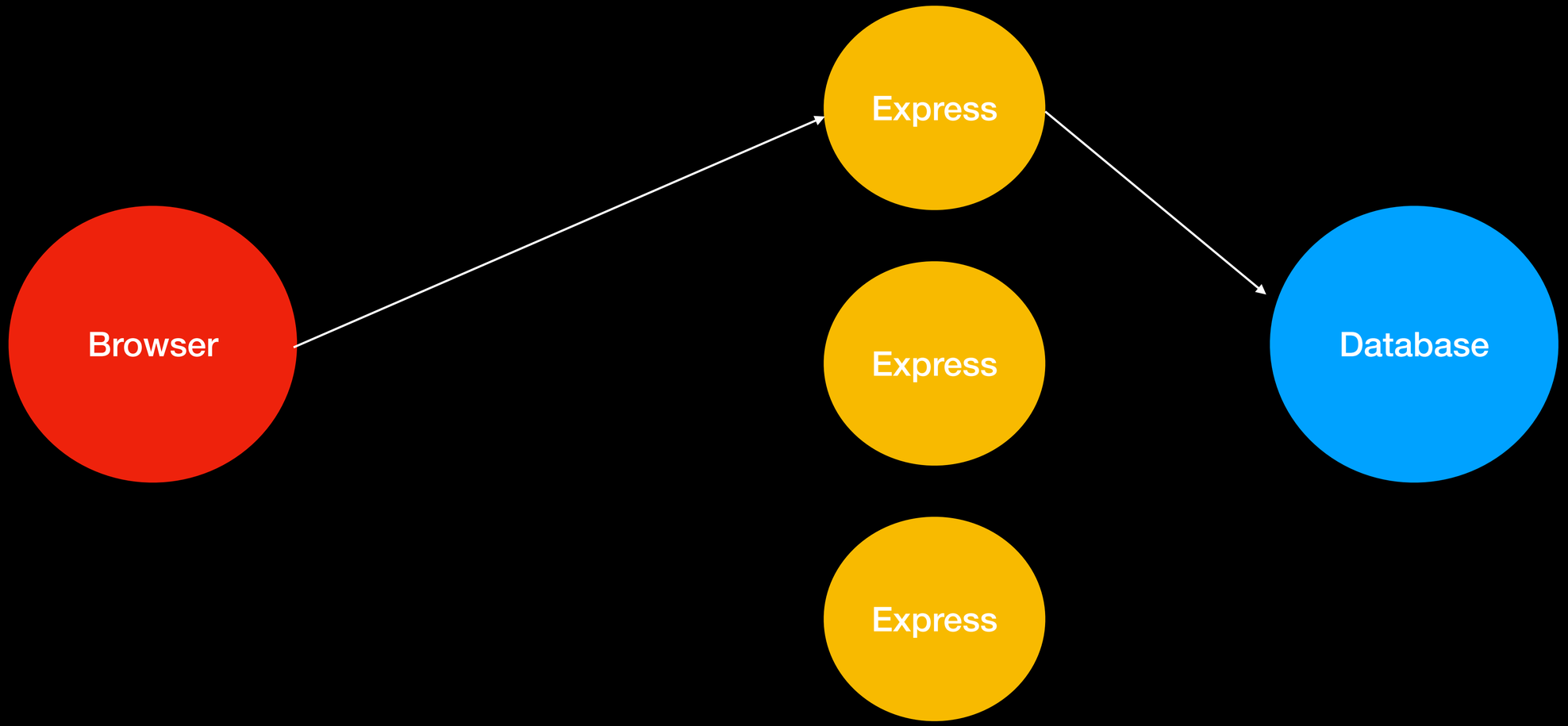
MongoDB deep dive

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



