

Advanced Databases – Assignment 1, Dr. Pierpaolo Dondio

DB Design

This assignment is worth 20% of the final evaluation.

You are requested to design and implement a database to model part of a real web-application.

For instance, you can model a typical message board or online forum, such as <http://www.hotstockmarket.com/f/42/stock-forums-for-nyse-nasdaq-amex>. This implies defining entities for storing information about the list of discussions, posts in a discussion, general information about a discussion, users' profiles and passwords, information about reputation score, list of friends, information about a specific post (text, attachments, date), information about which post is quoted and by whom...

(SEE next page for more examples and ideas)

Other suitable web-applications could be: flight reservation web-sites, Yahoo Finance message boards, facebook timeline or personal page, twitter account page, paddypower.com, amazon.com and so on...

You must select (part of) a real public web-application. You need to define the specific process you want to model in your logical design and what you intend to neglect (do not consider html related data, banners, ads...).

The application (or set of applications) chosen should be part of the overall functionalities offered by the web-site, and – if possible – it should represent a distinct business process, a stand-alone set of functionality.

Your role is to identify and model the data, entities and relations needed to support the real application. The application must be a real one, not generic.

Complexity. Choose a process or part of a process that can be expressed in something like 7/10 entities. Strictly do not define more than 15 entities, while the list of attributes is limited by the actual application that you are modelling.

Deliverables:

1. A Document describing the process: description of the real application chosen. The document should describe the functionality/ies supported by the database, including input, output, data manipulated by the chosen process. This represents your requirement analysis. It does not need to be in any formal specification language. A natural language description will suffice if enough details are provided. A walk-through scenario or a user-case could also be a good idea.
2. An ER Diagram. Submit a paper copy of the diagram properly commented (type of relationships, attributes chosen...)

3. A SQL script generating the above ER Diagram. The example must contain an example of Trigger (if you do not need a trigger, add a trigger to generate a log table of all the insertions in one of your tables, containing a timestamp and a short description of the type of operation performed).

4. Provide an implementation document, explaining how all the functionalities described in the requirement analysis document (point 1) are supported by the database schema proposed.

You might show examples of insert/select/update/delete queries. The document should also suggest where/why to use indexes to optimise queries.

5. Part of the submission is a 10/15 minutes demo in the lab.

In summary, there are four deliverables: requirement analysis document, ER diagrams, SQL script and implementation document + a short demo in the lab.

Submission date: Friday 16th November (demos will be scheduled after).

THE MOST IMPORTANT THING: the application chosen cannot be a generic one but an actual existing website!

EXAMPLE OF WEBSITE / APPLICATIONS

- Facebook (www.facebook.com). You could model the information about each account, the friends-list, the like/dislike mechanism, the timeline page of a single account, the news feed. Start by analysing the page, decide what you want to model and then think about entities, properties and relations to support that particular application/process
- Ryanair.com. You could model the procedure for booking a flight (or part of it), or the online check-in process...
- Online Forums or Message Boards (such as www.boards.ie). You could model the action of posting a message, opening a discussion. Entities involved are users, posts, discussions, sections of the forum...
- www.nasdaq.com (and any stock market web-site and application). You could model the process of providing stock prices, or the process of opening a virtual portfolio for stock monitoring by a registered user
- www.stackoverflow.com. Similar to an online forum.
- www.irishrail.com. You could model the process of searching for a trip and/or buying a ticket
- www.daft.ie. You could model the process of (advanced) searching for a property
- www.carzone.ie. Same as daft.ie but with cars
- Fantasy Football website (such as fantasy.premierleague.com). You could model the process of selecting a team and computing weekly scores.
- Online shops (amazon-like). You could model the ordering system or the system that gives recommendation to users (if you like this then... or people similar to you like...)

- Amazon S3 Website. You could model the process of buying and creating an online server
- ...plus anything you like...