MODELS (CONT)

WELCOME BACK

PLEASE DO THE SURVEY IN YOUR EMAIL

Objectives

- You will solidify our basic knowledge of models and where they fit in our rails applications. This might feel a bit repetitive, so bear with me.
- You will display information from a database in a view
- Updating models with database migrations
- Deleting data.
- REST

CREATE

READ ✓

Now

UPDATE

DESTROY

CREATE

READ ✓

UPDATE

DESTROY ✓

By end of day

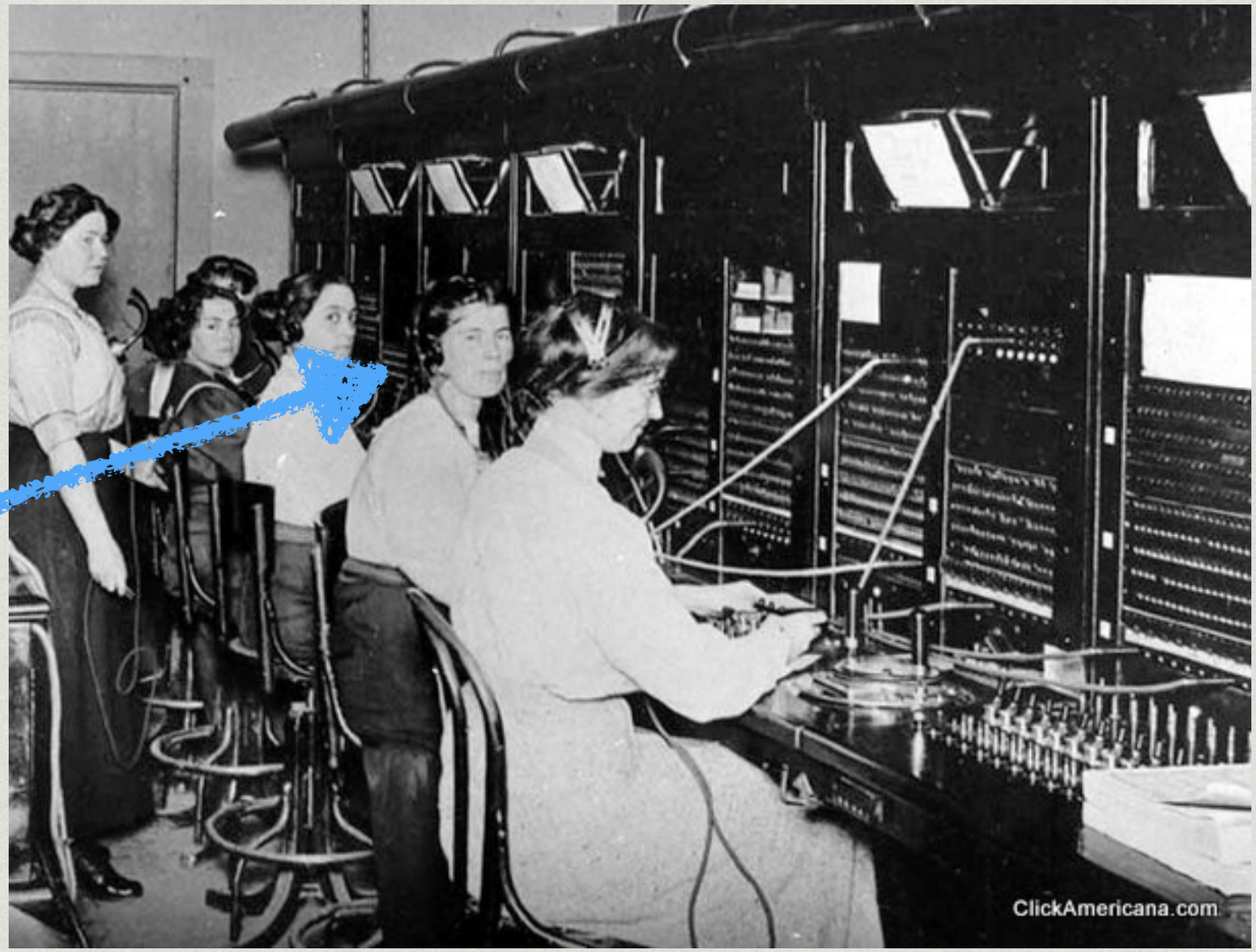
LET'S GROK THAT WHOLE MVC THING

The request

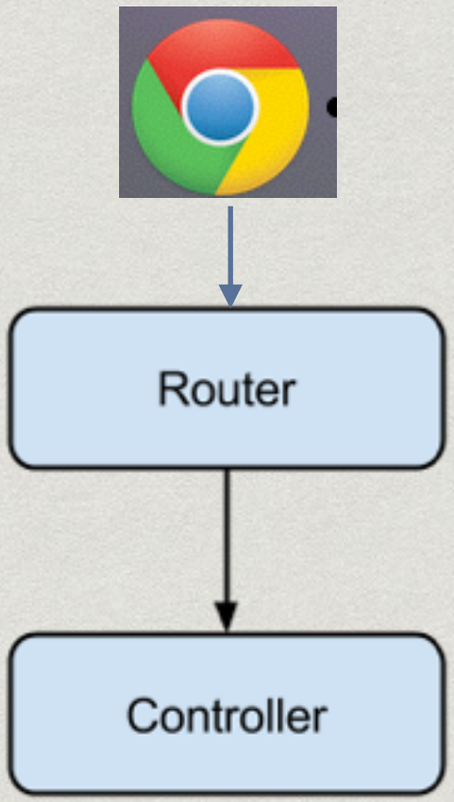
- As we know, all requests go to the Rails Router first, also known as the dispatcher.
- The dispatcher then routes the request to a controller.

Dispatcher

