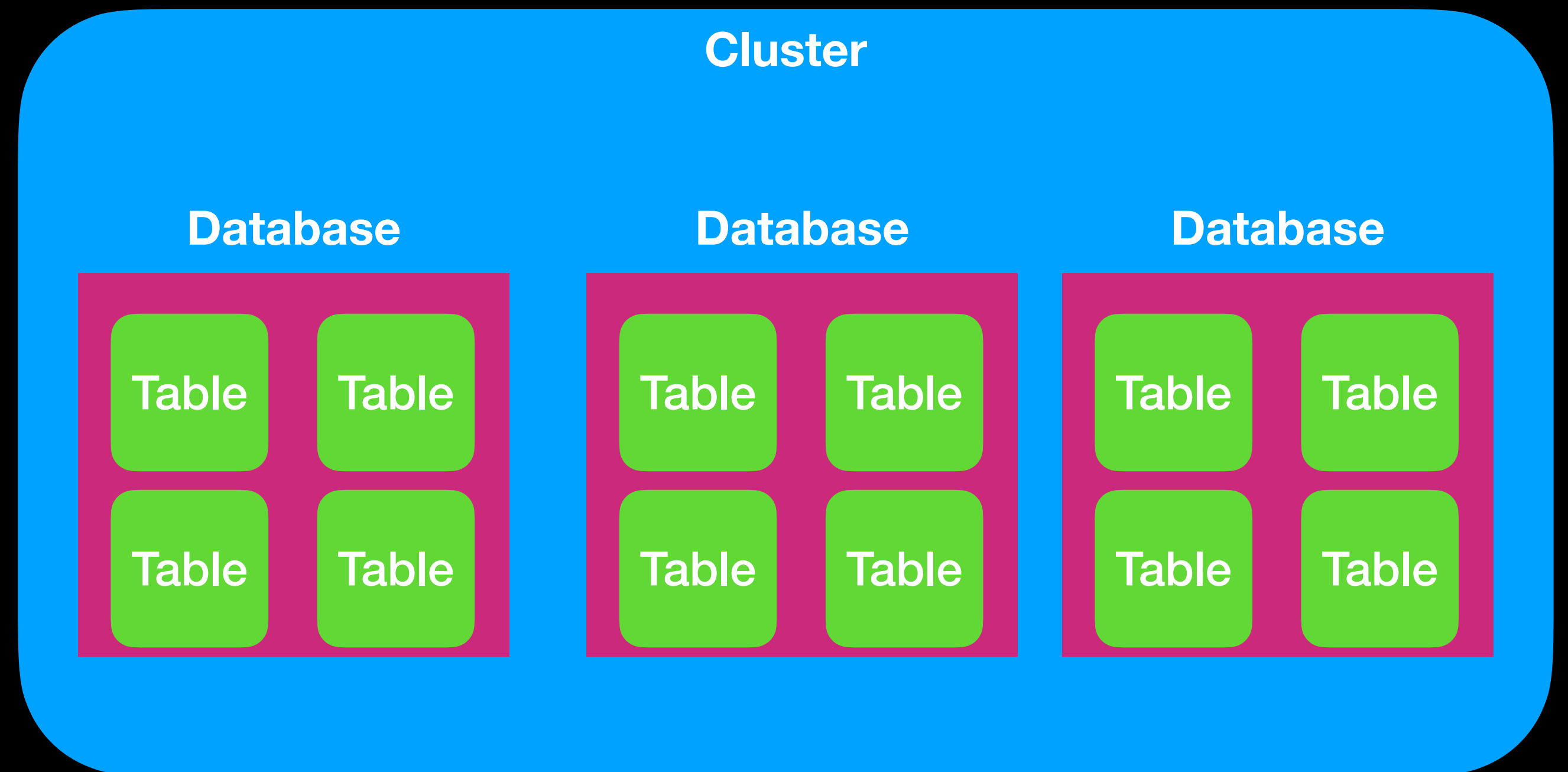
```
User.deleteMany({})  
  
User.deleteOne({  
  username: "harkirat@gmail.com"  
})
```



