

We've Seen MySQL
On Its Own

Now it's time for...

MySQL &

PHP

C++

Node

Java

Ruby

Python

C#

...

MySQL &

PHP

C++

Node

Java

Ruby

Python

C#

...

How do we interact
with MySQL through
external code?

Client's Computer

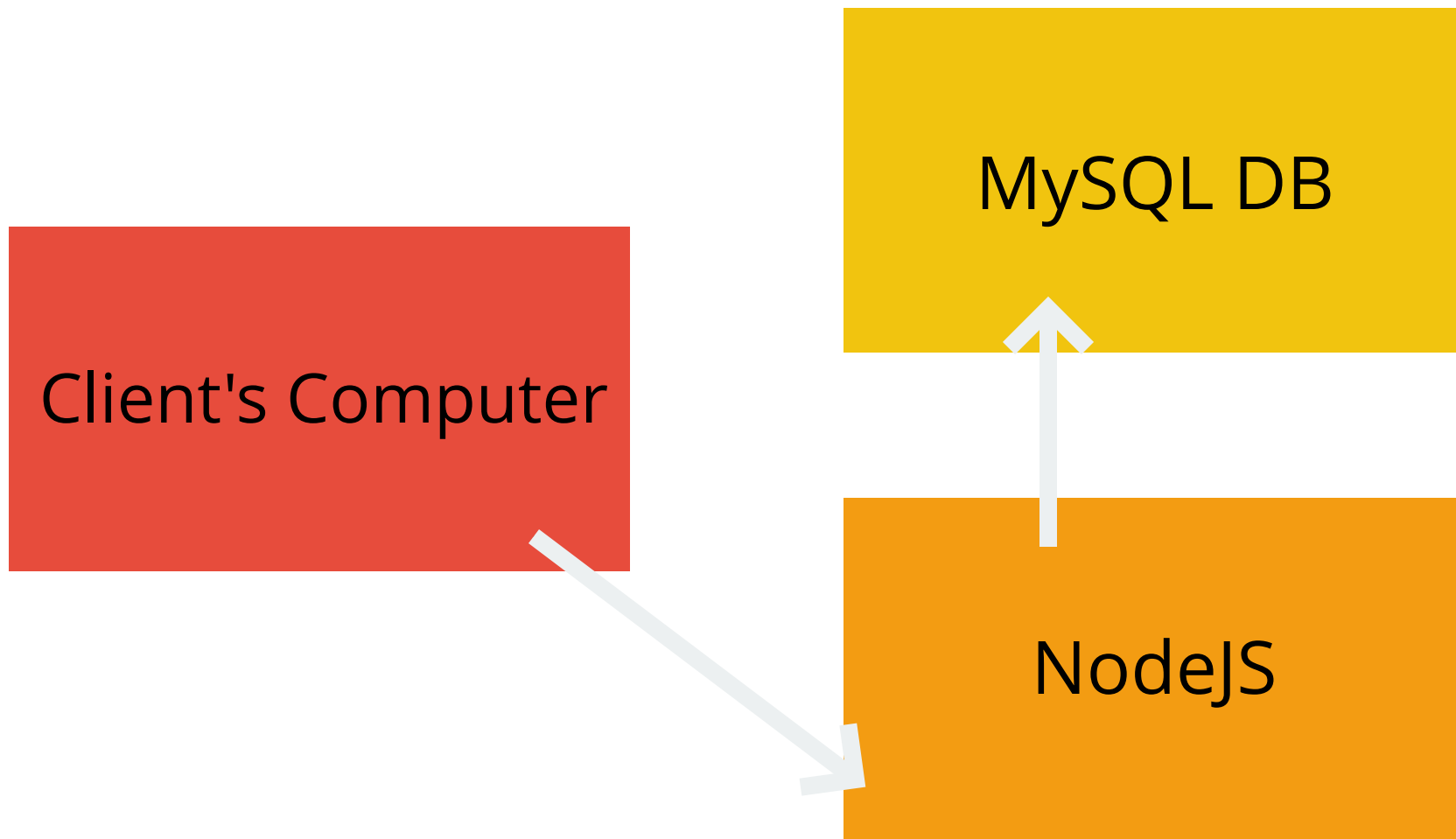
Client's Computer

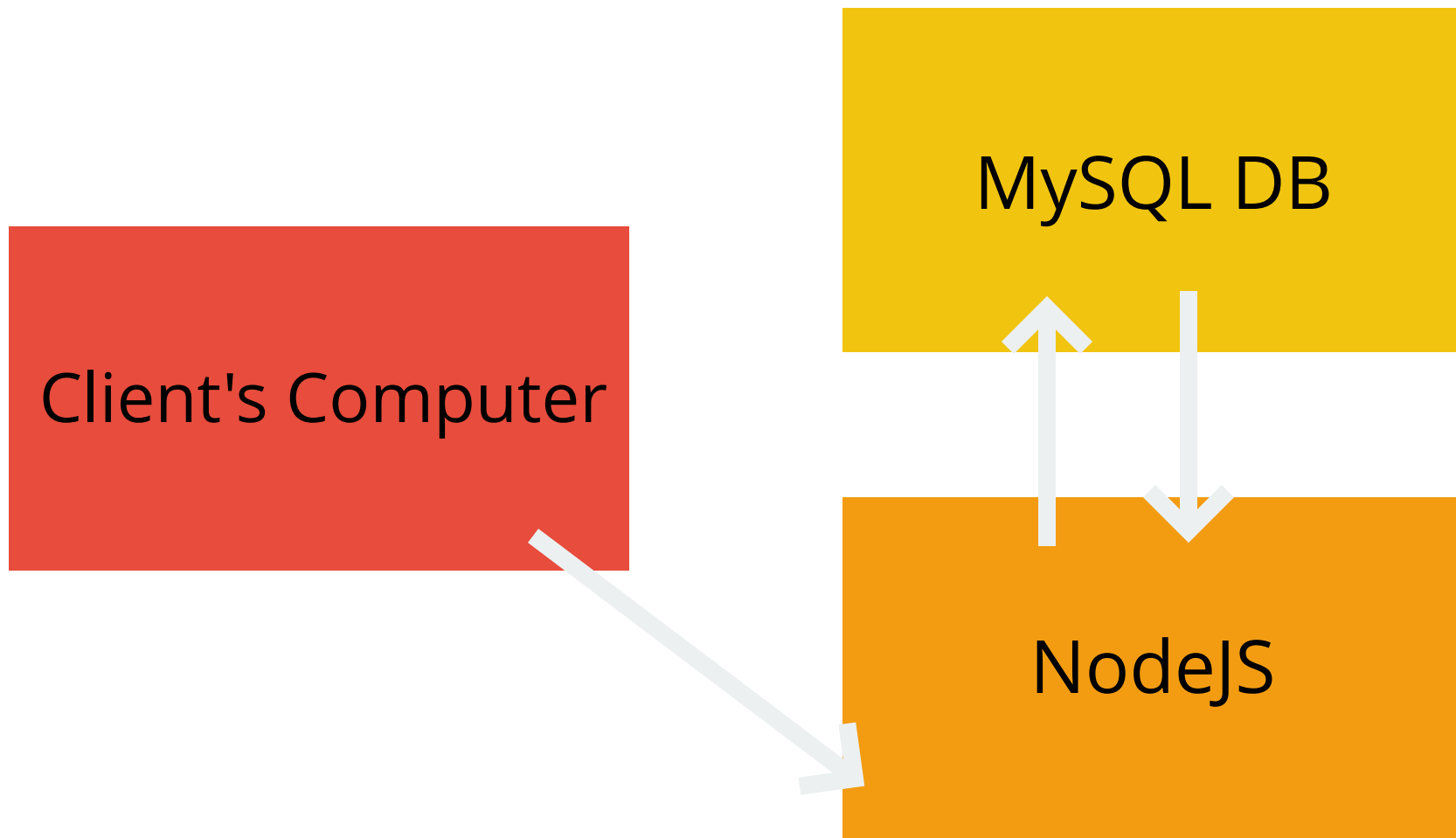


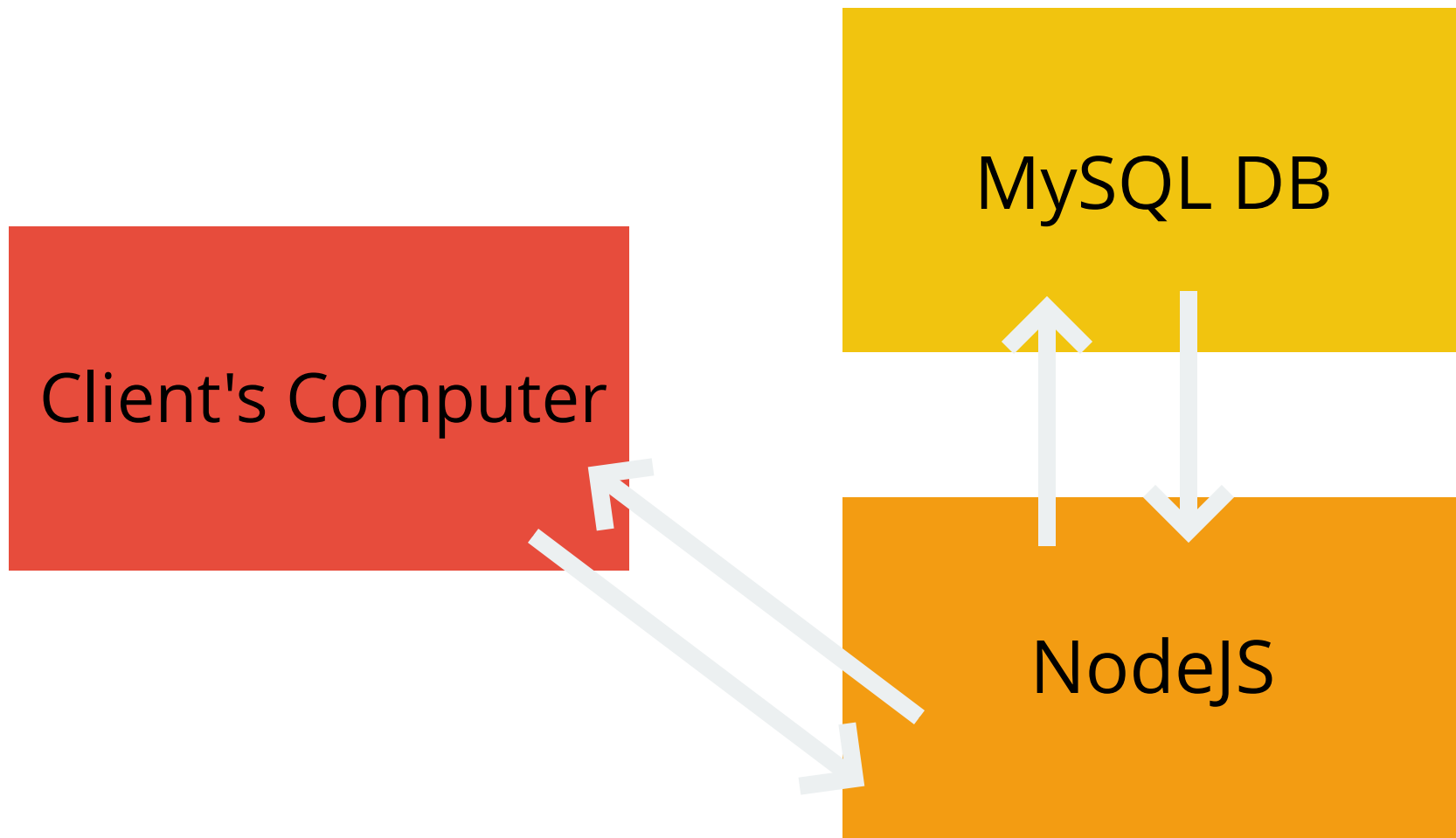
```
graph LR; A[Client's Computer] --> B[NodeJS]
```

