

Objectives

- Purpose of views
- Advantages and disadvantages of views
- ◆Create and drop views using SQL
- ♦ View materialization
- Under what conditions are views updatable

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Simple vs Materialized Views

- Dynamic result of one or more relational operations operating on base tables
- Normally stored as a query definition, no data
- Virtual table produced upon request, not necessarily exists in the database
- Defined as a query on one or more base tables
- View materialization is relatively new, common in data warehousing applications
- With view materialization, the view is stored as a temporary table, and maintained as the underlying base tables are updated

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Simple Views: Pros and Cons Advantages : Disadvantages : ◆ Improved Security Performance Reduced Complexity Update restriction Customization Structure restriction (e.g.constraints not Data Independence supported, cannot Data integrity reference itself) No extra storage required Keith Tang COMP2714

SC	L - CREATE VIEW
A	REATE VIEW ViewName [(ColumnName [,])] 5 subselect WITH [CASCADED LOCAL] CHECK OPTION]
	list of column names is specified, it must have same umber of items as produced by subselect
	omitted, each column takes name of corresponding olumn in subselect
	st must be specified if there is any ambiguity in a solumn name
• ◆ TI	ne subselect is known as the defining query
♦ So	ome DBMSs support only WITH CHECK OPTION
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SQL - CREATE VIEW Need SELECT privilege on all tables referenced in subselect and USAGE privilege on any domains used in referenced columns WITH CHECK OPTION − applicable only for updatable views If a modified row fails to satisfy WHERE clause of defining query, ensure it is not done to base table Forces all data modification statements executed against the view to adhere to the criteria set within the defining query Ensures the data remains visible through the view after the modification is committed

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CREATE VIEW Examples

CREATE VIEW au_names

AS

SELECT au_id, au_fname, au_lname

FROM authors;

CREATE VIEW cities

(au_id, au_city, pub_id, pub_city)

AS

SELECT a.au_id, a.city, p.pub_id, p.city

FROM authors a

INNER JOIN publishers p

ON a.city = p.city;

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CREATE VIEW Examples View that lists total revenue grouped by book type within publishers CREATE VIEW revenues (Publisher, BookType, Revenue) AS SELECT pub_id, type, SUM(price * sales) FROM titles GROUP BY pub_id, type; Kelth Tang COMP2714

DROP VI	EW	
	RICT CASCADE];	
	all dependent objects are down defined on the view bein	
	(default): if any other object ence on continued existence ped, command is rejected	ls depend for of the view
◆ For example		
DROP VIEW r	ny_authors;	
	s do not support [RESTRIC orts CREATE OR REPLAC	
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View Materialization

- Newer DBMS feature, and commonly used in data warehousing application
- Materialization means the view definition query is executed and the data result is stored
- Speeds up performance in handling large volume of data (over terabytes)
- Data currency is maintained by DBMS when underlying base tables are updated

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SQL syntax varies between DBMSs

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View Updatability

- An updateable view is one to which one can apply INSERT, UPDATE and DELETE statements.
- For view to be updatable, DBMS must be able to trace any row or column back to its row or column in the source table.
- View is not updateable if its SELECT definition uses GROUP BY, HAVING, DISTINCT or aggregate functions.
- Single-table views are almost always updateable if the primary key is included in the view.
- Can use INSTEAD OF triggers

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View Updatability

- ◆ SQL-92 : A view is updatable if and only if:
 - DISTINCT is not specified
 - Every element in SELECT list of defining query is a column name and each column appear only once
 - FROM clause specifies only one table, excluding any views based on JOIN, UNION, INTERSECT or EXCEPT
 - No nested SELECT referencing outer table
 - No GROUP BY or HAVING clause
 - Also, every row added through view must not violate integrity constraints of base table
- SQL:1999 relaxed some restrictions

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View Updatability

CREATE VIEW ny_authors

AS

SELECT au_id, au_fname, au_lname, state

FROM authors

WHERE state = 'NY';

UPDATE ny_authors

SET au_fname = 'Yasmin',

au_lname = 'Howcomely'

WHERE au_id = 'A01';

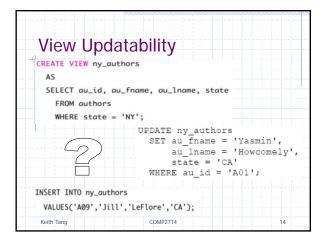
INSERT INTO ny_authors

VALUES('A08','Don','Dawson','NY');

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```



WITH CHECK OPTION ◆ Rows exist in a view because they satisfy WHERE condition of defining query ◆ If a row changes and no longer satisfies condition, it disappears from the view ◆ New rows appear within view when insert/update on view cause them to satisfy WHERE condition ◆ Rows that enter or leave a view are called migrating rows ◆ WITH CHECK OPTION prohibits a row migrating in or out of the view Kelth Tang COMP2714 15

WITH CHECK OPTION			
CREATE VIEW ny_authors			
AS SELECT au_id, au_fname, au_lname, state FROM authors	,		
WHERE state = 'NY' WITH CHECK OPTION;			
The following statements will generate a UPDATE ny author			
SET au_fname	= 'Yasmin', = 'Howcomely',		
VALUES('A09','Jill','LeFlore','CA');			
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