***SESSION 6 UNDO TABLESPACES***

Last login: Tue Feb 8 11:57:27 2022 from 10.31.12.209

[student@oracledb19c ~]$ **su - oracle**

Password:

Last login: Tue Feb 8 11:57:39 EST 2022 on pts/0

The Oracle base remains unchanged with value /opt/oracle/app/oracle

[oracle@oracledb19c ~]$ **sqlplus / as sysdba**

SQL\*Plus: Release 19.0.0.0.0 - Production on Sat Feb 19 21:04:07 2022

Version 19.3.0.0.0

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Connected to: 🡨**Our Instance “student” is running**

Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production

Version 19.3.0.0.0

**SQL> SET PAGESIZE 120**

**SQL> SET LINESIZE 120**

SQL> **host**

[oracle@oracledb19c ~]$ **pwd**

/home/oracle

**\* Download script “scott2.sql” from BB, then with CTRL-a select the whole code and copy with CRTL-C. Then open a new file in VI editor (under same name),then press “i” and then paste everything with RIGHT CLICK, then click on YES. Finally, pres ESC and save your script by doing :wq \***

[oracle@oracledb19c ~]$ **vi scott2.sql**

[oracle@oracledb19c ~]$ exit

Exit

**\* Run your script “scott2.sql”. After that you will be logged as SCOTT \***

SQL**> @scott2;**

SQL> **select username from dba\_users;**

select username from dba\_users

\*

ERROR at line 1:

ORA-00942: table or view does not exist

SQL> **conn / as sysdba**

Connected.

SQL> **select username from dba\_users;**

USERNAME

-----------------------------------------------------------------------------

SYS

SYSTEM

XS$NULL

OJVMSYS

LBACSYS

OUTLN

SYS$UMF

DBSNMP

APPQOSSYS

DBSFWUSER

GGSYS

ANONYMOUS

CTXSYS

DVSYS

DVF

GSMADMIN\_INTERNAL

MDSYS

OLAPSYS

XDB

WMSYS

GSMCATUSER

MDDATA

SYSBACKUP

REMOTE\_SCHEDULER\_AGENT

GSMUSER

SYSRAC

GSMROOTUSER

SI\_INFORMTN\_SCHEMA

AUDSYS

DIP

ORDPLUGINS

SYSKM

ORDDATA

ORACLE\_OCM

**SCOTT 🡨 here is a new schema called SCOTT**

SYSDG

ORDSYS

37 rows selected.

SQL> **conn scott/tiger**

Connected.

SQL> **select tname from tab;**

TNAME

-----------------------------------------------------------------------------

DEPT

EMP

BONUS

SALGRADE

DUMMY

CUSTOMER

ORD

7 rows selected. **🡨 SCOTT has 7 tables in his account**

SQL> **DESC DEPT**

Name Null? Type

--------------------------------------------------------------- ---------

DEPTNO NOT NULL NUMBER(2)

DNAME CHAR(14)

LOC CHAR(13)

SQL> **SELECT \* FROM DEPT;**

DEPTNO DNAME LOC

---------- -------------- -------------

10 ACCOUNTING NEW YORK

20 RESEARCH DALLAS

30 SALES CHICAGO

40 OPERATIONS BOSTON

SQL> **desc emp**

Name Null? Type

----------------------------------------------------------------- ----------

EMPNO NOT NULL NUMBER(6)

ENAME CHAR(10)

JOB CHAR(9)

MGR NUMBER(4)

HIREDATE DATE

SAL NUMBER(7,2)

COMM NUMBER(7,2)

DEPTNO NOT NULL NUMBER(2)

SQL> **SELECT COUNT(\*) FROM emp;**

COUNT(\*)

----------

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SQL> **conn / as sysdba**

Connected.

