The University of Queensland

School of Information Technology and Electrical Engineering

INFS1200/7900 Quiz 2

Name: _____   Student #: _____

Signature: _____

	Notes about this examination

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1. You have **10 minutes** reading time and **90 minutes** to write this examination.
2. You may use a pencil to write your solutions.
3. Answer all the questions on this paper.
4. The marks for each question are given in [].
5. Good luck!

Question	Mark	Max
Q1		10
Q2		15
Q3		15
Q4		15
Q5		15
Total		70

Q1 **[10 marks]** Answer the following questions.
Q1A. **[5 marks]** Suppose you are given a relation R (A, B, C, D, E) with the following functional dependencies:

{A, B}→C, C→{D, B}, D→E

Is R in BCNF? If not, decompose this relation into BCNF using the algorithm we covered in class and in the book; circle all answers in your final decomposition. Show all your work.

Q1B. **[5 marks]** Suppose you are given a relation R (A, B, C, D) with the following functional dependencies:

A→C, {B, C}→A, C→D

Is R in 3NF? If not, decompose this relation into 3NF using the algorithm we covered in class and in the book; circle all answers in your final decomposition. Show all your work.

The rest of the questions on this quiz are related to the database schema and database instance found in Appendix A. Please review it carefully and answer all of the following questions. For each query remove duplicates from your final answers where they are not explicitly requested, and include no extra columns).

2. **[15 marks]** Write the following SQL queries **without using subqueries**.

2A. **[4 marks]** Find the name of the breeds that have more than 2 pets.

Query

2B. **[5 marks]** Assuming the intersect operator is not implemented, find those clients who adopted a pet before 2016 and after 2017. Show the result of your query using data from Appendix A.

Query	Result

2C. **[6 marks]** For each breed that has been adopted**,** find the number of times they have been adopted. Show the result of your query using data from Appendix A.

Query	Result

3. **[15 marks]** Write the following SQL queries **using at least one subquery**. Show the result of your query using data from Appendix A.

3A. **[4 marks]** Find the breeds of pet which have never been adopted. Show the result of your query using data from Appendix A.

Query	Result

3B. **[5 marks]** Find the ID of the client(s) who adopted the most pets.

Query	Result

3C. **[6 marks]** Find owners with at least two pets, where one of the pets is a dog.

Query	Result

4. **[15 marks]** Write the following SQL queries. You can use any of the operators taught in the lectures.

4A. **[7 marks]** Find the clients that have not adopted any of the breeds that Dwight Schrute has adopted.

Query	Result

4B. **[8 marks]** Find the clients who have adopted all the breeds that Hermione Granger adopted.

Query	Result

5. **[15 marks]** The following questions are related to modifying data and integrity constraints.

5A. **[3 marks]** Delete all adoptions made by John Smith from the Adoption Table.

Query

5B. **[3 marks]** Modify the popularity column of the breed column such that the ratings are now on a scale 1-5 instead of 1-10. Eg. A rating of 8 should become a rating of 4.

Query

5C. **[4 marks]** Write the SQL statement to create the PET table. Assume the BREED table has already been created.

Query

5D. **[5 marks]** Can we delete the pet with ID=4 from the PET table – Why or Why not?

Query

This space is intentionally left blank. You can use it to answer questions or as scratch paper

(if you use this, CLEARLY indicate the connection between this work and the problem it is for both here and where the problem is stated!)