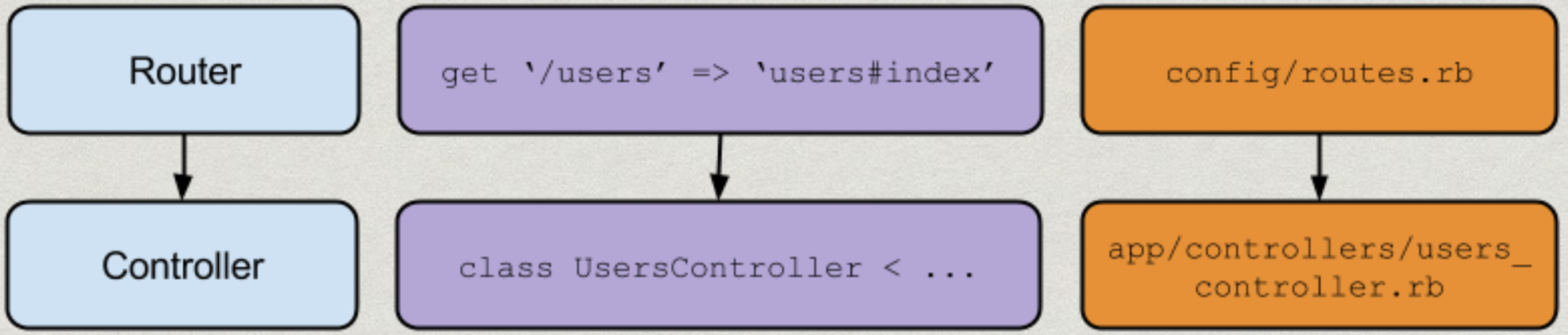
Amped for work



The request



More Specifically



Controller Logic

- It is the controllers logic to figure out what to do when receiving a request
- This includes retrieving information from a database with a model.
- IE: If requesting all of the users of a website, you'd need to retrieve all of the user rows from the users table using the User model

Controller Logic

- After the model gives back the information from the database to the controller, the controller should render the view.
- When rendering the view, the controller will give the information it retrieved from the model to the view
- The view will use the information render all of the users and their information