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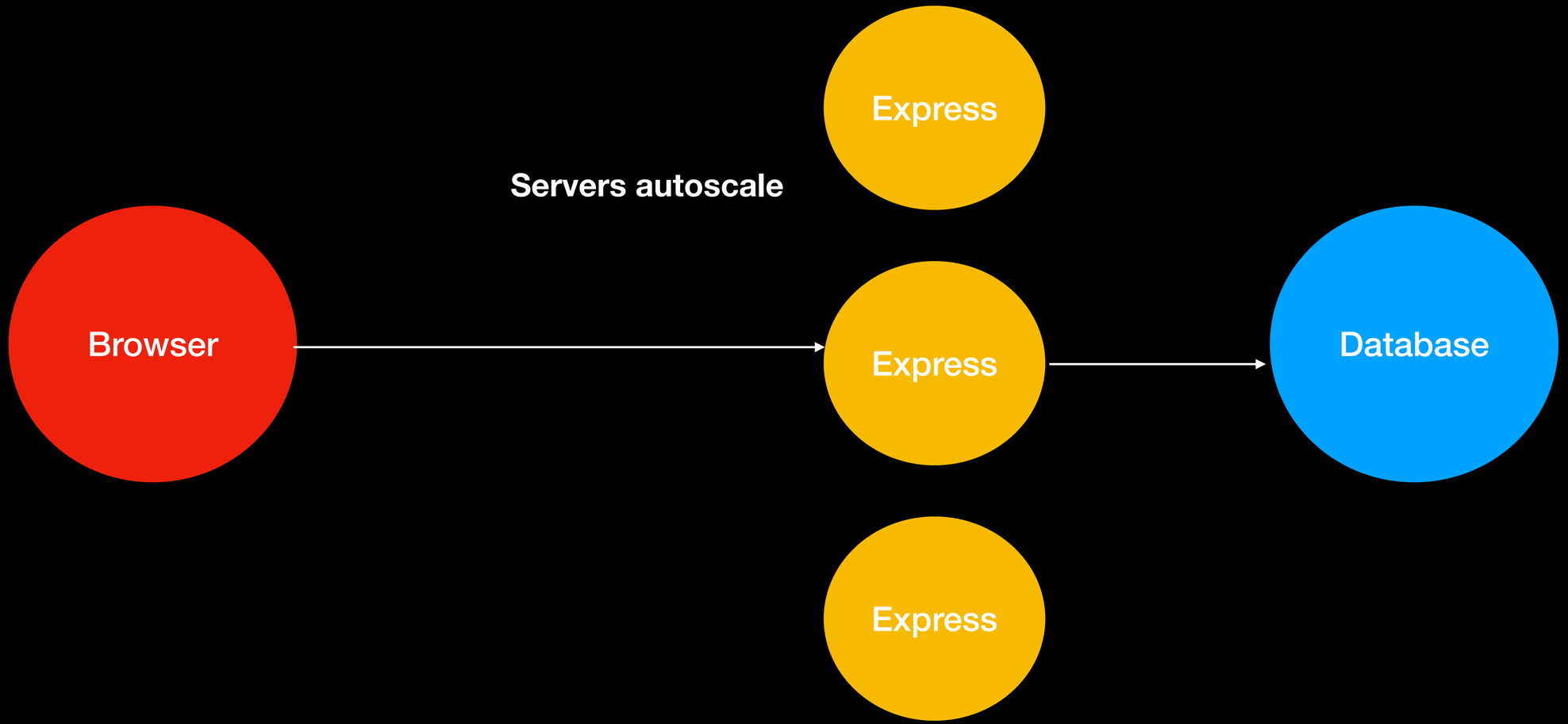
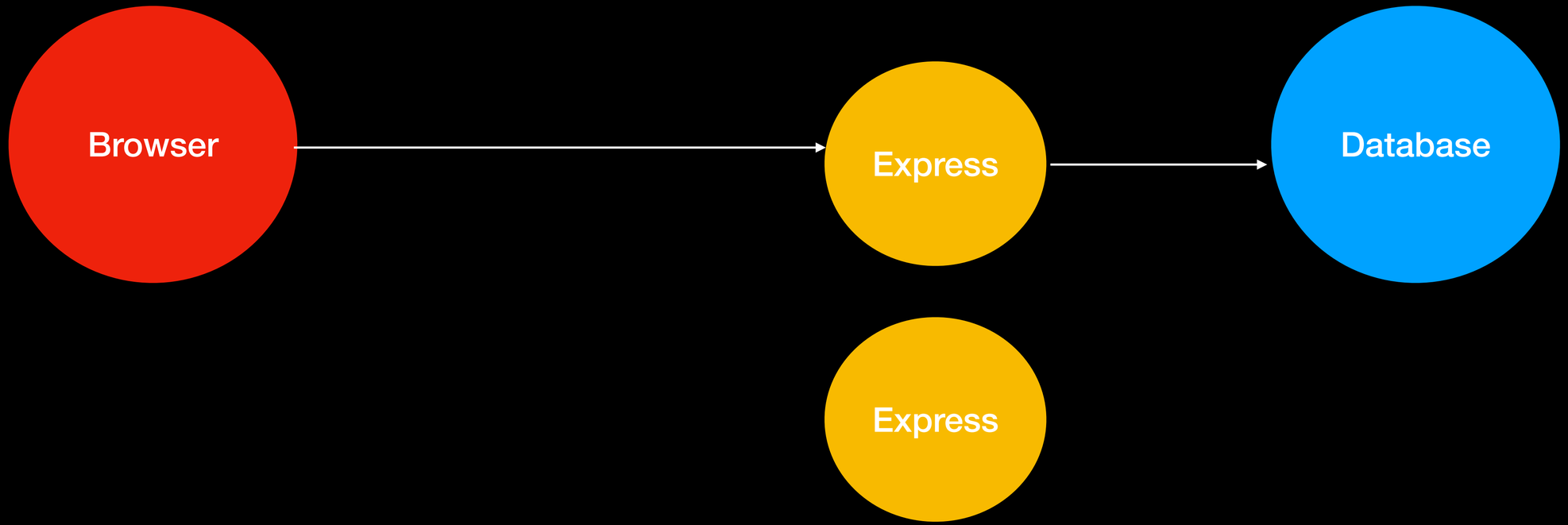


