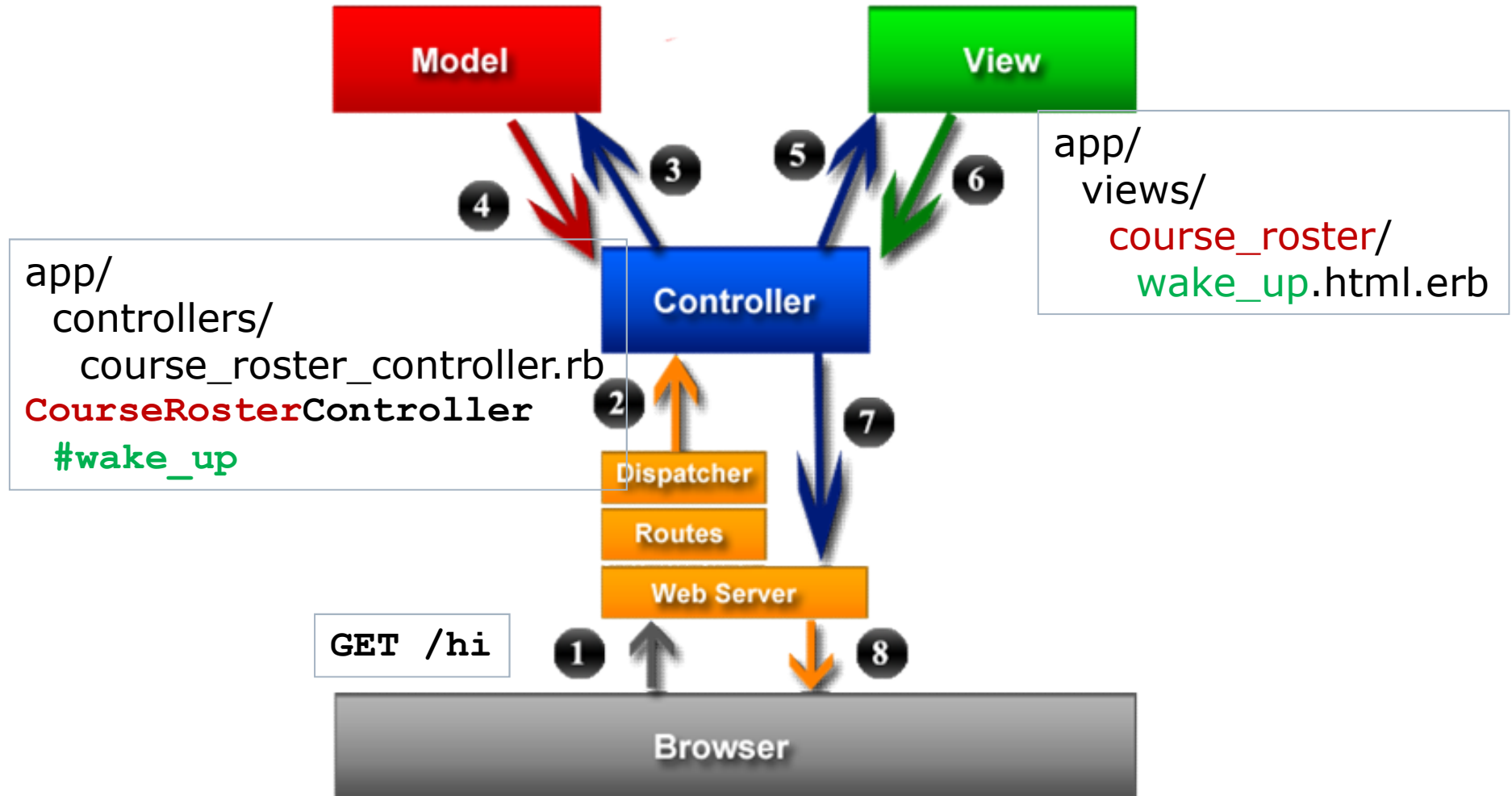


# Rails: Views and Controllers II

Computer Science and Engineering ■ College of Engineering ■ The Ohio State University

## Lecture 31

# Recall: Rails Architecture



# Wiring Views and Controllers

- A controller is just an ordinary Ruby class
  - Extends `ApplicationController`

```
class CourseRosterController <
  ApplicationController
```
  - Location: `app/controllers/`
  - Filename: `course_roster_controller.rb`
- Actions are methods in that class

```
def wake_up
  ...
end
```
- A view is an HTML page (kind of) that corresponds to that action
  - Location: `app/views/course_roster/`
  - Filename: `wake_up.html.erb`
  - Has access to *instance* variables (e.g., `@student`) of corresponding controller!

