Lecture #9: Reverse Engineering; Functional / Technical Specifications; Open Office Base; New Homework
Administrivia

- **Readings:**
  - Reading posted after class

- **Homework**
  - New homework!
On Today’s Menu

- Busy!
- Finish IMDB Reverse Engineering Example
- Discuss How To Implement Relationships
- Functional Specifications
- Technical Specifications
- Open Office Base
- Homework
IMDB Example

- Last week
  - movie
  - person
  - role
- Reference Tables
  - mpaa_rating
  - personal_title
  - suffix_title
  - role_type

- TODO
  - user_review
  - award
Relating - Implementation

```
<table>
<thead>
<tr>
<th>Member</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>- memberID</td>
<td>- team_name</td>
</tr>
<tr>
<td>- last_name</td>
<td></td>
</tr>
<tr>
<td>- first_name</td>
<td></td>
</tr>
<tr>
<td>- phone</td>
<td></td>
</tr>
</tbody>
</table>

```

```
<table>
<thead>
<tr>
<th>n..*</th>
<th>plays for</th>
<th>0..1</th>
</tr>
</thead>
<tbody>
<tr>
<td>is captain of</td>
<td></td>
<td>0..1</td>
</tr>
<tr>
<td>1..1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```
Relating Implementation

```
Member
- memberID
- last_name
- first_name
- phone

1..1 sponsors -->
```
Relating - Implementation

user

name

state_name

page

curl

title

tumbnail_url

likes 0..n

0..n
Specifications!

- **Functional**: What is the system supposed to do.
- **Technical**: How the system accomplishes its purpose.
Functional Specifications

- What is the subject of this database?
  - Is it about paintings in a gallery?
  - Statistics on baseball players?
  - Checking account transactions at a bank?

- What are the goals of this database?
  - Do the users require an interactive website?
  - Extensive accounting reports?
  - Is this a marketing tool?
Functional Specifications

- Who are the users or audience for this database system?
  - Will this database be used by administrative staff to track transactions?
  - Will it be used by teachers to record grades and other student information?
  - Will it be used by researchers to record data "on the fly" as they conduct experiments?
  - Will it be used by children?
Functional Specifications

- What are the data sources that you envision?
  - Will the system allow for data imports (e.g. text files), data entry by users, or both?

- What kind of output do the users need?
  - Will this system produce web pages, printed reports, "email blasts", mailing labels, and/or other output?

- Will this system require dynamic or static updates to a website?
Functional Specifications

- What are the approximate file sizes that you envision?
  - Will the files fit comfortably on a Mac or a PC as a desktop application or will this be a server-side application?

- Are there special business rules and/or calculations that pertain to this industry?
  - For example, it is important to specify how interest is calculated for a specific type of account in a banking transaction system.
  - Will the calculations be audited as required by law (e.g. in the banking industry)?
Functional Specifications

- How many data entry screens are needed and for what kinds of data?
  - How much data validation should happen in the data entry screens and/or will you need to plan for programs to "scour" the data during low usage times such as during the night?

- Give examples of some of the reports or output that will be required
  - e.g. the contents of several reports, whether mailmerges and/or labels are needed, data extracts
Functional Specifications

- Are there security requirements?
  - For example, would a production version of your system require confidential data such as medical patients' records?
- Is user authentication needed? and if so, on how many levels (supervisory, staff, etc)
- Will there be special considerations with regards to the data types?
  - Will the system need to handle a large volume of images, documents, moving image files or other special files?
Let's Play 13 Questions

- What is the subject of this database?
- What are the goals of this database?
- Who are the users or audience for this database system?
- What are the data sources that you envision?
- What kind of output do the users need?
- Will this system require dynamic or static updates to a website?
- What are the approximate file sizes that you envision?
13 Questions Continued

- Are there special business rules and/or calculations that pertain to this industry?
- How many data entry screens are needed and for what kinds of data?
- Give examples of some of the reports or output that will be required?
- Are there security requirements?
- Is user authentication needed?
- Will there be special considerations with regards to the data types?
Technical Specifications

- How the system will work.
- More questions
Technical Specifications

- What are the hardware and software requirements to run this system?
  - In our case, we will work on the web using PHP & MySQL
  - Minimum amount of disk storage for your initial data?

- Deployment scenarios:
  - Desktop, web, mobile, app?

- Backup requirements?
Technical Specification - Database

- List all of the tables to be included in the database and a brief description (one or two sentences) to describe each table.
- List the relationships among the tables. (This is most commonly done as a graphic but you may write it out if you prefer.)
- Describe the columns
Technical Specifications - Database Tables

- For each column in each table describe:
  - field name: a brief name which is easy to remember (e.g. "artist_name")
  - field description: a description of the information (e.g. "the name of the artist")
  - field data type: text, numeric, logical, date, or other; Specify any specific data type such as a URL or an image. For example, the artist's name would be a text field.
  - field length: This applies to text and numeric fields. Numeric fields can be described with a specific length for integers (e.g. "8") or with the number of places represented past the decimal (e.g. "6,2" for a number such as 999.99). Text field lengths are specified with an integer, e.g. the artist_name field could be set with a length of 30.

- Be sure to list any important validation rules here. For example, if the field contains the room number in a hotel reservation system, be sure that the room number applies to an actual room.