What is a database

It is a place where data is stored persistently

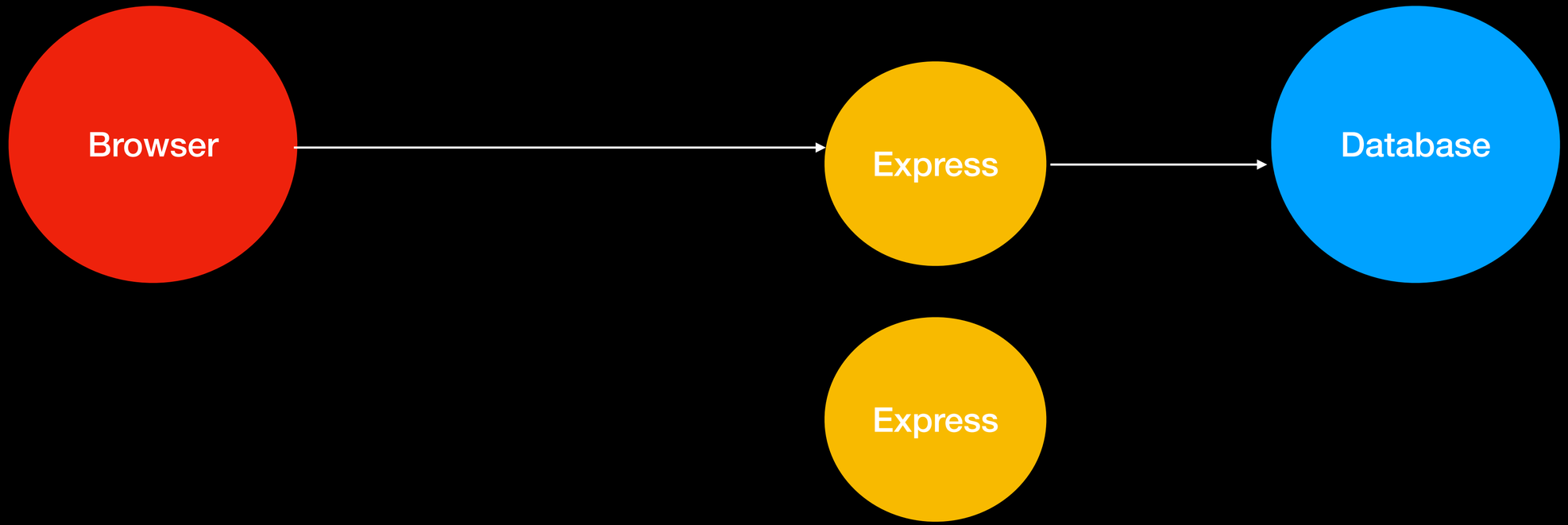
Servers are transient



What is a database

It is a place where data is stored persistently

Database is persistent

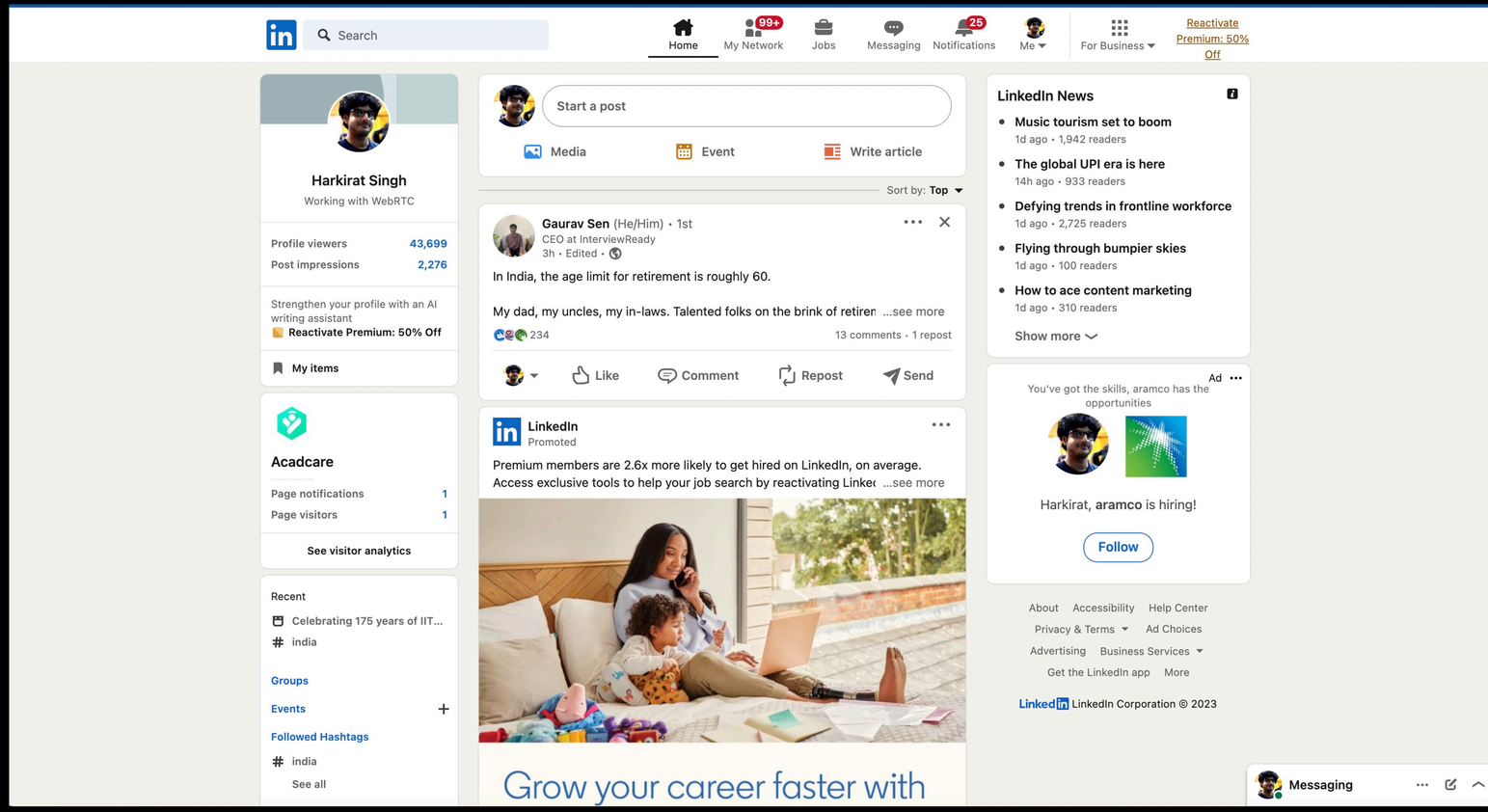


What is a database

Examples of data stored in databases -

