SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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Accredited by NAAC – UGC with 'A' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE NAME : 23CS207 - DATABASE MANAGEMENT SYSTEMS

II YEAR / IV SEMESTER

Unit 2- Relational Model

Topic 3 : Relational Algebra

Relational Query Languages

- *Query languages:* Allow manipulation and retrieval of data from a database.
- Relational model supports simple, powerful QLs:
  - Strong formal foundation based on logic.
  - Allows for much optimization.
- Query Languages != programming languages!
  - QLs not expected to be "Turing complete".
  - QLs not intended to be used for complex calculations.
  - QLs support easy, efficient access to large data sets.

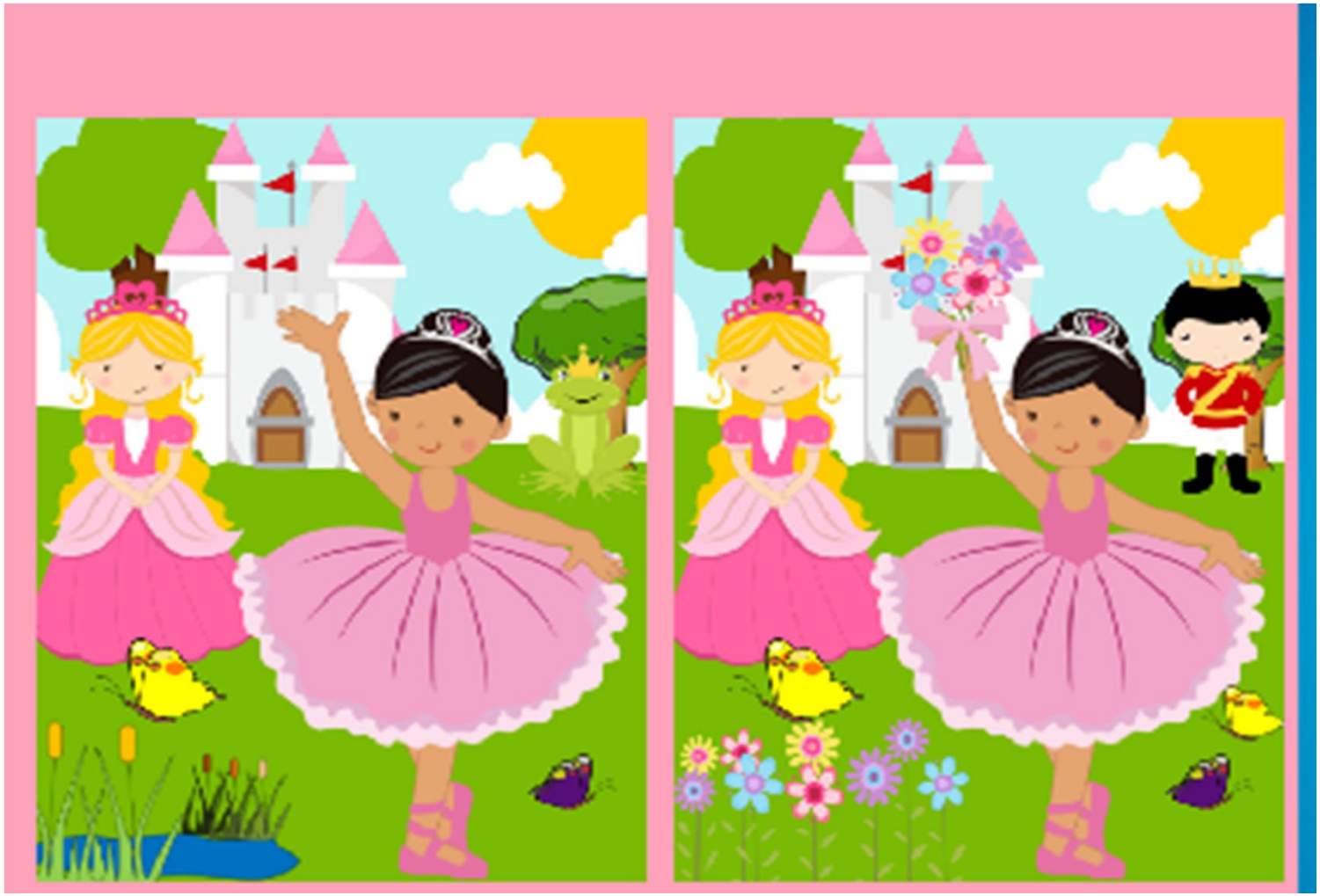
Formal Relational Query Languages

- Two mathematical Query Languages form the basis for "real" languages (e.g. SQL), and for implementation:
  - *Relational Algebra*: More operational(procedural), very useful for representing execution plans.
  - *Relational Calculus*: Lets users describe what they want, rather than how to compute it. (Non-operational, *declarative*.)

Relational Algebra

- Basic operations:
  - *Selection* ( ) Selects a subset of rows from relation.
  - *Projection* ( ) Deletes unwanted columns from relation.
  - *Cross-product* ( ) Allows us to combine two relations.
  - *Set-difference* ( ) Tuples in reln. 1, but not in reln. 2.
  - *Union* ( ) Tuples in reln. 1 and in reln. 2.
- Additional operations:
  - Intersection, *join*, division, renaming: Not essential, but (very!) useful.

BREAK



T1

sid	bid	day
22	101	10/10/96
58	103	11/12/96

EXAMPLE

T2

sid	sname	rating	age
22	dustin	7	45.0
31	lubber	8	55.5
58	rusty	10	35.0

T3

sid	sname	rating	age
28	yuppy	9	35.0
31	lubber	8	55.5
44	guppy	5	35.0
58	rusty	10	35.0

Union, Intersection, Set-Difference

T2

sid	sname	rating	age
22	dustin	7	45.0
31	lubber	8	55.5
58	rusty	10	35.0

T3

sid	sname	rating	age
28	yuppy	9	35.0
31	lubber	8	55.5
44	guppy	5	35.0
58	rusty	10	35.0

sid	sname	rating	age
22	dustin	7	45.0

$T2-T3$

sid	sname	rating	age
22	dustin	7	45.0
31	lubber	8	55.5
58	rusty	10	35.0
44	guppy	5	35.0
28	yuppy	9	35.0

$T2 \cup T3$

sid	sname	rating	age
31	lubber	8	55.5
58	rusty	10	35.0

$T2 \cap T3$

Evaluation

What are the basic operation ?

a)_____

b)_____

c)_____

Answer

a) *Selection*

b) *Projection*

c) *Union*

REFERENCES

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4. Raghu Ramakrishnan, —Database Management Systems||, Fourth Edition, McGraw-Hill College Publications, 2015.

THANK YOU