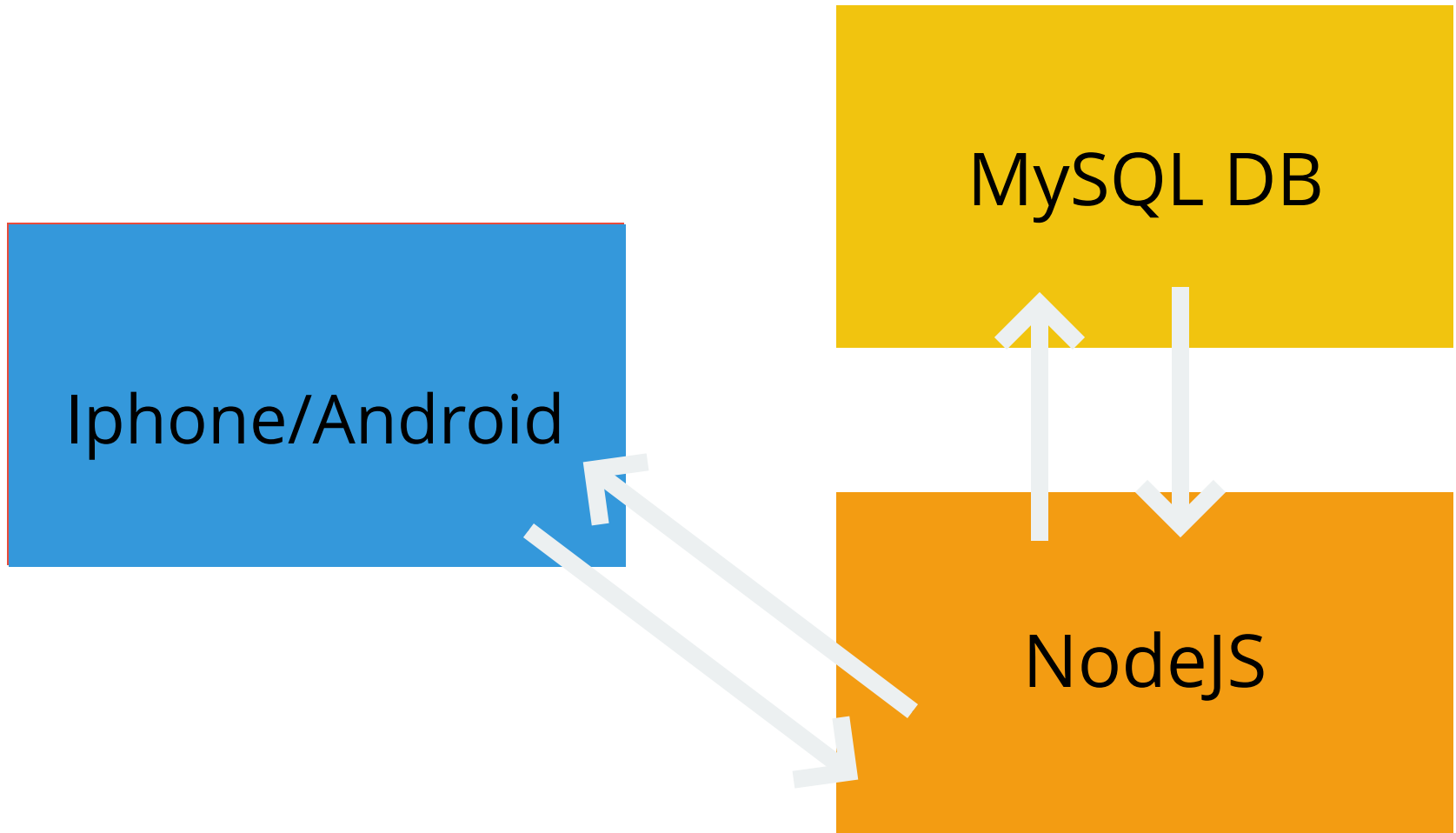
NodeJS

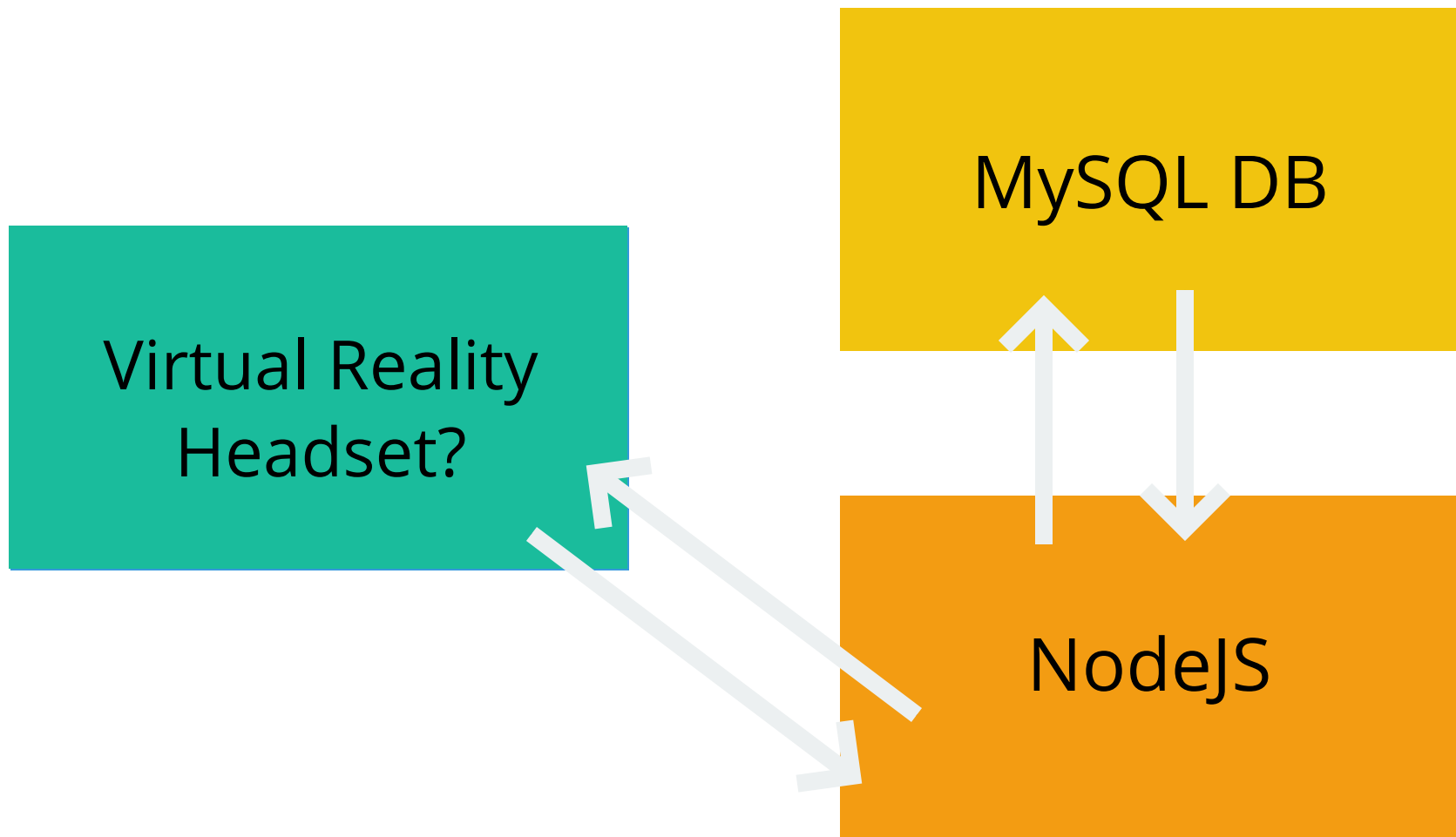
The diagram consists of two rectangular boxes. The first box, on the left, is red and contains the text 'Client's Computer'. The second box, on the right, is orange and contains the text 'NodeJS'. A light gray arrow points from the bottom-right corner of the red box to the top-left corner of the orange box, indicating a flow or connection between the two.