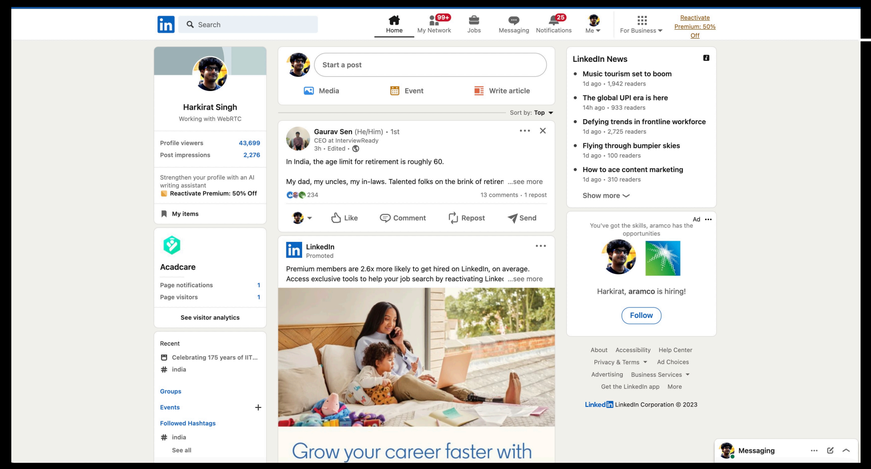
For Linkedin

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



What is a database

Examples of data stored in databases -



Get me my feed

Does auth checks

Express

Express

Give me all posts for this user

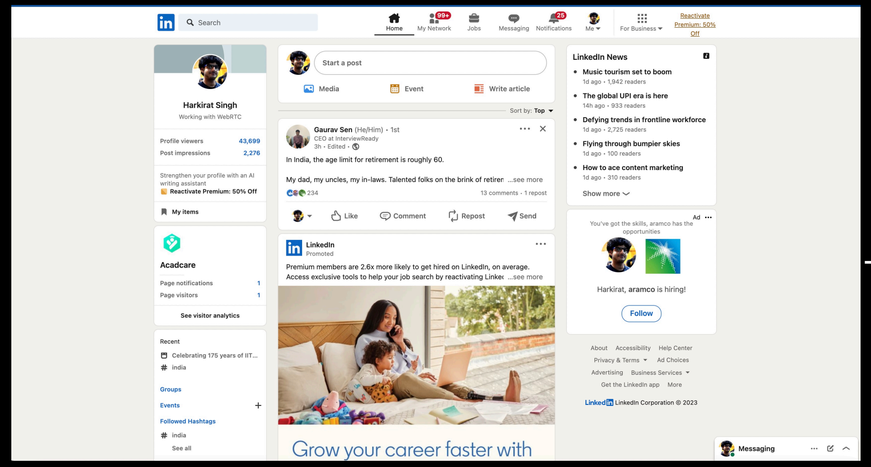
Database

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?



