

LBSC 690: Information Technology
Mid-Term (Take Home) Exam
Sample answers

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Question 1:

You are working at an online library, run by an organization incorporated in the US, whose website is at www.youmelib.com. Currently, the website is hosted at a data center in Dallas, Texas. The library director is thinking of moving the website to a data center in Munich, Germany, because she has received a cheaper quote for that location. However, she has a number of concerns about performing the move:

- 1. Will the domain name have to change to www.youmelib.com.de, since the web site is being moved to Germany?*
- 2. Even if the domain name stays the same, how will web browsers be able to find the new site, since it is moving to a new physical location?*
- 3. If a legal or regulatory issue comes up, which jurisdiction will the website be under: US, German/EU, or something else?*

Write a few sentences addressing each of these questions. Where the issue is technical, give a brief description of the technical matters involved. Where the answer is unclear, say so, and mention some of the issues involved.

- 1. No, the domain name would not have to change to a German domain. The physical location of the server does not constrain the domain name of the service. Site owners choose domain names to indicate (though not certify) the location of their organization, their intended audience, or the nature of their service. Having a US site use a German domain name would be positively misleading.*

2. When the web site gets moved to a new server, the IP address of the web site will change to that of the new server. The library needs to update the DNS record of the domain name so that it points to the new IP address. Clients will look up the new IP address in the DNS database. Finding the way from the client to the new IP address is done by the usual IP routing algorithms.
3. The legal jurisdictions a web service is under is unclear. The US government past claims the right to seize domains in the .com domain space, and sometimes to prosecute the owners of such domains. The server itself and the data on it may be subject to German and EU law (such as data privacy regulations). From a legal standpoint, it may be more straightforward to have the site hosted under the same jurisdiction as the domain name and the organization.

[40 minutes in total]

Question 2:

Your aunt wants to set up an online dedication page to her cat. She has uploaded an image of the cat to `http://bit.ly/yCdA8w`. The cat is called “Mr. Spinks”. The web page is to have the following features:

1. *The title “My Best Friend” is to appear in the browser title bar*
2. *The cat’s name is to appear in large letters on the top of the page*
3. *The cat’s picture is to appear below the cat’s name*
4. *The following three of the cat’s virtues are to be listed, in a bullet-point list, below the cat’s picture:*
 - *“Mr. Spinks doesn’t judge me”*
 - *“Mr. Spinks doesn’t tell stories about me”*
 - *“Mr. Spinks doesn’t pretend to like my food”*
5. *The background color of the page is to be chartreuse*
6. *The cat’s name is to be displayed in italic font*

Create a web page that meets these requirements. Use CSS wherever appropriate. Copy the entire content of the web page and the CSS file (as source code) into your answer. Also, upload the page so that it displays at:

`http://terpconnect.umd.edu/~YOURID/mrspinks.html`

The exact URL above must be used, with YOURID replaced by your directory id.

mrspinks.html:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<html>
  <head>
    <link rel="stylesheet" type="text/css" href="mrspinks.css">
    <meta http-equiv="content-type" content="text/html; charset=UTF-8">
    <title>My Best Friend</title>
  </head>

  <body>
    <h1><span class="mrspinks">Mr. Spinks</span></h1>

    <ul>
      <li><span class="mrspinks">Mr. Spinks</span> doesn't judge me
      <li><span class="mrspinks">Mr. Spinks</span> doesn't tell stories
        about me
      <li><span class="mrspinks">Mr. Spinks</span> doesn't pretend to
        like my food
    </ul>
  </body>
</html>
```

mrspinks.css:

```
body { background: #7FFF00 }
span.mrspinks { font-style: italic }
```

[40 minutes in total]

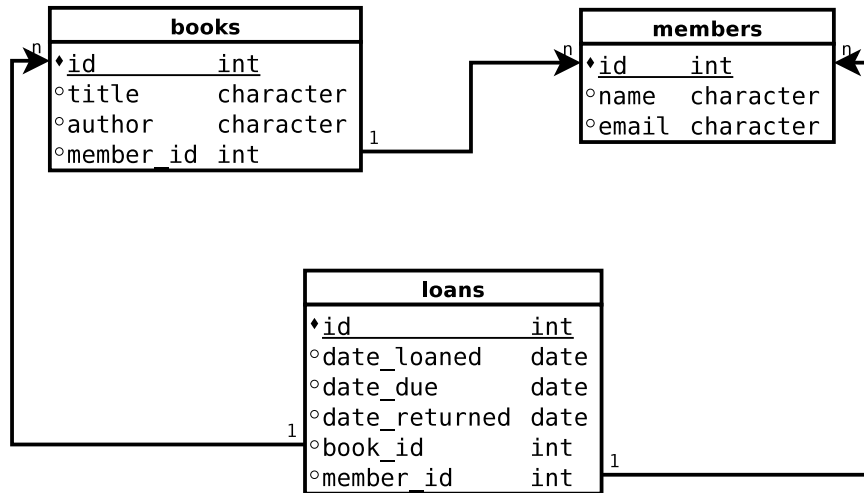
Question 3:

You and your friends decide to set up a mutual lending library for your personal book collections, and you have been asked to design the database for it. The database will list, for each group member, all the books that that group member owns. Then, when a group member borrows a book from another group member, the database will record who has borrowed the book and when it is due. Though only one person can borrow a book at any one time, group members want to keep a record of all the books that a person has borrowed over time.

Draw up a design for the database as an entity-relationship diagram. Indicate in the diagram the properties you wish each entity to have. Draw the relations

between the entities, including their cardinality (one-to-one, one-to-many). Indicate the foreign key, primary key relations.

NOTE: the drawing may be made (neatly) by hand. If you choose to submit by electronic copy, time taken to scan in the drawing is **not** included in exam time.



[40 minutes in total]