Data Base Technologies

Database Objects

Views

A View is a virtual table in the database whose contents are defined by a query.

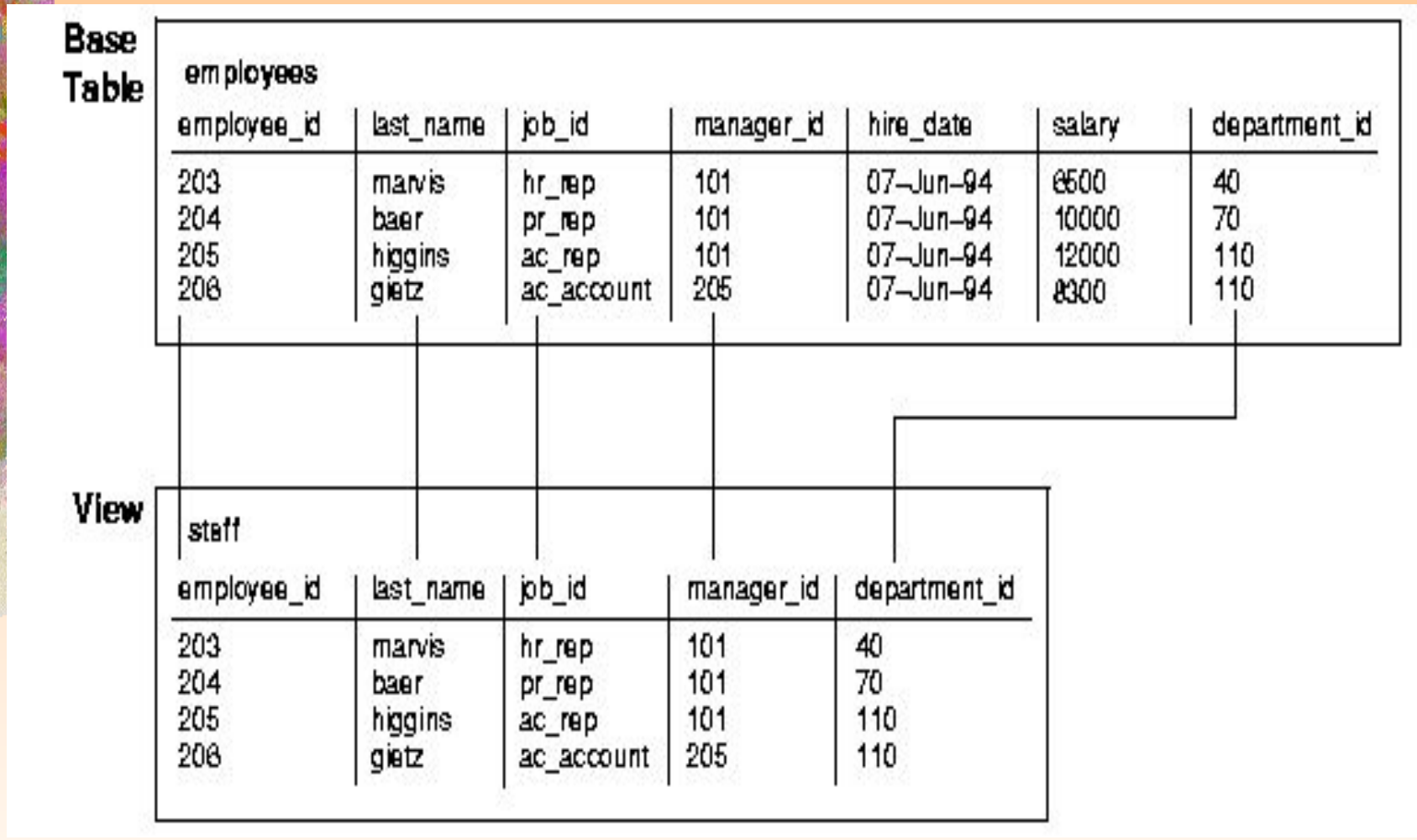
It can represent

- a subset of the data in a table(some of the columns or rows from the base table)
- Data from multiple tables (joins)

Unlike table, view is not allocated any storage space

View doesn’t contain any data.It is a stored query.

