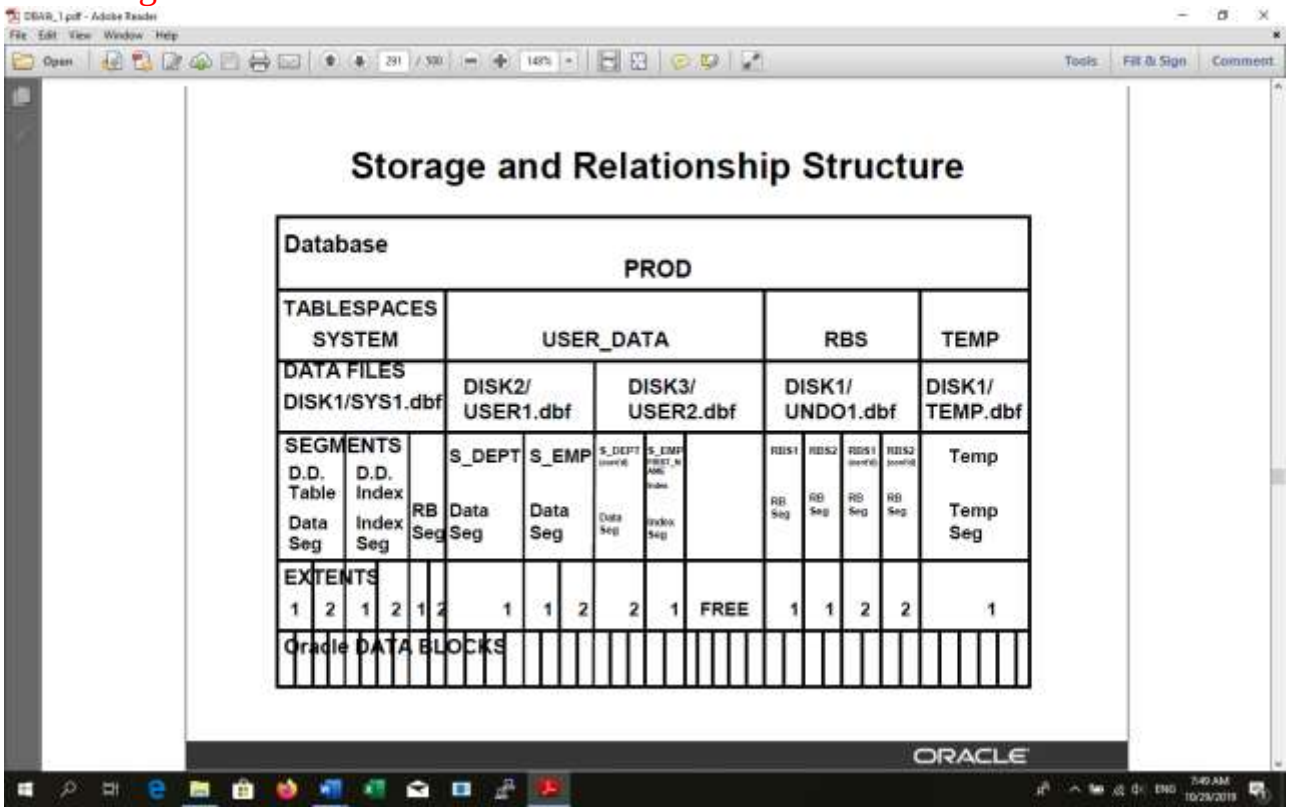
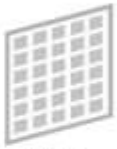
Structuri de stocare a datelor

A. Segmente si blocuri de date



Types of Segments



Table

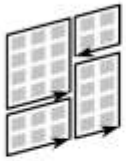


Table partition

Cluster

Index

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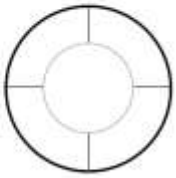
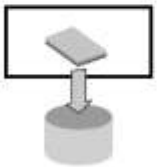
Types of Segments

Index-organized table

Index partition



Undo segment



Temporary segment

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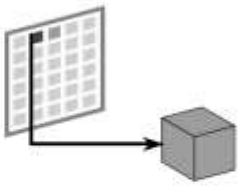
Types of Segments