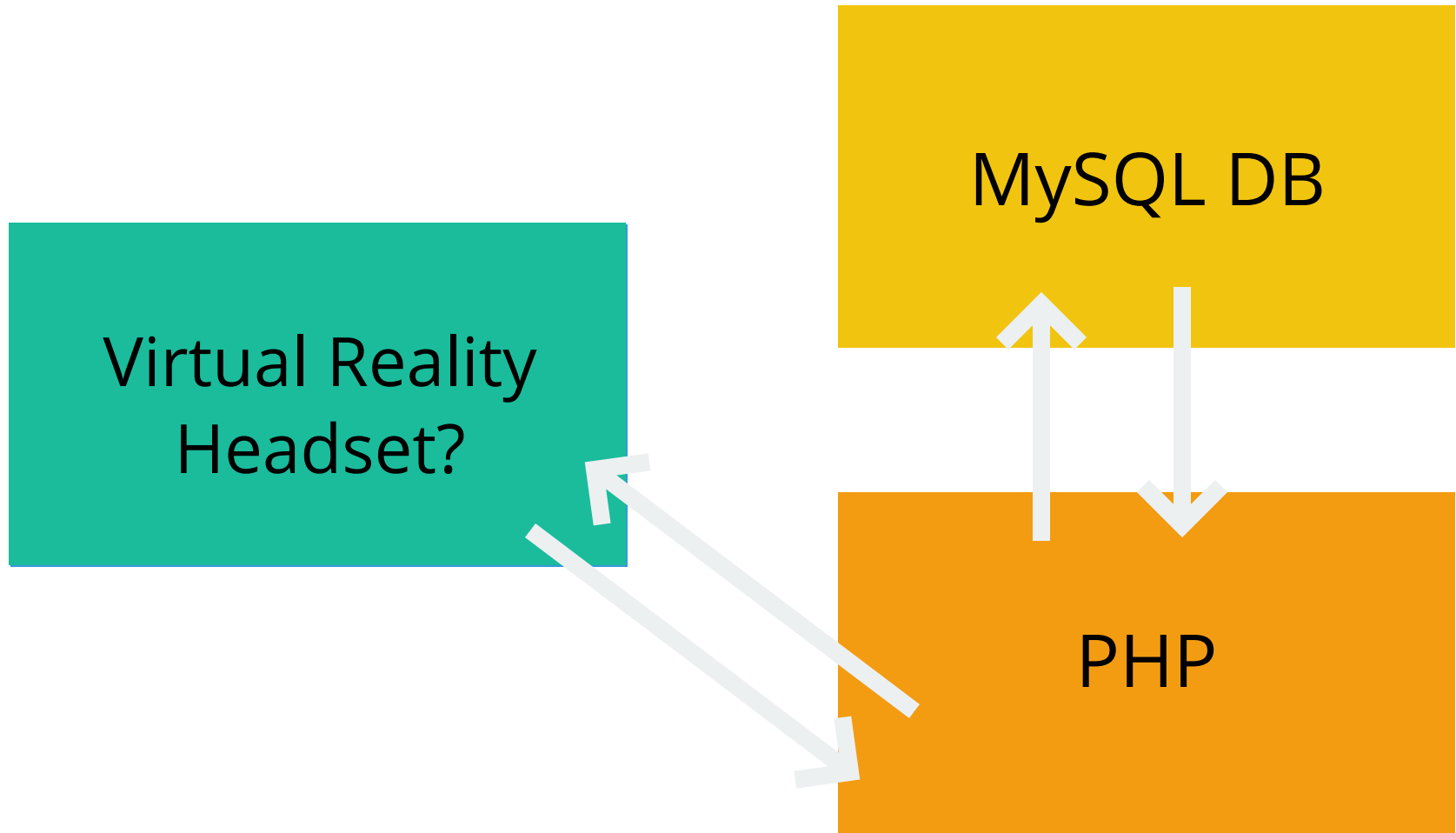


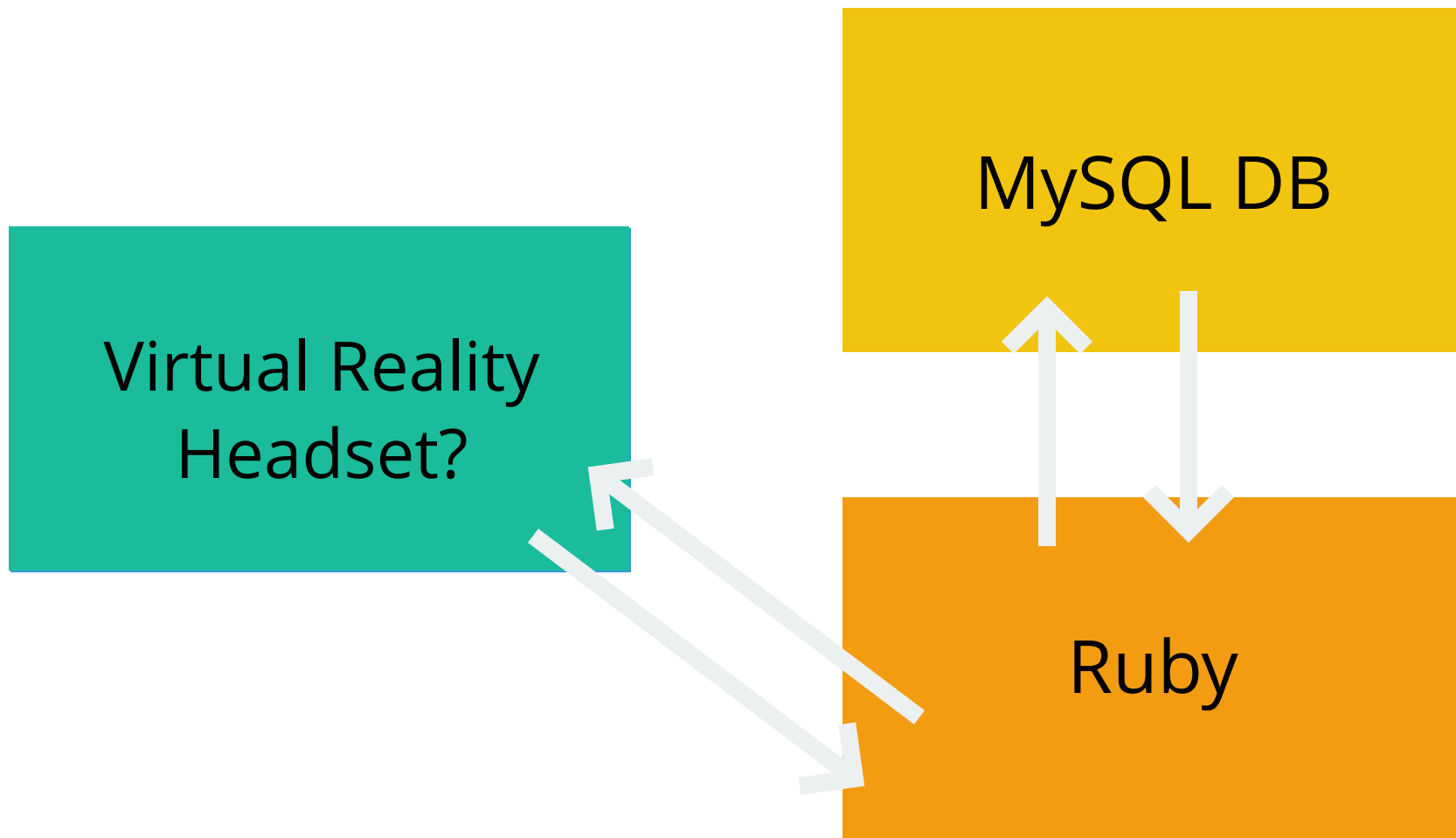












OUR FIRST PROJECT

JOIN US

An Evil Cult Mailing List Application

JOIN US

A Startup Mailing List Application

JOIN US

Enter your email to join **518** others on our waitlist. We are 100% not a cult.

Enter Your Email

Join Now

JOIN US

Enter your email to join **518** others on our waitlist. We are 100% not a cult.

Enter Your Email

Join Now

JOIN US

Enter your email to join **518** others on our waitlist. We are 100% not a cult.

Count All Users

Enter Your Email

Join Now

JOIN US

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Count All Users

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Join Now

JOIN US

Enter your email to join **518** others on our waitlist. We are 100% not a cult.