View is stored in the data dictionary , information_schema


Base Table
employees
employee_id
last_name
job_id
manager_id
hire_date
salary
department_id
203 marvis hr_rep 101 07–Jun–94 6500 40
204 baer pr_rep 101 07–Jun–94 10000 70
205 higgins ac_rep 101 07–Jun–94 12000 110
206 gietz ac_account 205 07–Jun–94 8300 110
View
staff
employee_id
last_name
job_id
manager_id
department_id
203 marvis hr_rep 101 40
204 baer pr_rep 101 70
205 higgins ac_rep 101 110
206 gietz ac_account 205 110

Importance of Views

- Provide an additional level of table security by restricting access to a predetermined set of rows or columns of a table
- Hide data complexity
- Simplify statements for the user
- Present the data in a different perspective from that of the base table
- Isolate applications from changes in definitions of base tables
- Save complex queries

Creating a View

CREATE [OR REPLACE]
VIEW view name **AS** query
[WITH CHECK OPTION];

OR REPLACE : Replaces the view if already exists.

WITH CHECK OPTION: Inserts & updates performed through the view will result in rows that the view can select.

Guidelines for creating a view

- The view's default column names are same as the table's column names.
- New column names are explicitly listed in the CREATE VIEW clause.They should have one-to-one relationship with the column names listed in the select clause of the query.
- New column names may be used where ever it is appropriate to change the column names appearing in the output of the view.

Guidelines for creating a view

- GROUP BY clause can be used in the definition of a view.
- Views may be joined or nested with other tables or views.
- To create the view successfully one must have permissions to access all the tables referenced in the query.

Sequences

Sequences are database objects used to generate unique integers

A sequence is an independent object and can be used with any table that requires its output.

Sequences are generally used to automatically generate Primary key values.

Syntax

CREATE SEQUENCE sequence_name
[START WITH integervalue
INCREMENT BY integervalue
MAXVALUE integervalue/NOMAXVALUE
MINVALUE integervalue/NOMINVALUE
CYCLE/NOCYCLE
CACHE integervalue/NOCACHE]

Sequences

INCREMENT BY Specify the interval between sequence numbers. This integer value can be any positive or negative integer, but it cannot be 0.
If this value is negative, then the sequence descends.
If the increment is positive, then the sequence ascends.
If you omit this clause, the interval defaults to 1.

START WITH Specify the first sequence number to be generated
For ascending sequences, the default value is the minimum value of the sequence. For descending sequences,the default value is the maximum value of the sequence.

Sequences

MAXVALUE Specify the maximum value the sequence can generate. MAXVALUE must be equal to or greater than START WITH and must be greater than MINVALUE.

MINVALUE Specify the minimum value of the sequence. `MINVALUE` must be less than or equal to `START WITH` and must be less than `MAXVALUE`.

Sequences

CYCLE Specify `CYCLE` to indicate that the sequence continues to generate values after reaching either its maximum or minimum value.

After an ascending sequence reaches its maximum value, it generates its minimum value.

After a descending sequence reaches its minimum, it generates its maximum.

CACHE Specify how many values of the sequence Oracle preallocates and keeps in memory for faster access. The minimum value for this parameter is 2.

Synonyms

- A **synonym** is an alias for any table, view, materialized view, sequence, procedure, function, or package.
- Because a synonym is simply an alias, it requires no storage other than its definition in the data dictionary.

Synonyms

- Mask the name and owner of an object
- Provide location transparency for remote objects of a distributed database
- Simplify SQL statements for database users
- Enable restricted access

Synonyms

Private synonym is in the schema of a specific user who has control over its availability to others.

Every user in a database can access a **public** synonym

CREATE PUBLIC SYNONYM
synonym_name FOR user.table_name.

