Lecture 26 Revision

- Last Lecture
  - NoSQL and Big data

- This Lecture
  - What next?
  - Revision and exam hints

Outline of 344 Lectures

- Introduction to databases and models
- Database design, ER modeling
- Relational model
- Relational algebra
- SQL(3)
- Functional dependencies and normalization
- Java, C and SQL, PL/SQL, PHP/SQL
- Trigger, Views
- DBMS architecture and system catalog
- Database file and storage
- Database indexing(2)
- Database security & auditing
- Transactions and concurrency control
- Database recovery
- Query optimization
- NoSQL and big data

Exam

To pass COSC 344 you must make at least 50% on the written exam

- Exam scope
  - Almost all topics introduced in this paper
  - No direct questions from Java &SQL, C&SQL, and PHP&SQL programming
- Online open-book exam
  - Your answers MUST be in your own words
  - Copying from lecture notes, textbooks and online resources is not permitted.
  - For most questions, you may not find direct answers from lecture notes or textbook. You need to understand before you can answer.

Exam Format

- Exam questions have similar format as those in the past years
  - 13 questions in total
  - Questions may contain sub-questions that are worth various marks
  - The total number of marks is 100
- A sample exam question

5. A trigger is a stored PL/SQL subprogram that can be invoked by DBMS automatically. (3)

   (a) Distinguish between *row-level triggers* and *statement-level triggers*.

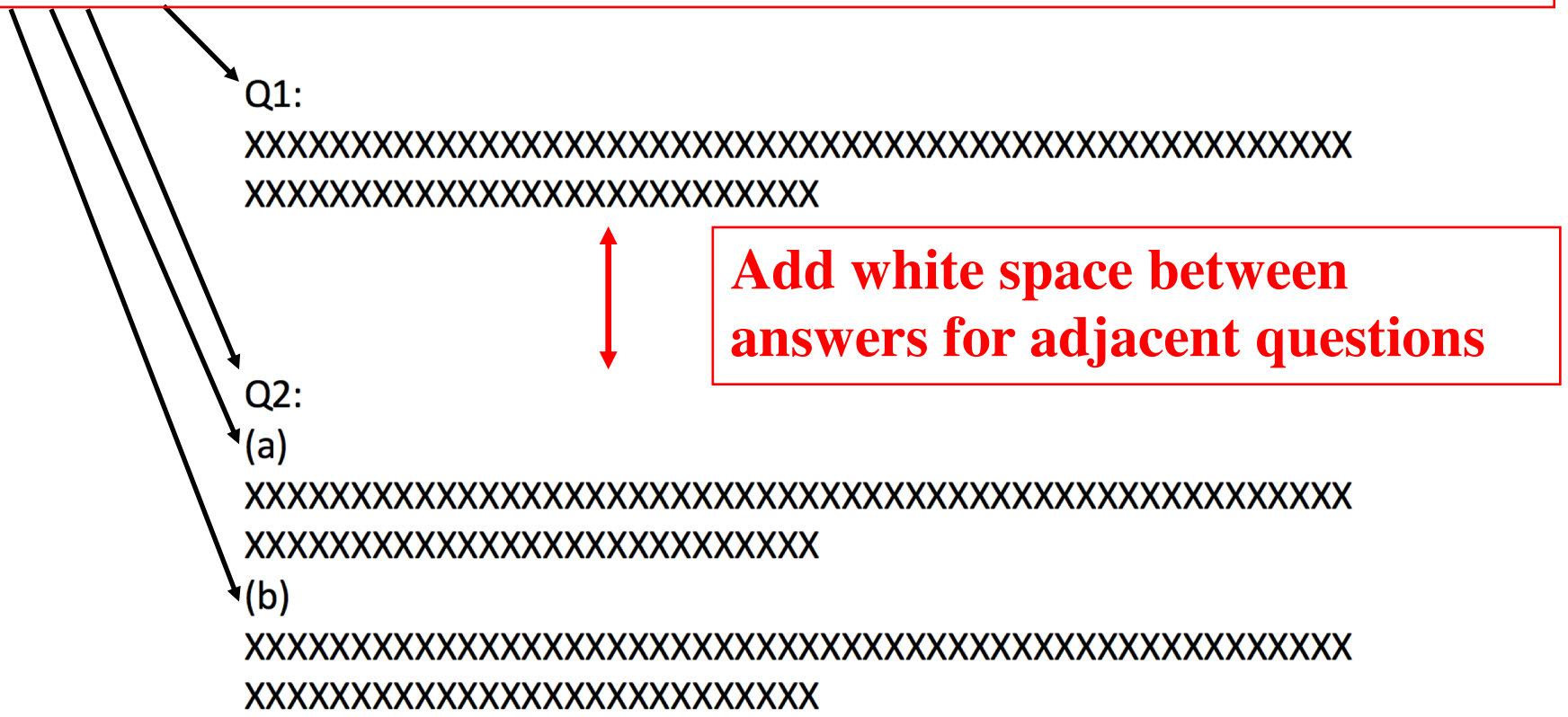
   (b) Suppose the `PROJECT` relation in the schema given in Figure 2 has a derived attribute named "total_hours" that records the total number of hours spent on each project. Explain how to design a trigger to maintain the values for this attribute. (4)

How to Answer Exam Questions

- All questions need to be answered in a single document (e.g. MS word or PDF)
- Answer the exam questions in the same order as they are listed in the exam paper.
- Clearly label your answers with the corresponding question and sub-question numbers
- Leave some white space between answers for adjacent questions.
- An example for the layout of answers is given in the next slide.