# Example: books/index.html.erb

```
<h1>Books</h1>
<table>
  <tr>
    <th>Title</th> <th>Summary</th> <th colspan="3"></th>
  </tr>
  <% @books.each do |book| %>
    <tr>
      <td><%= book.title %></td>
      <td><%= book.content %></td>
      <td><%= link_to 'Show', book %></td>
      <td><%= link_to 'Edit', edit_book_path(book) %></td>
      <td><%= link_to 'Destroy', book, method: :delete
        { confirm: 'Are you sure?' } %></td>
    </tr>
  <% end %>
</table>
<br /> <%= link_to 'New book', new_book_path %>
```

# Creating a Response

- There are 3 ways a controller action can create the HTTP response:
  1. Do nothing: defaults are used
  2. Call render method
  3. Call redirect method
- The first 2 result in HTTP status 200 (OK)
  - Body of response is the HTML of the view
- The 3<sup>rd</sup> results in HTTP status 302 (temporary redirect)
- Other responses are possible too (*e.g.*, useful for ajax)

# 1: Default Response

- If the action does not call render (or redirect), then render is implicitly called on corresponding view

```
class BooksController <
  ApplicationController

  def index
    @books = Book.all
  end
end
```

- Results in call to render

```
app/views/books/index.html.erb
```

## 2: Explicitly Calling Render

- Argument: *action* whose *view* should be rendered

```
def wake_up
  render :show # or render "show"
end
def show ...
```

- Action (show) does *not* get executed

- Action could be from another controller

```
render 'products/show'
```

- Can return text (or json or xml) directly

```
render plain: "OK"
render json: @book # calls to_json
render xml: @book # calls to_xml
```

- Note: render *does not* end action, so don't call it twice ("double render" error)

# 3: Calling Redirect

- Sends response of an HTTP redirect (3xx)
  - Default status: 302 (temporary redirect)
  - Override for permanent redirection (301)
- Consequence: client (browser) does *another* request, this time to the URL indicated by the redirect response
  - New request is a GET by default
- Need URL, can use named route helpers

```
redirect_to user_path(@user)
redirect_to @user # calls url_for(@user)
redirect_to users_path
redirect_to edit_user_path(@user)
```
- Or `:back` to go back in (client's) history



# Redirect vs Render

## □ Similarity

- Point to a different view
- Neither ends the action

**render... and return # *force termination***

## □ Difference

- Redirect entails 2 round-trips: request, action, response, request, action response
- Redirect requires a URL as argument, Render requires a view (action)

## □ Common usage for Redirect: POST-Redirect-GET pattern

# GET Blank Form, POST the Form

## Listing students

Fname	Lname	Buckid	
Marco	Pantani	22352022	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>
Primo	Camera	334432	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>
Cher		34822039	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>

[New Student](#)

RosterTool - Mozilla Fire fox

RosterTool

http://quickroster.com/students/new

### New student

Fname

Lname

Buckid

[Back](#)

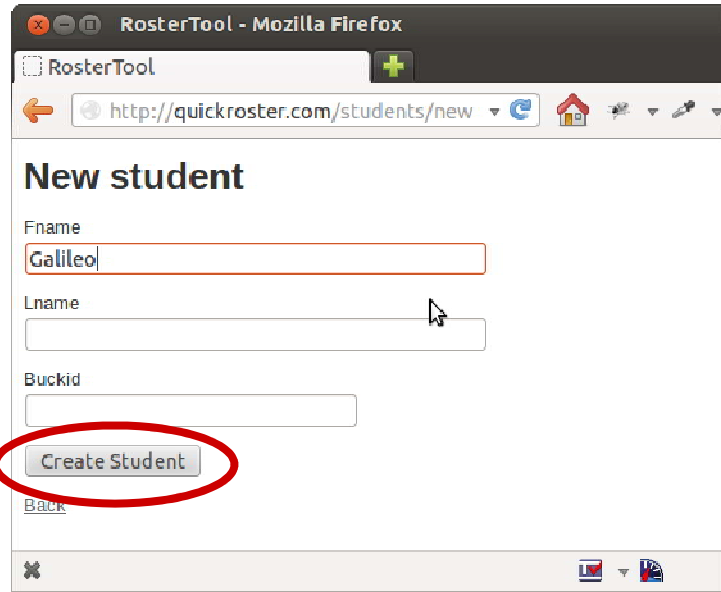
GET "a blank form"



POST /students  
lname: ..etc



# GET Blank Form, POST the Form



RosterTool - Mozilla Firefox

RosterTool

http://quickroster.com/students/new

## New student

Fname  
Galileo

Lname

Buckid

Create Student

Back

POST /students  
lname: ...etc



?

