INFS1200/7900
Introduction to Information Systems

Course Summary and Exam Review

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Course Summary

Celebrations

Final Exam Review

Future INFS Courses

Final Thoughts

Course-Level Learning Objectives

The course was designed to use tools and technologies that promote active learning and provide rich feedback to help you learn to

1. Extract information systems requirements to create basic conceptual models
2. Map basic conceptual data models to relational database schema
3. Reason with the logical foundation of the relational data model and the fundamental principles of correct relational database design
4. Express natural language queries using the SQL language
5. Construct simple computer-based information systems given a complete specification
6. Perform information systems analysis and design in a group setting using the concepts of this course

Active Lectures **Piazza** **Mini-project** **LDBM** **(Mock) Quizzes** **RiPPLE**

Design-based Assessment **Feedback through Gradescope** **Implementation based Assessment**

Revision Checklist for ER Diagrams

- **Terminology**
  1. Entity (Weak entity)
  2. Relationship (Degree, Recursive)
  3. Attribute (Key and Partial Key, Composite, Multivalued, Derived)
  4. Constraints (Cardinality ratio, Participation constraints)
  5. Extended ER (Specialization, Generalization)

- **Basic Concepts**
  1. Variation in Notation
  2. Subjectivity (Expressability, Design choices)
  3. Mapping to Relational Model

Revision Checklist for the Relational Model

- **Terminology**
  1. Relations (Is a Set, Table with Rows and Columns)
  2. Domains (Atomicity, Data type)
  3. Attributes (Degree of a relation, Prime or Key attribute)
  4. Tuples
  5. Key (Super key, Minimal key, Primary key, Candidate key, Foreign key)
  6. Mapping

- **Basic Concepts**
  1. Constraints (Domain, Key, Entity, Referential)
  2. Constraint violations, constraints and operations, inconsistent database state
  3. Step by step process for mapping

Revision Checklist for FDs and Normalisation

- **Terminology**
  1. Anomalies
  2. Functional Dependencies
  3. Normal Forms

- **Basic Concepts**
  1. How to determine and how to infer FDs
  2. Closure computation
  3. Definitions of Normal Forms
  4. Normalization is a Process

Revision Checklist for SQL

- **Terminology**
  1. Declarative vs. Procedural
  2. DDL statements (CREATE TABLE, ALTER TABLE, DROP TABLE)
  3. DML statements (INSERT, DELETE, UPDATE, **SELECT)**

- **Basic Concepts**
  1. Selection, Projection, Sorting (WHERE/HAVING, SELECT, ORDER BY)
  2. Aggregation (COUNT, SUM, AVG, MIN, MAX) and Grouping (GROUP BY)
  3. Conditions on groups and aggregates (HAVING)
  4. Multiple relation queries (Joins, Nesting)
  5. When to join and when to nest?
  6. Correlated and non-correlated sub-queries
  7. Sub-query operators (IN, comparison with (or without) ANY/ALL, EXISTS)

Revision Checklist for Data Warehousing

- **Terminology**
  1. OLTP vs OLAP
  2. Multidimensional data modelling
  3. CUBE and ROLLUP queries
  4. Star Schema vs Snowflake Schema

- **Basic Concepts**
  1. Basic OLAP queries (Full Star, Roll-up, Drill-down, Slicing, Dicing, Pivoting)
  2. Advanced OLAP queries (WITH CUBE and WITH ROLLUP)
  3. Cube sizes and interpretations.

Revision Checklist for Database Security

- **Terminology**
  1. Privacy vs. Security
  2. Sensitive Data
  4. Database Audit
  5. Access Control

- **Basic Concepts**
  1. Threats to database security
  2. Database Control Measures (especially the three types of Access Control)
  3. SQL Injection

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RiPPLE

Highest Rating
(1) Luong Ba Duong
(2) Yiyun Zhang
(3) Tom Wang

Most Effective Questions
(1) Si Yu Louis Yang
(2) Tai-Chun Hung
(3) Samuel Parchert