Give me all posts for myself

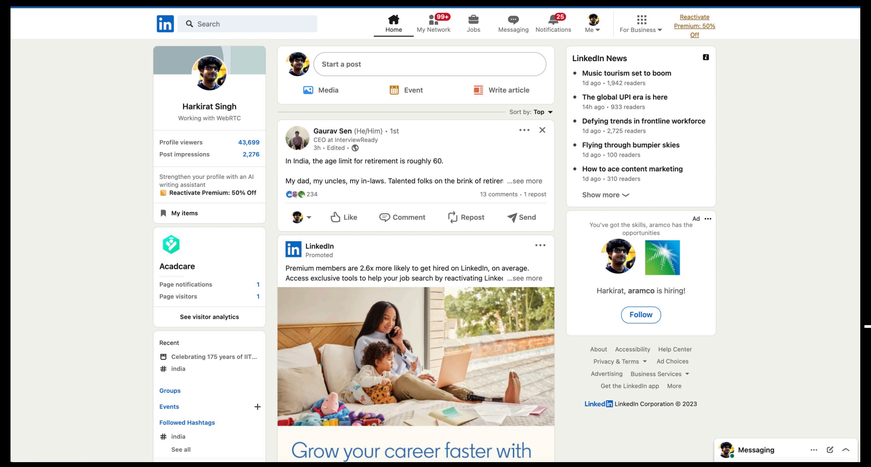
What is a database

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

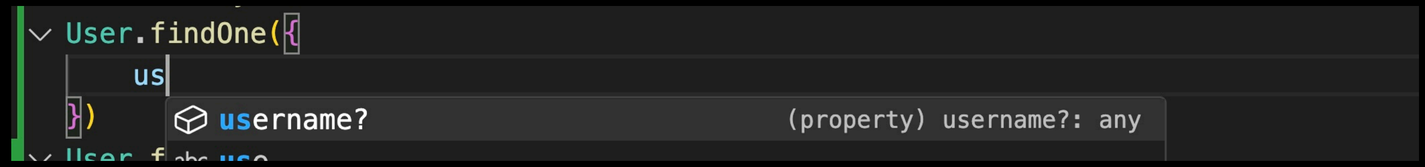
What is a database

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



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);
```



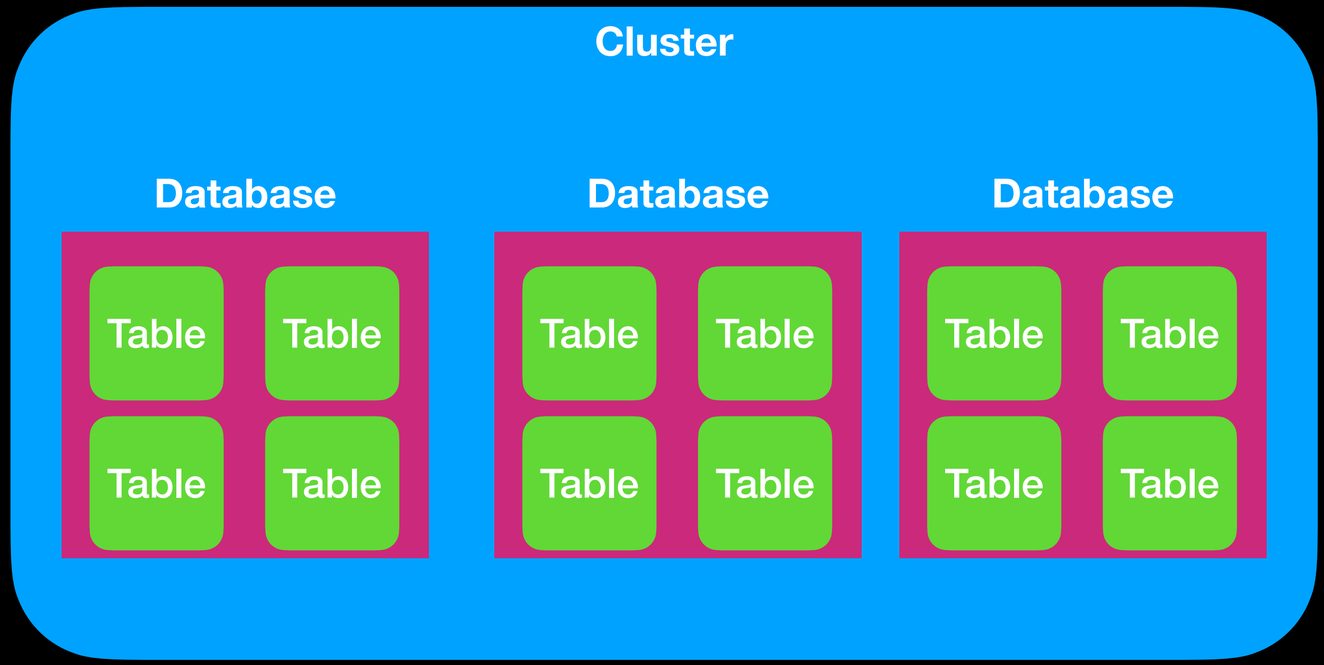
```
User.deleteMany({})