SQL> **show parameter undo**

NAME TYPE VALUE

------------------------------------ ----------- ----------------------------

temp\_undo\_enabled boolean FALSE

**undo\_management string AUTO**

**undo\_retention integer 900**

undo\_tablespace string UNDOTBS1

**\* Default value for the UNDO RETENTION is 15 minutes (900 seconds) \***

SQL> **SELECT contents, extent\_management, allocation\_type,**

**initial\_extent, retention**

**FROM dba\_tablespaces**

**WHERE tablespace\_name ='UNDOTBS1';**

CONTENTS EXTENT\_MAN ALLOCATIO INITIAL\_EXTENT RETENTION

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**UNDO**  **LOCAL**  **SYSTEM**  **65536** **NOGUARANTEE**

**\* By default UNDO tablespace is created as LOCAL-AUTOALLOCATE and with NOT guaranteed retention time. It can NOT be created as an UNIFORM tablespace \***

SQL> **SELECT file\_name, bytes, blocks, status,**

**autoextensible, increment\_by, maxbytes**

**FROM dba\_data\_files**

**WHERE tablespace\_name ='UNDOTBS1';**

FILE\_NAME

-----------------------------------------------------------------------------

BYTES BLOCKS STATUS AUT INCREMENT\_BY MAXBYTES

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/opt/oracle/app/oracle/oradata/DISK3/undotbs01.dbf

**356515840**  43520 AVAILABLE **YES 640 3.4360E+10**

\* If we open our **DB EXPRESS tool** via CHROME with

[**https://myvmlab.senecacollege.ca:XXXX/em**](https://myvmlab.senecacollege.ca:XXXX/em) where xxxx is your DB Express Port# (one MORE than one used for SSH login),then we can see size of all our Tablespaces in the far right Graph. The current size of my tablespace UNDOTBS1 is **340MB**, and that is what the last query showed us as well (BYTES=356515840) \*

**\* Let’s try to reduce the size of our UNDOTBS1 tablespace, via several attempts. \***

SQL> **ALTER DATABASE DATAFILE '/opt/oracle/app/oracle/oradata/DISK3/undotbs01.dbf' RESIZE 120M;**

Database altered.

SQL> **ALTER DATABASE DATAFILE '/opt/oracle/app/oracle/oradata/DISK3/undotbs01.dbf' RESIZE 60M;**

Database altered.

SQL> **ALTER DATABASE DATAFILE '/opt/oracle/app/oracle/oradata/DISK3/undotbs01.dbf' RESIZE 40M;**

ALTER DATABASE DATAFILE '/opt/oracle/app/oracle/oradata/DISK3/undotbs01.dbf' RESIZE 40M

\*

ERROR at line 1:

ORA-03297: **file contains used data beyond requested RESIZE value**

SQL> **ALTER DATABASE DATAFILE '/opt/oracle/app/oracle/oradata/DISK3/undotbs01.dbf' RESIZE 50M;**

ALTER DATABASE DATAFILE '/opt/oracle/app/oracle/oradata/DISK3/undotbs01.dbf' RESIZE 50M

\*

ERROR at line 1:

ORA-03297: **file contains used data beyond requested RESIZE value**

**\* So, I could not go lower than 60Mb here. DB Express tool confirmed that value as well \***

SQL> **conn scott/tiger**

SQL> **select count(\*) from emp;**

COUNT(\*)

----------

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**\* We are going to add 50000 rows, then remove all rows, then add again 50000 rows without Commit/Rollback, so that we use some Undo Space \***

SQL> **BEGIN**

**for i in 1..50000 loop**

**INSERT INTO emp (EMPNO,ENAME,DEPTNO) VALUES(i+10000,'JONES',20);**

**END LOOP;**

**END;**

/

PL/SQL procedure successfully completed.

SQL> **select count(\*) from emp;**

COUNT(\*)

----------

50014

SQL> **DELETE FROM EMP;**

50014 rows deleted.

SQL> **BEGIN**

**for i in 1..50000 loop**

**INSERT INTO emp (EMPNO,ENAME,DEPTNO) VALUES(i+10000,'JONES',20);**

**END LOOP;**

**END;**

**/**

PL/SQL procedure successfully completed.