Count All Users

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Join Now

Insert A New User

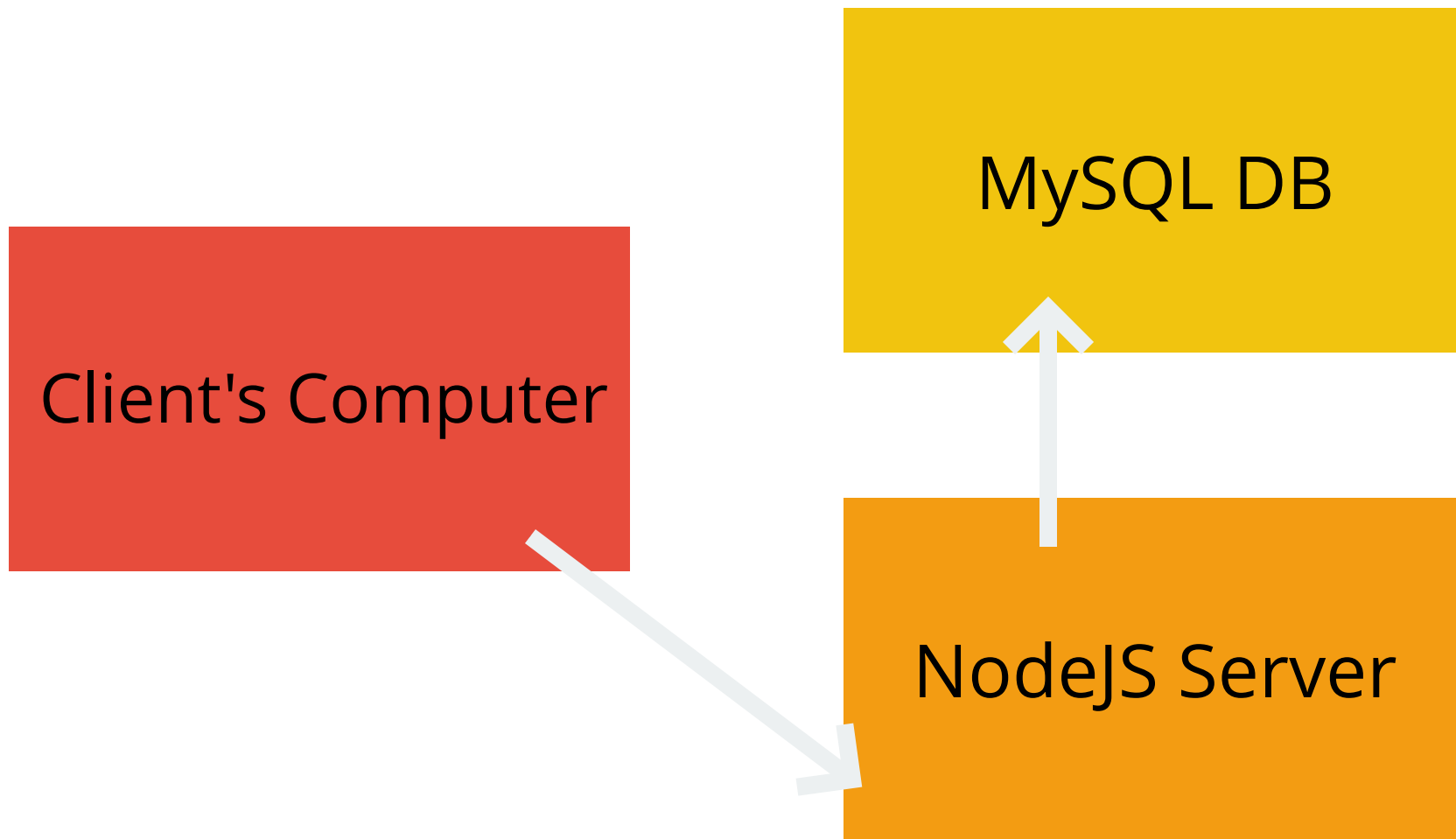
Client's Computer

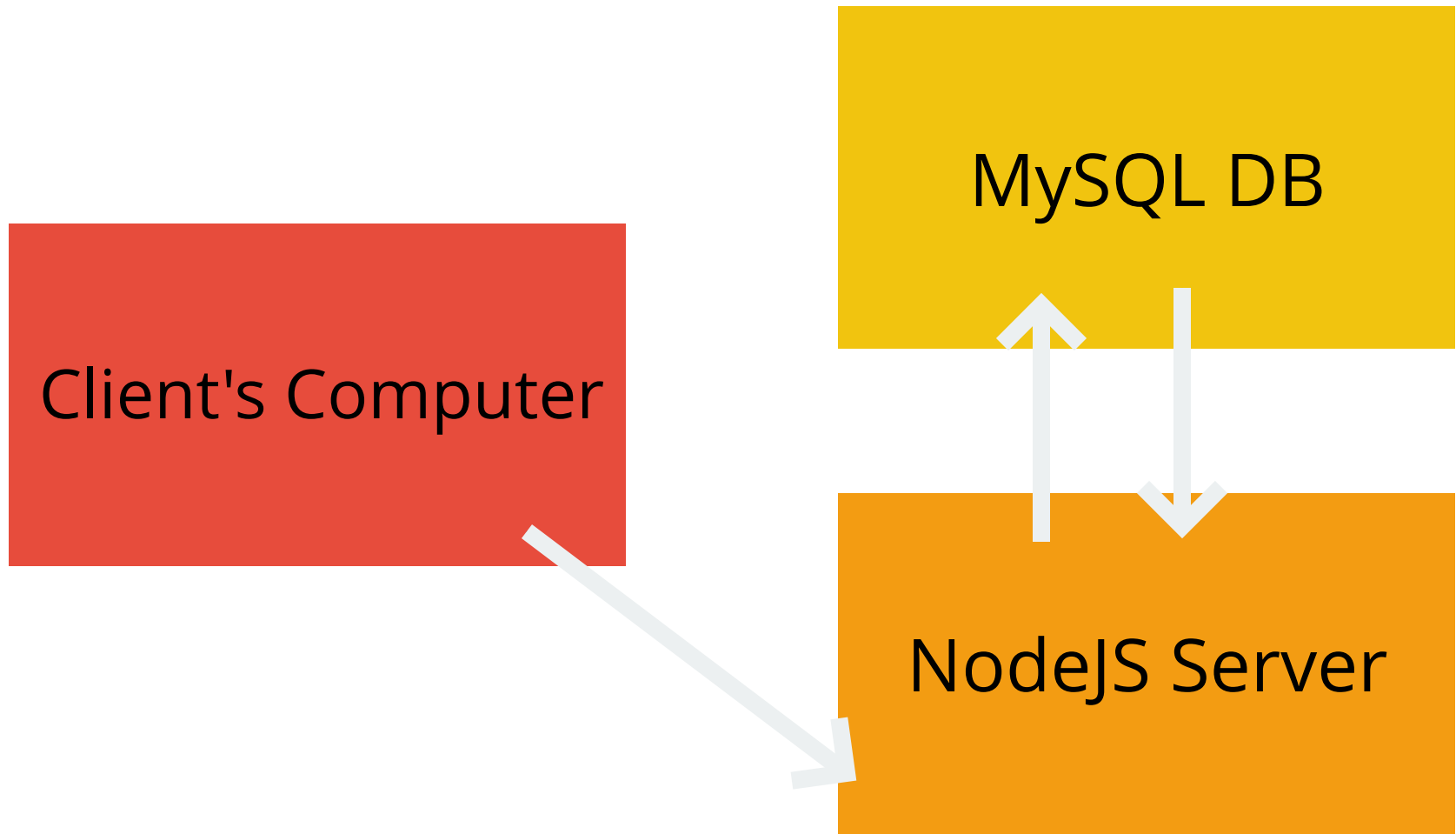
Client's Computer

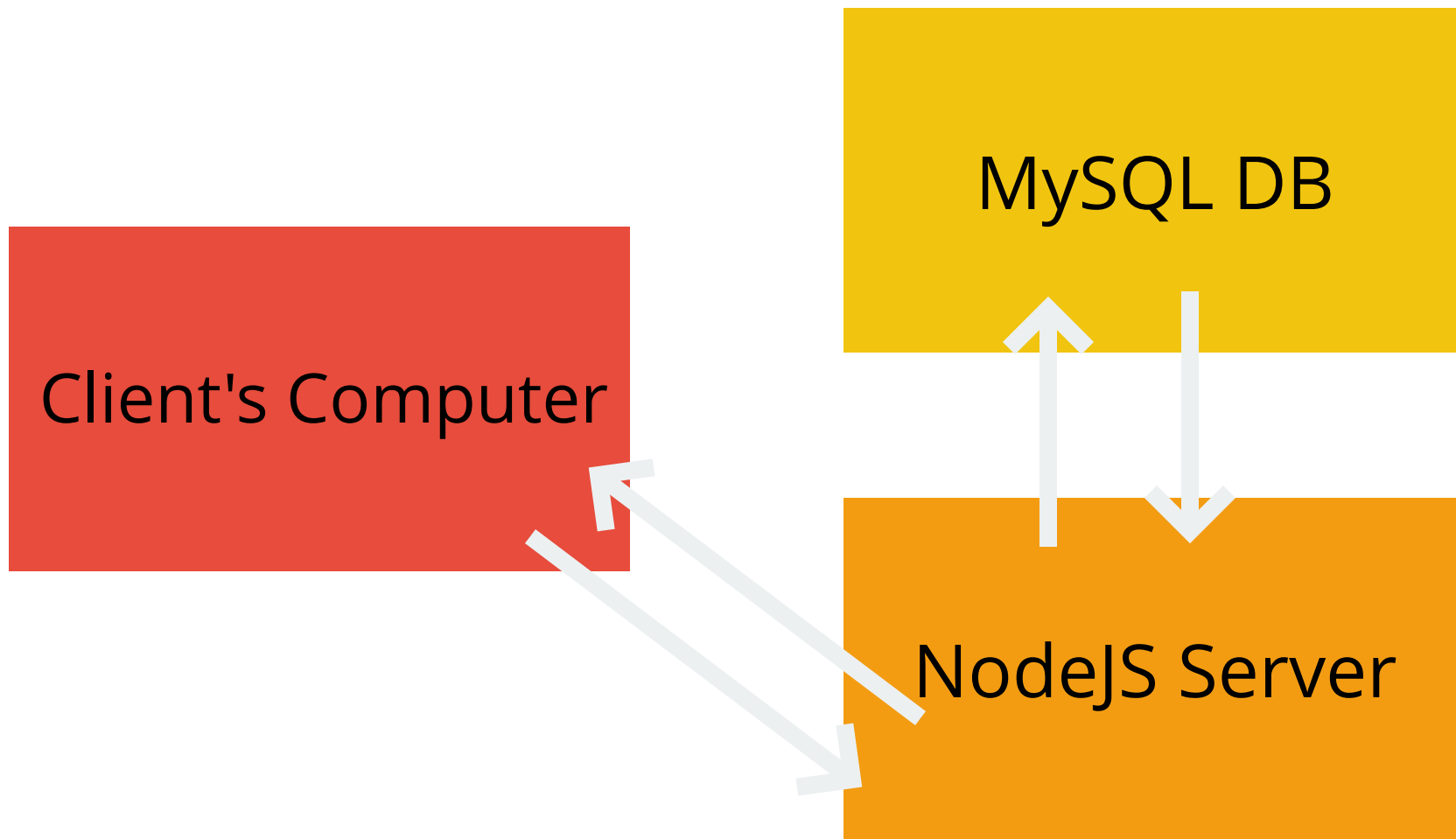


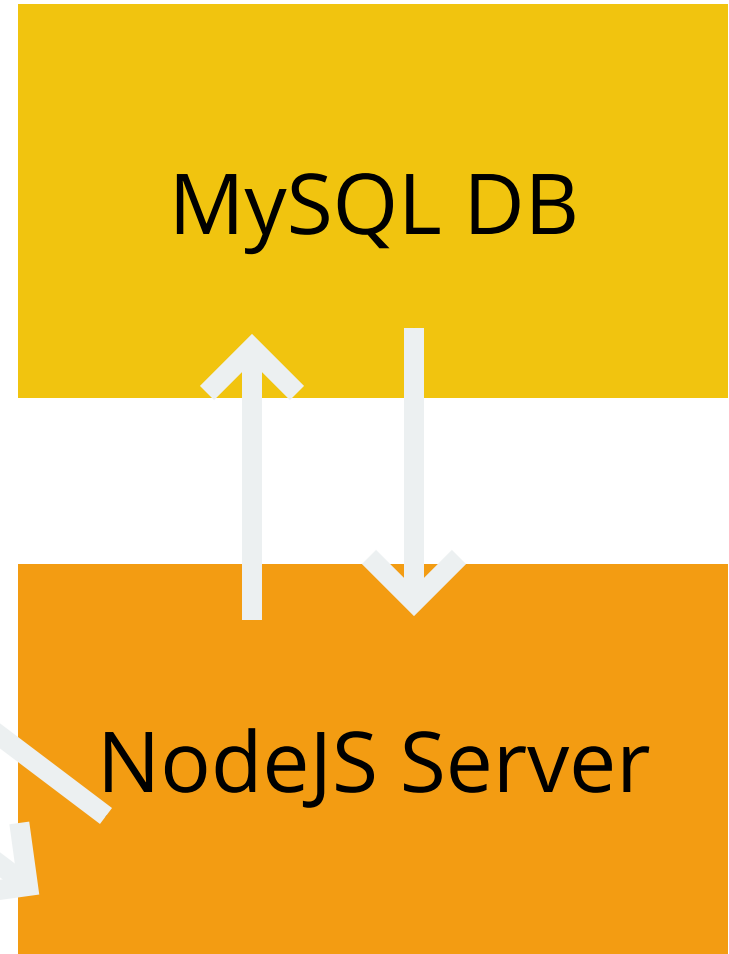
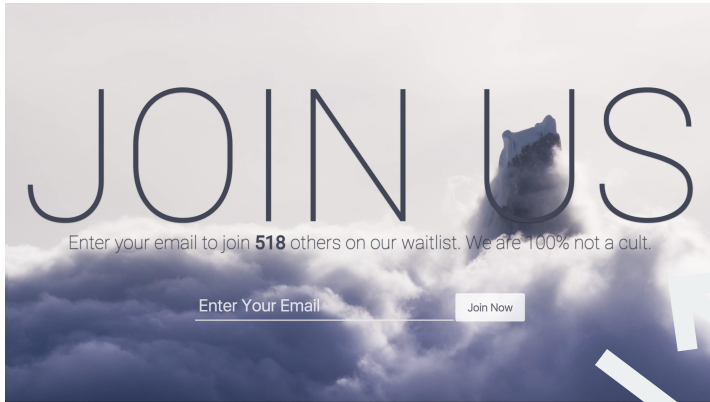
```
graph LR; A[Client's Computer] --> B[NodeJS Server]
```

NodeJS Server

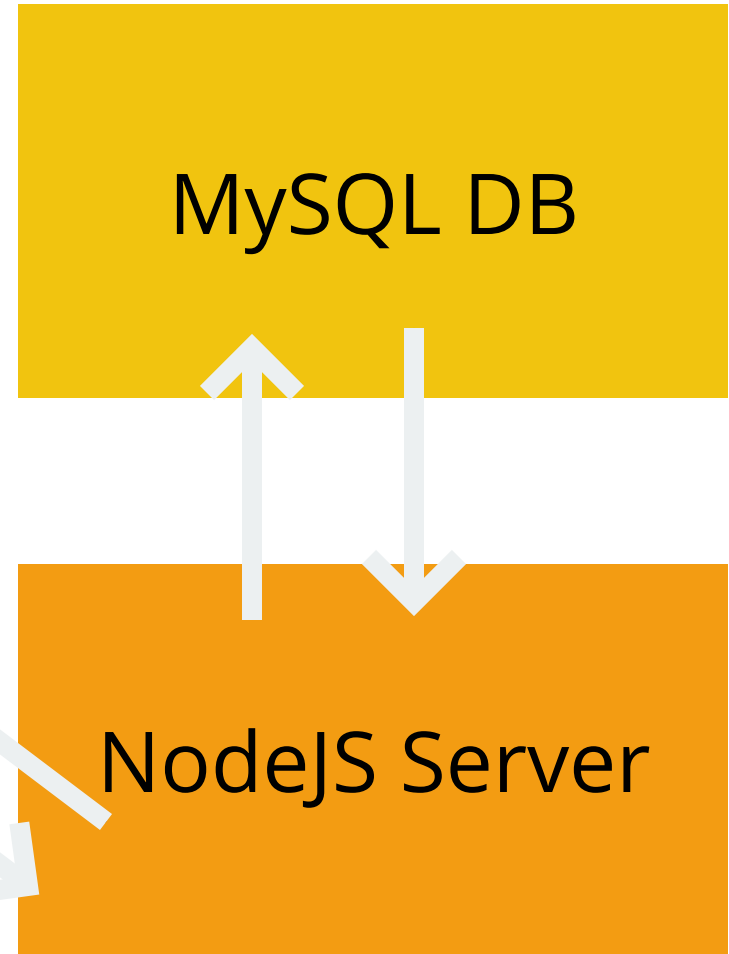
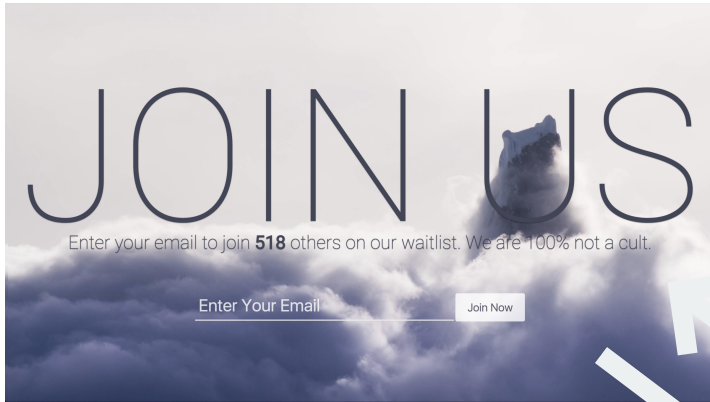


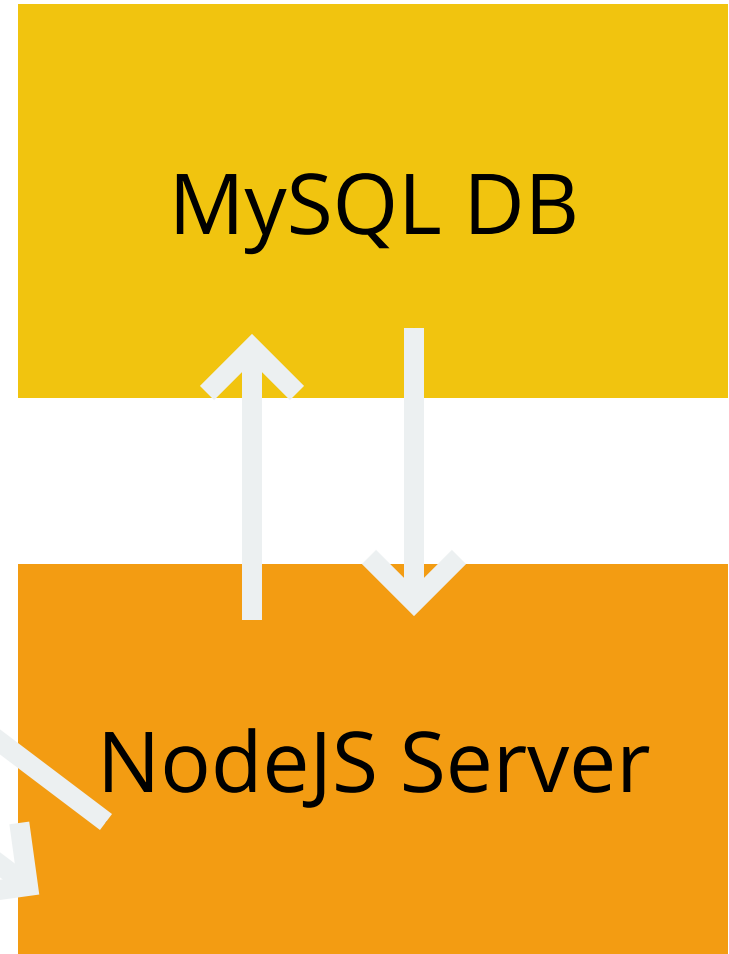
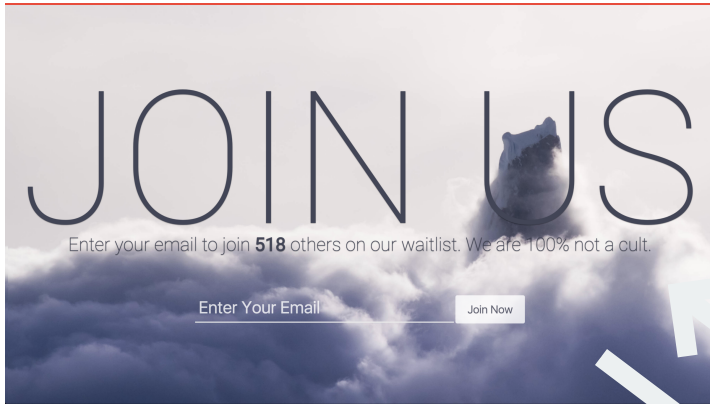


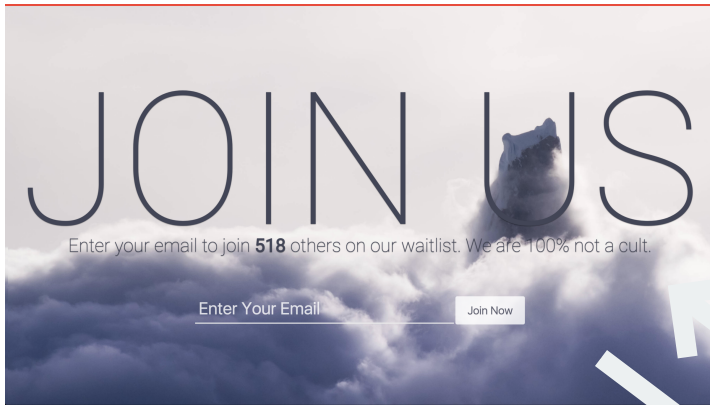




WHERE DO WE START?







