Knowledge Test K3

COMP 4081 • Software Engineering • Fall 2019

Solutions

Name: _____ , _____

           Last name   First name

Rules:

- No potty breaks.
- Turn off cell phones/devices.
- Closed book, closed note, closed neighbor.

- <u>WEIRD!</u> Do not write on the backs of pages. If you need more pages, ask me for some.

Reminders:

- Verify that you have all pages.
- Don't forget to write your name.
- Read each question <u>carefully</u>.
- Don't forget to answer <u>every</u> question.

1. [4] For each of the figures below, tell which box in Figure 1 corresponds to the figure by writing the appropriate label (A, B, C, etc.) next to the figure below.

Figure 2: _____A_____

Figure 3: _____B_____

Figure 4: _____C_____

Figure 5: _____F_____

2. [1] Figure 5 contains a call to the `image_tag` helper method. Where is the image referenced in the call (`university-of-memphis-logo.png`) stored?

    a) Top-level project folder

    (b) `app/assets/images` folder

    c) `app/views/pages` folder

3. [1] If you wanted to add to the page shown in Figure 2 a hyperlink to the `uofm-driven` page, which of the following lines would be the best one to add to the code in Figure 5?

    a) `<a href="/uofm-driven">UofM Driven</a>`

    b) `<%= link_to "UofM Driven", "/uofm-driven" %>`

    (c) `<%= link_to "UofM Driven", uofm_driven_path %>`

4. [1] What would happen if you entered the URL `http://localhost:3000/` into the browser?

    a) A generic Rails welcome screen would be displayed

    b) The `uofm-cs` page would be displayed, and the URL would not change

    (c) The `uofm-cs` page would be displayed, and the URL would change to `http://localhost:3000/uofm-cs`

5. [1] What would the `uofm_driven_path` helper method return?

   a) `"/uofm-driven"`

   b) `"/uofm_driven"`

   c) `"http://localhost:3000/uofm-driven"`

   d) `"http://localhost:3000/uofm_driven"`

6. [1] What would the `uofm_driven_url` helper method return?

   a) `"/uofm-driven"`

   b) `"/uofm_driven"`

   c) `"http://localhost:3000/uofm-driven"`

   d) `"http://localhost:3000/uofm_driven"`

7. [1] Which part of the route in Figure 3 causes Rails to generate the `uofm_driven_path` and `uofm_driven_url` helper methods?

   a) `'uofm-driven'`

   b) `to: 'pages#uofm_driven'`

   c) `as: 'uofm_driven'`

8. [3] How would the HTML sent to the browser be different than the HTML.ERB code in Figure 5?

   The embedded Ruby image_tag element would be replaced with a generated HTML <img> element. Otherwise, the rest of the HTML code would be the same.

9. Entering the URL `http://localhost:3000/uofm-cs` into the browser sets off a series of events. For each labeled arrow (a, b, c, etc.) in Figure 1, describe in plain English the event that would happen at that point in the series. Note that each of the events a and d have two arrows, which was done simply to help clarify the flow the event and does not mean that there are two parts to the event.

a) [2] **The browser sends an HTTP GET request to the Rails web server.**

b) [2] **The router invokes the uofm_cs controller action based the route that matched the HTTP request.**

c) [2] **The controller renders the uofm_cs.html.erb view.**

d) [2] **The controller sends to the browser an HTTP response containing the rendered HTML.**

10. [6] Imagine that you wanted to add a new page, `uofm-tigers`, to the web app depicted in the figures. (The actual content of the page is not important.) List all the files you would create and all the files that you would update. For each file you list, describe in plain English the what you would put in the file.

Update routes.rb: Add a new GET route for the uofm-tigers page that maps to a new controller action.

Update pages_controller.rb: Add the new controller action such that it renders a new HTML.ERB view.

Create uofm_tigers.html.erb: Add the new HTML.ERB code for the view.

11. [3] Imagine that you had a file `app/views/pages/foo.html.erb`, and you wanted to replace the HTML.ERB template that is currently being used for the `uofm-cs` page with this "foo" one. Tell exactly how you would change the code in Figure 4 to accomplish this change.

In the PagesController, change the uofm_cs method such that the code:

render :uofm_cs

Is changed to:

render :foo

Bonus Problem

1. [6] For each component (labeled A, B, C, etc.) in Figure 1, write the name of the component in the Rails MVC architecture.