SQL> **select count(\*) from emp;**

COUNT(\*)

----------

50000

SQL> **conn / as sysdba**

Connected.

SQL> **SELECT file\_name, bytes, blocks, status,**

**autoextensible, increment\_by, maxbytes**

**FROM dba\_data\_files**

**WHERE tablespace\_name ='UNDOTBS1';**

FILE\_NAME

-----------------------------------------------------------------------------

BYTES BLOCKS STATUS AUT INCREMENT\_BY MAXBYTES

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/opt/oracle/app/oracle/oradata/DISK3/undotbs01.dbf

**83886080** 10240 AVAILABLE YES 640 3.4360E+10

**\* Our manipulations used around 20Mb, because now the size shown in DB Express is 80Mb, and that is what the last query showed as well (BYTES=83886080) \***

SQL> **ALTER SYSTEM SET undo\_retention = 3600; 🡨 Change it to 1 hour**

System altered.

SQL> **SELECT \* FROM V$ROLLNAME;**

USN NAME CON\_ID

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0 SYSTEM 0

1 \_SYSSMU1\_1261223759$ 0

2 \_SYSSMU2\_27624015$ 0

3 \_SYSSMU3\_2421748942$ 0

4 \_SYSSMU4\_625702278$ 0

5 \_SYSSMU5\_2101348960$ 0

6 \_SYSSMU6\_813816332$ 0

7 \_SYSSMU7\_2329891355$ 0

8 \_SYSSMU8\_399776867$ 0

9 \_SYSSMU9\_1692468413$ 0

10 \_SYSSMU10\_930580995$ 0

11 rows selected.

**\* In the AUTO management mode, we have 1+10 Undo Segments created by Server initially. As number of transactions increase, server will add one segment per each active transaction \***

SQL> **set transaction name 'T1';**

Transaction set.

SQL> **SELECT \* FROM scott.emp WHERE empno < 10008;**

EMPNO ENAME JOB MGR HIREDATE SAL COMM DEPTNO

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10001 JONES 20

10002 JONES 20

10003 JONES 20

10004 JONES 20

10005 JONES 20

10006 JONES 20

10007 JONES 20

7 rows selected.

SQL> **UPDATE scott.emp SET deptno = 10**

**WHERE deptno = 20;**

50000 rows updated.

SQL> **DELETE FROM scott.emp;**

50000 rows deleted.

SQL> **SELECT t.status, t.start\_time, t.xidusn "Segment#",**

**r.name "Segment name"**

**FROM v$transaction t JOIN v$rollname r**

**ON t.xidusn = r.usn**

**WHERE t.name = 'T1';**

STATUS START\_TIME Segment# Segment name

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**ACTIVE** 02/19/22 21:37:57 **4** \_SYSSMU4\_625702278$

**\* We can see that our Update/Delete is using Segment #4 and that is still active \***

SQL> **SELECT file\_name, bytes, blocks, status,**

**autoextensible, increment\_by, maxbytes**

**FROM dba\_data\_files**

**WHERE tablespace\_name ='UNDOTBS1';**

FILE\_NAME

-----------------------------------------------------------------------------

BYTES BLOCKS STATUS AUT INCREMENT\_BY MAXBYTES

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/opt/oracle/app/oracle/oradata/DISK3/undotbs01.dbf

**99614720** 12160 AVAILABLE YES 640 3.4360E+10

**\* Our manipulations used around 15Mb, because now the size shown in DB Express is 95Mb, and that is what the last query showed as well (BYTES=99614720) \***

SQL> **COMMIT;**

Commit complete.

SQL> **SELECT COUNT(\*) FROM scott.emp;**

COUNT(\*)

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0

SQL> **exit**

Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production

Version 19.3.0.0.0

[oracle@oracledb19c ~]$ **exit**

logout

[student@oracledb19c ~]$ **exit**

logout