COM 1001

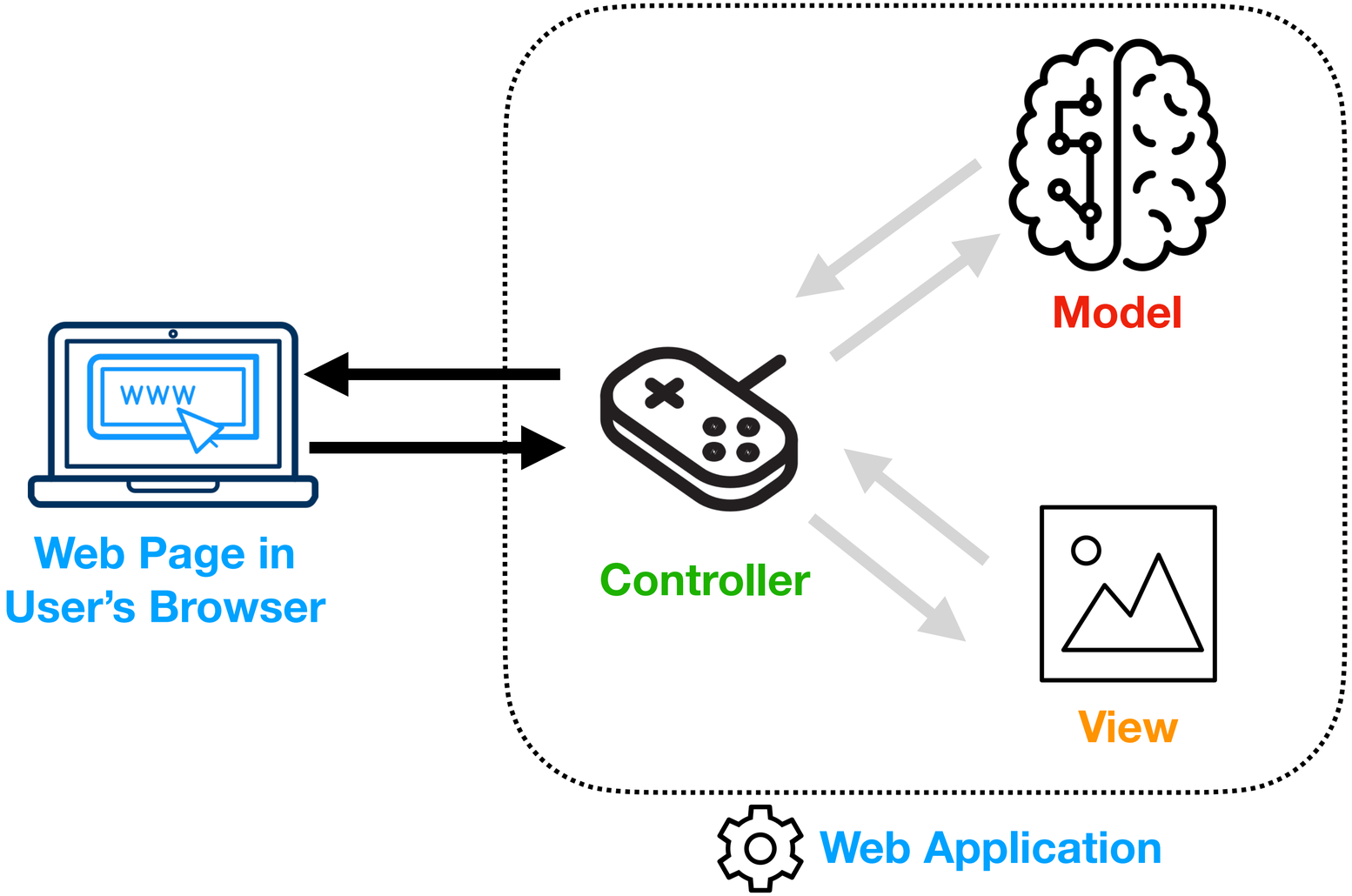
Introduction to Software Engineering

Professor Phil McMinn

Web Application Architecture

The Model View Controller (MVC) Design Pattern

Model View Controller (MVC)