Layout of Question Answers

Put the number for question and sub-question in separate lines



Answer questions in the same order as they are listed in the exam paper.

Handwritten Submission

- It is acceptable **only when** you have difficulty in answering questions electronically.
- Follow the same layout requirements given the previous slide
- Scan the handwritten answers to a clean, small, black-and-white PDF
  - The scanned PDF must not be faint and blurry.
  - Your writing must be legible. No marks will be given for unreadable scanned PDF.
  - don't take pictures, use scan apps such as Adobe Scan.

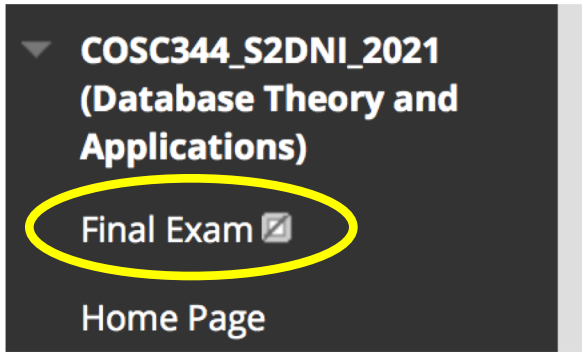
Diagram Drawing

- For some questions, you may be asked to draw a diagram to illustrate your answer. You can draw it in the following two ways:
  - Draw the diagrams using software such as MS Powerpoint or other online drawing tools.
  - Draw the diagrams manually and then scan them.

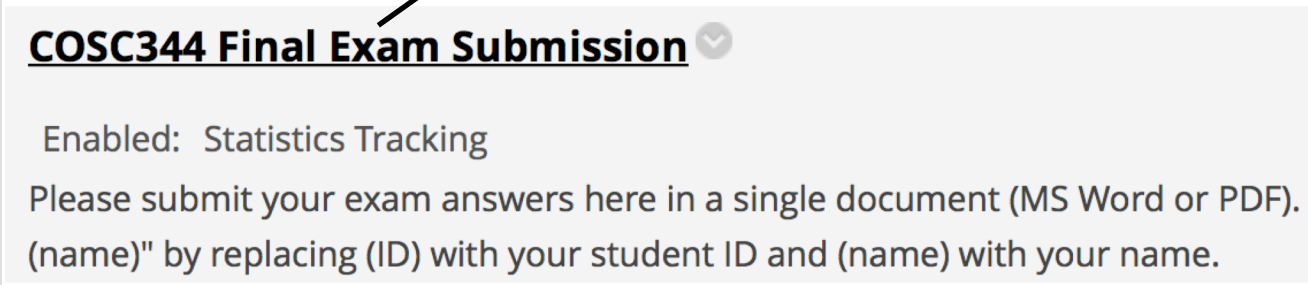
Exam Platform

- Blackboard
  - Exam questions will be made available during the exam period.
  - Answer sheet needs to be submitted via Blackboard
    - Name the answer sheet using the following format COSC344-(ID)-(name)

    by replacing (ID) with your student ID and (name) with your full name.



Click the title to submit



Exam Platform

- If you encounter any problem in submitting your answer sheet in Blackboard, send it to the lecturers by email immediately with subject line “COSC344 Exam: (ID) (Name)” replacing (ID) by your student ID and (Name) with your name.

- Don’t sent your answer sheet via email if your submission in Blackboard is successful.

Tips on Answering Questions

- Read the questions carefully.
- Use complete sentences, complete words.
  - before is spelled ‘before’, not ‘b4’
- Define any technical terms you use.
- Give an example if it will help demonstrate you understand something.
- Completely answer the questions.
  - If a question is worth several marks, don’t just write a single sentence with the answer stated badly.
- On quantitative questions, show all your work.
  - If you only write down a number, it is either correct or incorrect.

Examples of Answer

- Explain the term *functional dependency* (2)

(a 3 minute answer)

- Answer – version 1

  A functional dependency means the y-value depends on the x-value

Examples of Answer

- Explain the term *functional dependency* (2)

(a 3 minute answer)

- Answer – version 2

A functional dependency (FD) describes a relationship between two sets of attributes in a relation.
It is usually written X → Y, which means that in any tuple in a relation, the value of Y is determined by the value of X.
FDs provide a way to describe real world situations which lead to data restrictions or constraints in the modelled world.
For example, the rule that every student at Otago has a unique student id number could be stated as

Student_id → Student_fname, Student_mname, Student _lname

Examples of Answer

- Explain the term *functional dependency* (2)

(a 3 minute answer)

- Answer –version 3

  A functional dependency (FD), usually written X → Y, where X and Y are attributes, and "→" stands for "determines", means that in any tuple in a relation, the value of Y is determined by the value of X.

  e.g.

  Student_id → Student_name

How to Study for the Exam

- Read and understand the material given in the course handouts.
- THEN practise by doing some past exams which you can get from the library.

  https://www.otago.ac.nz/library/exams/

Questions?

Finally

I wish you every success and hope we'll meet up again some time