Assignment 1   *Due: see CrsMgr - to be uploaded to CrsMgr: one file for the group to be uploaded by the group leader.*

Max. Marks: 30 points

QUESTION 1. [10 points]

A university database contains information about professors (identified by an employee number, EID) and courses (identified by CourseID). Professors teach courses which could be recorded by a relationship set Teaches between professors and courses. Each of the following situations could apply to the Teaches relationship set. For each situation, draw an ER diagram that describes it (assuming no further constraints hold).

1. Professors can teach the same course in several terms, and each offering must be recorded.

2. Professors can teach the same course in several term, and only the most recent such offering needs to be recorded. (Assume this condition applies in all subsequent questions.)

3. Every professor must teach at least one course.

4. Every professor teaches exactly one course (no more, no less).

5. Every professor teaches exactly one course (no more, no less), and every course must be taught by some professor.

QUESTION 2. [10 points]

Consider a database for a art gallery. The database requires a schema that captures all the information that such galleries need to maintain. Galleries keep information about artists, their names (which are unique), birthplaces, age, and style of art. For each piece of artwork, the gallery records the artist, the year it was created, its unique title, its type of art (e.g., painting, lithograph, sculpture, photograph), and its acquisition price (and if it was a gift, the appraised value at the time of the gift). Further each type may have sub-types; painting could be realism, impressionism, landscape, portrait, still life. Pieces of artwork are also classified into groups of various kinds, for example, period(Paleolithic, Gothic, renaissance (Romanesque, rococo, baroque), pre-modern(neo-classicism, realism, impressionism), modern, folk art, Canadian, African art, Native Art. Art is also classified as to the media used; for example oil, watercolour, acrylic, collage, rubbing, soapstone, plaster, etc. A given art object may belong to more than one group. Each group is identified by a name (such as those just given above) that describes the group. Finally, galleries keep information about customers. For each customer, galleries keep that person's unique name, address, total amount of dollars spent in the gallery, and the artists and groups of art that the customer tends to like. Draw an ER diagram for the database.

Question 3. [10 points]

The Motor Vehicles Department is interested in maintaining information on motorists, their vehicles, their registration details, and the traffic violations committed by the motorist(drivers), if any. Motorists can be distinguished by their SIN, but in addition, their names, DOB, addresses, phone numbers, etc. are of interest. The vehicles owned by motorists, their makes, the province in which they are registered, their registration number and the termination dates, and

the address of the registration office (where the registration was made) should also be recorded. In addition, details on the license(drivers permit) of the motorists (such as license number, office in which it was issued, the expiry date of the license) are to be included. Finally, information on traffic violations committed by the motorists (including details such as the nature of the violation, the fine imposed, the deadline for payment, and the date the fine was paid, if at all) is also of interest.

1. Develop an ER diagram to represent the conceptual database scheme for the above "enterprise".

2. In the diagram, mark the various constraints (keys, cardinalities of the relationships, etc.)

For on-line submission the various files should be included in a single directory which is tar-balled and compressed (.tgz) or zipped or rared. It should include a README file detailing the Course, Section, team ID, name, student IDs and ENCS accounts of each member of the team and list of files submitted in your on-line submission. Submission must be before the deadline by the group leader to the Course manager. (Only one file is to be uploaded for each group. You may replace a file by a new file by first deleting the old version BEFORE uploading a new one. Multiple files for each assignment cannot be submitted!)
- **DO NOT FORGET TO DO A HONEST PEER EVALUATION**
- **IT CAN BE DONE ANYTIME UP TO TWO DAYS AFTER THE DUE DATE FOR THE MARKED ENTITY**
- **NO EXTENSIONS**
- **YOU GET A 0 IF YOU DO NOT EVALUATE THE MEMBERS OF YOUR TEAM!**
- **READ/REREAD THE REQUIREMENTS ABOUT FILE TO BE UPLOADED AND ITS NAME**

Do not email your submissions; they will be deleted without opening them!