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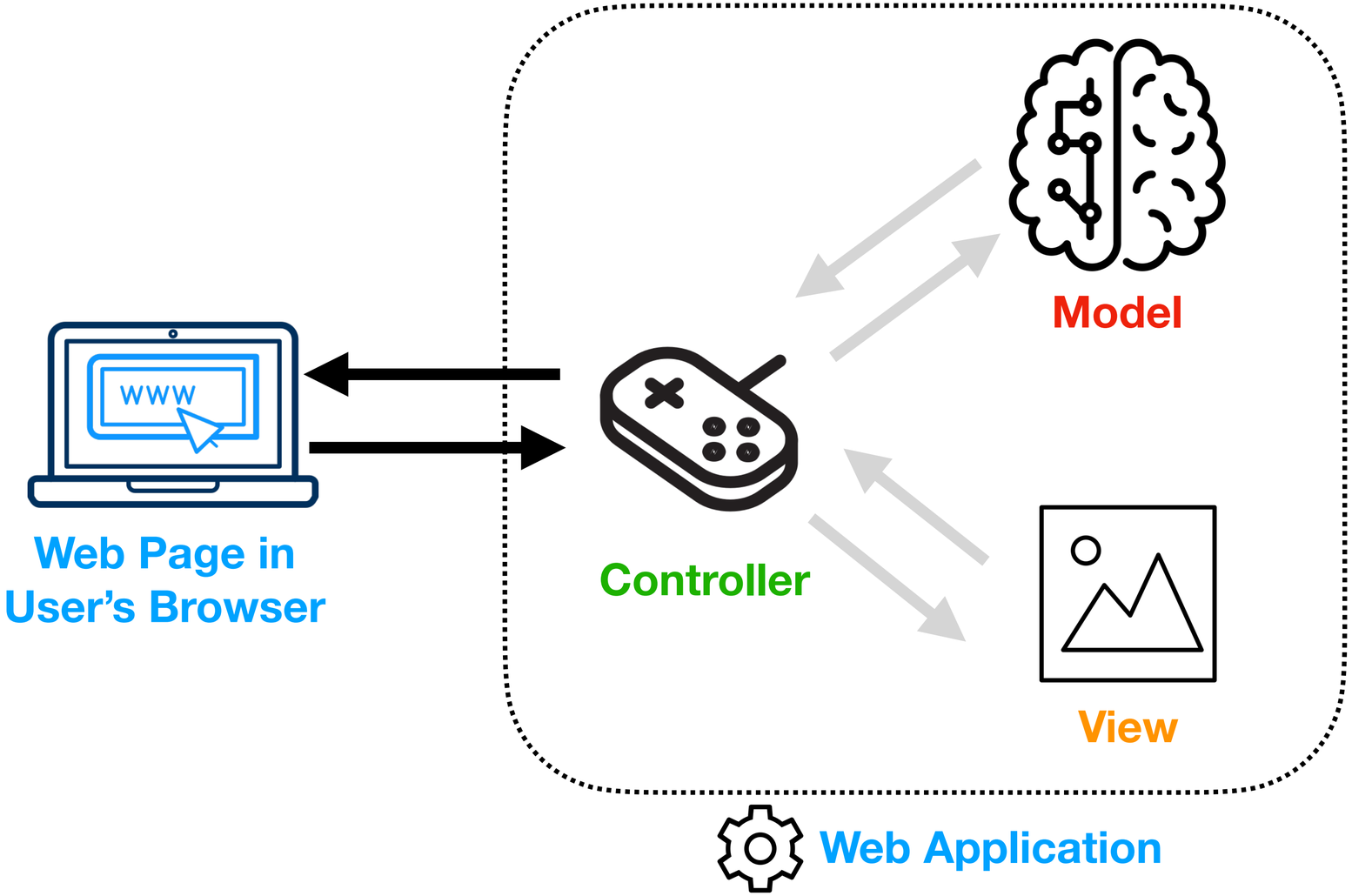

Models encode application-specific logic and manage data (in a persistent data store such as a database).

They form the "brain" of the web app.

(We won't talk about models much more in this lecture – but we'll be coming back to them later in the module.)