MySQL DB

NodeJS Server

Our Users Table Is Super Simple

email

&

created_at

Our First Goal...

Use NodeJS to randomly
generate and INSERT 500+
users into a database

SETTING UP CLOUD9

FOR NODE

A QUICK NOTE

On What This Course Is And Isn't

Seems a bit late for that...

A solid purple square with the text "NodeJS" centered in black.

NodeJS

A solid teal square with the text "MySQL" centered in black.

MySQL

Hello there MySQL, How Many
Users Are In The Database?

A solid purple square containing the text "NodeJS" in a black, sans-serif font.

NodeJS

A solid teal square containing the text "MySQL" in a black, sans-serif font.

MySQL

Hello there MySQL, How Many
Users Are In The Database?



```
graph LR; NodeJS[NodeJS] --> MySQL[MySQL]
```

NodeJS

MySQL

Hello there MySQL, How Many
Users Are In The Database?



Well...it looks like there are
currently 518 users in here!

Hello there MySQL, How Many
Users Are In The Database?



Well...it looks like there are
currently 518 users in here!

5 Minutes of Node

Running Files and using NPM

Write Some Code

```
console.log("THIS IS SOME CODE!");
```

Execute The File

```
node filename.js
```

Introducing FAKER

```
npm install faker
```

Our Gameplan...

Use Faker To Generate User Data For Us


```
faker.internet.email()
```

```
faker.internet.email()
```



```
faker.internet.email()
```



Orie23@hotmail.com

```
faker.internet.email()
```



Orie23@hotmail.com

Simone.Walsh@gmail.com

```
faker.internet.email()
```



Orie23@hotmail.com

Simone.Walsh@gmail.com

Aubree_Daugherty97@yahoo.com

```
faker.date.past( )
```

```
faker.date.past( )
```



```
faker.date.past( )
```



Tue Dec 27 2016 11:48:00 GMT+0000 (UTC)


```
faker.date.past( )
```



Tue Dec 27 2016 11:48:00 GMT+0000 (UTC)

Fri Dec 16 2016 11:13:08 GMT+0000 (UTC)

```
faker.date.past( )
```



Tue Dec 27 2016 11:48:00 GMT+0000 (UTC)

Fri Dec 16 2016 11:13:08 GMT+0000 (UTC)

Fri Jun 24 2016 06:33:49 GMT+0000 (UTC)

WARNING THIS IS NOT REAL CODE

```
INSERT INTO users (email. created_at) VALUES  
(  
    faker.internet.email(),  
    faker.date.past()  
);
```

WARNING THIS IS NOT REAL CODE

```
INSERT INTO users (email, created_at) VALUES  
(  
    faker.internet.email(),  
    faker.date.past()  
);
```



Do That 500 Times

Introducing MySQL

The Node Package, That Is

A solid purple square with the text "NodeJS" centered in black.

NodeJS

A solid teal square with the text "MySQL" centered in black.

MySQL

Hello there MySQL, How Many
Users Are In The Database?

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NodeJS

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MySQL

Hello there MySQL, How Many
Users Are In The Database?



```
graph LR; NodeJS[NodeJS] --> MySQL[MySQL]
```

NodeJS

MySQL

Hello there MySQL, How Many
Users Are In The Database?



Well...it looks like there are
currently 518 users in here!

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Well...it looks like there are
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NodeJS

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MySQL

Hello there MySQL, How Many
Users Are In The Database?



```
graph LR; NodeJS[NodeJS] --> MySQL[MySQL]
```

NodeJS

MySQL

Hello there MySQL, How Many
Users Are In The Database?



Users...I have no idea what you are
talking about! I don't see a users
table in here :(

Hello there MySQL, How Many
Users Are In The Database?



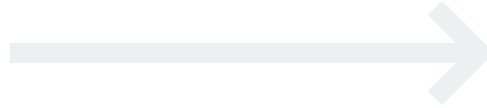
Users...I have no idea what you are
talking about! I don't see a users
table in here :(



NodeJS

Hello there MySQL, How Many
Users Are In The Database?

NodeJS



Hello there MySQL, How Many
Users Are In The Database?

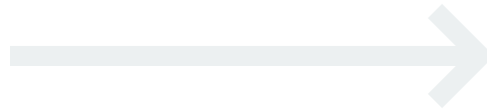


NodeJS

MySQL?? Are you there???

Hello there MySQL, How Many
Users Are In The Database?

NodeJS



MySQL?? Are you there???



Step 1: Connect To MySQL

```
var mysql    = require('mysql')

var connection = mysql.createConnection({
  host      : 'localhost',
  user      : 'some_username',
  database  : 'some_database'
});
```

Step 2: Run Queries

```
var q = 'SELECT 1 + 1 AS solution';  
connection.query(q, function (error, results, fields) {  
  if (error) throw error;  
  console.log('The solution is: ', results[0].solution);  
});
```

Don't worry, we'll go over this in detail!

WAIT I HAVE A QUESTION

How do you know what
code to type?

Creating Our Schema

Nice And Simple

```
CREATE TABLE users (  
    email VARCHAR(255) PRIMARY KEY,  
    created_at TIMESTAMP DEFAULT NOW()  
);
```


To Select All Users

```
var q = 'SELECT * FROM users';  
connection.query(q, function (error, results, fields) {  
    console.log(results);  
});
```

To INSERT a user

```
var person = {email: 'Jenny467@gmail.com'};  
connection.query('INSERT INTO users SET ?', person, function(err, result) {  
  if (error) throw error;  
  console.log(result);  
});
```

INSERTING multiple users

```
var data = [  
  ['blah@gmail.com', '2017-05-01 03:51:37'],  
  ['ugh@gmail.com', '2017-05-01 03:51:37'],  
  ['meh@gmail.com', '2017-05-01 03:51:37']  
];  
  
var q = 'INSERT INTO users (email, created_at) VALUES ?';  
  
connection.query(q, [data], function(err, result) {  
  console.log(err);  
  console.log(result);  
});
```

Quick Exercises

Find Earliest Date A User Joined

+	-----	+
	earliest_date	
+	-----	+
	May 2nd 2016	
+	-----	+

Find Email Of The First (Earliest) User

email	created_at
Friedrich_Kulas@hotmail.com	2016-05-02 20:28:18

HINT: SUBQUERY

Users According To The Month They Joined

month	count
November	51
January	49
May	48
December	47
July	46
June	43
April	41
October	41
September	40
March	40
August	40
February	32

Count Number of Users With Yahoo Emails

```
+-----+
|  yahoo_users  |
+-----+
|                  166  |
+-----+
```


Calculate Total Number of Users for Each
Email Host

provider	total_users
gmail	190
yahoo	166
hotmail	159
other	3

MOVING ON TO
THE WEB APP

IT'S TIME TO MEET
EXPRESS

The Framework We'll Be Using To Make JOIN US

LOOK AT THE DOCS!

Starting Nice And Simple

DON'T RUN THIS YET!

```
npm install express
```

WHAT THE HECK DOES THIS DO

```
npm init
```

(it's a fast way of starting a new app)

THIS VERSION IS BETTER

```
npm install express --save
```

It will save a record of the install

Client's Computer



Client's Computer

The diagram consists of two rectangular boxes. The box on the left is red and contains the text 'Client's Computer'. The box on the right is teal and contains the text 'Express App (Node)'. There are no lines or arrows connecting the two boxes.

Express App
(Node)



```
graph LR; A[Client's Computer] --> B[Express App (Node)]
```

Client's Computer

Express App
(Node)

Hi there, I would like the "/" page please!



```
graph LR; A[Client's Computer] --> B[Express App (Node)];
```

Client's Computer

Express App
(Node)

Hi there, I would like the "/" page please!



```
graph LR; A[Client's Computer] --> B[Express App (Node)];
```

Client's Computer

Express App
(Node)

Sure thing, here you go!

Hi there, I would like the "/" page please!



```
graph LR; A[Client's Computer] -- "Hi there, I would like the '/' page please!" --> B[Express App (Node)]; B -- "Sure thing, here you go!" --> A;
```

Client's Computer

Express App
(Node)

Sure thing, here you go!

Hi there, I would like the "/" page please!

HELLO FROM OUR WEB APP!



Sure thing, here you go!

Our First SUPER SIMPLE Express App

```
var express = require('express');  
var app = express();  
  
app.get("/", function(req, res){  
  res.send("HELLO FROM OUR WEB APP!");  
});  
  
app.listen(8080, function () {  
  console.log('App listening on port 8080!');  
});
```

Adding More Routes

Client's Computer

Client's Computer

Express App
(Node)



```
graph LR; A[Client's Computer] --> B[Express App (Node)]
```

Client's Computer

Express App
(Node)

Hi there, I would like the "/joke" page please!



```
graph LR; A[Client's Computer] --> B[Express App (Node)]
```

Client's Computer

Express App
(Node)

Hi there, I would like the "/joke" page please!



```
graph LR; A[Client's Computer] --> B[Express App (Node)];
```

Client's Computer

Express App
(Node)

Sure thing, here you go!

Hi there, I would like the "/joke" page please!



Client's Computer

The diagram consists of two rectangular boxes. The left box is red and contains the text 'Client's Computer'. The right box is teal and contains the text 'Express App (Node)'. Two horizontal arrows connect them: a top arrow pointing from the red box to the teal box, and a bottom arrow pointing from the teal box back to the red box.

Express App
(Node)

Sure thing, here you go!

Hi there, I would like the "/joke" page please!

What do you call a dog that does magic tricks? A labracadabrador.



Sure thing, here you go!

Routing Pseudocode

1. Did The Client Request "/"?

Respond with "WELCOME TO THE HOME PAGE"

2. Did The Client Request "/joke"?

Respond with "Knock Knock..."

Adding Another Route

```
app.get("/joke", function(req, res){  
  var joke = "What do you call a dog that does magic tricks? A labracadabrador.";  
  res.send(joke);  
});
```

One Last Route

```
app.get("/random_num", function(req, res){  
    var num = Math.floor(Math.random() * 10) + 1;  
    res.send("Your lucky number is " + num);  
});
```

The Next Logical Step Integrating MYSQL

We have 519 users

Client's Computer

Client's Computer

Express App
(Node)

Hi there, I would like the "/" page please!



```
graph LR; A[Client's Computer] --> B[Express App (Node)];
```

Client's Computer

Express App
(Node)

Hi there, I would like the "/" page please!



```
graph LR; A[Client's Computer] --> B[Express App (Node)];
```

Client's Computer

Express App
(Node)

One sec, let me ask MySQL for a
user count

Hi there, I would like the "/" page please!



```
graph LR; A[Client's Computer] --> B[Express App (Node)]; B --> C[MySQL];
```

Client's Computer

Express App
(Node)

One sec, let me ask MySQL for a
user count

MySQL

Hi there, I would like the "/" page please!