Building On

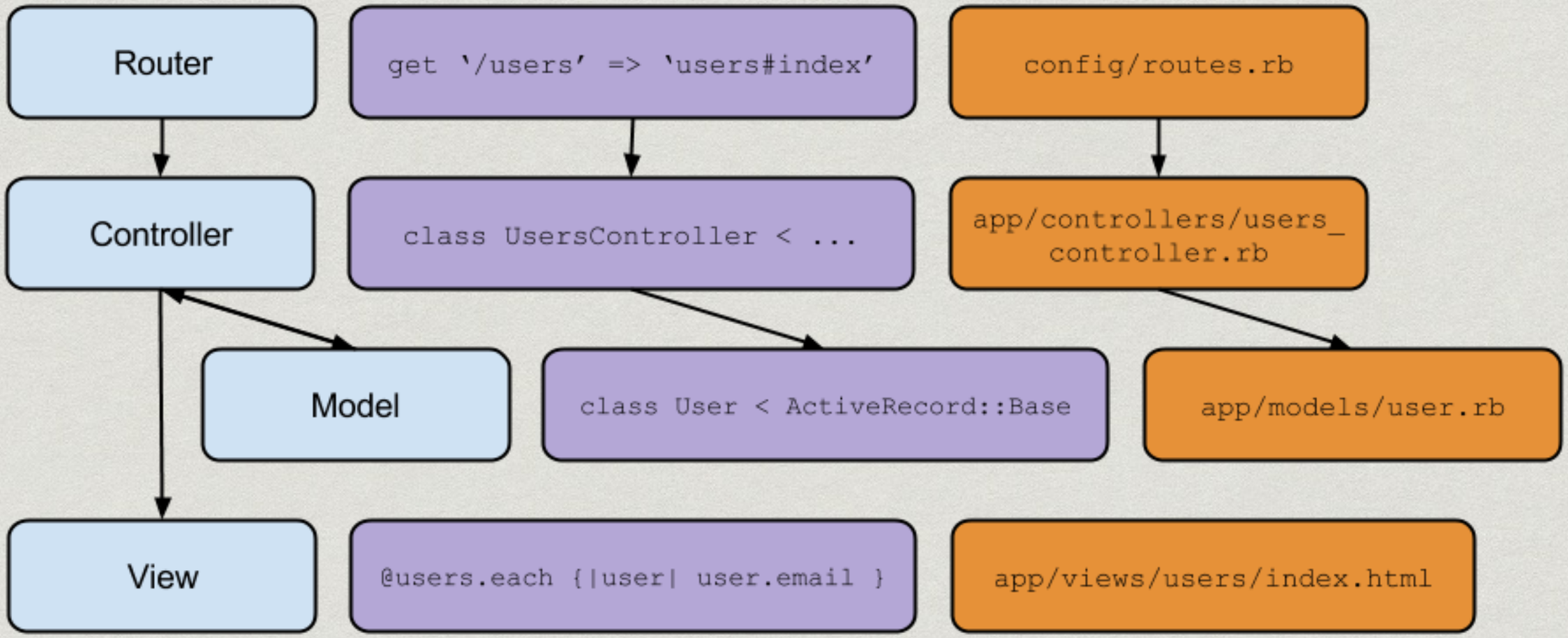
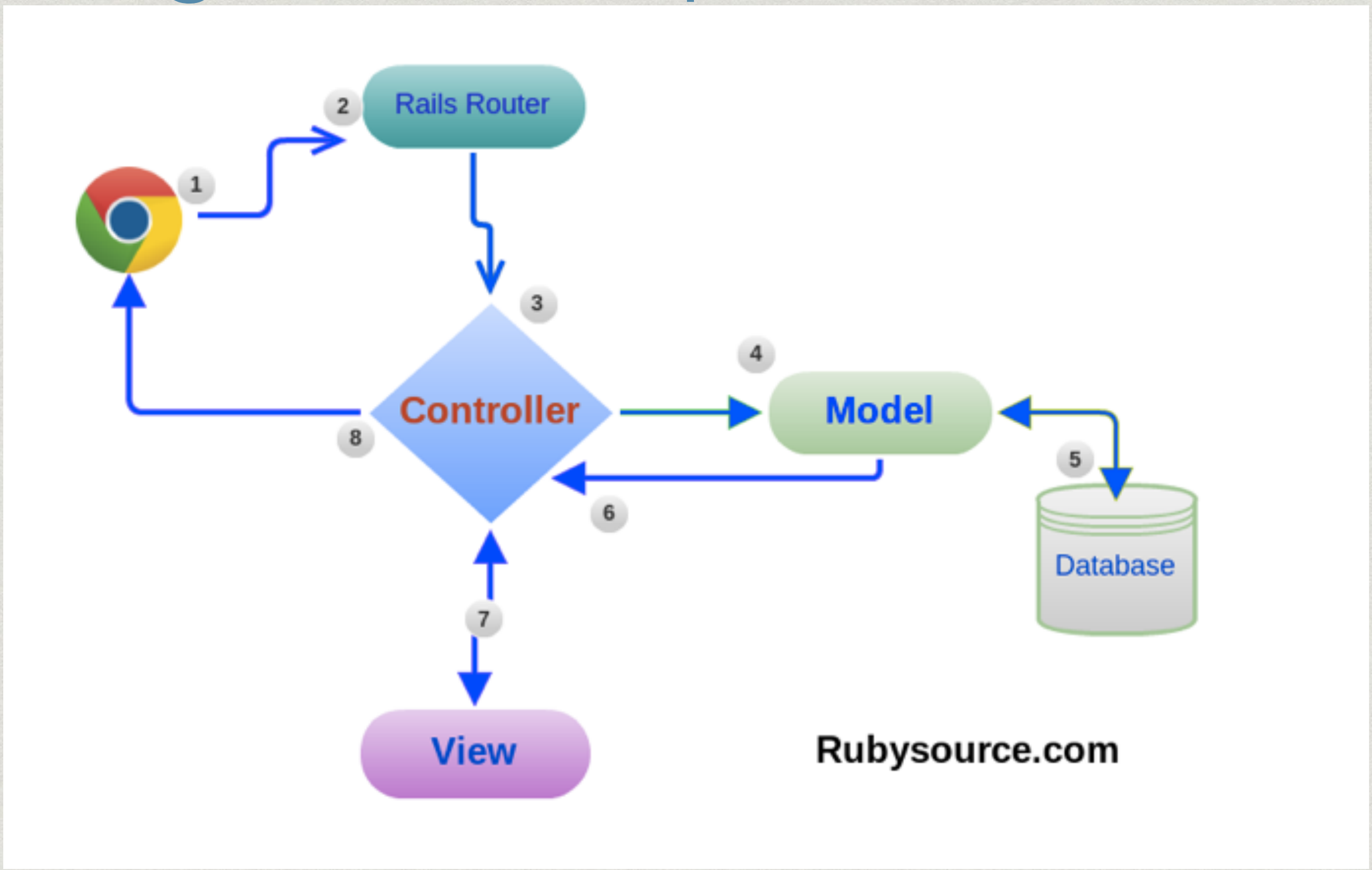