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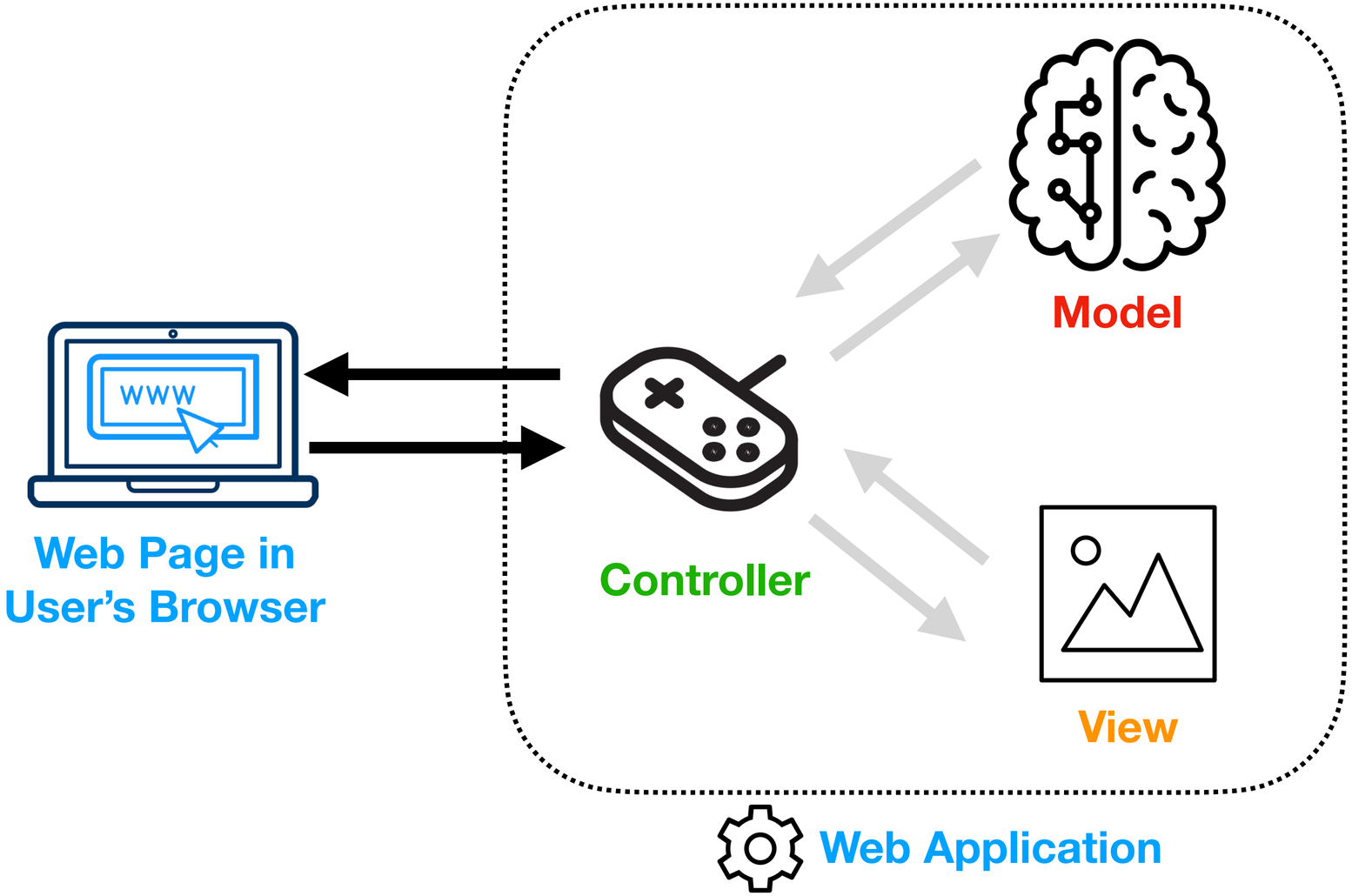

Views contain the code for rendering the front-end of the application, along with any presentation logic.

(We met Sinatra Views in the last lecture.)

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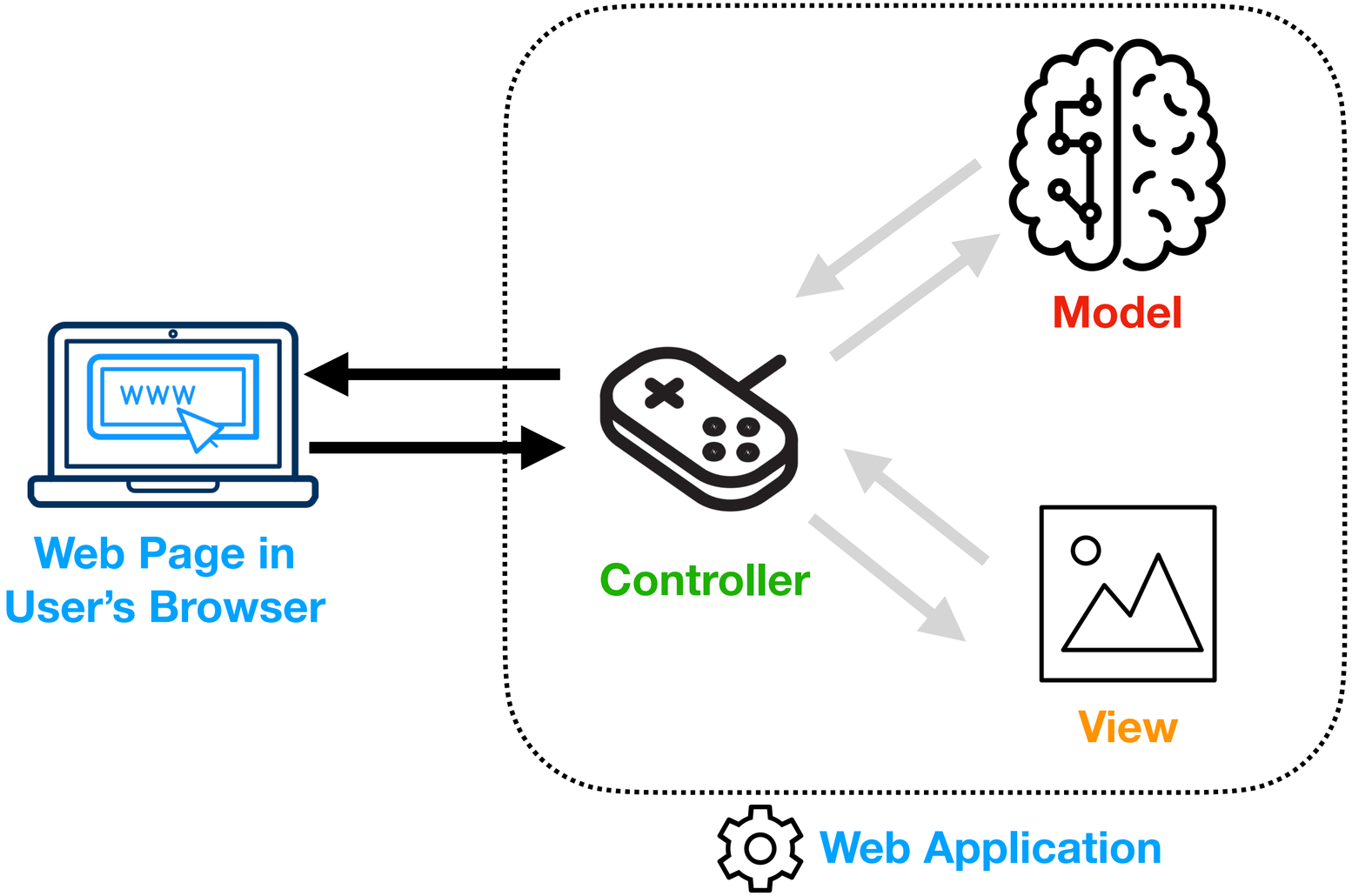