Most Answered Correctly
(1) Zicong Gao
(2) Marshall Kusabs
(3) Juhua Huang

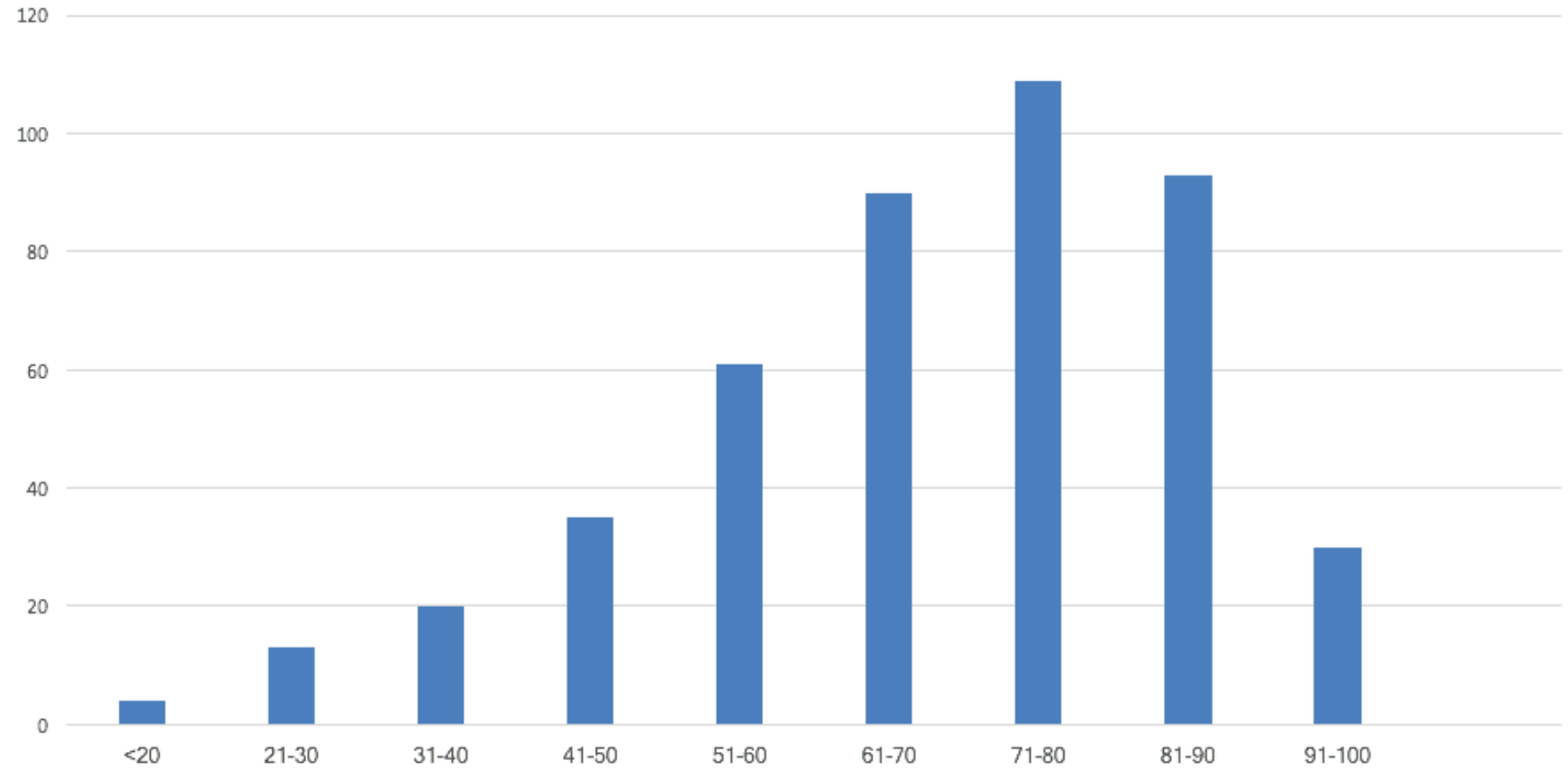
Piazza

Highest Contribution
(1) Scott Wong
(2) Jie Peng
(3) Maigan Palmer

Course

Highest Overall grade
(1) Oliver Jeaffreson
(2) Ruidan Wang
(3) Tom Wang

Current Course Grade Distribution



I'll be adding 3% to your final course grade to carter for the difficulty level of the course compared to previous offerings.

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Final Exam

Date/Time: November 5th at 8am

Venue: please check exam timetable (could be different for different last names)

Bring your Student Card

One A4 sheet of handwritten or typed notes double sided is permitted

Final Exam

- The final exam will address (theoretical) material from the entire semester
- Students are required to pass the final exam i.e. to obtain at least 50% in the Final Exam to pass the subject.

Final Exam

- Centrally Controlled
- Time allowed for working: 2 hours
- Time allowed for perusal: 10 minutes
- Answer all questions
- Write in the space provided on the exam paper
- Questions carry the number of marks indicated

Final Exam Questions

1. ER Diagrams – (10 marks) Drawing an ER diagram
2. Relational Model – (5 marks) Similar in format to the question from Quiz 1.
3. ER to Relational Mapping – (5 marks)
4. Functional Dependency and Minimal Cover – (8 marks)
5. Normalisation – (8 marks)
6. SQL – (20 marks) Using the student, college apply schema and data used during Lectures
7. Data Warehousing and OLAP– (10 marks) Using the sales schema used during Lectures
8. Database Security – (10 marks)
9. Open Question– (4 marks)

Preparing for the Final exam

- Lecture Notes
- Textbook
- Tutorial Questions
- LDBM
- RiPPLE Questions
- Class Exercises & Practice Questions
- Passed Final exams through Library
- Quizzes and mock Quizzes.
- Piazza

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Core Courses

- **INFS1200 Information Systems** will give you foundations of what a database system does and how to use it
- **INFS2200 Relational Database Systems** on what the database management software does and how to administer it
- What effect multiple computers and huge amounts of data have in **INFS3200 Advanced Database Systems**

Advanced Courses

- **INFS3202 Web Information Systems** (how the Web affects information systems)
- **INFS3204 Service-Oriented Architectures** (how organizations can be tied together using information systems technology).
- **INFS4205 High Dimensional Data** covers techniques on managing spatial and multimedia data
- **INFS4203 Data Mining** covers discovery of patterns and anomalies in large volumes of data, including the Web
- **INFS7410 Information Retrieval** where you can learn how search engines work and are built

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