Router
get '/users' => 'users#index'
config/routes.rb
Controller
class UsersController < ...
app/controllers/users_
controller.rb
Model
class User < ActiveRecord::Base
app/models/user.rb
View
@users.each {|user| user.email }
app/views/users/index.html

Diagram Recap



A few notes

- A controller does *not* need to use a model. In fact, it is quite common to have a welcome controller to handle landing page.
- A controller *could* return data that is not returned by the database model.

In-class exercise

- In your class 10 folder (HALF WAY, whoa)
  - `rails new business_time`
  - `cd business_time`
- After that, please generate (hint hint) a model named “Company” with 2 attributes:
  - `name` with a type of `string`
  - `number_of_employees` with a type of `integer`

Routes Exercise

- Remember, all routes exist in the “config/routes.rb” file within your Rails application directory.
- Please add a route for a GET request to “/companies” that routes to a controller and action:
  - Companies controller
  - index action

Controller Exercise

- Remember, all controllers must be added to the app/controllers directory

- Please create a controller called Companies with an action called “index” (manually!, **no** rails g)

  - Remember, actions are fancy methods on controllers.

View Exercise

- Remember, all views live in the app/views directory, with a subfolder that is named after the name of the controller.
  - So given a controller called “users”, the directory path would look like: “app/views/users”
- The name of the action is also the name of the view file. So with an action called “index”, the file would be:
  - “app/views/users/index.html.erb”
- With that, please create a view file for the controller we generated, leave it empty.

Passing information to the view

- Remember, it is the controller's job to pass information to the view
- We're going to play around with that a bit.

Controllers & Views

- Controllers use what's called an "instance variable"
- Instance variables start with an @ sign

controller.rb

```ruby
class MyController < ApplicationController
  def hello
    @my_instance_variable = "Hello World!"
  end
end
```

Instance Variables

- They’re very similar to normal variables, but they are for the instance of a class, and *thats it.*
- This means that 2 different instances of a class can’t access the same instance variable.
- Rails creates a new instance of your controller class with every request.
- Anything outside of the instance of that class can’t access the variable.
  - Technically you can but please please don’t.