Controllers take inputs (HTTP requests) and convert them to outputs (HTTP responses, i.e. web pages) by using models and views.

(We've already met controllers in the form of HTTP verb-route pairs, and return strings from Sinatra blocks.)

Why use MVC?

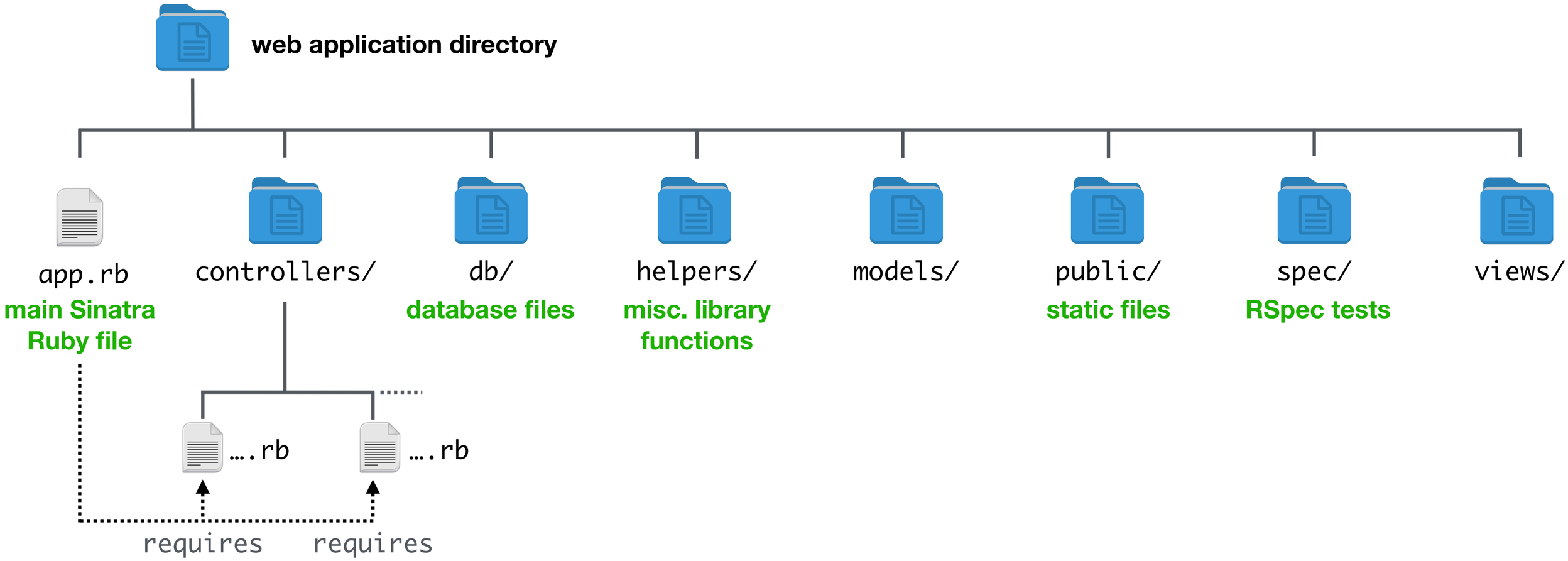
Sinatra does not enforce the use of MVC, **however it is good practice.**

MVC is based on the software engineering principle called **“separation of concerns”**.