# GET Blank Form, POST the Form

RosterTool - Mozilla Firefox

RosterTool

http://quickroster.com/students/new

## New student

Fname  
Galileo

Lname

Buckid

Create Student

[Back](#)

POST /students  
lname: ...etc



Rostertool - Mozilla Firefox

Rostertool

http://quickroster.com/students/34

Student was successfully created.

Fname: Galileo

Lname:

Buckid:

[Edit](#) | [Back](#)



# GET Blank Form, POST the Form

RosterTool - Mozilla Firefox

RosterTool

http://quickroster.com/students/new

## New student

Fname  
Galileo

Lname

Buckid

Create Student

[Back](#)

POST /students  
lname: ...etc



Rostertool - Mozilla Firefox

Rostertool

http://quickroster.com/students/34

Student was successfully created.

Fname: Galileo

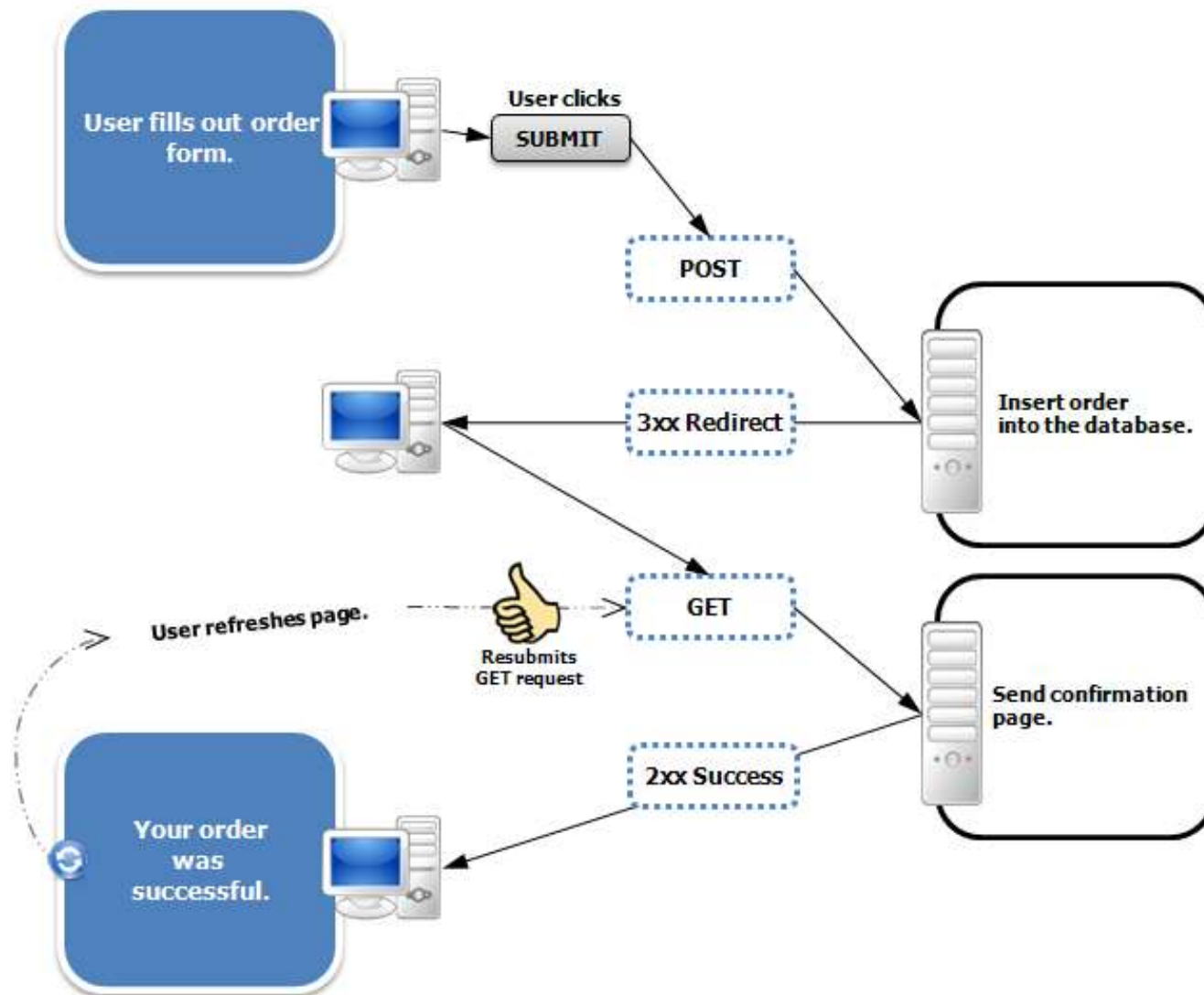
Lname:

Buckid:

[Edit](#) | [Back](#)



# POST-Redirect-GET Pattern



# Example of POST-Redirect-GET

```
class BooksController <
  ApplicationController

def create
  @book = Book.new(book_params)
  if @book.save
    redirect_to @book, notice: 'Success!'
  else
    render :new
  end
end
end
```

# Example of POST-Redirect-GET

```
class BooksController <
  ApplicationController

def create
  @book = Book.new(book_params)
  if @book.save
    redirect_to @book, notice: 'Success!'
  else
    render :new
  end
end
end
```



# Flash

- A hash returned with redirect response
  - Set by controller action issuing redirect

```
flash[:referral_code] = 1234
```
  - Common keys can be assigned in redirect

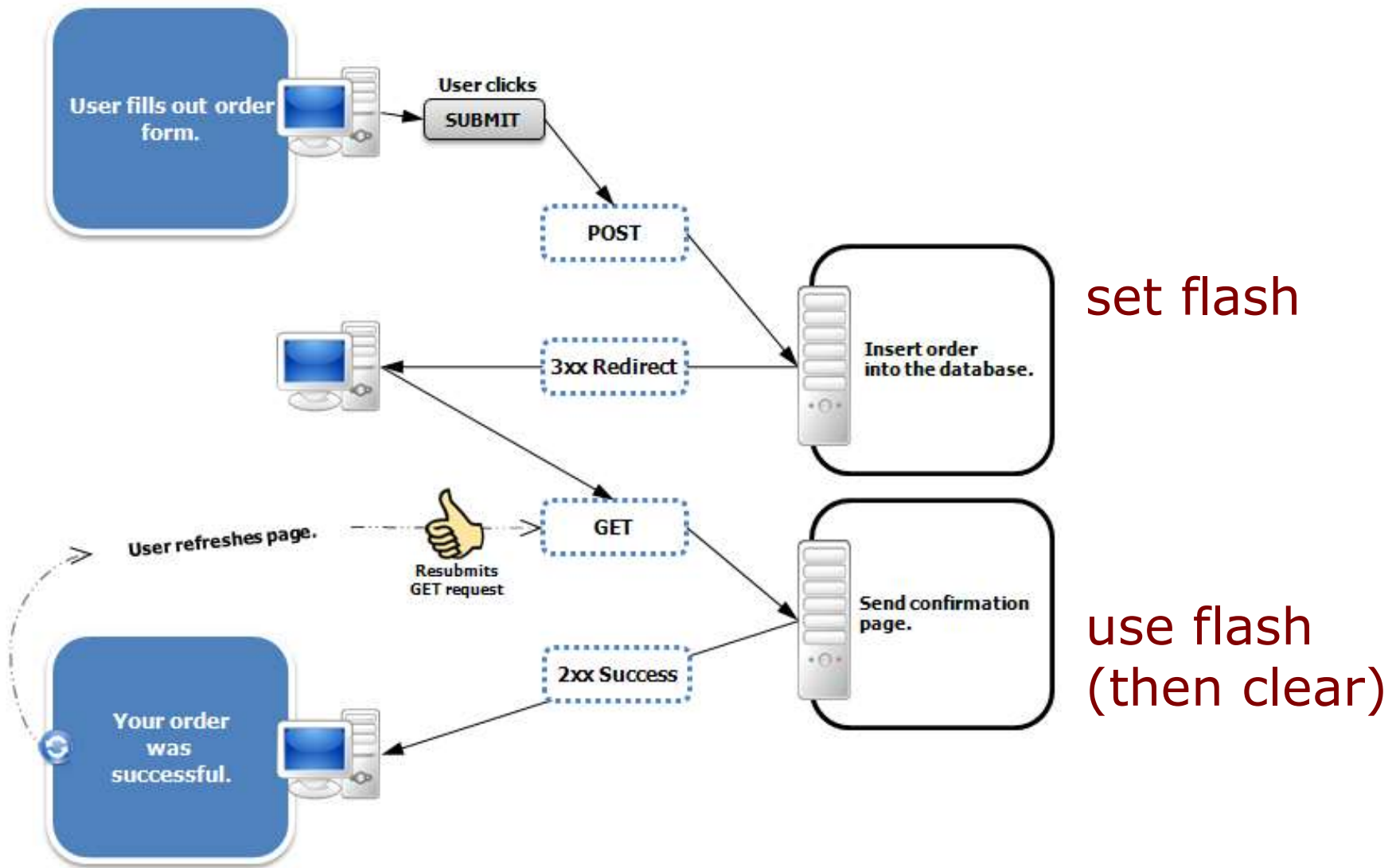
```
redirect_to book_url notice: '...'  
redirect_to book_url alert: '...'
```
- Flash included in client's *next* request
- Flash available to *next* action's view!

```
<p id="info"><%= flash[:warn] %>...
```

