

CSIT115/CSIT815 Data Management and Security
Laboratory 3
20 March 2017

Scope

This laboratory includes the tasks related to logical modelling and relational data model.

The outcomes of the laboratory work are due by **Saturday, 1 April, 2016, 7.00 pm.**

This laboratory contributes to 2% of the total evaluation in the subject.

A submission procedure is explained at the end of specification.

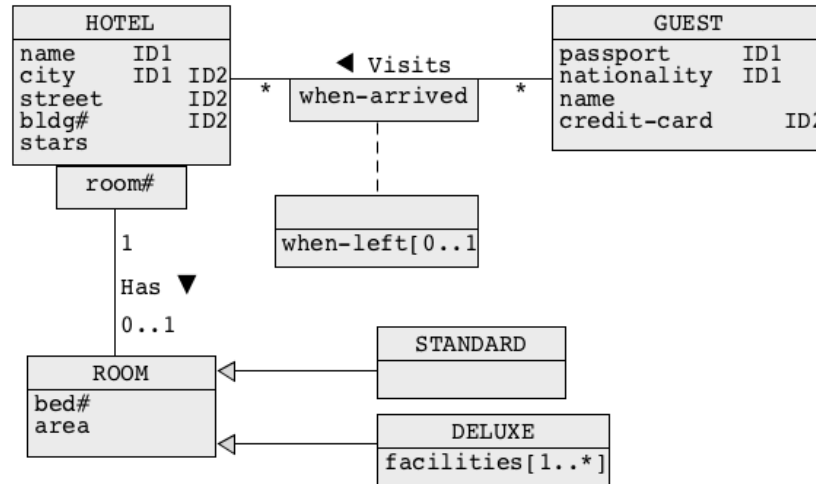
This laboratory consists of 2 tasks and specification of each task starts from a new page.

It is strongly recommended to solve the problems included in this specification **before coming to a laboratory class** and bring the preliminary solutions to a laboratory class such that any doubts, question, problems, etc can be discussed with a tutor in a laboratory class. Such procedure allows for more effective use of time spent in a supervised laboratory class.

Tasks

Task1 (1 mark)

Consider a conceptual schema given below.



Your task is to perform a step of logical database design, i.e. to transform a conceptual schema given above into a collection of relational schemas.

For each relational schema created clearly list the names of attributes, primary key, candidate keys (if any), and foreign keys (if any). Assume, that **subset method** must be used to implement a generalization (if any). A way how a conceptual schema can be transformed into a collection of relational schemas is explained in a presentation 06 Logical Design.

The relational schemas must be listed in a format presented in the slides 43-44 in a presentation 06 Logical Design. Listing of the relational schemas in the other format scores no marks.

Deliverables

A file `solution1.pdf` with a list of relational schemas, primary key for each relational schema, candidate keys (if any) for each relational schema, foreign keys (if any) for each relational schema. Submission of a file with a different name and/or different extension and/or different type scores no marks.

Task 2(1 mark)

Consider the following collection of relational schemas.

PROPERTY(PNum, City, Street, HouseNum, OwnerPhone, Price)
Primary key = (PNum)
Candidate key = (City, Street, HouseNum)
Foreign key = (OwnerPhone) references OWNER(OwnerPhone)

OWNER(OwnerPhone, OwnerName)
Primary key = (OwnerPhone)

BUYER(BuyerPhone, BuyerName, City, Street, HouseNum)
Primary key = (BuyerPhone)
Candidate key = (City, Street, HouseNum)

PREFERENCE(BuyerPhone, City, Street, MaxPrice, MinPrice, PDate)
Primary key = (BuyerPhone, PDate)
Foreign key = (BuyerPhone) references BUYER(BuyerPhone)

INSPECTION(BuyerPhone, PNum, IDate)
Primary key = (BuyerPhone, PNum, IDate)
Foreign key 1 = (BuyerPhone) references BUYER(BuyerPhone)
Foreign key 2 = (PNum) references PROPERTY(PNum)

Your task is to perform *reverse database engineering*, i.e. to find a conceptual schema of a database that has a collection of relational schemas given above. Use UMLetlet to draw a conceptual schema found. Use an option File->Export as... to export your diagram into a file solution2.bmp in BMP format.

Deliverables

A file solution2.bmp with the *reverse engineered* conceptual schema. Submission of a file with a different name and/or different extension and/or different type scores no marks.

Submission

Note, that you have only one submission. So, make it absolutely sure that you submit correct files with the correct contents. No other submission is possible !

Submit the files **solution1.pdf**, and **solution2.bmp** through Moodle in the following way:

- (1) Access Moodle at **<http://moodle.uowplatform.edu.au/>**
- (2) To login use a **Login** link located in the right upper corner the Web page or in the middle of the bottom of the Web page
- (3) When logged select a site **CSIT115/CSIT815 (S117) Data Management and Security**
- (4) Scroll down to a section **Submissions**
- (5) Click at a link **In this place you can submit the outcomes of Laboratory 3**
- (6) Click at a button **Add Submission**
- (7) Move a file **solution1.pdf** into an area **You can drag and drop files here to add them**. You can also use a link **Add...**
- (8) Repeat step (7) for a file **solution2.bmp**.
- (8) Click at a button **Save changes**
- (9) Click at a button **Submit assignment**
- (10) Click at a button **Continue**

A policy regarding late submissions is included in the subject outline.

Only one submission of the outcomes of Laboratory 3 is allowed and only one submission per student is accepted.

A submission marked by Moodle as "late" is always treated as a late submission no matter how many seconds it is late.

A submission that contains an incorrect file attached is treated as a correct submission with all consequences coming from the evaluation of the file attached.

It is expected that all tasks included within **Laboratory 3** will be solved **individually without any cooperation** with the other students. If you have any doubts, questions, etc. please consult your lecturer or tutor during lab classes or office hours. Plagiarism will result in a **FAIL** grade being recorded for that assessment task.

The evaluated outcomes of Laboratory 3 will be electronically returned to the students before 11.55pm on Saturday, 22 April, 2016.

End of specification