Client's Computer



```
graph LR; A[Client's Computer] --> B[Express App (Node)]; B --> C[MySQL];
```

The diagram illustrates a request flow. A red box on the left is labeled 'Client's Computer'. A horizontal arrow points from this box to a green box on the right labeled 'Express App (Node)'. From the green box, a vertical arrow points down to a blue box at the bottom right labeled 'MySQL'. The text 'One sec, let me ask MySQL for a user count' is positioned below the red box.

Express App
(Node)

One sec, let me ask MySQL for a
user count

MySQL

Hi there, I would like the "/" page please!

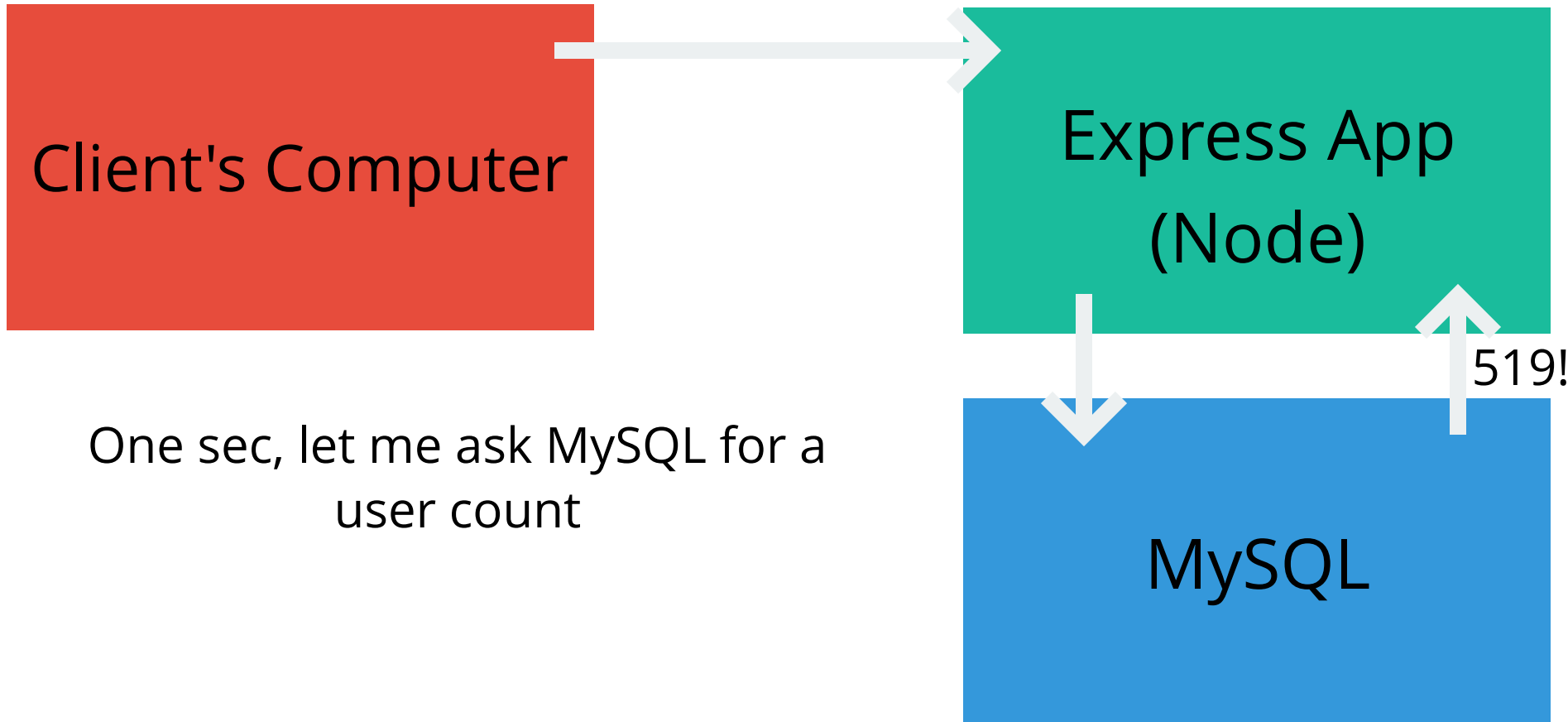
Client's Computer

Express App
(Node)

One sec, let me ask MySQL for a
user count

MySQL

519!



Hi there, I would like the "/" page please!

Client's Computer

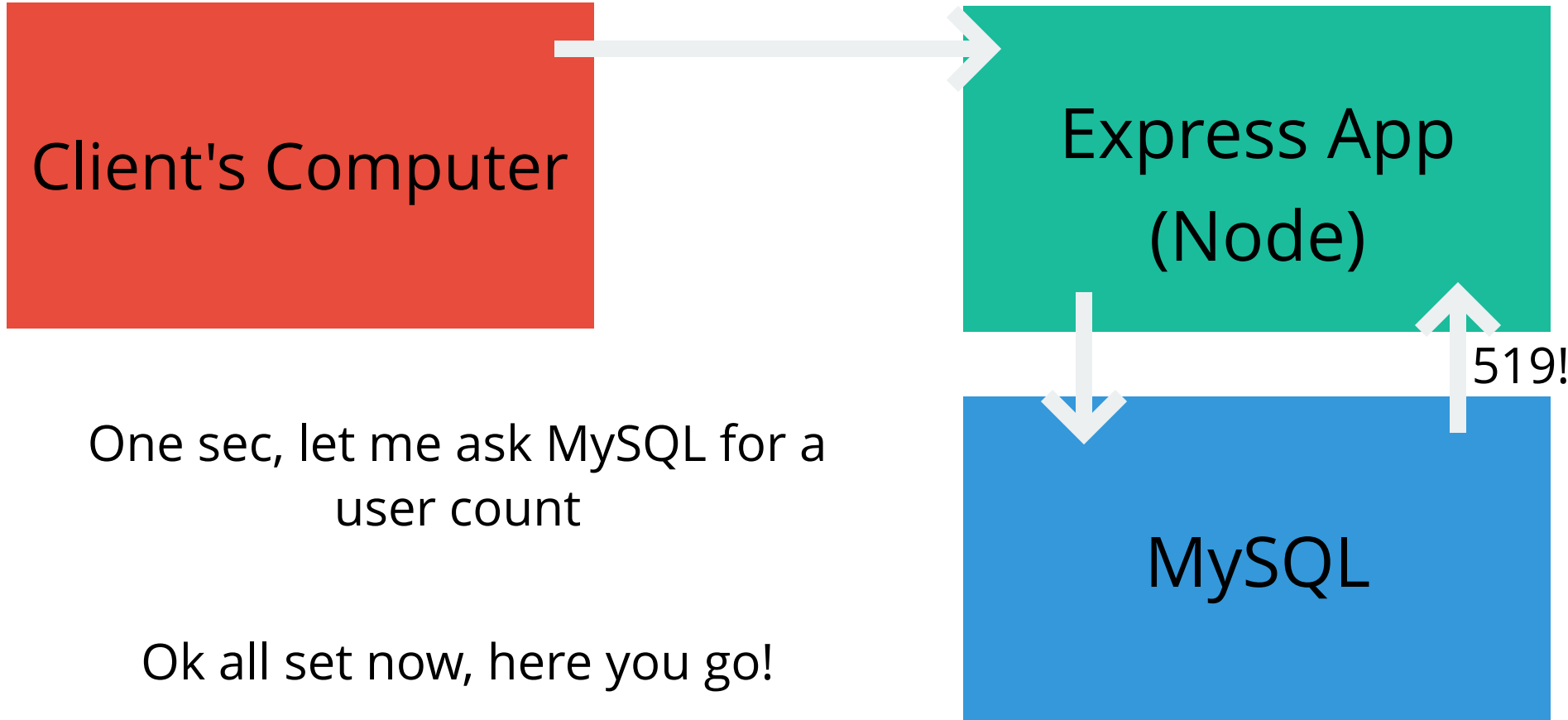
Express App
(Node)

One sec, let me ask MySQL for a
user count

Ok all set now, here you go!

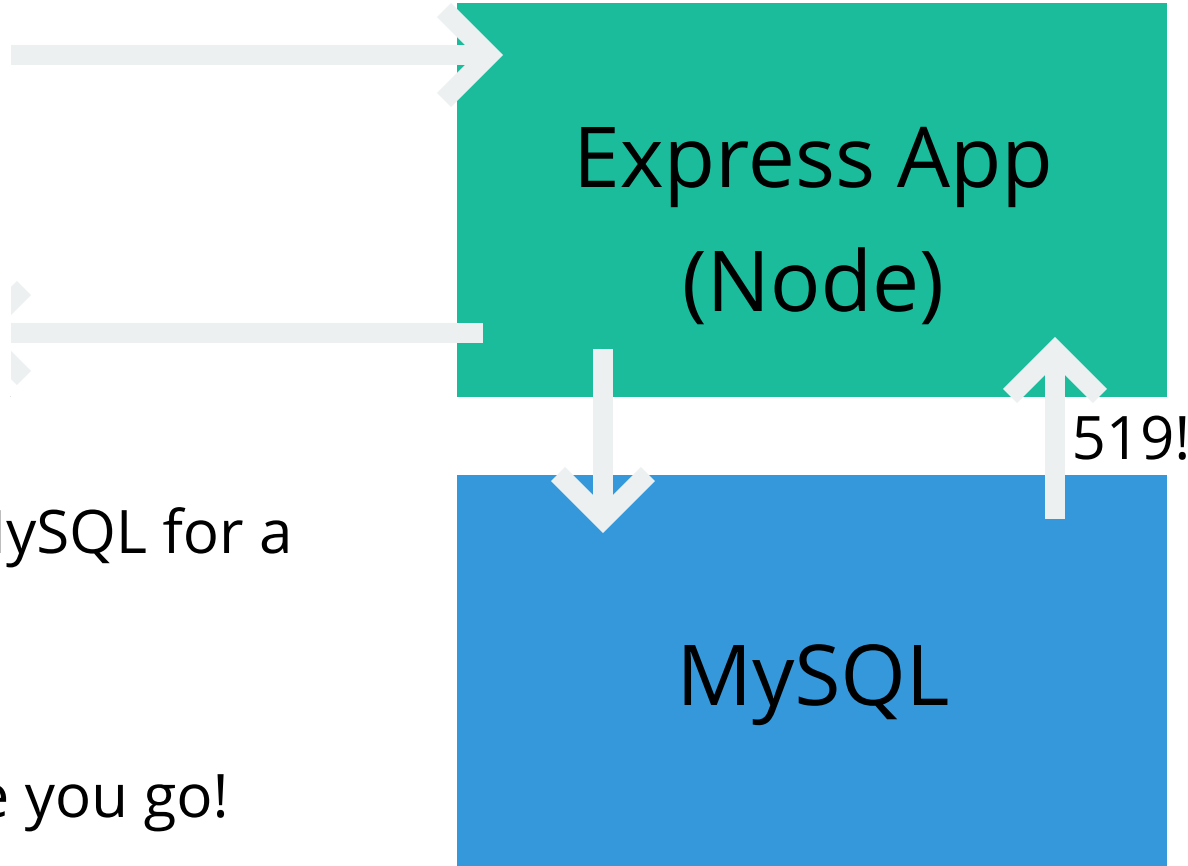
MySQL

519!



Hi there, I would like the "/" page please!

We have 519 users



One sec, let me ask MySQL for a user count

Ok all set now, here you go!

Retrieving Users Count From DB Inside a Route

```
app.get("/", function(req, res){  
  var q = 'SELECT COUNT(*) as count FROM users';  
  connection.query(q, function (error, results) {  
    if (error) throw error;  
    var msg = "We have " + results[0].count + " users";  
    res.send(msg);  
  });  
});
```

(Not showing code to connect to the db)

WORKING WITH VIEWS

Adding HTML to our web app

We're Working Towards This...



