

CMPT 354: Database Systems

Final Exam

Simon Fraser University

Spring 2014,

Instructor: Oliver Schulte

Student Name:

Student Number:

- 1. Write down your name and student number. Also on the answer sheet.**
2. Answer all questions. This exam consists of 15 pages. You have 3 hours to complete this exam. You can earn a total of **104.5** points on the exam. I indicate the worth of each question.
3. For short answer/multiple choice questions, you can get full marks for giving the right answer, and partial credit for explaining a wrong answer if the explanation contains enough correct insights. *For multiple choice questions use the general purpose answer sheet.*
4. You should answer the questions in the space provided. If necessary, you may continue your answer on the back of the question sheet. *Indicate your final answer clearly.*
5. This is a closed-book exam, but you may use 1 (one) 8.5 x 11 sheet of notes for reference, both sides. No electronics allowed (cellphones, laptops, tablets). *Put away your electronics.*
6. For writing SQL queries, either standard SQL or Microsoft SQL is acceptable. You may use all of the SQL:99 standard (including parts that are not supported by Microsoft SQL server). The last page in this exam lists a number of standard SQL constructs as well basic operations in relational algebra. You can use everything listed, and you can also use other valid parts of SQL or relational algebra if you wish.
7. Work efficiently. Some questions are easier than others. Avoid getting bogged down in the more difficult ones before you have answered the easier ones.

Grading Breakdown. Day Section.

Section	Your Mark	Total Possible
Queries		26
Query Evaluation		20
Application Development and XML		27
Indexing		10
Join Implementation		14
Files Organization		7.5
Total		104.5

Appendix 1: Basic Operations in SQL and relational algebra.

SQL keywords: SELECT, FROM, WHERE, AS, DISTINCT, INTERSECT, UNION, EXCEPT, IN, EXISTS, UNIQUE, ANY, ALL, COUNT, SUM, AVG, MAX, MIN, GROUP BY, HAVING, NULL, CHECK, ASSERTION.

Relational Algebra operations:

Projection	π
Selection	σ
Union	\cup
Intersection	\cap
Set Difference	$-$
Cross Product, Cartesian Product	\times
Division	$/$
Condition Join	\bowtie_c
Renaming	ρ

Instructions before the Final

- Don't turn over the exam until we're ready.
- Turn off your cellphone and pagers.
- Go to the bathroom now – we've got 2.5 hours to go.
- Don't talk during the exam.
- Raise your hand if you have a question.
- You may be asked to change seats during the exam.
- If necessary, clarifications will be displayed on the overhead projector.
- After the final exam: you can see your exam grade on courses.cs.sfu.ca when it's ready