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

What is a database

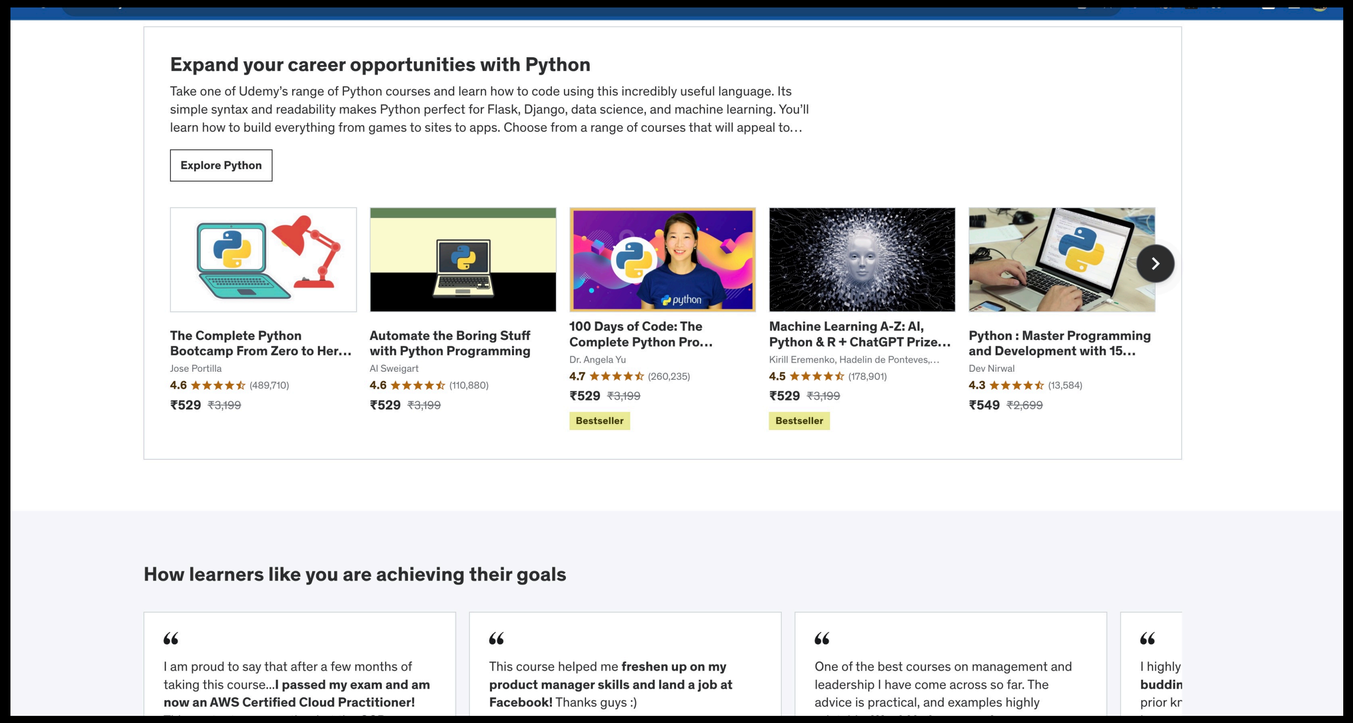
3 Jargons to know in Databases

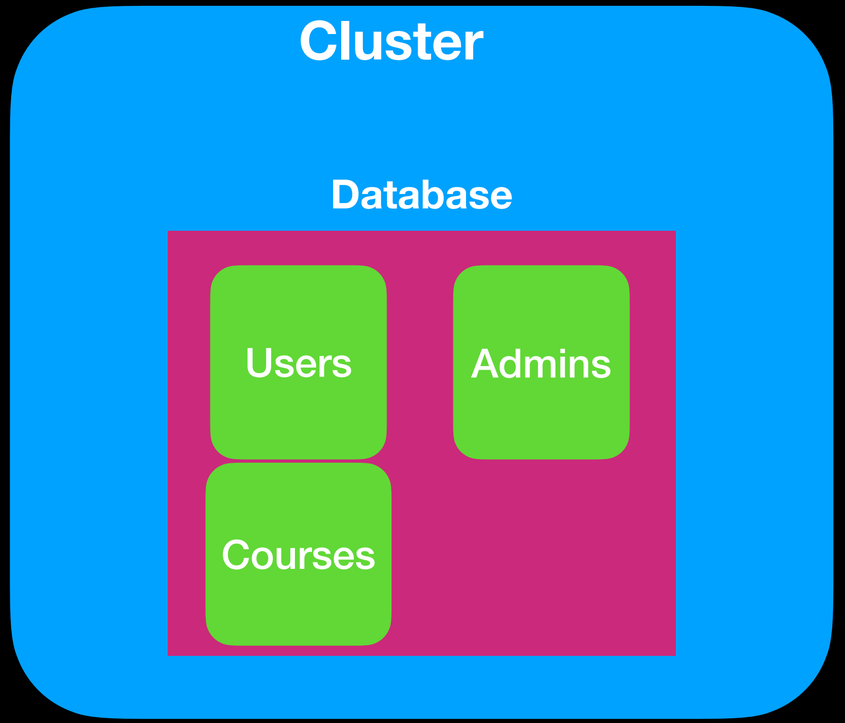
1. **Cluster**
2. **Database**
3. **Table**



What is a database