# What is a database

## 3 Jargons to know in Databases

1. Cluster
2. Database
3. Table



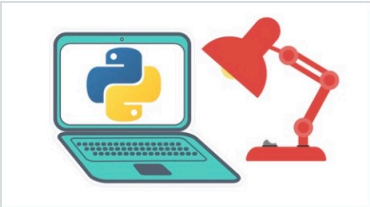
# What is a database

What would this mean for a simple course app


### Expand your career opportunities with Python

Take one of UdeMy's range of Python courses and learn how to code using this incredibly useful language. Its simple syntax and readability makes Python perfect for Flask, Django, data science, and machine learning. You'll learn how to build everything from games to sites to apps. Choose from a range of courses that will appeal to...


Explore Python



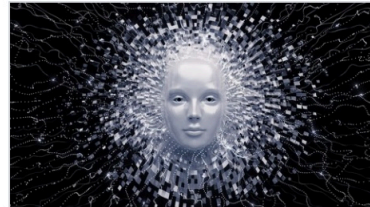
**The Complete Python Bootcamp From Zero to Hero...**  
Jose Portilla  
4.6 ★★★★★ (489,710)  
₹529 ₹3,499




**Automate the Boring Stuff with Python Programming**  
Al Sweigart  
4.6 ★★★★★ (110,880)  
₹529 ₹3,499



**100 Days of Code: The Complete Python Pro...**  
Dr. Angela Yu  
4.7 ★★★★★ (260,235)  
₹529 ₹3,499  
Bestseller



**Machine Learning A-Z: AI, Python & R + ChatGPT Prize...**  
Kirill Eremenko, Hadelin de Ponteves, ...  
4.5 ★★★★★ (178,901)  
₹529 ₹3,499  
Bestseller



**Python : Master Programming and Development with 15...**  
Dev Nirwal  
4.3 ★★★★★ (13,584)  
₹549 ₹2,699

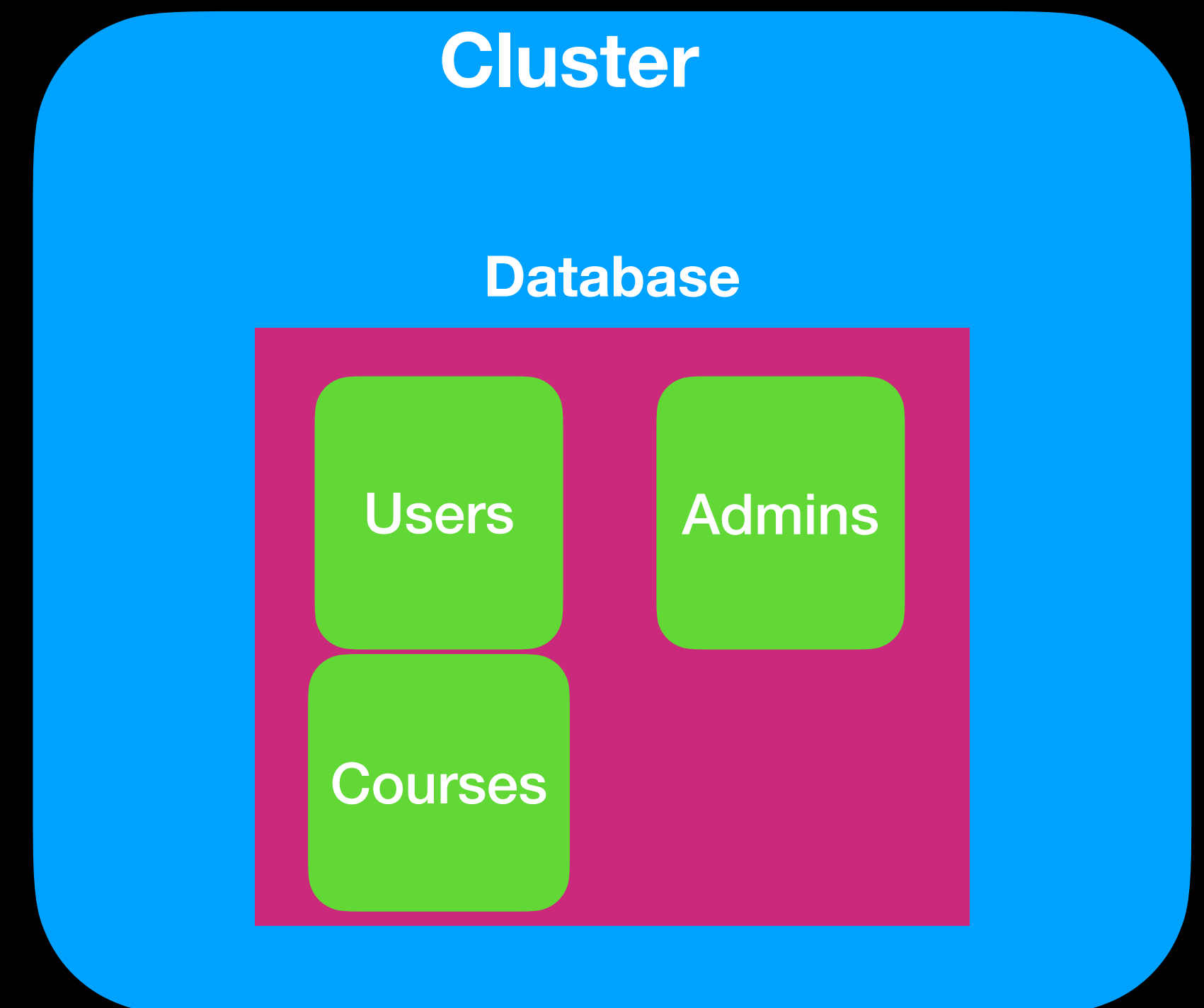
### How learners like you are achieving their goals

