VIEWS & DATA DICTIONARY

Database Management System

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VIEWS

- Virtual tables derived from base tables

- Do not exist physically

- A way of specifying a table that we need to reference frequently

- Can query view table just like any base tables

- Hides complexity of data,

- Provides security of data

- Can join & simplify multiple tables into a single virtual table

VIEWS

- Syntax:
  create view <viewname> as select <list of attributes> from <base table>

  ex: create view stud_mark as select student.regd, student.name, mark.eng,   mark.math from student, mark where student.regd = mark.regd;

- Views can be implemented by 2 approaches:

  1. Query modification
  2. View materialization

VIEWS

- Query modification
  1. Involves modifying the view query into the query on the underlying base table
  2. Given a particular update on a particular view, what updates need to be applied to which underlying base relvars to implement original view update.
  3. Ex: select name, regd from stud_mark where math > 80;

  4. select name, regd from student, mark where student.regd = mark.regd and mark.math > 80;

VIEWS

- View materialization

  1. 'converting to physical form'

  2. Involves physically creating a temporary view table when view is first queried & keeping that table on assumption that other queries on the view will follow

  3. An efficient strategy for automatically updating the view table when base tables are updated must be developed in order to keep the view up to date.

  4. Techniques using concept of incremental update have been developed for this purpose, where it is determined what new tuples must be modified in a materialized view table when a change is applied to one of the base tables

VIEWS

- View materialization (cont…)

  5. View is generally kept as long as it is being queried. If such view is not used for some time, the system may remove the view & re-compute it from scratch when required later.

Pros of Views:

- Provides automatic security for hidden data

- Provides view of same data in different views/ways

- Provides logical data independence (immunity to change in logical structure of db)

- Provides a short hand (macro capability)

DATA DICTIONARY

- A.k.a. data repository, catalogue, data encyclopaedia

- Mini DBMS that manage meta-data

- System db rather than user db

- Contains data about data (definitions of system objects)

- Possible to query the dictionary just like other db

- Data could be Schemas, mappings, security constraints, integrity constraints, etc.

- Often used as an integral tool for information resource management

DATA DICTIONARY

- A useful data dictionary system should store & manage following types of info:

  1. Description of schemas of db system

  2. Detailed info on physical db design

  3. Descriptions of db users, their responsibilities & access rights

  4. High level description of db transactions, applications & of relationships of users to transactions

  5. Usage statistics such as frequencies of queries, transactions & access counts to different positions of db

Data Dictionary

Data Dictionary outlining a Database on Driver Details in NSW

Field Name	Data Type	Data Format	Field Size	Description	Example
License ID	Integer	NNNNNN	6	Unique number ID for all drivers	12345
Surname	Text		20	Surname for Driver	Jones
First Name	Text		20	First Name for Driver	Arnold
Address	Text		50	First Name for Driver	11 Rocky st Como 2233
Phone No.	Text		10	License holders contact number	0400111222
D.O.B	Date / Time	DD/MM/YYYY	10	Drivers Date of Birth	08/05/1956

Attribute Name	Required	Type	Field Length	Default Values	Notes
Article Title	Yes	Text	250	n/a	Can contain HTML.
Article Author	Yes	Look-Up	n/a	n/a	
Article Category	Yes	Look-Up	n/a	Uncategorized	
Article Content	No	Text	Unlimited	n/a	Can contain HTML.

KEEP
CALM
IT'S
QUIZ
TIME

- 1. What does SQL stand for?
A. Structured Query Language
B. Structured Question Language
C. Strong Question Language

A

Below is part of a table from a database.

Pupil_ID	Surname	Forename	TG	Contact number
4536	Cade	Robert	9PKF	01453 873456
4545	Calam	Mavis	9RFG	01453 784563
4589	Lakin	Tracy	9VDF	01452 887864
4593	Radford	Peter	9PKF	01453 842227
4604	Ramsey	Kevin	9SDA	01453 856709
4632	Smith	Amy	9PLA	01452 865634

Which statement is correct about the above database table?

A.   ? | The 'Contact' field must be set to be a text field.

B.   ? | The 'Contact' record must be set to be a number field.

C.   ? | The 'Contact' field must be set to be a number field.

D.   ? | The 'Contact' record must be set to be a text field.

A

Below is part of a table from a database.

Pupil_ID	Surname	Forename	TG	Contact number
4536	Cade	Robert	9PKF	01453 873456
4545	Calam	Mavis	9RFG	01453 784563
4589	Lakin	Tracy	9VDF	01452 887864
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4604	Ramsey	Kevin	9SDA	01453 856709
4632	Smith	Amy	9PLA	01452 865634

How many **records** are there in the database table?

A. ? Six

B. ? Five

C. ? Seven

D. ? Four

A

Below is part of a table from a database.

