

**CSIT115/CSIT815 Data Management and Security**  
**Assignment 1**  
5 March 2018

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**Scope**

This assignment is related to conceptual modelling of the sample database domains.

**Important messages**

**Please read the messages listed below before implementation of the tasks included in a specification of Assignment 1.**

More implementation related information can be found in "How to ... ?" Cookbook available through Moodle or at:

<http://www.uow.edu.au/~jrg/115/COOKBOOK>.

The outcomes of Assignment 1 are due by **Saturday, 24 March, 2018, 10.00 pm (sharp)**.

Assignment 1 contributes to 6% of the total evaluation in the subject.

A submission procedure is explained at the end of this document.

Only one submission of the outcomes of Assignment 1 is allowed and only one submission per student is accepted. Please make sure that you submit the correct files.

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.

Compressed (zipped, rared, tared, etc) files will not be evaluated.

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

A policy regarding late submissions is included in CSIT115/815 Subject Outline.

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## **Tasks**

### **Task 1 (4 marks)**

Read and analyse the following specification of a sample database domain.

*A real estate agency would like to create a database to record some its operations.*

*The agency consists of a number of branches located in different cities. A branch is described by a unique branch name, unique address, unique phone number, and unique fax number. An address consists of city name, street name, building number, and office number.*

*The agency employs a number of real estate agents and administration employees. Every employee has a unique employee number at a branch he/she works at. It means two or more employees working at different branches may have the same employee numbers. An employee is described by a first name, last name, date of birth, employment date, and salary. Real estate agents have a business phone number used to communicate with the clients. The employees are assigned to the branches such that each employee is assigned to only one branch and a branch has one or more employees.*

*The agency employs a number of junior and senior real estate agents. Senior real estate agents are additionally described by a promotion date to a senior level. Junior real estate agents are additionally described by a list of training courses organized by the agency. A training course is described by its scope, date when started, date when completed, and a list of one or more objectives. Senior real estate agents do not pass through any training courses organized by the agency.*

*The agency lists a number of real estate properties for sale. A property is described by its address (city, street, building number, and optional flat number), date when it has been the most recently listed on a market, and price asked by an owner. Each real estate property has a unique number assigned by the agency. If a real estate property is sold or if it is taken off the market by an owner the agency still keeps information about such property together with information about the dates when a status of a property has changed. Note, that a status of real state property can change many times from "on a market", "sold", "off a market".*

*The agency assigns a group of real estate agents to a real estate property when the property is listed on a market. An agent is always assignment to one or more real estate properties listed for sale.*

*The agency keeps information about the owner of properties listed for sale and the potential buyers who are interested in the properties listed for sale. Both potential buyers and sellers are described by a first name, last name and unique mobile phone number.*

An objective if this task is to construct a conceptual schema for the specification of a database domain listed above.

It is not allowed to add any artificial identification attributes commonly known as "id" attributes to the specification listed above.

Use UMLet tool to create a drawing of a conceptual schema in a notation of UML simplified class diagrams explained to you during the lecture classes in CSIT115. No other notation will be accepted !

Remember to use CSIT115-815Palette palette !

Use an option File->Export as... to export your diagram into a file `solution1.bmp` in BMP format. Do not delete an exported file. You will submit it as one of the deliverables from your laboratory work.

In this task there is NO NEED to provide a detailed analysis of a conceptual schema like in the previous task. The final conceptual schema expressed in a notation of UML simplified class is completely sufficient.

**Deliverables**

A file `solution1.bmp` with the final design of a conceptual schema. Submission of a file with a different name and/or different extension and/or different type scores no marks.

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**Task 2 (2 marks)**

Read the following specification of a sample database domain.