Controllers & Views

- Controllers must assign an instance variable in their action methods to send data to the view file. For example:

controller.rb

```
1  class MyController < ApplicationController
2    def hello
3      @my_instance_variable = "Hello World!"
4    end
5  end
```

hello.html.erb

```
1  <h1>
2    <%= @my_instance_variable! %>
3  </h1>
```

ERB Tags

- ERB Tags are fancy tags that can run and echo Ruby into HTML.
- They start with <% and end with %>
- When an ERB tag starts with <%=, this means “print the value of this ruby code”

ERB Tags

So this…

hello.html.erb

```
1  <h1>
2    <%= @my_instance_variable! %>
3  </h1>
```

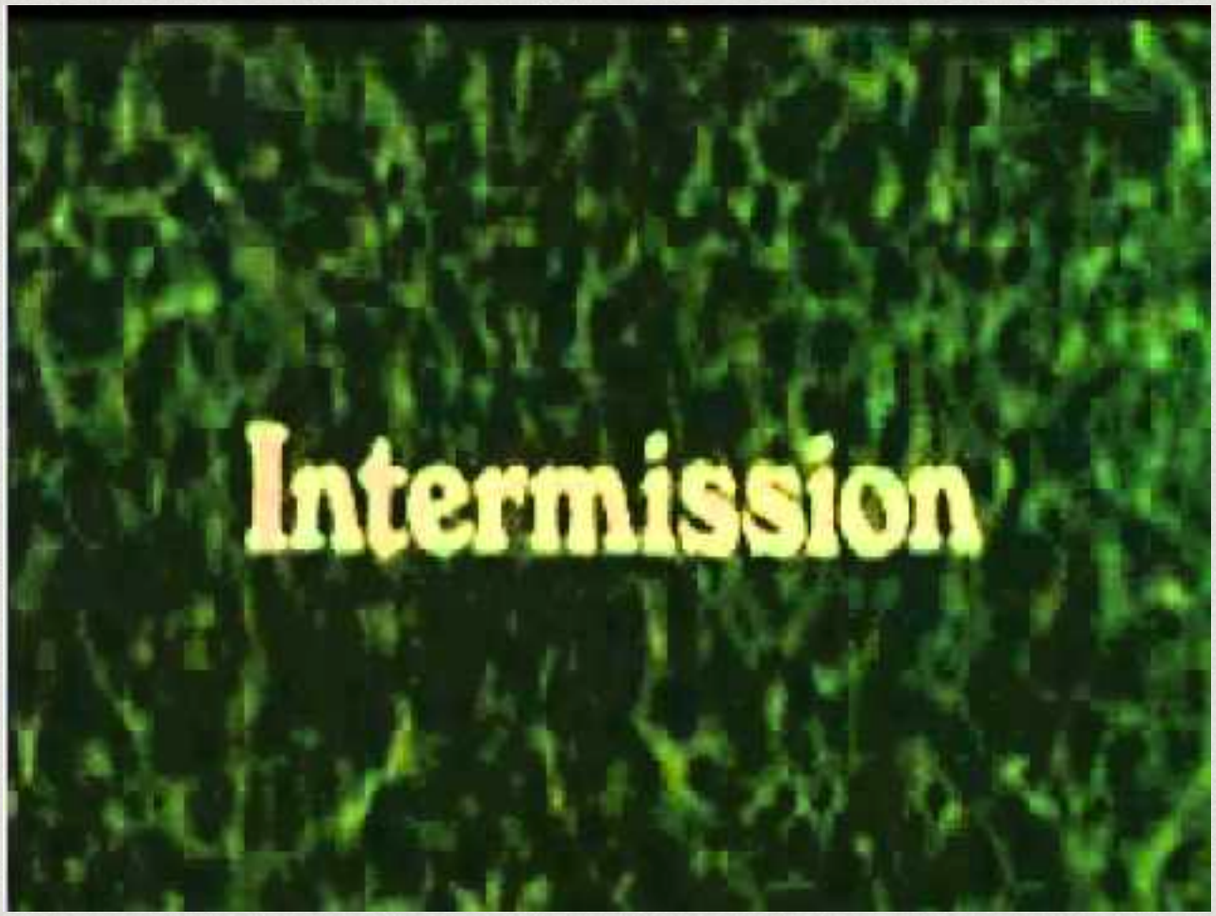
Would print whatever the value of "@my_instance_variable" is into the view

