School of Computing and Information Technology
University of Wollongong

Session: **Autumn 2017**
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CSIT115/CSIT815 Data Management and Security
Laboratory 2
8 March 2017

Scope

This laboratory includes the tasks related to conceptual modelling of the sample database domains.

This outcomes of the laboratory work are due by **Saturday, 18 March, 2017, 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 (1.5 mark)

Read the following specification of a sample database domain.

A network of vehicle repair facilities has the locations distributed all over a country. A vehicle repair facility is located at a unique address and has a unique name.

A facility employs a number of mechanics and administration staff members. An employee is described by an employee number, which is unique at a facility, first name, last name, phone number and optional email address. A group of senior mechanics has their certification documents recorded. All mechanics are additionally described by a driver license number and type of a license owned.

Vehicles are repaired at the facilities. A facility repairs passenger cars, trucks, small delivery vans and buses. A repair process is described by a start date/time, end date/time, mechanics involved and the names of spare parts used. At the end of repair process a report that describes the repair process is created. A repair process consists of ordered steps and short description of actions performed at each step.

Your task is to create a conceptual schema of the sample database domain given above and to draw such schema in a notation of UML simplified classes of objects. To do so, perform analysis of the sample database domain in the following way. First, read through the specification listed above and find all classes of objects. Next, read through the specification again and find all attributes. Next, read through the specification again and find all associations, link attributes, and association classes. Next, read through the specification again and find identifiers and qualifications. Finally, read through the specification and find generalizations.

To create the fragments of conceptual schema obtained after each iteration and use a diagram drawing tool UMLetlet.

It is possible to include the fragments of text into a Word document and to insert into it the fragments and the final diagram as `bmp` file obtained from an option File->Export as … option of UMLetlet. A structure of the file should include the specification of a sample database domain with the fragments of text with the UML simplified class diagrams representing a solution expanded step by step. When ready convert Word document into `pdf` format and save it as a file `solution1.pdf`.

Deliverables

A file `solution1.pdf` with a description of a process of conceptual modelling together 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.

Task 2 (0.5 mark)
Read the following specification of a sample database domain.

A database should contain information about the sports cars and their owners.

The first name, last name, phone number, and address describe an owner of a car. An address consists of a suburb name, street name, building number, and optional flat number. A pair of attributes: first name and last name uniquely identifies an owner. A phone number can also be used to identify an owner.

An owner owns one or more sports cars. Each car has only one owner. The database should contain information about the present owner of a car and date when an owner purchased a car. A car is identified by a registration number.

We consider only two sorts of sports cars: spartan or luxurious. A spartan sports car is additionally described by an engine capacity.

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

Construct a conceptual schema for the specification of a database domain listed above. Use UMLetlet to create a drawing of a conceptual schema in a notation of UML simplified class diagrams. Use an option File->Export as... to export your diagram into a file `solution2.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 `solution2.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.

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`** to 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 2`**
(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 2 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 2** 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 2 will be electronically returned to the students before 11.55pm on Saturday, 8 April, 2017.

End of specification