Index

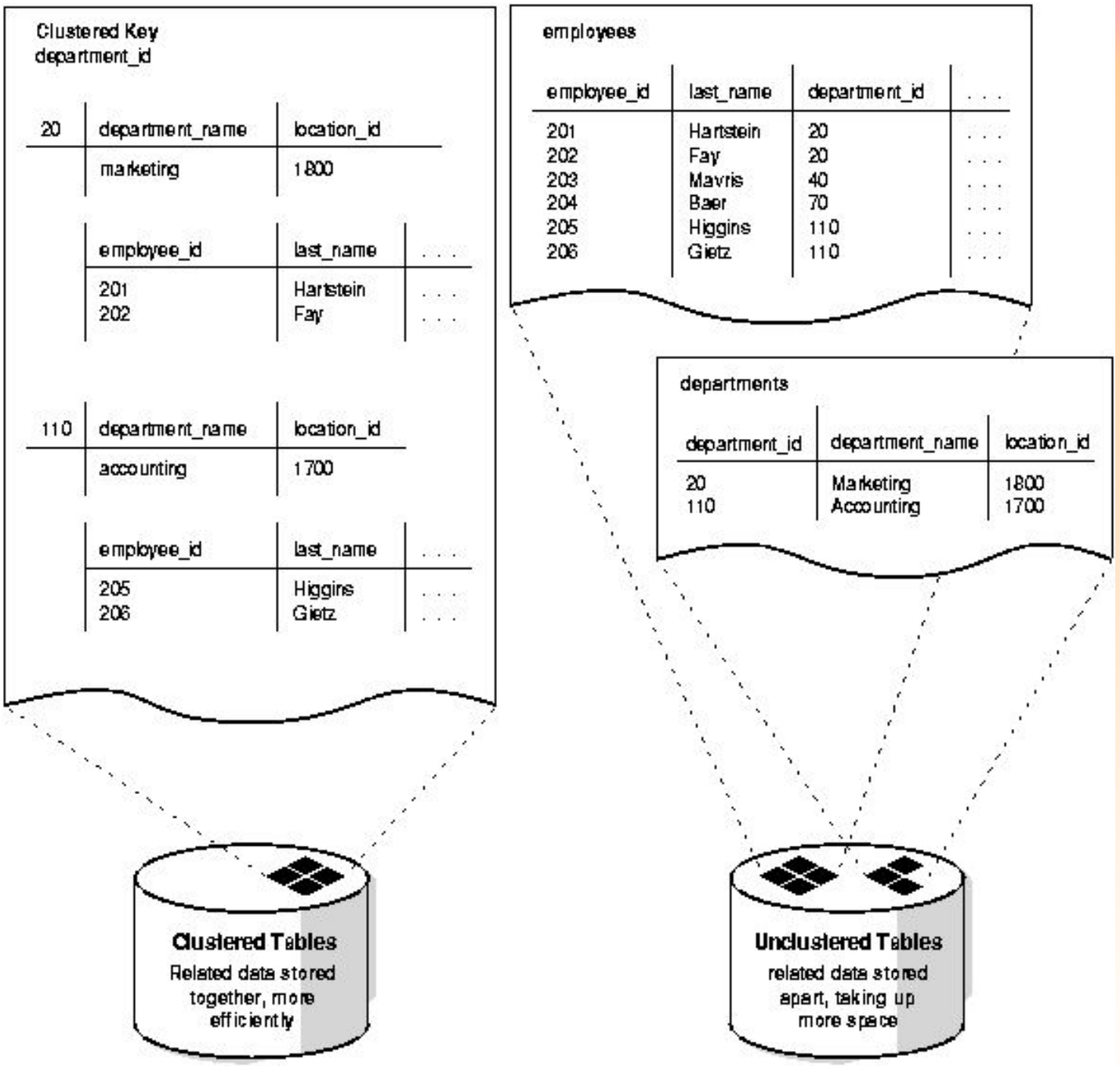
Indexes are database objects created on one or more columns of a table to speed SQL statement execution on the table.

Oracle index provides a faster access path to table data.

Oracle uses B-trees to store indexes.

Cluster

A cluster is a group of tables that share the same data blocks because they share common columns and are often used together.


Clustered Key
department_id
20
department_name
location_id
marketing
1800
employee_id
last_name
. . .
201
Hartstein
. . .
202
Fay
. . .
110
department_name
location_id
accounting
1700
employee_id
last_name
. . .
205
Higgins
. . .
206
Gietz
. . .
employees
employee_id
last_name
department_id
. . .
201
Hartstein
20
. . .
202
Fay
20
. . .
203
Mavris
40
. . .
204
Baer
70
. . .
205
Higgins
110
. . .
206
Gietz
110
. . .
departments
department_id
department_name
location_id
20
Marketing
1800
110
Accounting
1700
Clustered Tables
Related data stored together, more efficiently
Unclustered Tables
related data stored apart, taking up more space

Cluster

- Disk space is reduced for joins of clustered tables.
- Access time improves for joins of clustered tables.
- In a cluster, a **cluster key value** is the value of the cluster key columns for a particular row.
- Each cluster key value is stored only once each in the cluster and the cluster index, no matter how many rows of different tables contain the value. Therefore, less storage is required to store related table and index data in a cluster

Materialized Views (Snapshots)

- It is a local copy of remote tables.
- In distributed environments, materialized views are used to replicate data at distributed sites and synchronize updates done at several sites The materialized views as replicas provide local access to data that otherwise has to be accessed from remote sites.

Materialized Views (Snapshots)

CREATE MATERIALIZED VIEW view_name
REFRESH [FAST/COMPLETE/FORCE]
START WITH
AS query

create materialized view employee
refresh complete
start with sysdate next sysdate+7
with primary key
as select * from emp@REMOTE_CONNECT

Materialized Views (Snapshots)

create public database link REMOTE_CONNECT
connect to current_user
using ‘connect_string’

create public database link REMOTE_CONNECT
connect to scott identified by tiger
using ‘connect_string’