Routes, Controllers, and Views

Link to lesson

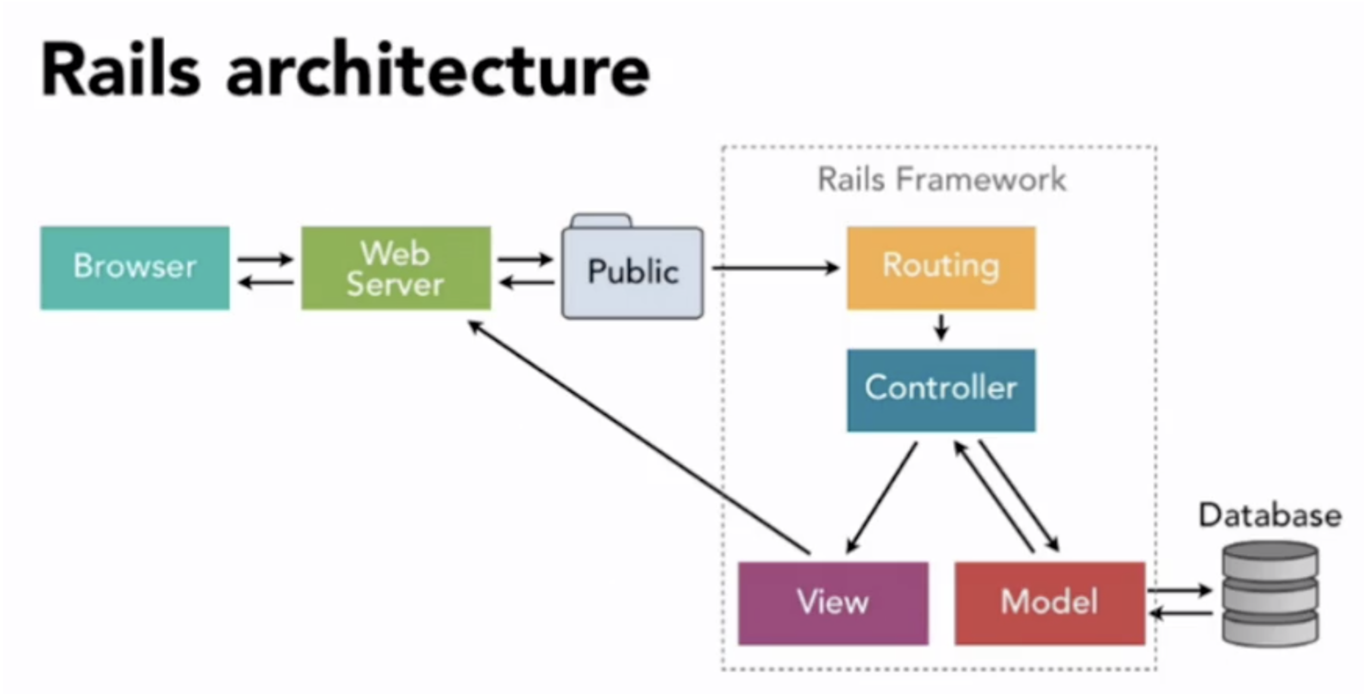
A link to the lesson can be found here.

Why Routes?

- Routing is a key part of all websites.
- The content of a website should be organised in several URLs.
- Different URLs and different HTTP methods require different routes.
- Routing is needed whenever we want to use a URL in our app.

How does Rails work?

- This image is useful in understanding the behaviour of the rails framework.



- The bottom of the image illustrates the MVC architecture (Model, View, Controller)
  - The model, where we define and store the data thanks to our database.
  - The controller, which manages everything and establishes connection between the model and the view.
  - We can see the the view is the one that is going to show the content of the website in the browser.

- But how does Rails know which view it has to render? To answer this, we can look at the arrows in the diagram.
  - We can see that the HTTP request is going to arrive at the Routing first.
  - Then, once the Routing has processed the request, the controller can start managing everything.

Steps of the process (overview)

1. Client sends a HTTP request.

2. Routes connects URLs to controller actions.

3. Controller executes actions and renders view.

Step 1: Client sends a HTTP request.

- When the user types a URL into the browser, and that URL points to a running rails server, the servers reads the path and looks for a route.

- The first route that matches is the one that is uses.

- Actually, every time we type a URL and press enter or we click on a link, a HTTP request (GET, POST, PUT/PATCH, DELETE) is sent to the server.

Step 2: Routes connects URLs to controller actions

- The rails server finds the first route that matches the HTTP method and path (the URL) and directs the request to the associated controller action.

- Routes are defined in the config/routes.rb file and map HTTP verbs and paths to controller actions.

- Controller actions are another name for controller methods and they are found in the controllers source code.