JOIN US

Enter your email to join **518** others on our waitlist. We are 100% not a cult.

Enter Your Email

Join Now

Where We'll Start...The Unstyled Version...

JOIN US

Enter your email to join **518** others on our waitlist. We are 100% not a cult.

All The Markup We Need

```
<h1>JOIN US</h1>
<p class="lead">Enter your email to join <strong>518</strong>
others on our waitlist. We are 100% not a cult. </p>
<form method="POST" action="/register">
  <input type="text" class="form" placeholder="Enter Your Email">
  <button>Join Now</button>
</form>
```

EJS

```
npm install --save ejs
```



```
app.set("view engine", "ejs");
```

```
res.render( 'home' );
```

```
res.render( 'home' );
```



```
res.render( 'home' );
```



Look For A Views Directory

```
res.render( 'home' );
```



Look For A Views Directory



```
res.render( 'home' );
```



Look For A Views Directory



Look For **home.ejs** in that directory

Soooooooooooo

What about that form...



JOIN US

Enter your email to join **518** others on our waitlist. We are 100% not a cult.

Enter Your Email

Join Now

JOIN US

Enter your email to join **518** others on our waitlist. We are 100% not a cult.

Client's Computer

Client's Computer

Express App
(Node)

Hi server, I would like to sign up, here's my email
sophie97@yahoo.com



```
graph LR; A[Client's Computer] --> B[Express App (Node)]
```

Client's Computer

Express App
(Node)

Hi server, I would like to sign up, here's my email
sophie97@yahoo.com



```
graph LR; A[Client's Computer] --> B[Express App (Node)];
```

Client's Computer

Express App
(Node)

One sec, let me ask MySQL to
INSERT that for you

Hi server, I would like to sign up, here's my email
sophie97@yahoo.com



```
graph LR; A[Client's Computer] --> B[Express App (Node)]; B --> C[MySQL];
```

Client's Computer

Express App
(Node)

One sec, let me ask MySQL to
INSERT that for you

MySQL

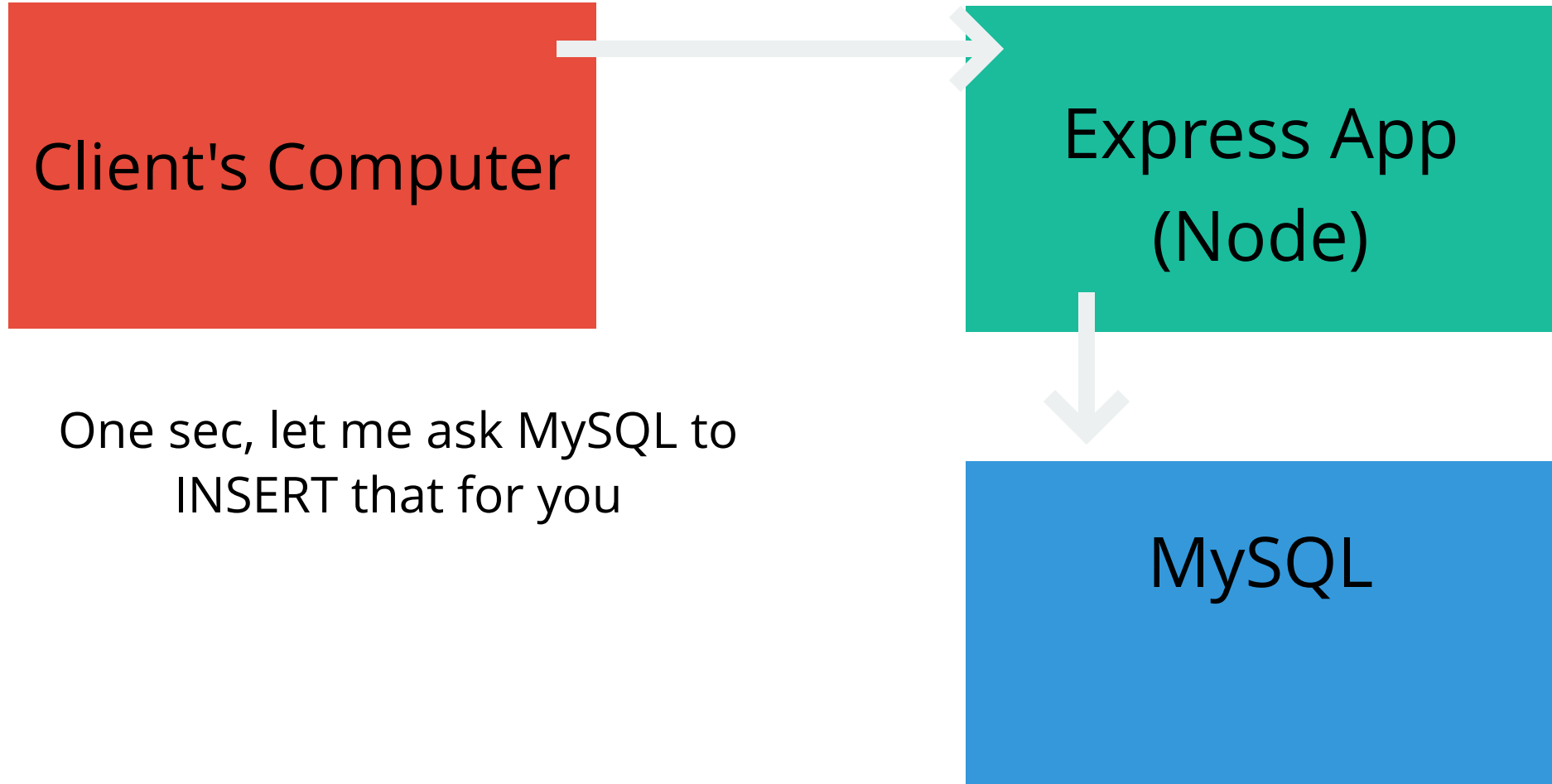
Hi server, I would like to sign up, here's my email
sophie97@yahoo.com

Client's Computer

Express App
(Node)

One sec, let me ask MySQL to
INSERT that for you

MySQL



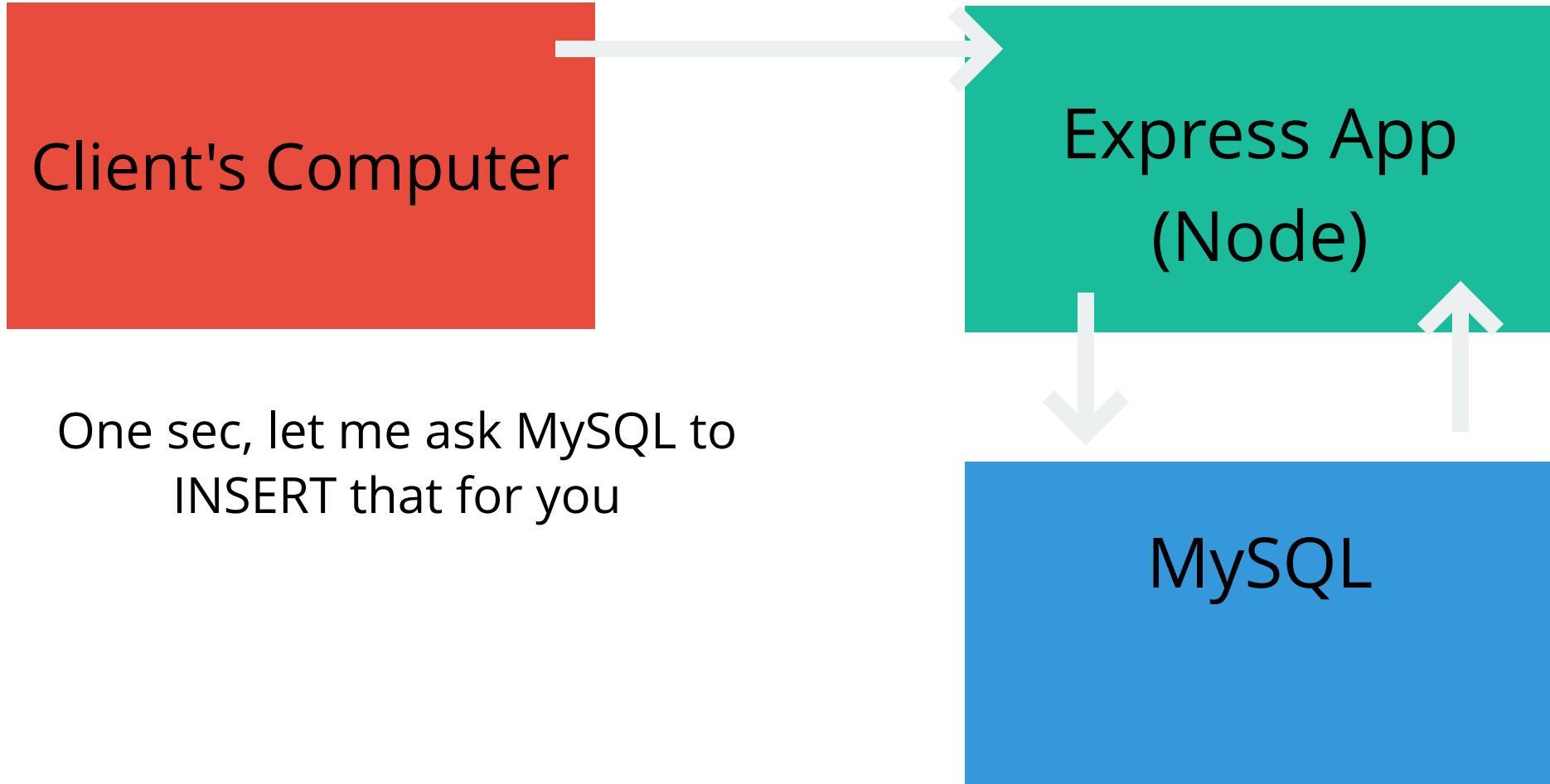
Hi server, I would like to sign up, here's my email
sophie97@yahoo.com

Client's Computer

Express App
(Node)

One sec, let me ask MySQL to
INSERT that for you

MySQL



Hi server, I would like to sign up, here's my email
sophie97@yahoo.com

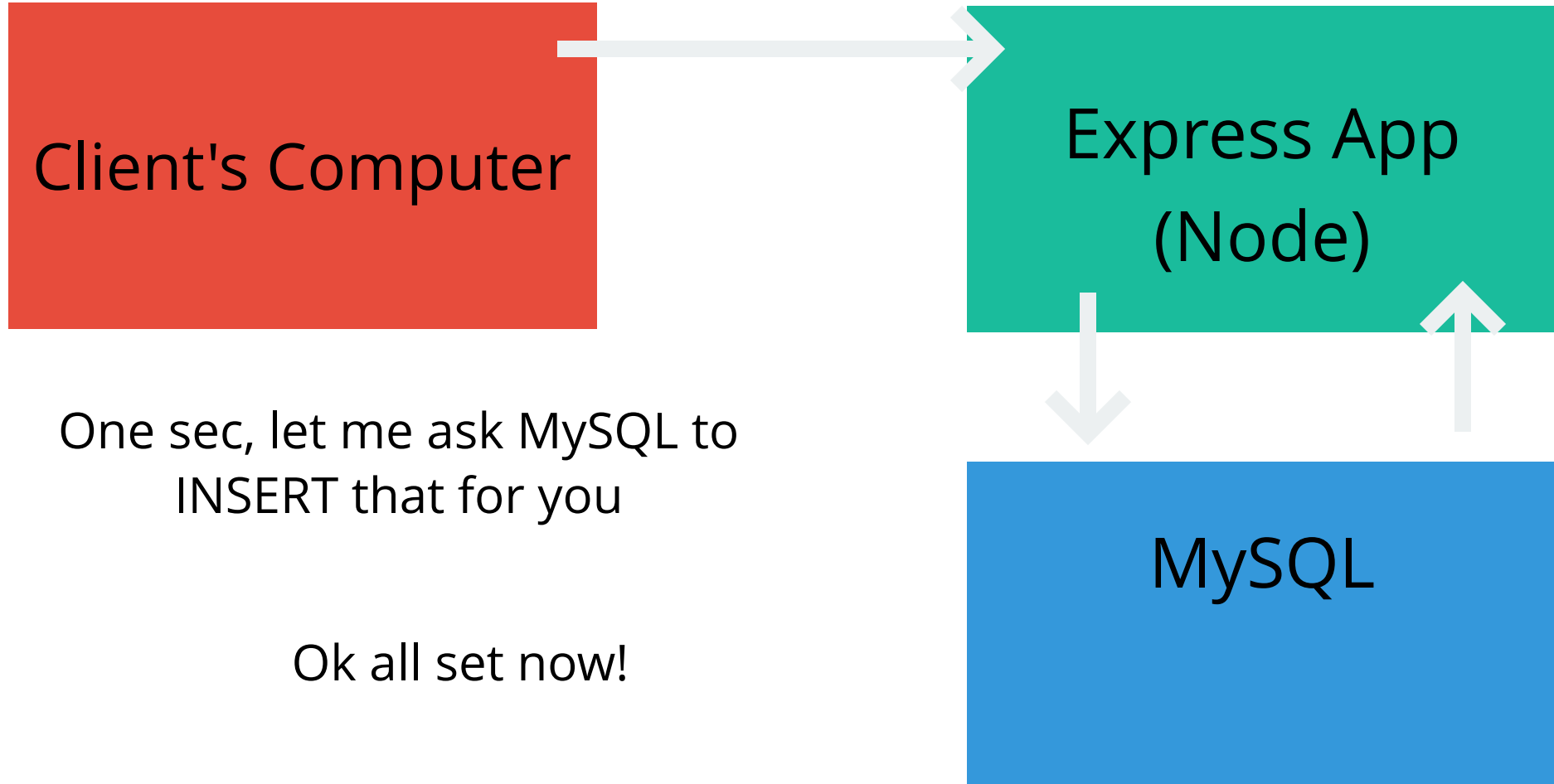
Client's Computer

Express App
(Node)