  - But: `flash.now` available to first view!

```
flash.now[:notice] = 'no such book'
```

# Flash: Set, Use, Clear



# Using Flash in View

```
# display just notice message
<p id="notice"><%= notice %></p>

# display all the flash messages
<% if flash.any? %>
  <div id="banner">
    <% flash.each do |key, message| %>
      <div class="flash <%= key %>">
        <%= message %>
      </div>
    <% end %>
  </div>
<% end %>
```

# Example of Render vs Redirect

```
class BooksController <
  ApplicationController

def update
  @book = Book.find(params[:id])
  if @book.update(book_params)
    redirect_to @book, notice: 'Success!'
  else
    render :edit
  end
end
end
```

# Why Is This Wrong?

```
class BooksController <
  ApplicationController

def update
  @book = Book.find(params[:id])
  if @book.update(book_params)
    redirect_to @book, notice: 'Success!'
  else
    render :edit, notice: 'Try again.'
  end
end
end
```

# Fix: Use Flash.now

```
class BooksController <
  ApplicationController

def update
  @book = Book.find(params[:id])
  if @book.update(book_params)
    redirect_to @book, notice: 'Success!'
  else
    flash.now[:notice] = 'Try again.'
    render :edit
  end
end
```

# Code Duplication

```
class BooksController < ApplicationController

  def show
    @book = Book.find(params[:id])
  end

  def edit
    @book = Book.find(params[:id])
  end

  def update
    @book = Book.find(params[:id])
    . . .
  end
end
```

# DRY, aka Single-Point-of-Control

```
class BooksController < ApplicationController
  before_action :set_book,
                only [:show, :edit, :update, :destroy]

  def show  # method is now empty!
  end

  def edit  # method is now empty!
  end

  # and other actions...

  private
  def set_book
    @book = Book.find(params[:id])
  end
end
```



# Sanatizing Inputs

```
def update
  @book = Book.find(params[:id])
  if @book.update(book_params)
    redirect_to @book, notice: 'Success!'
  else
    render :edit
  end
end

private
def book_params
  params.require(:book).permit(:title,
                                :summary)
end
```

# Recall Partial

- A blob of ERb used in multiple views
- Examples
  - Static header used throughout site
  - Dynamic sidebar used in many places
- Include in a template (or layout) with:
  - `<%= render 'menu' %>`
  - `<%= render 'users/icon' %>`
- Filename of partial has "\_" prefix
  - Default location: app/views
    - `app/views/_menu.html.erb`
  - Organize into subdirectories with good names
    - `app/views/users/_icon.html.erb`

# Example: views/layouts/applic...

```
<!DOCTYPE html>
<html>
  ... etc
<body>
  <%= render 'layouts/header' %>
  <div class="container">
    <%= yield %>
    <%= render 'layouts/footer' %>
  </div>
</body>
</html>
```