What would this mean for a simple course app



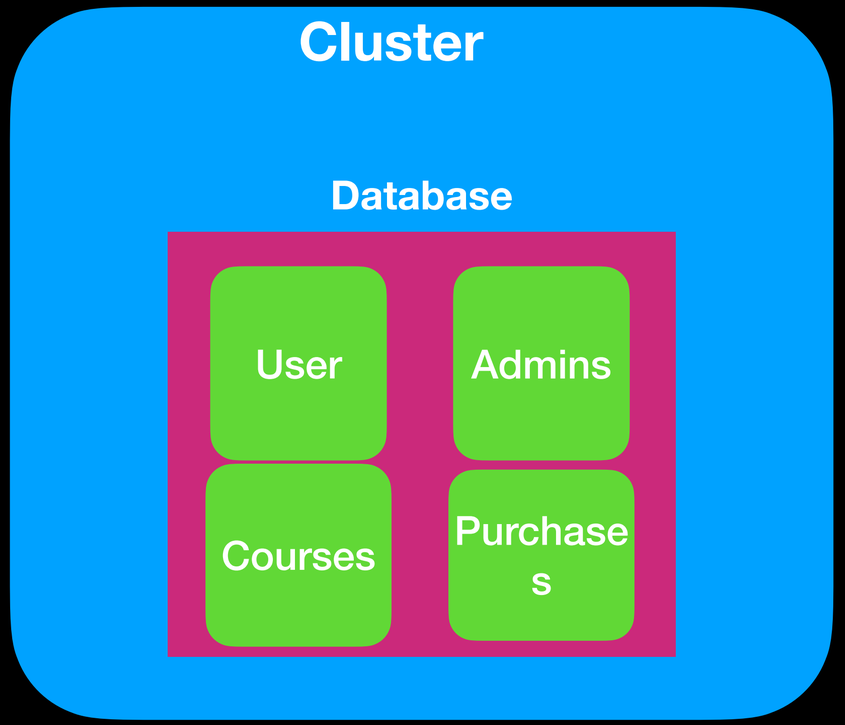


What is a database

What would this mean for a simple course app

Users

Id	Email	Password	Name	Age
1	harkirat@gmail.com	123123	harkirat	20
2	raman@gmail.com	kirat123	harkirat	22