*A university would like create a database to keep information about students who enrol subjects and tutorials, lecturers who teach subjects, and tutors who supervise tutorial classes.*

*A student is allowed to enrol many running subjects and a running subject can be enrolled by many students. A student is described by a unique student number, first name, last name and date of birth.*

*A subject is described by a unique subject code, unique title, total number of credit points, and a nonempty list of subject learning outcomes.*

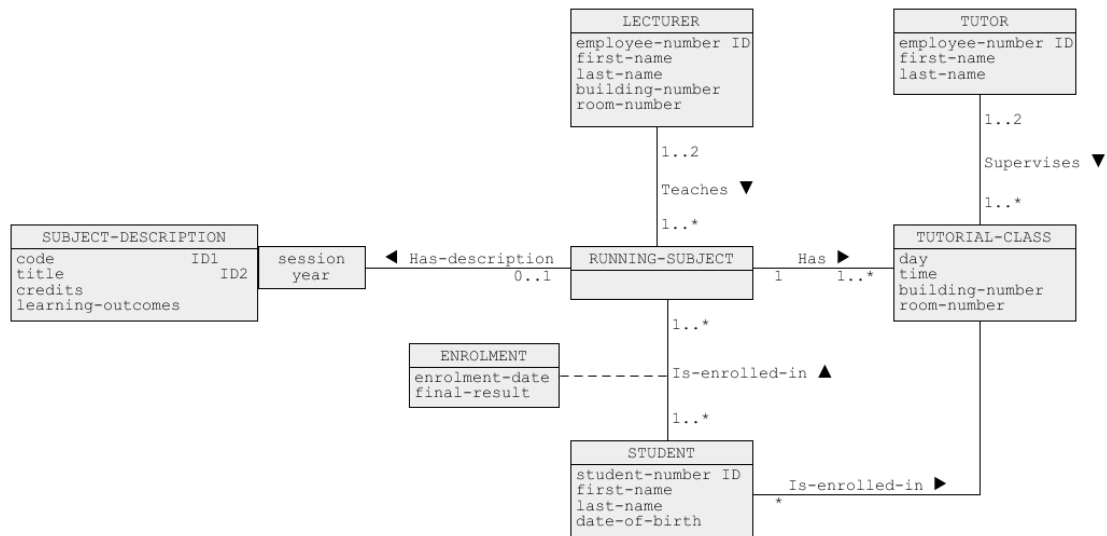
*A running subject has a number of tutorial classes assigned to it. A running subject is described by a session and year when it is opened for enrolment. A tutorial is described day, time and location (building number and room number).*

*Students enrol running subjects. A student enrolls one or more subjects and a subject must be enrolled by one or more students. Note, that it may happen that a student must enrol the same subject more than one time. An enrolment is described by an enrolment date and the optional final result achieved by a student in a subject.*

*When enrolled in a subject a student is automatically enrolled in one of the tutorials. Information about a tutorial automatically enrolled by a student must be included in a database.*

*A running subject has at most two lecturers teaching the running subject. A tutorial has at most two tutors supervising the tutorial. Both lecturers and tutors are described by a unique employee number, first name, and last name. A lecturer is additionally described by a building number and room number of his/her office.*

A database designer used a specification of database domain listed above to create the following conceptual schema (see next page).



Find and list up to 5 discrepancies between a specification of database domain listed above and a conceptual schema created by a database designer. Save a list of discrepancies in a file `solution2.pdf`. DO NOT create your own design ! It is also not your task to correct the conceptual schema. Your task is to find and list all places where a specification is not consistent with the respective conceptual schema.

You can imagine yourself that you are employed as a tutor in the subject and your task is to evaluate a design submitted by another student and to provide a student with a feedback on what is wrong in the design. As you can see it is not so easy task to be a tutor ... ;)

### Deliverables

A file `solution2.pdf` with a list of 5 discrepancies between a specification of database domain listed above and a conceptual schema created by a database designer. Submission of a file with a different name and/or different extension and/or different type scores no marks.

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## Submission

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

Submit the files **solution1.bmp** and **solution2.pdf** 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/DPIT115/CSIT815 (S118)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 Assignment 1**
- (6) Click at a button **Add Submission**
- (7) Move a file **solution1.bmp** 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.pdf**.
- (9) Click at a button **Save changes**
- (10) Click at a button **Submit assignment**
- (11) Click at the checkbox with a text attached: **By checking this box, I confirm that this submission is my own work, ...** in order to confirm the authorship of your submission
- (12) Click at a button **Continue**

It is expected that all its tasks included within **Assignment 1** will be implemented **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.

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*End of specification*