# Example: views/layouts/\_footer

```
<footer class="footer">
  <small>
    <a href="http://www.osu.edu">OSU</a>
  </small>
  <nav>
    <ul>
      <li><%= link_to "About",
                    about_path %></li>
      <li><%= link_to "Contact",
                    contact_path %></li>
    </ul>
  </nav>
</footer>
```

# Recall: Tricks with Partials

□ Content of partial can be customized with arguments in call

□ In call: pass a hash called `:locals`

```
<%= render partial: "banner",  
      locals: { name: "Syllabus",  
               amount: @price } %>
```

□ In partial: access hash with *variables*

```
<h3> <%= name %> </h3>
```

```
<p> Costs <%= "#{amount}.00" %></p>
```

# Parameter Passing to Partials

- Partial also has one *implicit* local variable
- In the partial, parameter name *same* as partial

```
# in partial nav/_menu.html  
<p> The price is: <%= menu %></p>
```

- Argument value assigned explicitly  

```
<%= render partial: 'nav/menu',  
          object: cost %>
```

- Idiom: Begin partial by renaming this parameter

```
# in partial nav/_menu.html  
<% price = menu %>
```

# Example: books/index.html.erb

```
<h1>Books</h1>
<table>
  <tr>
    <th>Title</th> <th>Summary</th> <th colspan="3"></th>
  </tr>
<% @books.each do |book| %>
  <tr>
    <td><%= book.title %></td>
    <td><%= book.content %></td>
    <td><%= link_to 'Show', book %></td>
    <td><%= link_to 'Edit', edit_book_path(book) %></td>
    <td><%= link_to 'Destroy', book, method: :delete
      { confirm: 'Are you sure?' } %></td>
  </tr>
<% end %>
</table>
<br /> <%= link_to 'New book', new_book_path %>
```

# Refactored books/index.html.erb

```
<h1>Books</h1>
<table>
  <tr>
    <th>Title</th> <th>Summary</th> <th colspan="3"></th>
  </tr>
<% @books.each do |book| %>
  <%= render 'detail', object: book %>

<% end %>
</table>
<br /> <%= link_to 'New book', new_book_path %>
```



# Corresponding Partial

```
<tr>
  <td><%= detail.title %></td>
  <td><%= detail.content %></td>
  <td><%= link_to 'Show', detail %></td>
  <td><%= link_to 'Edit', edit_book_path(detail) %></td>
  <td><%= link_to 'Destroy', detail, method: :delete
                confirm: { 'Are you sure?' } %></td>
</tr>
```

# Demo: Scaffolding

- Generate many things at once
  - Migration for table in database
  - Model for resource
  - RESTful routes
  - Controller and corresponding methods
  - Views for responses
- Command

```
$ rails g scaffold Student lname:string  
buckid:integer  
$ rails db:migrate  
$ rails server
```

# Summary

- Controller generates a response
  - Default: render corresponding view
  - Explicit: **render** some action's view
  - Explicit: **re-direct**
  - POST-redirect-GET (aka "get after post")
  - Flash passes information to next action
- Reuse of views with partials
  - Included with render (*e.g.*, `<%= render...>`)
  - Filename is prepended with underscore
  - Parameter passing from parent template
  - Can iterate over partial by iterating over a collection

# Partials With Collections

- Iteration over partials is common

```
<% for item in @items %>
  <%= render partial: 'item_brief',
    object: item %>
<% end %>
```

- Short-hand: Replace above with

```
<%= render partial: 'item_brief',
  collection: @items %>
```

- Renders partial once for each element
- Initializes partial local variables each time
  - `item_brief` (the member of the collection)
  - `item_brief_counter` (integer 0..size of collection)
- Can also add separator *between* each partial

```
<%= render partial: 'item_brief',
  collection: @items,
  spacer_template: 'line_space' %>
```

# Partial Super Shorthands

- For a model *instance* (e.g. `@book`) in a template
  - `<%= render @book %>`
  - Includes `_book.html.erb` partial
  - Passes in `@book` to partial (as `:object`)
  - Value available as local variable `book` in partial
- For a model *collection* (e.g. `@books`) in a template
  - `<%= render @books %>`
  - Call `render` multiple times, once/member
  - Each call uses same partial (`_book.html.erb`)
  - Each call passes in different member as argument
  - Value available as local variable `book` in partial
- Returns `nil` if collection is empty
  - `<%= render @books || 'No books to see.' %>`