A) **Browser**

B) **Router**

C) **Controller**

D) **Model**

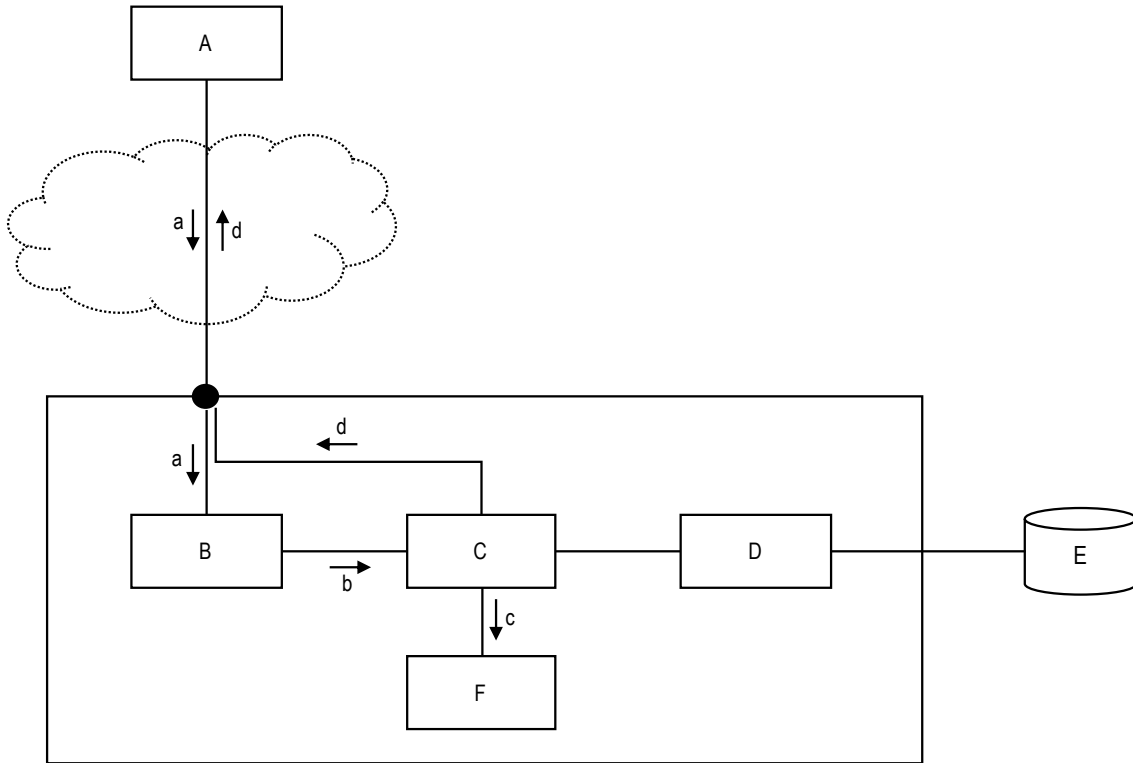E) **Database/DBMS**

F) **View**

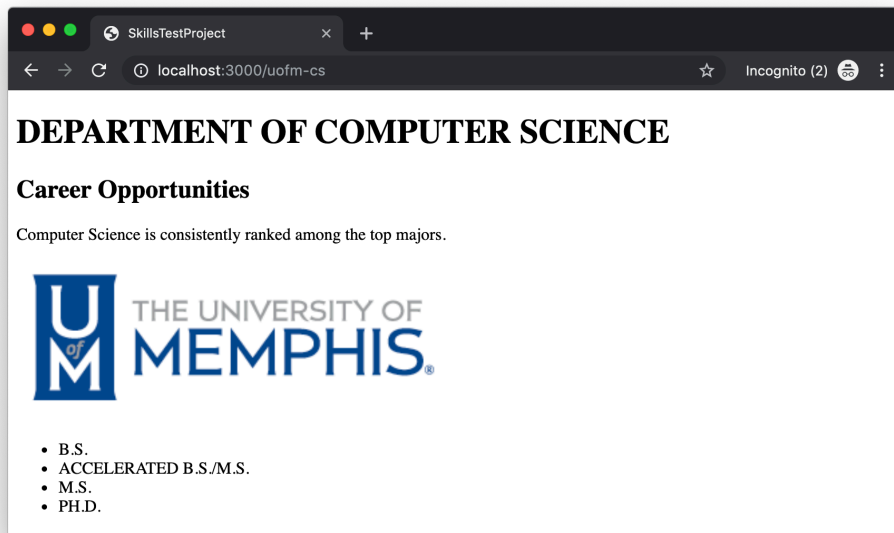# Figures

Figure 1. Architecture diagram.

Figure 2. Screen shot of web app.

```
Rails.application.routes.draw do
  get 'uofm-driven', to: 'pages#uofm_driven', as: 'uofm_driven'
  get 'uofm-cs', to: 'pages#uofm_cs', as: 'uofm_cs'
  root to: redirect('/uofm-cs', status: 302)
end
```

Figure 3. `config/routes.rb`

```
class PagesController < ApplicationController

    def uofm_driven
        respond_to do |format|
            format.html { render :uofm_driven }
        end
    end

    def uofm_cs
        respond_to do |format|
            format.html { render :uofm_cs }
        end
    end

end
```

Figure 4. `app/controllers/pages_controller.rb`

```
<h1>DEPARTMENT OF COMPUTER SCIENCE</h1>

<h2>Career Opportunities</h2>

<p>
    Computer Science is consistently ranked among the top majors.
</p>

<%= image_tag "university-of-memphis-logo.png", height: 150 %>

<ul>
    <li>B.S.</li>
    <li>ACCELERATED B.S./M.S.</li>
    <li>M.S.</li>
    <li>PH.D.</li>
</ul>
```

Figure 5. `app/views/pages/uofm_cs.html.erb`