

DASC 5333 Database Systems for Data Science
CSCI 4333 Design of Database Systems
Spring 2023
Homework #3 Database Modeling

UML Modeling

Download and install the *student* version of Astah's UML Editor: <http://astah.net/download>. Astah should provide it for free for students. This is one of the best free UML editors available. It has some restrictions but should be more than sufficient for our class. Another good alternative is to use Visual Paradigm community version. This is free but will leave a watermark when you export your model diagram to images or PDF. Instead, you may just take a screenshot of the model.

The homework assignment is to model a drastically simplified toy Simple Conference Site Pal (SCSP) for supporting websites for conferences.

Multiplicities for attributes and associations should be as specific as possible. Attribute and association documentation are optional, but they are encouraged when not trivial. For example, the roles or names of associations should be displayed when appropriate. Operations for classes are not necessary. You may use the stereotypes <<PK>> and <<unique>> for attributes when appropriate. Create suitable data types for SQL if appropriate.

Save your files as <<last-name>>_<<student_id>>_h3_class.asta (Astah's file format) and <<last-name>>_<<student_id>>_h1_documentation.docx (optional; for additional information). Examples: bajaj_0007007_h3_class.asta. Include a PDF versions of your class diagram: <<last-name>>_<<student_id>>_h3_class.pdf, especially if you are not using Astah.

Submit your homework through Blackboard, including .asta and/or .pdf file. If you are not using Astah, you must submit a PDF file.

SCSP

Create a data model by constructing an UML class diagram to support a portion of a drastically simplified part of a conference management database: SCSP. It only supports a *very* limited set of highly simplified functions for building conference websites. Make reasonable assumptions.

Simple Conference Site-Pal (SCSP) supports hosting Web-based conference systems to manage conferences. There are many real-world conferences and you can browse a few to get some ideas. However, keep in mind that we are modeling a drastically simplified part of SCSP only.

SCPS allows users to set up conferences for people to submit papers to conferences, review papers of conferences, and attends conferences. A conference has a unique Id (all Id should be of the type SQL:Id). It must have a name, start date (of type Date), end date (of type Date) and a venue name. A venue may have an address. For example, a virtual conference does not require an address.

Every address must have a unique Id, a street, a city, and a country. It may or may not have a state or a zip code since come countries do not have them. A country has a unique country code and a unique name (e.g. 'US' and 'United States of America').

In the database, a person has a last name, a first name, and an email. A person may also have a phone and/or an address. A person may have an account (username + password) in order to use certain functionalities.

A conference has a lead organization and any number of support organizations. An organization has a unique Id, a name, and an optional phone (of type string). The database may store the address of an organization. It may also store the country of origination of an organization. For example, the organization 'Siemens at Houston' may have the address '2909, Bay Area Boulevard, Houston, TX 77058, USA' and a country of origin of 'Germany.'

A conference may have many tracks. For example, the conference 'IEEE Data Modeling Conference (IDMC)' may have the tracks 'RDB', 'NoSQL', 'Alternate Models' and 'Blockchain, etc. Papers can be submitted to one of these tracks for publications. The track 'general' will be created for all works not assigned to a track in a conference. All non-track papers will then be submitted to this 'general' track. A track has a unique id and a track name. Note that a track name is not unique. For example, more than one conferences may have the same track names of 'NoSQL.'

A paper has a unique Id, a title, a submission date (of type Date), and one or more authors. Any person can be an author of multiple papers. The position of the authorship of a paper should be recorded. For example, the paper:

Jody Smith, Chip Gump, Karl West, Conceptual Modeling Transformation for NoSQL Databases.

may be submitted to the track 'NoSQL' of the conference IDMC. The authorship information:

Author	Position	EEmail	Phone	Organization
Jody Smith	1	smithJ111@uhcl.edu	NA	UHCL
Chip Gump	2	chipGump@gmail.com	NA	NA
Karl West	3	west1@uhcl.edu	281-283-3231	UHCL

A person can also review any number of papers. The review comment and outcome must be recorded. Outcomes are selected from a list of defined choices for a conference. For example, for IDMC, the possible outcomes may be:

OutcomeId	OutcomeCode	Outcome
424	1	Accept with award consideration
425	2	Accept with no modification
426	3	Accept with minor modifications
427	4	Accept with major modifications
428	5	Conditional Accept with major modifications
429	6	Reject

Note that OutcomeCode is meaningfully used only by IDMC. OutcomeId is a unique Id across all conferences.

Thus, a person 'Sylvia King' may review the paper " Conceptual Modeling Transformation for NoSQL Databases" with the review result:

- OutcomeId = 425; (i.e. 2, Accept with no modification.)
- Comment = 'Excellent work. Best of my three reviewed papers.'

A paper can have any number of reviewers.

A paper may have many keywords, which can be shared among papers. E.g. for the paper "Conceptual Modeling Transformation for NoSQL Databases," the keywords may be "conceptual model", "modeling", "NoSQL", "model transformation" and "database".

A conference usually have a chair person. It can have any number of staffs, which varies from conferences to conferences. The role and a description of a staff of a conference should be stored. For example:

For ICDM:

1. Conference chair: Rebecca Scarborough.
2. Staff:
 - a. Jane Desmond: role: co-chair, description: technical co-chair.
 - b. Paul Peterson: role: co-chair, description: marketing co-chair.
 - c. ...