Unrelated code is not jumbled up, so that each individual **code unit** (method, file) is more:

- **Cohesive**. Each unit does fewer things, more simply.
- **Modular and reusable**. We don’t have to re-write the same logic several times in different places in our application, obeying another software engineering maxim “don’t repeat yourself”.
- **Easier to maintain and understand**. We know where a piece of code should live, and we can get to know what it does more quickly.

Suggested File Structure of a Sinatra Application



The Main Sinatra File as an “Entry Point”

```ruby
get "/" do
  # ...
end

get "/list-products" do
  # ...
end
```

controllers/multi-controller/controllers/user_facing.rb

```ruby
require "sinatra"

require "require_all"
require_rel "controllers"
```

controllers/multi-controller/app.rb

(main Sinatra Ruby file run from the terminal)

```ruby
get "/admin/login" do
  # ...
end

get "/admin/logout" do
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end
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controllers/multi-controller/controllers/admin_system.rb

Loads all the Ruby files in a specified directory relative to the current Ruby file. Needs the “`require_all`” gem.

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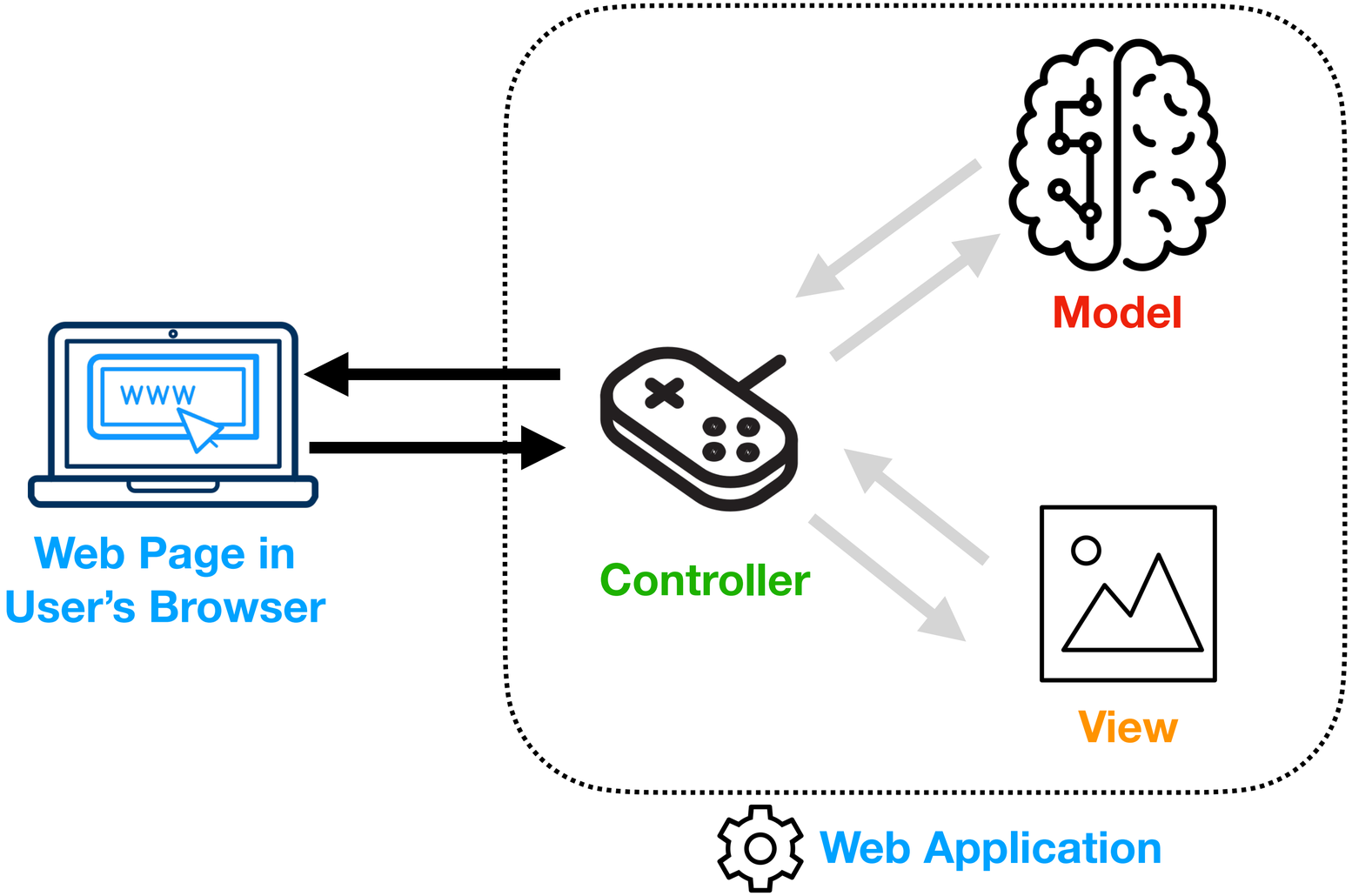