Code Along

- Adding a simple “instance variable” to our controllers that our view will display.
- This is the basis for passing information between controllers are views

Lab

- Within our companies index view, next to the company name that is displayed, display the ID of the company as well.
- Remember, all things in our database automatically get an ID.
- Extra time? Display when they were created too.


Intermission

Database Seeds

- Rails has a feature called “seeding”
- It allows you to create data inside of your database easily
- Seeding is typically used to populate the initial data of a database

Database Seeds

- There is a file “db/seeds.rb” that will contain our seeds.
- This file is just executed top to bottom. It’s basically a plain ruby file that has all of your models loaded into for you.
- To execute seeding, you run the command:
  - `rake db:seeds` in your terminal (from within your rails app directory)

Seeding Notes

- A few notes about seeding:
  - If you run "`rake db:seed`" multiple times, you will end up with duplicates.
- If you want to reset data and then seed, you can run consecutively:
  - `rake db:reset`
  - `rake db:seed`
- Again, this blow away ***ALL*** of your data. Not just your seeds, so move with caution.

Seeds Code Along

Adding a few company seeds using our Company model

SORTING COMPANIES

Research

- Using Google, Stack Overflow, various documentation or whatever, see how you might sort companies by descending order by **number of employees** on the /companies/rankings page
- you have 15 minutes

Lab

- Add another route for GET for “/companies/rankings” that points to our companies controller, and an action called “rankings”
- Create the action method and view file for the route.
- Within our new action, create an instance variable (@ranked_companies) and assign it to a string “nothing yet”
    - Display this instance variable inside of the new view file you created.
- Create a link on the index view to the ranking page
- **Bonus:** Print the data type of @ranked_companies

Sorting by number of employees

- `Company.order(:number_of_employees).reverse`
- OR
- `Company.order(number_of_employees: :desc)`
- Try that in the rails console
- Then make it happen in the view, similar to index.
- **Bonus:** The companies are ordered by employee number. Let's also number them ordinally.

UPDATING DATABASE TABLES

Migrations

- We've done migrations when we created models
- Let's say you want to update a model that already exists.
- You use a different generator for that.

Add city to company model

- If the migration name is of the form "AddXXXToYYY" or "RemoveXXXFromYYY" and is followed by a list of column names and types then a migration containing the appropriate add_column and remove_column statements will be created.
- Okay what does that mean…

Add city to company model

- `rails g migration AddCityToCompanies city:string`
- This changes the structure of the database so there is now a column for city.
- Before `Company.city` would error. Now it works.

Try it in the console

- Create a new company with a city attribute.
- Problem: the old data is sans city.
- How can we solve that?

PARAMS

Parameters

- A request can include a Params hash.
- This could be passed in manually. For instance, if you want to know how many people visited your sight from a Twitter campaign like 'click here to save 15%!' you can include a query string in the link like so:
- `https://myapp.com/signup?lead_source=twitter`

Parameters

- `https://myapp.com/signup?lead_source=twitter`
- The controller that handles this get request will have a hash like this:
- `params = {"lead_source" => "twitter" }`
- If you get an error page, you will see the params hash plain as day.
- You can access values in the hash by it's key. Usually as a symbol, but string is allowed.

Parameters

```
def signup
  if params[:lead_source] == "twitter"
    admission_price = 85
  else
    admission_price = 100
  end
end
```

Parameters

- Oftentimes, you will code parameter keys directly into routes.
- Let’s make a /companies/cities/<somecity> route to demonstrate.

Filtered queries

* `@companies = Company.where(city: params[:city])`

Filtered queries

- On the cities page, we want to show not ALL of the companies, but all of them that are in the specified city.

- Hit the docs for 5, see if you can come up with a statement that queries the DB for the companies that match the one the user put into params.

- /companies/cities/london should return all of the companies where city is london. (case matters)

Lab

- Implement a route, controller action and View to show companies by city.
- **Bonus:** Display the requested city in the view.
- **Bonus:** Display a special message to the user if no companies are found for that city.

