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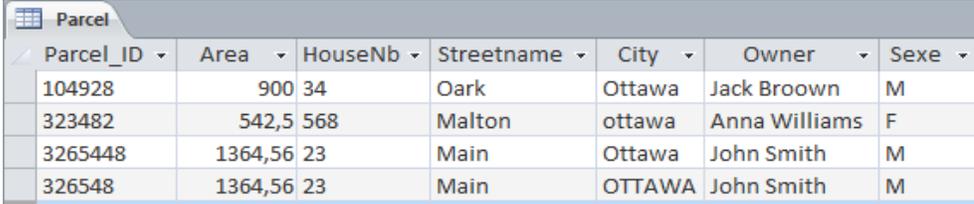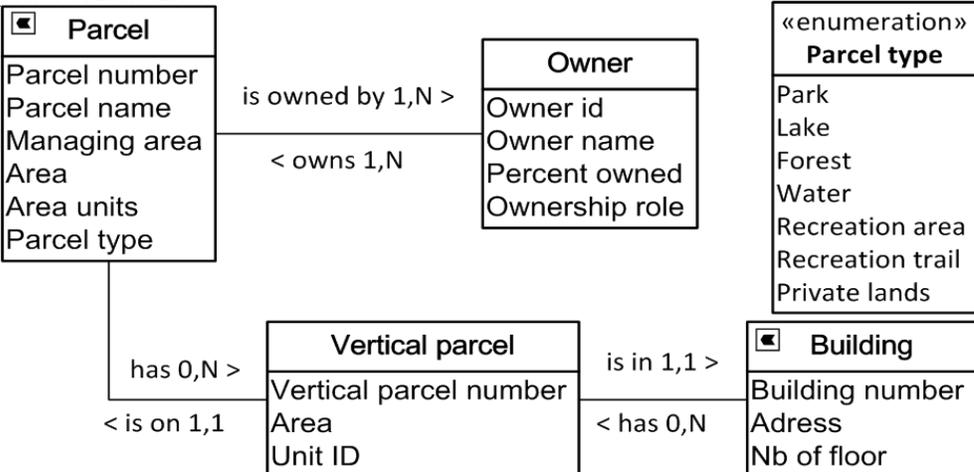## E1 - SPATIAL DATABASES & LAND INFORMATION SYSTEMS

October 2013

Note: This examination consists of 10 questions on 2 pages.

		Marks	
Q. No	Time: 3 hours	Value	Earned
1	Define what an index is in a database. Name one indexing method.	3 2	
2	Name three relational operators used in queries to manipulate the contents of tables in a database.	6	
3	Give two reasons why you should design a conceptual data model before implementing the database.	4	
4	You are mandated to design and develop a spatial database system. After discussing with the client, you think that a disciplined method will be more appropriate than an Agile method to develop the database system. Give three reasons why you should use a disciplined method instead of an agile method.	9	
5	 a) Write SQL script to create the above table. b) Write SQL script to update Owner "Jack Broown" to "Jack Brown" c) Write SQL script to delete the parcel number 3265448	 4 4 4	
6	Give three database integrity constraints you should implement for the table in #5.	6	
7	Translate this conceptual schema (CIM) designed with UML, in a PIM Relational Database Schema 	20	

8	With the database implementation done in #7, is it possible to answer the following questions? If no, explain why. If yes, write the appropriate SQL query. (3pts each) a) How many parcels are private lands? b) Find the parcels having both types forest and recreation area? c) Give the list of owners of the parcel number 4563. d) Give the list of owners of the vertical parcel number 786. e) How many vertical parcels are in the building number 101?	15	
9	Name and explain three issues of liability associated with the use of spatial data.	9	
10	For each of the following definitions, give an appropriate answer (2 pts each): a) Part of SQL which allows a user to create: tables, fields and constraints in a database. b) It is used to uniquely identify each record in a table. c) A collection of programs that enables you to store, modify, and extract information from a database. d) Used to ensure accuracy and consistency of data in a relational database. e) Type of database that is optimized for data warehouse and OLAP. f) It is used to avoid orphan records in a "child table" linked to a "parent table". g) Spatial database development phase where conceptual data models are made.	14	
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