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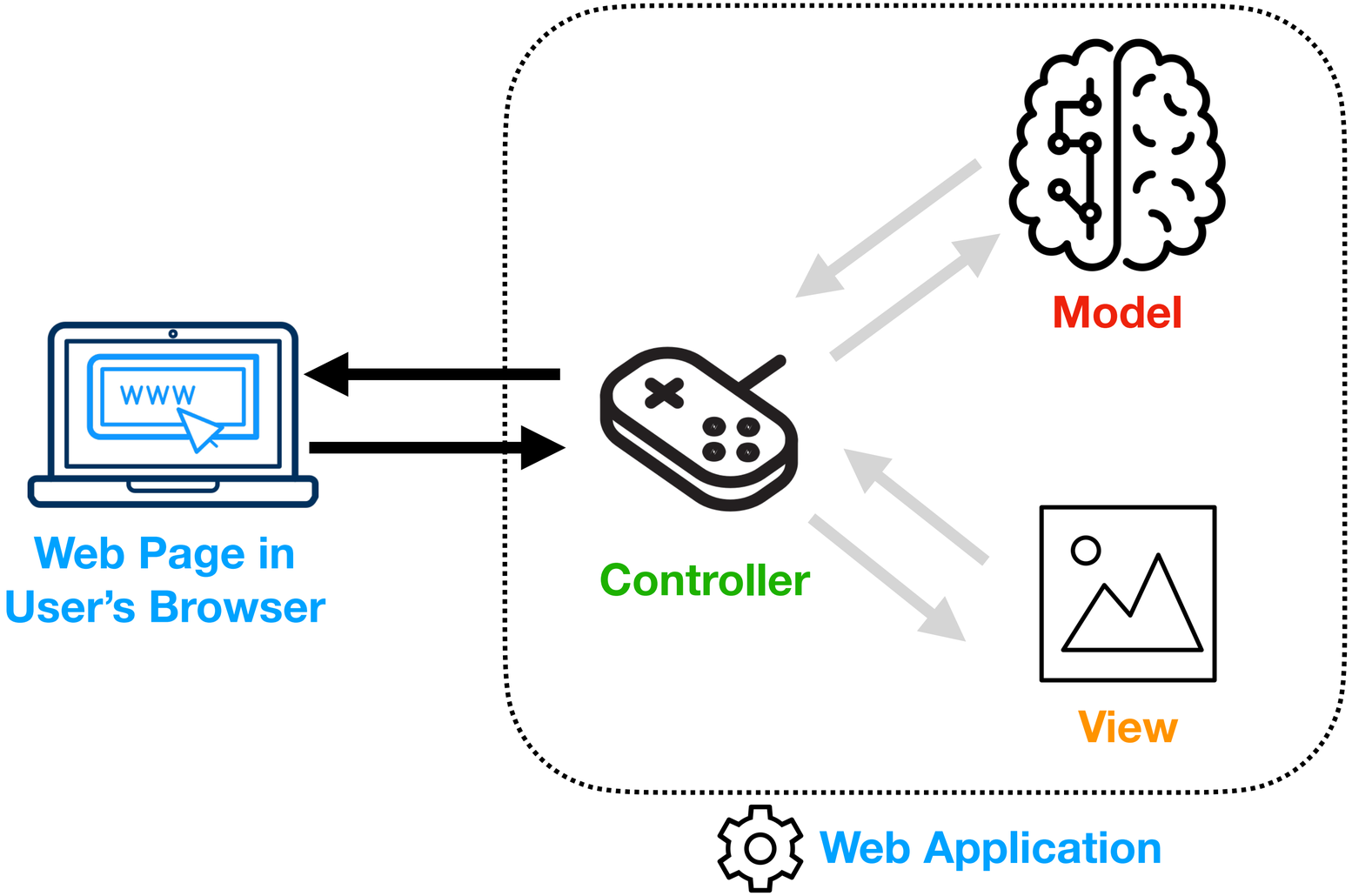

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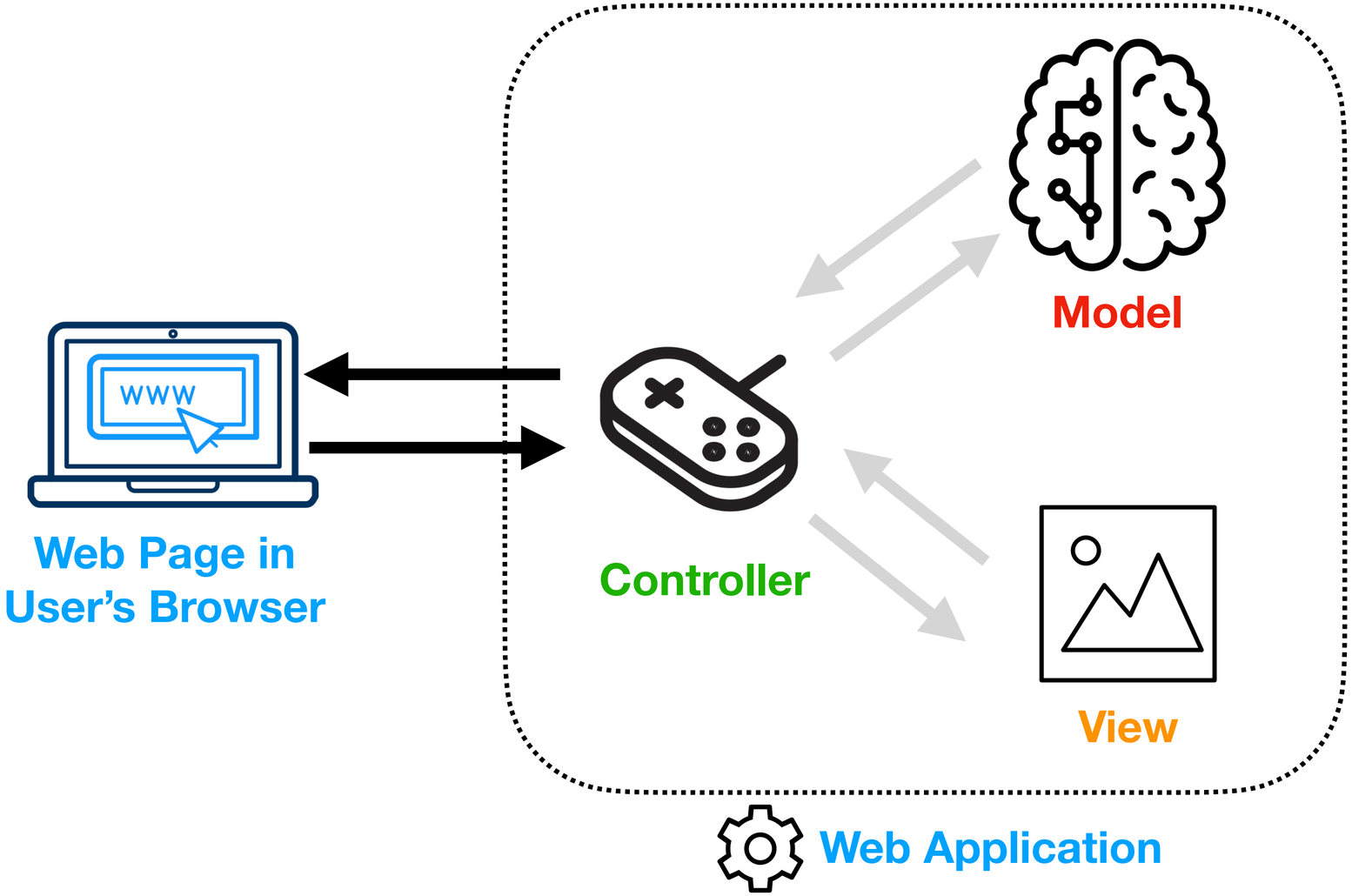

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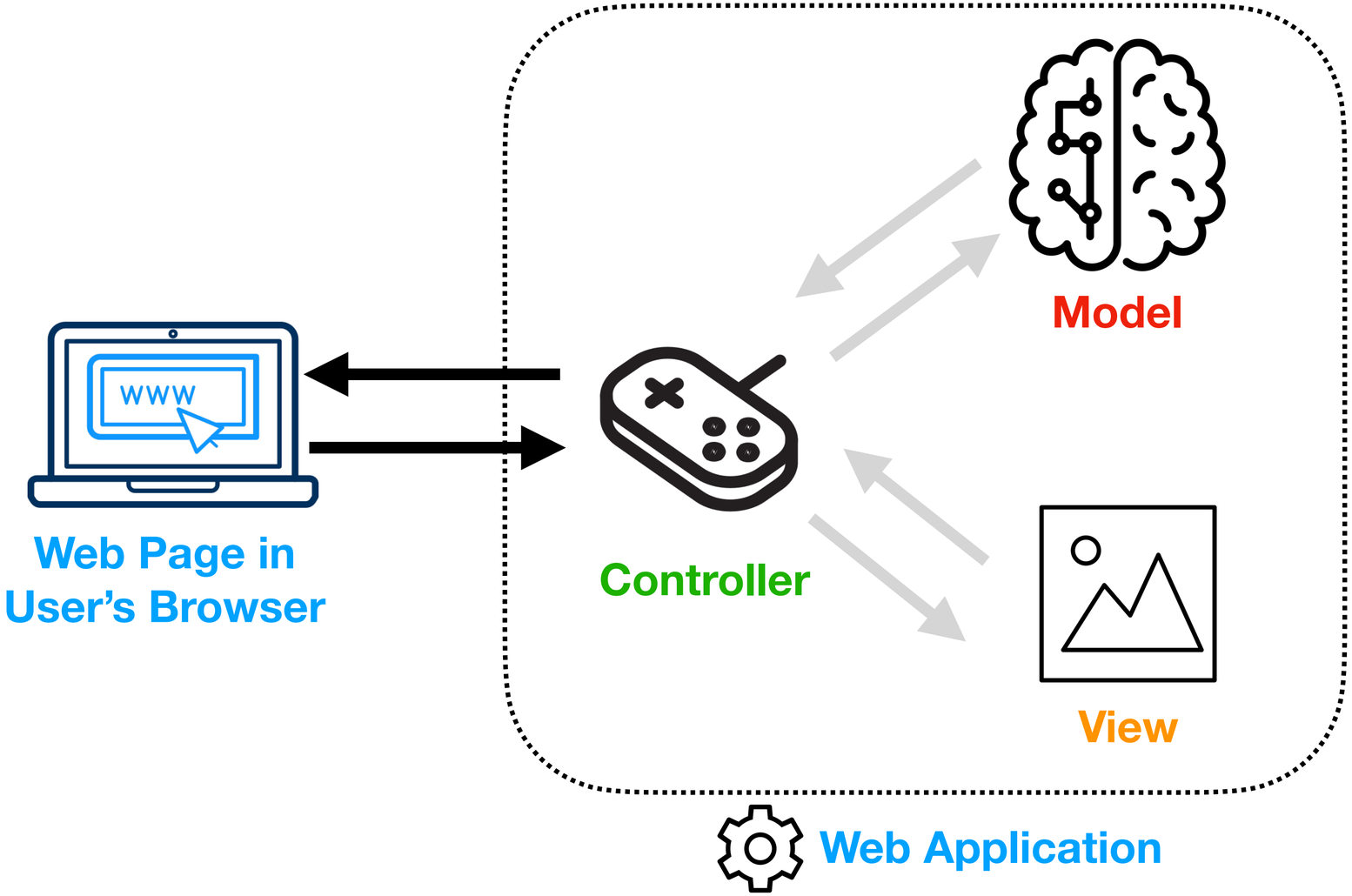

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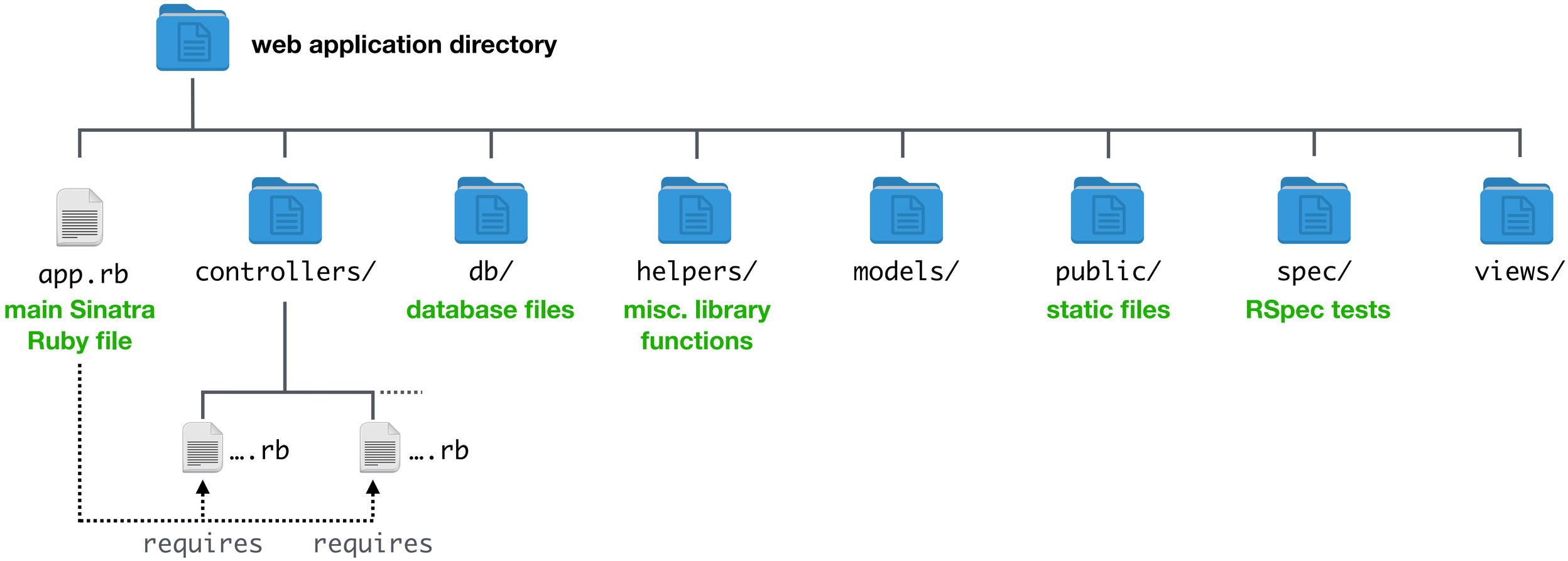

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