CIS551 Final Project: Thought Experiments

Paul Elliott
University of Oregon
paule@cs.uoregon.edu

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1 How to Find My Project

The web frontend of my project may be found at the following URL:

```
http://ix.cs.uoregon.edu/~paule/databases/project/
```

and the source code may be found on ix in the following location:

```
/home/users/paule/public_html/databases/project
```

and lastly, you may access my database using this connection information:

```
server = ix.cs.uoregon.edu
database = project
user = guest
password = guest
port = 3525
```

2 Summary

I would like to build a database for storing and composing multimedia thought experiments. What I define to be a **thought experiment** is *a written exposition (journal entry, idea, blog post, etc) containing one to many sections of text and zero to many links or attachments of multimedia*. Most of the stored data will be text-based, with occasional serialized data storage for multimedia (though likely a far better solution would be to store urls to cloud-stored media). The applications that I see desirable are as follows:

- Compose and store thought experiments;

- View thought experiments in arbitrary categories (keyword searches, etc);

- Modify, augment and edit thought experiments;

- Comment on thought experiments and link them to other thoughts; and

- Load thought experiments into a common format (pdf, html, jpeg, etc).

3   Logical Design

A thought experiment has a title, date created, last modified, and an experiment_category (idea, blog post, journal, to do, etc). Experiment categories belong to a mutable set of categories. A thought experiment may contain one to many text sections, and zero to many multimedia attachments. Multimedia attachments can be outside web links, audio, video, or images. The attachments can be handled via serialization in the form of blob data (maybe ok for images), but would probably do better with a stored url to an external media source. Text sections have a date created and date modified, a paragraph-ish length bit of text, and a thought_category (separate from experiment_category, but similar idea: thought, poem, prose, question, reflection, quote, etc). All text sections, multimedia, and thought experiments can be commented on, and comments include date created, references (one of immutable set of text, audio, video, picture, link, thought_experiment, etc), and the actual comment. All thought experiments, multimedia, and text sections can have a mood genre.

4   Physical Database Design and Table Contents

For an in-depth look at my physical database design and table contents, check out the attached mysqldump in *thought_experiments.sql*. For a general overview, however, I will note that the database contains tables for the three primary entities (thought experiments, text sections, multimedia), tables for comments and moods, and associative tables which connect the primary entities.

5   Physical Application Design

My thought experiments site has a few main applications that leverage the underlying database. The first is the ability to create a new thought experiment: one specifies a title, category, text and text category, and optionally media attachments in the form of relative paths or URLs. Inserting a new thought experiment affects many tables:

- ThoughtExperiment;

- ThoughtCategory (used to populate the category dropdown);

- TE_Cat (creates a record associating the new thought to a category);

- TextSection and TE_TextSec (store the text associated with the thought);

- TextCategory (used to populate the category dropdown);

- TS_Cat (creates a record associating the new text to a category); and

- (Optionally) Multimedia and TE_Mult (for Multimedia attachments).

I will note that insertion is a fairly complex task. There are quite a few intricate relationships that must be maintained here in order to properly insert the entire thought experiment.

Another set of applications involve browsing the entire set of thought experiments, text sections, or multimedia. These applications affect their respective tables. My site allows a user to easily switch between viewing these groupings, and relies on the database to populate associated views.

Yet another set of applications enable users to comment on thought experiments, text sections, or multimedia. Creating comments primarily involves the Comments table, but also involves the respective tables containing the entities being commented on. These tables allow the user to view a given entity before and during the commenting process.

Lastly, a final set of applications allow users to add moods to the major three entities. Moods are populated in a dropdown from the Moods table, and successful insertions involve creating entries in the appropriate association tables (TE_Mood, TS_Mood, and Mult_Mood).

In addition to these major applications, there are also some minor applications interleaved throughout the site. For example, the home page counts the number of thought experiments to give a quick summary of the site's usage. Such minor applications improve the user experience of the site.

6   User's Guide

My site is relatively easy to use. Upon accessing the homepage, you will see a summary of the number of thought experiments currently being hosted. Clicking on that number will take you to where you may browse the database's contents. At the bottom of the screen, you will see four navigation links that take you to the main parts of the site. "Create" will take you to where you may create a thought experiment, "Browse" will take you to where you may browse the database's contents, and "About" and "Home" take you to the About and Home pages respectively.

6.1   Creating a New Thought Experiment

On the Create page, you will first enter a title for the thought as well as the general category it fits under. You may then enter text in the text area, and give that a distinct category as well. A button at the bottom allows you to add

media attachments to the thought experiment–simply click the button, then enter a title and a URL or relative path for the multimedia you wish to attach. When you are all done, click "Submit." You will be taken to a summary page which will have a link for you to view the thought you created.

