

Lecture 19: Revision

Mid-Semester Exam Revision

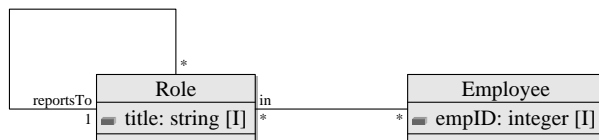
- UML class diagram translation
- UML class modelling
- Manual evaluation of SQL
- Writing SQL queries
- Integrity constraints
- Relational Algebra and Calculus

Exam Outline

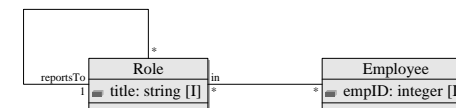
- 1 SQL
  - a Manually evaluate 2 simple SQL queries against a given database **[2 marks]**
  - b Write SQL queries to satisfy 3 requirements **[6 marks]**
- 2 Relational Model
  - a Two short-answer questions about integrity constraints **[4 marks]**
- 3 UML
  - a Model a simple scenario given as text, using a UML class diagram **[3 marks]**
  - b Translate a given UML class diagram into SQL CREATE SCHEMA statements **[3 marks]**
- 4 Relational Algebra and Calculus
  - a Manually evaluate a simple relational algebra query against a given database **[1 mark]**
  - b Write a relational calculus query to satisfy a textual requirement **[1 mark]**

UML Translation

(However, its convenient to cover this material in a slightly different order.)

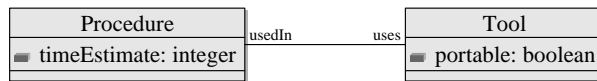


Translation Outline from Lecture 9



- For each class, create a relation schema with
  - 1 a relation attribute for each class attribute
  - 2 specify the primary key, as indicated in the diagram
- For each many-many association, create a relation schema with a foreign key for each association end (union of these attribs is primary key)
- For each many-one association, add a foreign key to the class at the many end

## UML Class Modelling Eg from 2007 mid-test, Q1.(e)



Add to the class diagram above to cater for the following new requirements. The organisation is expanding and will have several workshops. The workshops will have different types of tools available. Queries will be needed to determine which workshops have the tools required to perform a given procedure.

## Integrity Constraints

ie, Primary keys, foreign keys

Questions such as

- What's wrong with these tables, given these integrity constraints
- What would happen if you attempted a certain operation

## Relational Algebra and Calculus

Evaluate relational algebra query.

Write relational calc query, eg, list the employees that are not in any role.