Review

Views

• Derived/Not stored directly
• Ex:
  
  `create view good_sailors
  as select * from sailors where rating>=7;`

  `select *
  from good_sailors;`

Chapter 1-2

• File system vs. DBMS
• Advantages of a DBMS
• When not to use DBMS?
Chapter 1-2

• Three-level of abstraction
  – What are they?

• Data independence
  – What is it?
  – How many different kinds?
  – Example for each kind.

• Transaction management
  – What is a transaction?
  – What mechanism is used to ensure the integrity?

Chapter 1-2

• People who work with databases

Chapter 3

• Relation
  – Relation schema
  – Relation instance (tuple, record, row)
  – Field (column, attribute)
    • Domain
      – Name and values
  – Degree (number of fields)
  – Cardinality (number of records)
  – Integrity Constraints
Chapter 7

- Know how to draw ER and use it to express your application requirements

- Entities
  - Definition, graphical representation in ER

- Attributes
  - Definition, graphical representation in ER
  - Domain, key, primary key, candidate key

- Relationships
  - Definition, graphical representation in ER
  - Can relationship have attributes?
  - Role and role indicators

Chapter 7

- Key constraints
  - One-to-many
  - Many-to-many
  - Graphical representations in ER

- Participation constraints
  - Total vs. partial
  - Graphical representations in ER

Chapter 7

- Weak entities
  - Identifying owner
  - Be in total participation with the owner
  - Partial key
  - Graphical representations in ER

- Conceptual design with ER model
Chapter 9.1

• ER to Relational
  – Entities
  – Relations without constraints
  – Relations with key constraints
  – Relations with participation constraints
  – Weak entities
  – Class hierarchies

Chapter 4

• SQL commands for creating tables
  • INSERT
  • DELETE
  • UPDATE

• Be careful with the syntax

Chapter 4

• Integrity constraints
  – Key constraints
    • Primary key, superkey, candidate key
    • SQL syntax (UNIQUE, CONSTRAINT)
  – Foreign key constraints
    • SQL syntax
  – Domain constraints
  – NULL constraints
Chapter 4

• Integrity constraints
  – ON DELETE/UPDATE
    • CASCADE
    • NO ACTION
    • SET DEFAULT
    • SET NULL

Chapter 6

• Relational algebra
  – Basic operations
    • Selection
    • Projection
    • Set operations
      – Union
      – Difference
      – Cross-product
  – Other operations
    • Intersection
    • Join
      – Equijoin
        • Natural join
    • Division

Chapter 4-5

• Basic queries
  SELECT
  FROM
  WHERE

• What is the order in which the query is executed?
Chapter 4-5

• Cross product between the same table
  – When do we need it?
  – How do we rename columns or tables?

• How many tables do we need?

Chapter 4-5

• UNION, INTERSECT, EXCEPT

• String comparison
  – LIKE ‘_’, ‘%’

Chapter 4-5

• Nested queries
  – WHERE … IN ( )
  – Can have several layers
  – Can act as argument
<table>
<thead>
<tr>
<th>Chapter 4-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Aggregate operators</td>
</tr>
<tr>
<td>– COUNT</td>
</tr>
<tr>
<td>– SUM</td>
</tr>
<tr>
<td>– AVG</td>
</tr>
<tr>
<td>– MAX</td>
</tr>
<tr>
<td>– MIN</td>
</tr>
<tr>
<td>• GROUP BY</td>
</tr>
<tr>
<td>• HAVING</td>
</tr>
<tr>
<td>• What is the order of execution?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quiz #5</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What does the * mean in SQL?</td>
</tr>
<tr>
<td>• What does this say?</td>
</tr>
<tr>
<td>Select E.eid</td>
</tr>
<tr>
<td>From Employees E</td>
</tr>
<tr>
<td>Where E.salary = (Select MAX(E2.salary)</td>
</tr>
<tr>
<td>From Employees E2)</td>
</tr>
<tr>
<td>• Provide the SQL for this:</td>
</tr>
<tr>
<td>Find the names of all employees who are directly supervised by ‘Franklin Wong’</td>
</tr>
</tbody>
</table>