Step 3: Controller executes actions and renders view.

- In the controller action, the controller gets information from the model and provides that information to the view via instance variables.

- The controller renders the view with the appropriate information from the model, and that rendered content is sent to the client (the browser viewed by the user).

- By default, the view it renders is in the views directory and has a name that matches the controller action.

Defining the route

- There are a few ways to define a route in config/routes.rb

- This is one of the ways to specify a route:

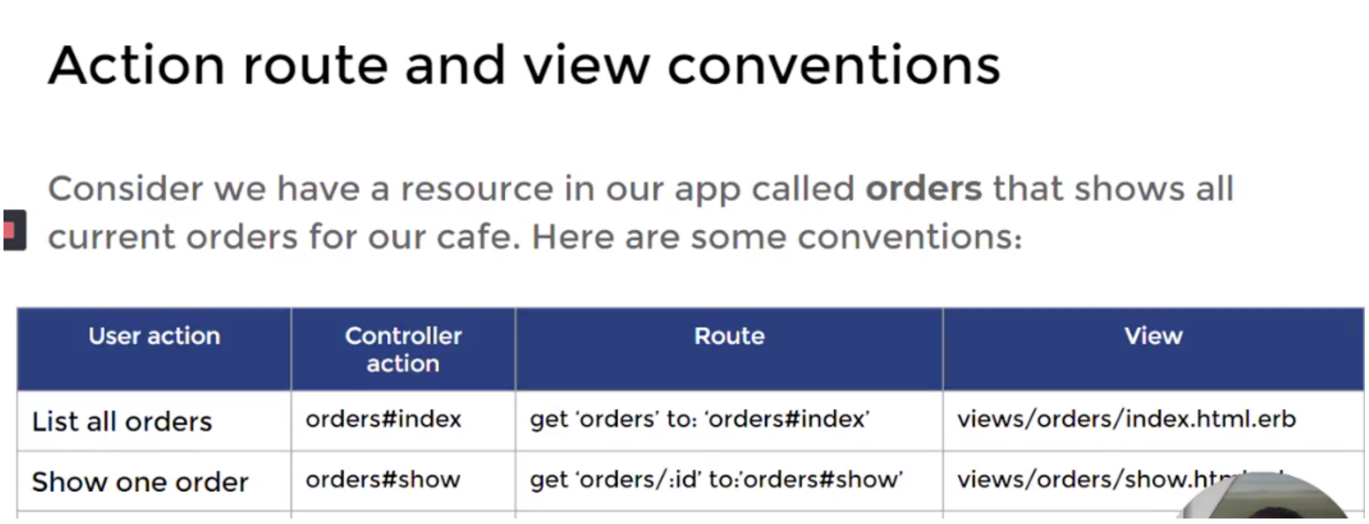
  ```
  HTTP_verb ‘path’ to: ‘controller_name#action_name’
  ```

Example:

```
get ‘orders’ to: ‘orders#index’
```

- In this example, if the user types a URL (which is a get method) the route will send the request to the orders controller which will execute the index action or the index method.

Action, Route and View conventions



Action route and view conventions

Consider we have a resource in our app called **orders** that shows all current orders for our cafe. Here are some conventions:

User action	Controller action	Route	View
List all orders	orders#index	get ‘orders’ to: ‘orders#index’	views/orders/index.html.erb
Show one order	orders#show	get ‘orders/:id’ to:’orders#show’	views/orders/show.ht

List all orders

- If the user wants to list all orders that orders controller is going to execute the index action/ index method (as per image above).

  ```
  orders#index
  ```

- In order to define that in our config/routes.rb file we will require a *get* method because we want to get all the orders.

  ```
  get ‘orders’ to: ‘orders#index’
  ```

- This **index method** will render a **view** from the **views directory**.

```
views/orders.index.html.erb
```

Show one order

- If the user wants to see just one order.
- The controller action that is going to execute that view is:

  ```
  orders#show
  ```

- Remembering that the **orders controller** is going to have a **show action**.
  - In order to define this in our config/routes.rb file we will require a *get* method because we want to get an order except that path is slightly different than the first example.

    get ‘orders/:id to:’orders#show’
- Every time we have a collon in the URL it means that this is a **parameter** or a **param.**
- We use **parameters** when we have a **list of items** (in this example the items are orders but the can be any kind of item) and we want to **access just one**.
- The **parameter is the item we want to access**.
- Also, the item must have an **ID** if we want **access to it**.

Action, Route and View conventions (cont.)

- The **route** tells the **rails server** what to **display** when the user just types in the server URL with no additional path.
- In other words, it is the **home** or **index** of the application.
- The **root route** is specified in the config/routes.rb with the syntax:

  ```
  root to: ‘controller#action’
  ```