“  
I am proud to say that after a few months of taking this course...**I passed my exam and am now an AWS Certified Cloud Practitioner!**

“  
This course helped me **freshen up on my product manager skills and land a job at Facebook!** Thanks guys :)

“  
One of the best courses on management and leadership I have come across so far. The advice is practical, and examples highly

“  
I highly **buddin** prior kr



# What is a database

What would this mean for a simple course app

## Users

Id	Email	Password	Name	Age
1	<a href="mailto:harkirat@gmail.com">harkirat@gmail.com</a>	123123	harkirat	20
2	<a href="mailto:raman@gmail.com">raman@gmail.com</a>	kirat123	harkirat	22

## Cluster

### Database

User

Admins

Courses

Purchases

# What is a database

What would this mean for a simple course app

## Admins

Id	Email	Password	Name
1	<a href="mailto:admin@gmail.com">admin@gmail.com</a>	123123	Raman
2	<a href="mailto:admin2@gmail.com">admin2@gmail.com</a>	123123	Kirat

## Cluster

### Database

User

Admins

Courses

Purchase  
s



# What is a database

## Courses

id	Title	Description	Price
1.	Full stack	Learn Full stack	5000
2.	Web3	Learn Web3.	3999

## Cluster

### Database

User

Admins

Courses

Purchase  
s

# What is a database

What would this mean for a simple course app

## Purchases

user_id	course_id	timestamp	payment_ref
1.	1	02/12/2024.	pay_123123
2.	1	02/12/2024.	pay_331213

## Cluster

### Database

User

Admins

Courses

Purchase  
s

# What is a database

Lets try to target the assignments from this week

# What is a database

**Something extra**

**You can attach methods to schema  
And call them on objects later**

```
UserSchema.methods.purchaseCourse = async function(courseId) {  
  this.purchasedCourses.push(courseId);  
  await this.save();  
};
```

```
User.findById(userId).then(user => {  
  user.purchaseCourse(courseId).then(() => {  
    console.log('Course purchased successfully');  
  });  
});
```