**CLASS EXERCISE, CHAPTER 10 and 11 -- CREATING INDEXES and SEQUENCES plus DATA DICTIONARY VIEWS**

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**REMOVING and RESTORING TABLES**

*\*Firstly, we will create two tables to play with \**

SQL> CREATE TABLE STAFF AS

SELECT employee\_id, last\_name, hire\_date, job\_id,

salary, department\_id

FROM employees;

Table created.

SQL> CREATE TABLE MINISTAFF AS

SELECT employee\_id, last\_name, hire\_date, job\_id, salary

FROM employees

WHERE department\_id IN (10,20,60,80);

Table created.

SQL> SELECT \* FROM ministaff;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **EMPLOYEE\_ID** | **LAST\_NAME** | **HIRE\_DAT** | **JOB\_ID** | **SALARY** |
| 200 | Whalen | 87-09-17 | AD\_ASST | 4400 |
| 201 | Hartstein | 96-02-17 | MK\_MAN | 13000 |
| 202 | Fay | 97-08-17 | MK\_REP | 6000 |
| 103 | Hunold | 90-01-03 | IT\_PROG | 9000 |
| 104 | Ernst | 91-05-21 | IT\_PROG | 6000 |
| 107 | Lorentz | 99-02-07 | IT\_PROG | 4200 |
| 149 | Zlotkey | 00-01-29 | SA\_MAN | 10500 |
| 174 | Abel | 96-05-11 | SA\_REP | 11000 |
| 176 | Taylor | 98-03-24 | SA\_REP | 8600 |

9 rows selected.

SQL> DROP TABLE STAFF;

Table dropped. 🡪 **this was temporary removal to recyclebin**

SQL> SELECT original\_name, droptime

FROM recyclebin ;

|  |  |
| --- | --- |
| **ORIGINAL\_NAME** | **DROPTIME** |
| STAFF | 2006-12-03:11:13:47 |

SQL> DESC staff

ERROR:   
ORA-04043: object staff does not exist

SQL> FLASHBACK TABLE staff TO BEFORE DROP;

Flashback complete. **🡪 this was restore from recyclebin**

SQL> DESC staff

|  |  |  |
| --- | --- | --- |
| **Name** | **Null?** | **Type** |
| EMPLOYEE\_ID |  | NUMBER(6) |
| LAST\_NAME | NOT NULL | VARCHAR2(25) |
| HIRE\_DATE | NOT NULL | DATE |
| JOB\_ID | NOT NULL | VARCHAR2(10) |
| SALARY |  | NUMBER(8,2) |
| DEPARTMENT\_ID |  | NUMBER(4) |

SQL> DROP TABLE ministaff PURGE;

Table dropped. 🡪 **this was permanent removal (no recyclebin)**

SQL> SELECT original\_name, droptime

FROM recyclebin ;

no rows selected

SQL> FLASHBACK TABLE ministaff TO BEFORE DROP;

FLASHBACK TABLE ministaff TO BEFORE DROP

\*

ERROR at line 1:   
ORA-38305: object not in RECYCLE BIN

**🡪 we could not restore this table, it was not in the recycle bin after PURGE option**

**INDEXES**

SQL> CREATE INDEX staff\_salary\_idx ON staff(salary);

Index created. **🡪 We created a SINGLE index**

SQL> CREATE INDEX staff\_lname\_idx ON staff(last\_name);

Index created.

SQL> DROP INDEX staff\_lname\_idx;

Index dropped.

SQL> CREATE INDEX staff\_lname\_salary\_idx

ON staff(last\_name, salary);

Index created.