Pupil_ID	Surname	Forename	TG	Contact number
4536	Cade	Robert	9PKF	01453 873456
4545	Calam	Mavis	9RFG	01453 784563
4589	Lakin	Tracy	9VDF	01452 887864
4593	Radford	Peter	9PKF	01453 842227
4604	Ramsey	Kevin	9SDA	01453 856709
4632	Smith	Amy	9PLA	01452 865634

How many **fields** are there in the database table?

A. ? Six

B. ? Three

C. ? Four

D. ? Five

D

Below is part of a table from a database.

Pupil_ID	Surname	Forename	TG	Contact number
4536	Cade	Robert	9PKF	01453 873456
4545	Calam	Mavis	9RFG	01453 784563
4589	Lakin	Tracy	9VDF	01452 887864
4593	Radford	Peter	9PKF	01453 842227
4604	Ramsey	Kevin	9SDA	01453 856709
4632	Smith	Amy	9PLA	01452 865634

Which statement best describes how this database table has been sorted?

A. ___?___ The database table has been sorted alphabetically, in descending order, by the Surname field.

B. ___?___ The database table has been sorted numerically, in ascending order, by the Surname field.

C. ___?___ The database table has been sorted alphabetically, in ascending order, by the Surname field.

D. ___?___ The database table has been sorted alphabetically, in ascending order, by the Surname record.

C

- In which language (DDL/DML) does these following queries belong to?

- CREATE to create a new table or database.

- ALTER for alteration.

- Truncate to delete data from the table.

- DROP to drop a table.

- RENAME to rename a table.

DDL

- A _____ in a table represents a relationship among a set of values.
  a) Column
  b) Key
  c) Row
  d) Entry

C

- The term _____ is used to refer to a row.
  a) Attribute
  b) Tuple
  c) Field
  d) Instance

B

- The term attribute refers to a _____ of a table.
a) Record
b) Column
c) Tuple
d) Key

B

- For each attribute of a relation, there is a set of permitted values, called the _____ of that attribute.
  a) Domain
  b) Relation
  c) Set
  d) Schema

A

- Course(course_id,sec_id,semester)
  Here the course_id,sec_id and semester are _____ and course is a _____
  a) Relations, Attribute
  b) Attributes, Relation
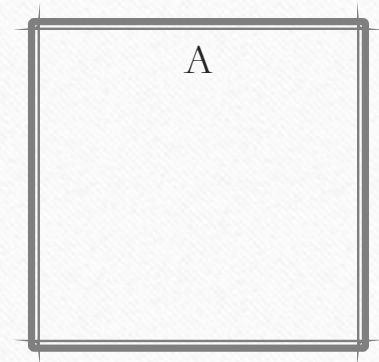 c) Tuple, Relation
  d) Tuple, Attributes

B
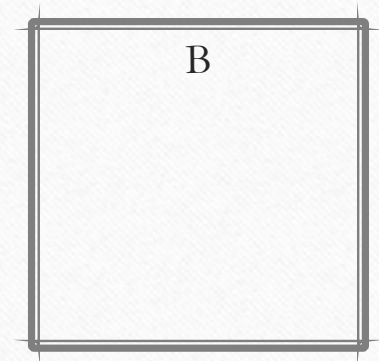
A domain is atomic if elements of the domain are considered to be _____ units.

a) Different
b) Indivisbile
c) Constant
d) Divisible

B
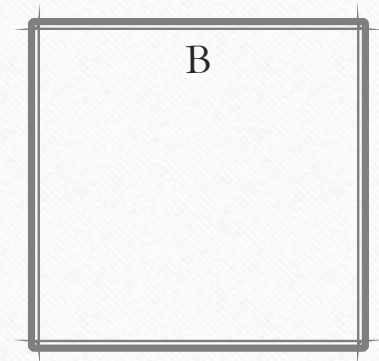
The tuples of the relations can be of _____ order.
a) Any
b) Same
c) Sorted
d) Constant

A

Which one of the following is a procedural language ?
a) Domain relational calculus
b) Tuple relational calculus
c) Relational algebra
d) Query language

C

Which of the following is used to denote the selection operation in relational algebra ?
a) Pi (Greek)
b) Sigma (Greek)
c) Lambda (Greek)
d) Omega (Greek)

B

A query in the tuple relational calculus is expressed as:
a) {t | P() | t}
b) {P(t) | t }
c) {t | P(t)}
d) All of the mentioned

C

A set of possible data values is called
a) Attribute
b) Degree
c) Tuple
d) Domain

D

The attribute name could be structured as a attribute consisting of first name, middle initial, and last name. This type of attribute is called
a) Simple attribute
b) Composite attribute
c) Multivalued attribute
d) Derived attribute

B

The attribute AGE is calculated from DATE_OF_BIRTH . The attribute AGE is
a) Single valued
b) Multi valued
c) Composite
d) Derived

D

The entity relationship set is represented in E-R diagram as
a) Double diamonds
b) Undivided rectangles
c) Dashed lines
d) Diamond

D

Last question for this session:
An entity set that does not have sufficient attributes to form a primary key is termed a _____
a) Strong entity set
b) Variant set
c) Weak entity set
d) Variable set

C

Thank you!