One sec, let me ask MySQL to
INSERT that for you

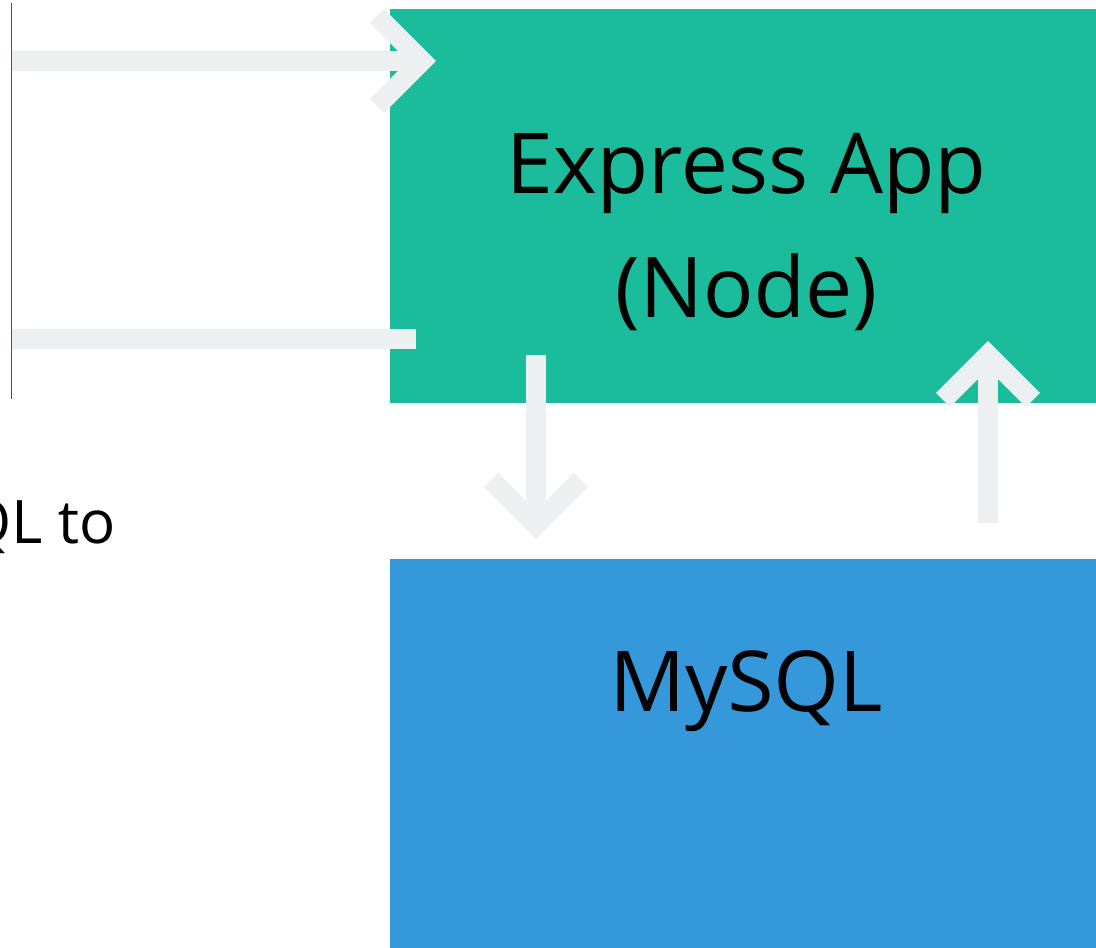
Ok all set now!

MySQL



Hi server, I would like to sign up, here's my email
sophie97@yahoo.com

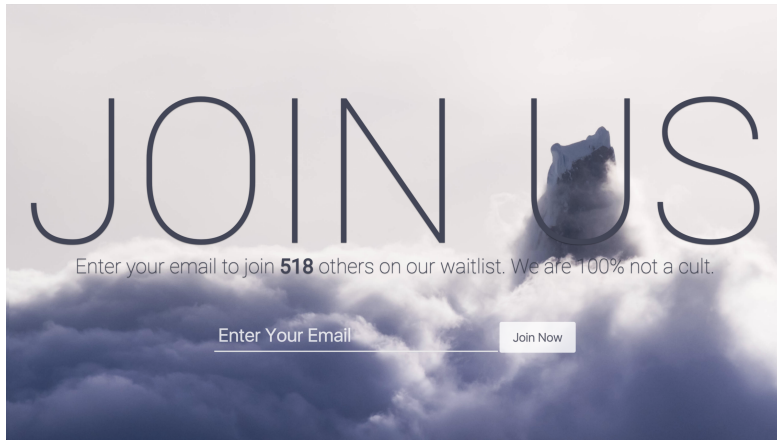
Thanks for registering!



One sec, let me ask MySQL to
INSERT that for you

Ok all set now!

Hi server, I would like to sign up, here's my email
sophie97@yahoo.com



Express App
(Node)

One sec, let me ask MySQL to
INSERT that for you

Ok all set now!

MySQL

How Does The
Form Data
Make It To Our
Server?

Defining a POST route

```
app.post('/register', function(req,res){  
    //a POST route!  
});
```

Some Annoying Set Up

```
npm install --save body-parser
```

```
var bodyParser = require("body-parser");
```

```
app.use(bodyParser.urlencoded({extended: true}));
```

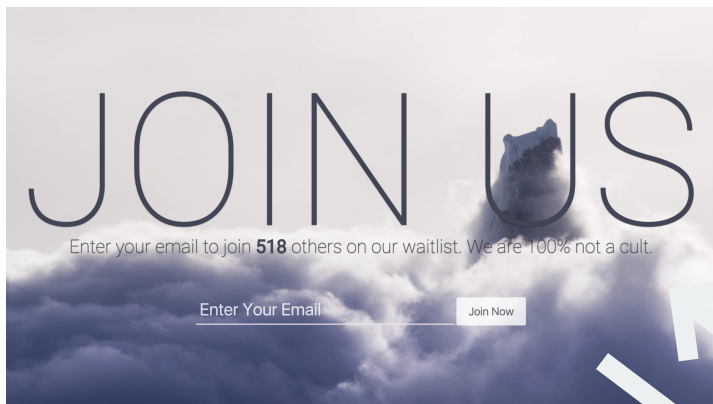
Extracting Form Data From Request Body

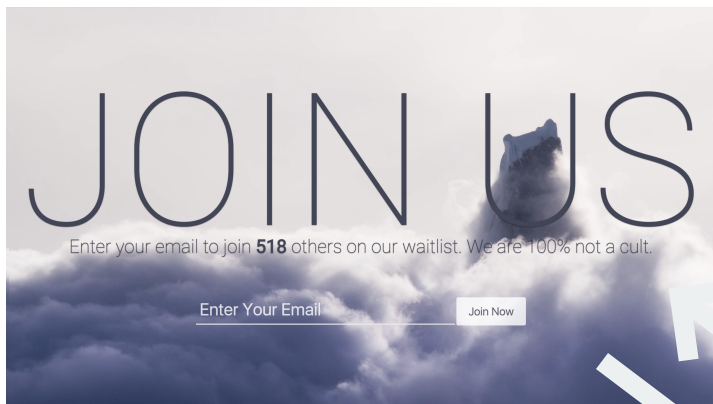
```
var person = {email: req.body.email};
```

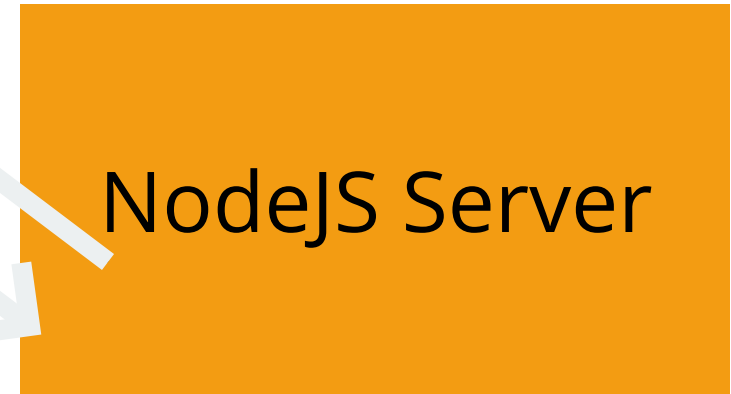
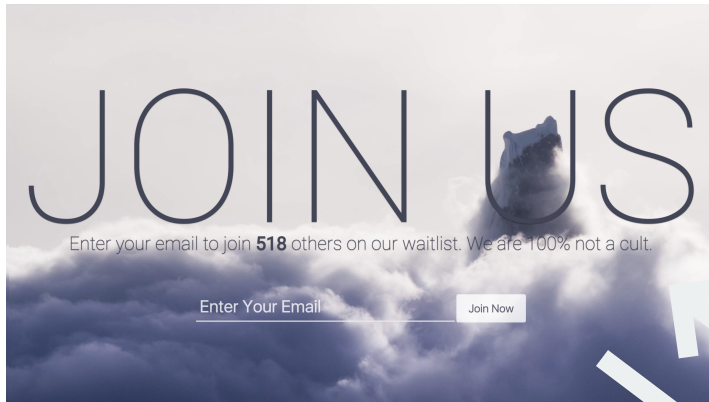

Our Finished /register POST route

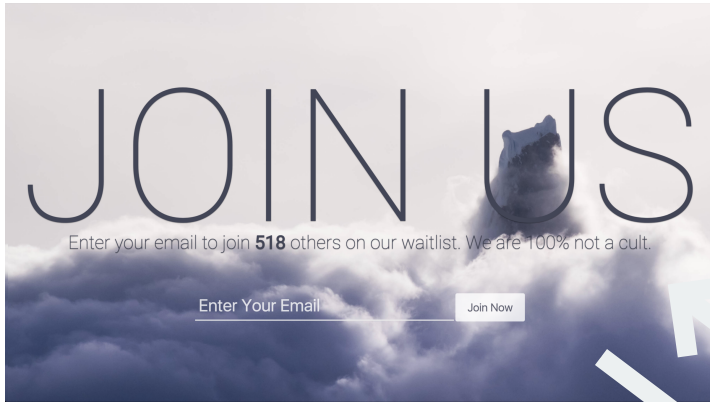
```
app.post('/register', function(req,res){  
  var person = {email: req.body.email};  
  connection.query('INSERT INTO users SET ?', person, function(err, result) {  
    console.log(err);  
    console.log(result);  
    res.redirect("/");  
  });  
});
```

```
app.use(express.static(__dirname + "/public"));
```









MySQL DB

NodeJS Server