MOAR LAB

Lab

- Your client changed its mind. They no longer care about number of employees. They feel that their investors are better informed by rankings by `market_capitalization`
- Remove num_employees with a new migration, add the requested attribute
- Rework the /rankings route to accept either rankings/market-cap
- If you finish early, make a route for rankings/profit-margin that uses the same controller (you will need another migration)

RESOURCEFUL ROUTES

HTTP Verbs

- Can you name four of them?
- Which one have we done exclusively since we abandoned rails scaffolding?

Standardize your routes for fun and profit

- This is one of those moments where rails rewards you for following convention.
- Resourceful routes give you seven standard routes with just one line.

Resourceful routes

```
Rails.application.routes.draw do

  resources :companies

  root 'companies#index'

  get 'companies/rankings' => 'companies#rankings'
  get 'companies/cities/:city' => 'companies#cities'
```

You still need these since they aren't standard.

Run rake routes

```
vincent@apple:~/Desktop/business_time $ rake routes
            Prefix Verb   URI Pattern                                Controller#Action
         companies GET    /companies(.:format)                       companies#index
                   POST   /companies(.:format)                       companies#create
       new_company GET    /companies/new(.:format)                   companies#new
      edit_company GET    /companies/:id/edit(.:format)              companies#edit
           company GET    /companies/:id(.:format)                   companies#show
                   PATCH  /companies/:id(.:format)                   companies#update
                   PUT    /companies/:id(.:format)                   companies#update
                   DELETE /companies/:id(.:format)                   companies#destroy
                root GET    /                                         companies#index
companies_rankings GET    /companies/rankings(.:format)              companies#rankings
                   GET    /companies/cities/:city(.:format)          companies#cities
vincent@apple:~/Desktop/business_time $
```

Run rake routes

```
vincent@apple:~/Desktop/business_time $ rake routes
                  Prefix Verb   URI Pattern                                Controller#Action
               companies GET    /companies(.:format)                       companies#index
                         POST   /companies(.:format)                       companies#create
             new_company GET    /companies/new(.:format)                   companies#new
            edit_company GET    /companies/:id/edit(.:format)              companies#edit
                 company GET    /companies/:id(.:format)                   companies#show
                         PATCH  /companies/:id(.:format)                   companies#update
                         PUT    /companies/:id(.:format)                   companies#update
                         DELETE /companies/:id(.:format)                   companies#destroy
                    root GET    /                                          companies#index
companies_rankings GET    /companies/rankings(.:format)              companies#rankings
                         GET    /companies/cities/:city(.:format) companies#cities
vincent@apple:~/Desktop/business_time $
```

Handy path helpers — we will use these in the controller actions and links.

link_to

- Rails has an intuitive link format you can work with.
- Let's implement this to link the index view to the show (single company) view.

link_to

```
<%= link_to 'text', resource %>
```

link_to

For our index page:

```
<%= link_to 'Show', company %>
```

link_to

Back to the index

```
<%= link_to 'Back to index', companies_path %>
```

DESTROYING DATA

Deleting data

- User clicks the delete button.
- DELETE request is sent to the server.
- The controller finds the right record to destroy, and destroys it.
- Instead of rendering a template, it should redirect to where you were.
- The Company model already has a delete route.

The controller action

```
def destroy
  Company.find(params[:id]).destroy
  redirect_to companies_path
end
```

The controller action

```
def destroy
  Company.find(params[:id]).destroy
  redirect_to companies_path
end
```

What does this do?

The controller action

```
def destroy
  Company.find(params[:id]).destroy
  redirect_to companies_path
end
```

What is companies_path

Redirecting

- For some methods, including destroy, it doesn't make sense to render a template. What is there to see?
- For this reason, we will redirect the user to the index view.

Link for deleting

```
<%= link_to 'Link text', object-to-delete, method:
  :delete, data: { confirm: 'Are you sure?' } %>
```

Link for deleting

Let’s put that on the index page and try it out.

RECAP

Recap

- Migrations are used to update existing tables/ models in the database.
- .where on a model filters a database query
- .order sorts by an attribute.
- link_to is a handy link helper
- redirect_to is necessary in controller actions that don’t have sensible views of their own.