6.2 Viewing and Browsing

The Browse page allows you to see the database contents. You may filter the page using the dropdown in the upper left. For browsing thought experiments, you can click on the title of the thought to view that thought in greater detail. When viewing a thought, you will be able to see its information (category, etc) as well as any associated text and attachments.

6.3 Commenting

You may access commenting from one of two places: the Browse page, or from viewing a particular thought experiment. The comment links take you to a separate page where you can enter your comment text, and then submit that text. In future work, I would like to make this process more streamlined and find a salient way to display comments.

6.4 Moods

You may apply a mood(s) to a given entity from the same pages as in accessing commenting. This will take you to a separate page where you will find a drop-down containing the available moods. Select an appropriate mood, and click "Moodify." In future work, I would like to make this process more streamlined and find a salient way to display moods.

7 Conclusion

In this database project, I have completed a sufficiently complex database schema and have implemented it in MySQL. I have populated my database within reason, and provided a useful web application interface which allows users to easily access and leverage my database. The site itself has been published on the departmental ix server, and my code and data are immediately available there.

Given more time, I would like to expand the capabilities and usability of the web interface. The database design itself is simple but elegant– it allows a satisfactory representation of the thought experiments I wish to store. If the interface was improved functionally and aesthetically, I think it would be a useful personal tool/collection. However, I do want to investigate the ability to link multiple thought experiments and entities together somehow, and this will involve modifications to the underlying database. I also want to be able to support more than just image features– in particular, I would like to be able to

embed video and audio, and leverage Amazan cloud storage if possible. These agenda items form the core of my future work on this project.

8   Last Notes

There are some inconsistencies between the earlier parts of this document and the EER diagram, and the remaining portions that were filled in more recently. For example, multimedia has temporarily been reduced to a single table for brevity and in the interest of time. Certain functionality such as linking and audio/video attachments are not yet supported. I would have removed these inconsistencies, but I wanted to keep them as a reminder of future work to be done. I hope to further develop this site and eventually deploy it as a travel aide while I am traveling abroad. Thanks for your understanding!
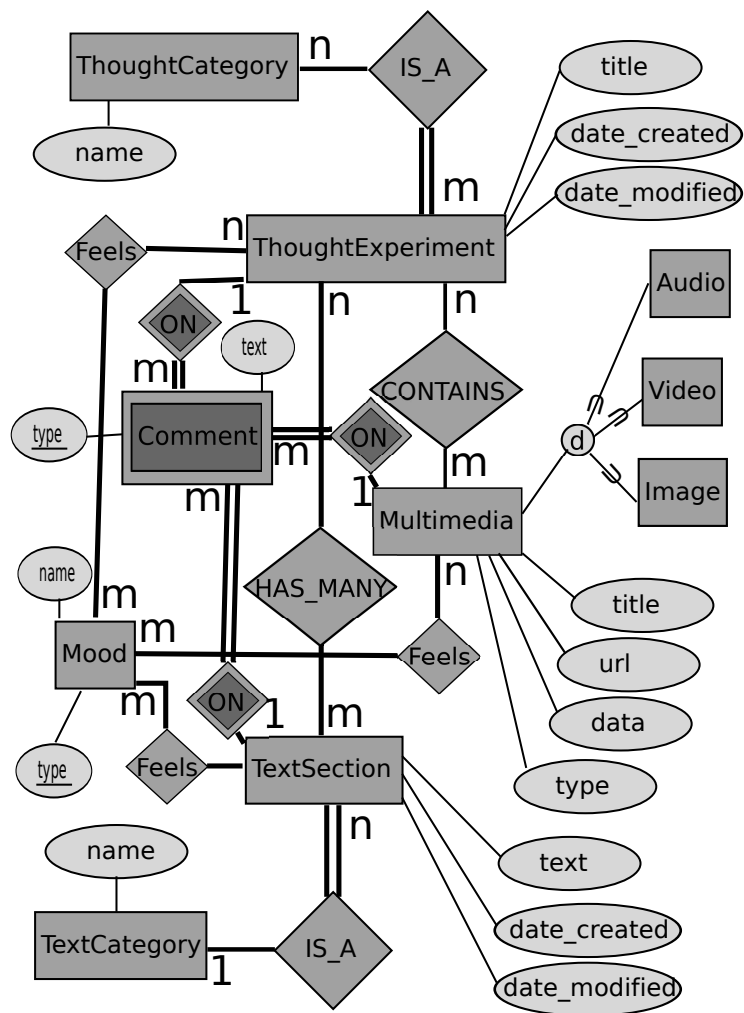
Figure 1: EER diagram for my database project (all tables should also have a primary key id attribute, excluded for brevity).