**🡪 In order to modify an Index we need to drop it and re-create it again. Here we created a COMPOSITE Index that will serve a dual purpose: for two columns and for the first mentioned one** (that is why we do NOT need an index just for the last name anymore, it is given with this composite one)

SQL> SELECT index\_name, uniqueness FROM **user\_indexes**

WHERE table\_name = ‘STAFF’ ;

|  |  |
| --- | --- |
| **INDEX\_NAME** | **UNIQUENESS** |
| STAFF\_SALARY\_IDX | NONUNIQUE |
| STAFF\_LNAME\_SALARY\_IDX | NONUNIQUE |

SQL> SELECT index\_name, column\_name, column\_position

FROM **user\_ind\_columns**

WHERE table\_name = ‘STAFF’ ;

**🡪 In order to see a column name that is indexed and their relative position (if index is a composite one) use user\_ind\_columns view**

|  |  |  |
| --- | --- | --- |
| **INDEX\_NAME** | **COLUMN\_NAME** | **COLUMN\_POSITION** |
| STAFF\_SALARY\_IDX | SALARY | 1 |
| STAFF\_LNAME\_SALARY\_IDX | SALARY | 2 |
| STAFF\_LNAME\_SALARY\_IDX | LAST\_NAME | 1 |

**SEQUENCES**

SQL> CREATE SEQUENCE staff\_empid\_seq

START WITH 111

MAXVALUE 200

NOCACHE ; **🡪 Default value for CACHE is 20 values**

Sequence created.

SQL> INSERT INTO staff VALUES (**staff\_empid\_seq.NEXTVAL**,’Moore’,sysdate,’IT\_PROG’,8000,60);

1 row created.

**🡪 We used AUTO option for generation of UNIQUE integer values with SEQUENCENAME.NEXTVAL here**

SQL> SELECT \* FROM staff

WHERE hire\_date = sysdate;

No rows selected. -- be careful when equalling dates

SQL> SELECT \* FROM staff

WHERE to\_date(hire\_date,'RR-MM-DD') =

to\_date(sysdate, 'RR-MM-DD');

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **EMPLOYEE\_ID** | **LAST\_NAME** | **HIRE\_DAT** | **JOB\_ID** | **SALARY** | **DEPARTMENT\_ID** |
| 111 | Moore | 06-12-03 | IT\_PROG | 8000 | 60 |

SQL> SELECT sequence\_name, last\_number

FROM **user\_sequences** ;

|  |  |
| --- | --- |
| **SEQUENCE\_NAME** | **LAST\_NUMBER** |
| DEPARTMENTS\_SEQ | 280 |
| EMPLOYEES\_SEQ | 207 |
| LOCATIONS\_SEQ | 3300 |
| STAFF\_EMPID\_SEQ | 112 |

**🡪 Column Last\_Number means actually NEXT available number (if NOCACHE option is used)**

SQL> ALTER SEQUENCE staff\_empid\_seq

MAXVALUE 140

CACHE 10;

Sequence altered.

SQL> SELECT sequence\_name, last\_number, cache\_size

FROM user\_sequences

WHERE sequence\_name LIKE ‘STAFF%’;

|  |  |  |
| --- | --- | --- |
| **SEQUENCE\_NAME** | **LAST\_NUMBER** | **CACHE\_SIZE** |
| STAFF\_EMPID\_SEQ | 122 | 10 |

**🡪 Column Last\_Number means actually FIRST number from the NEXT set of cached values (if CACHE option is used)**

SQL> INSERT INTO staff VALUES (staff\_empid\_seq.NEXTVAL,'Dunn',sysdate,'IT\_PROG',7000,60);

1 row created.

SQL> ROLLBACK;

Rollback complete.

SQL> INSERT INTO staff VALUES (staff\_empid\_seq.NEXTVAL,'Markov',sysdate,'IT\_PROG',11000,60);

1 row created.

SQL> SELECT \* FROM staff

WHERE to\_date(hire\_date,'RR-MM-DD') =

to\_date(sysdate, 'RR-MM-DD');

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **EMPLOYEE\_ID** | **LAST\_NAME** | **HIRE\_DAT** | **JOB\_ID** | **SALARY** | **DEPARTMENT\_ID** |
| 111 | Moore | 06-12-03 | IT\_PROG | 8000 | 60 |
| 113 | Markov | 06-12-03 | IT\_PROG | 11000 | 60 |

**🡪 So, if we perform any rollback, then we create gaps in the sequence values (employee Dunn got number 112 and that number was lost after rollback)**