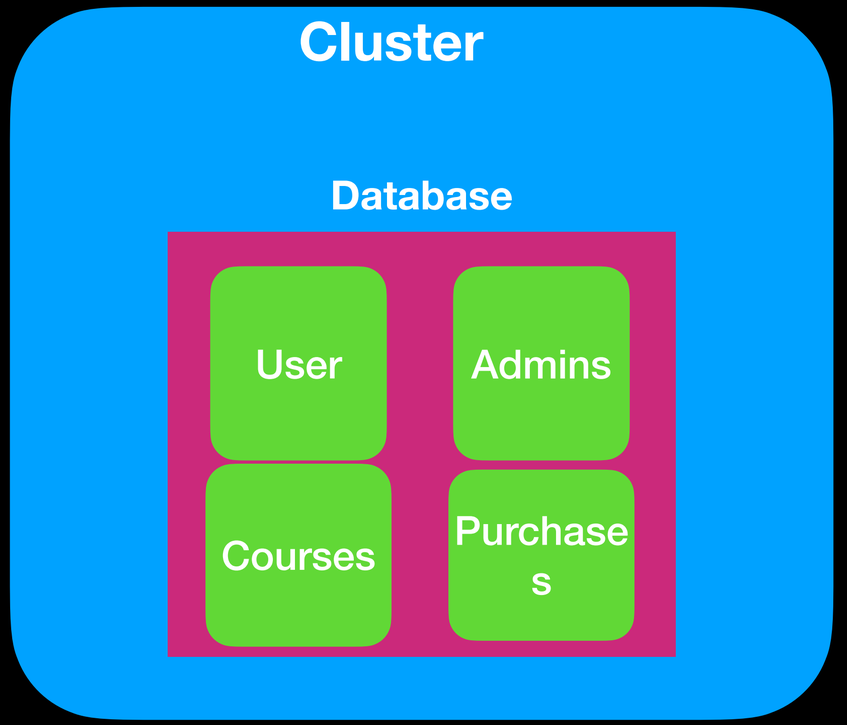


What is a database

What would this mean for a simple course app

Admins

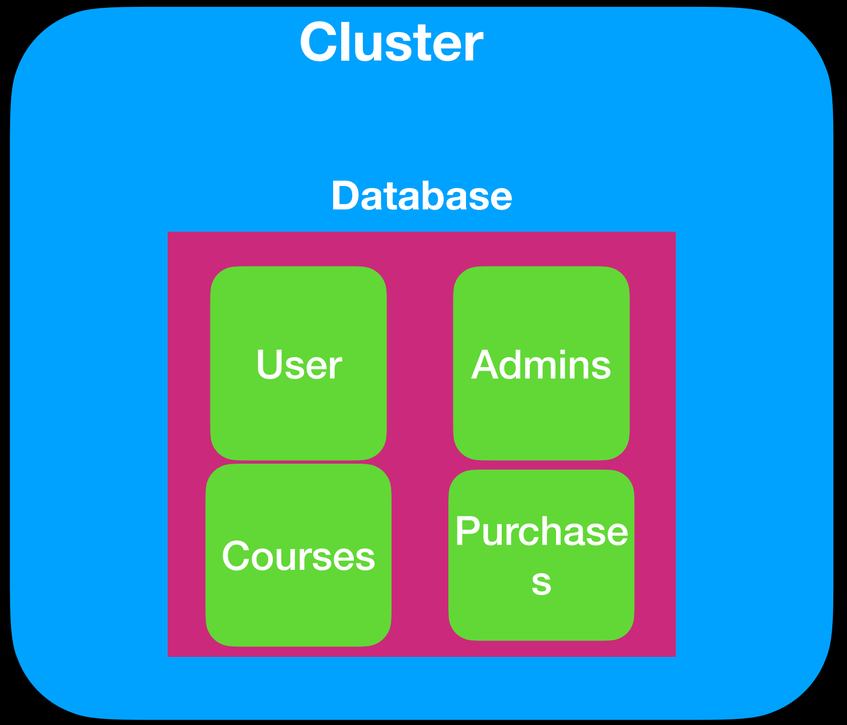
Id	Email	Password	Name
1	admin@gmail.com	123123	Raman
2	admin2@gmail.com	123123	Kirat



What is a database

Courses

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

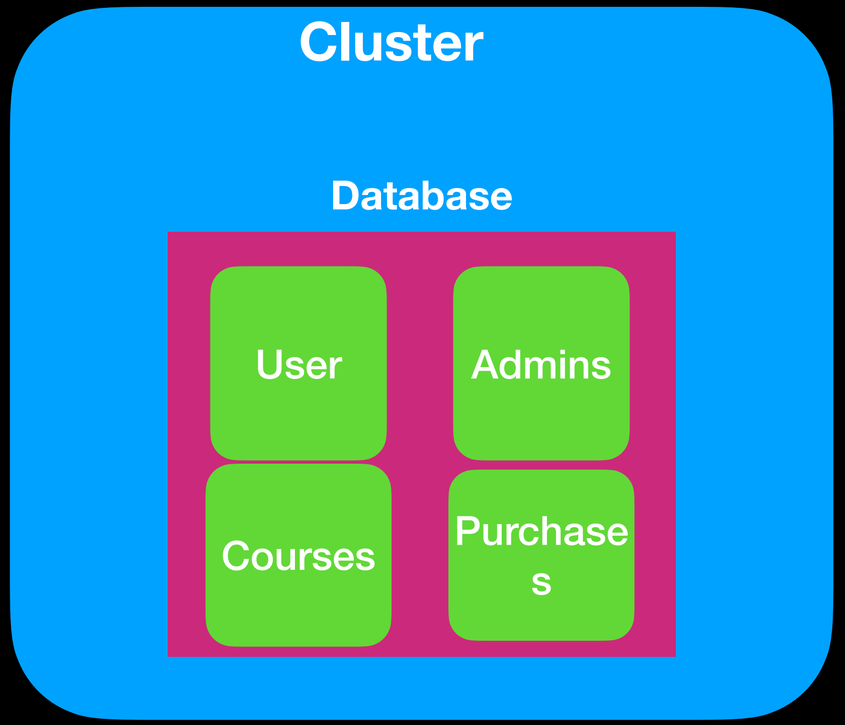


What is a database

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



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');
    });
});
```