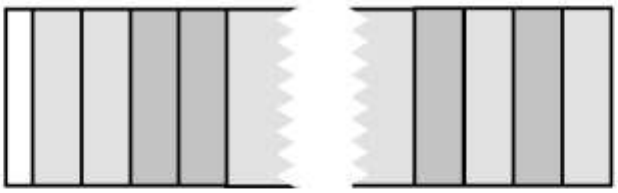
LOB segment

Nested table

Bootstrap segment

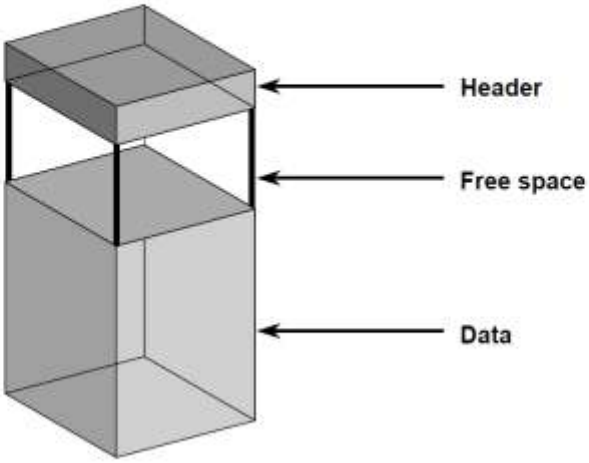
Used and Free Extents

Data file

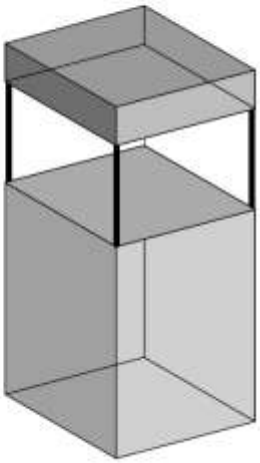


File header Used extent Free extent

Database Block Contents



Block Space Utilization Parameters



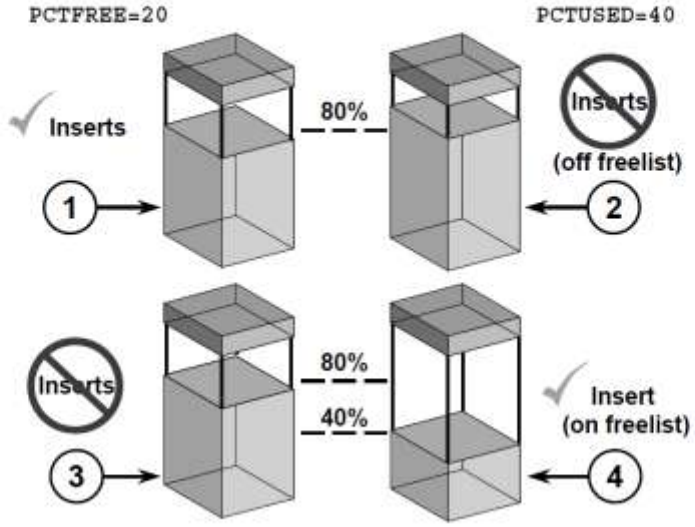
INITRANS

MAXTRANS

PCTFREE

PCTUSED

Block Space Usage



ORACLE

Obtaining Storage Information

Information about storage can be obtained by querying the following views:

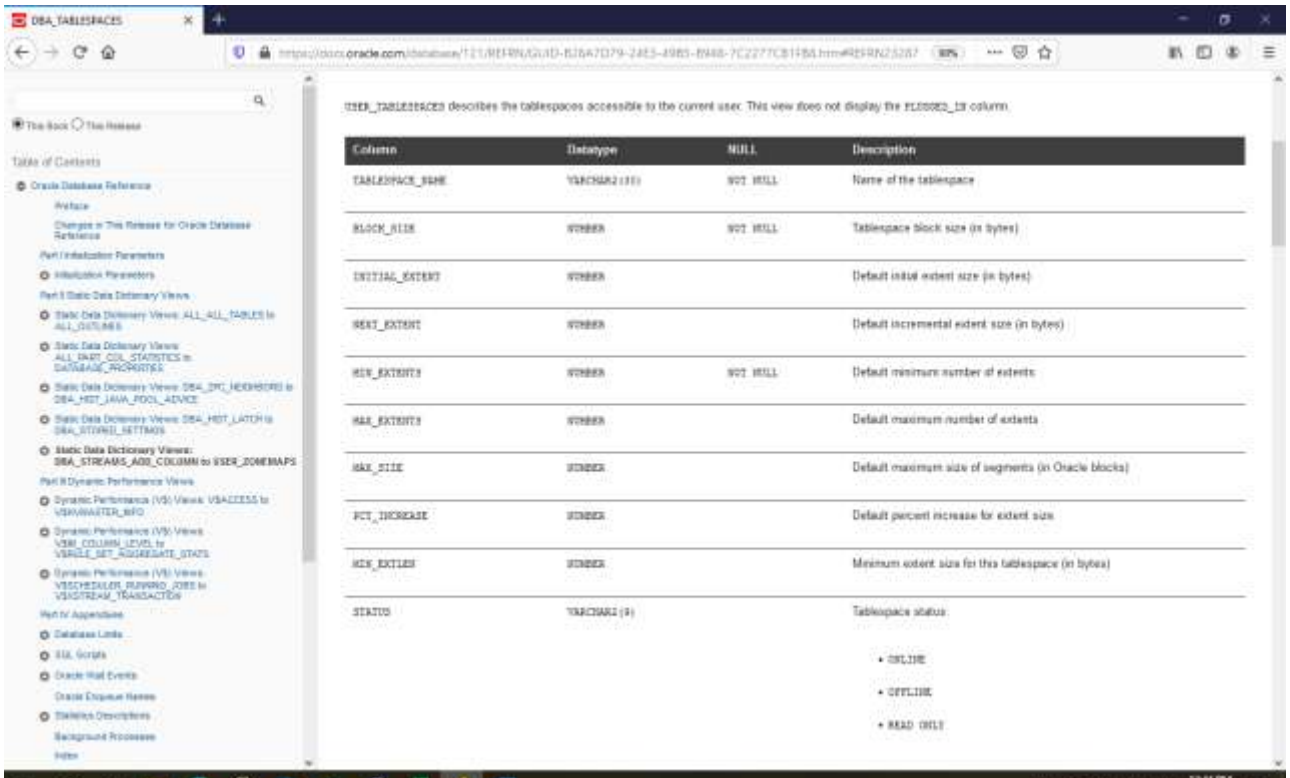
- DBA_EXTENTS
- DBA_SEGMENTS
- DBA_TABLESPACES
- DBA_DATA_FILES
- DBA_FREE_SPACE

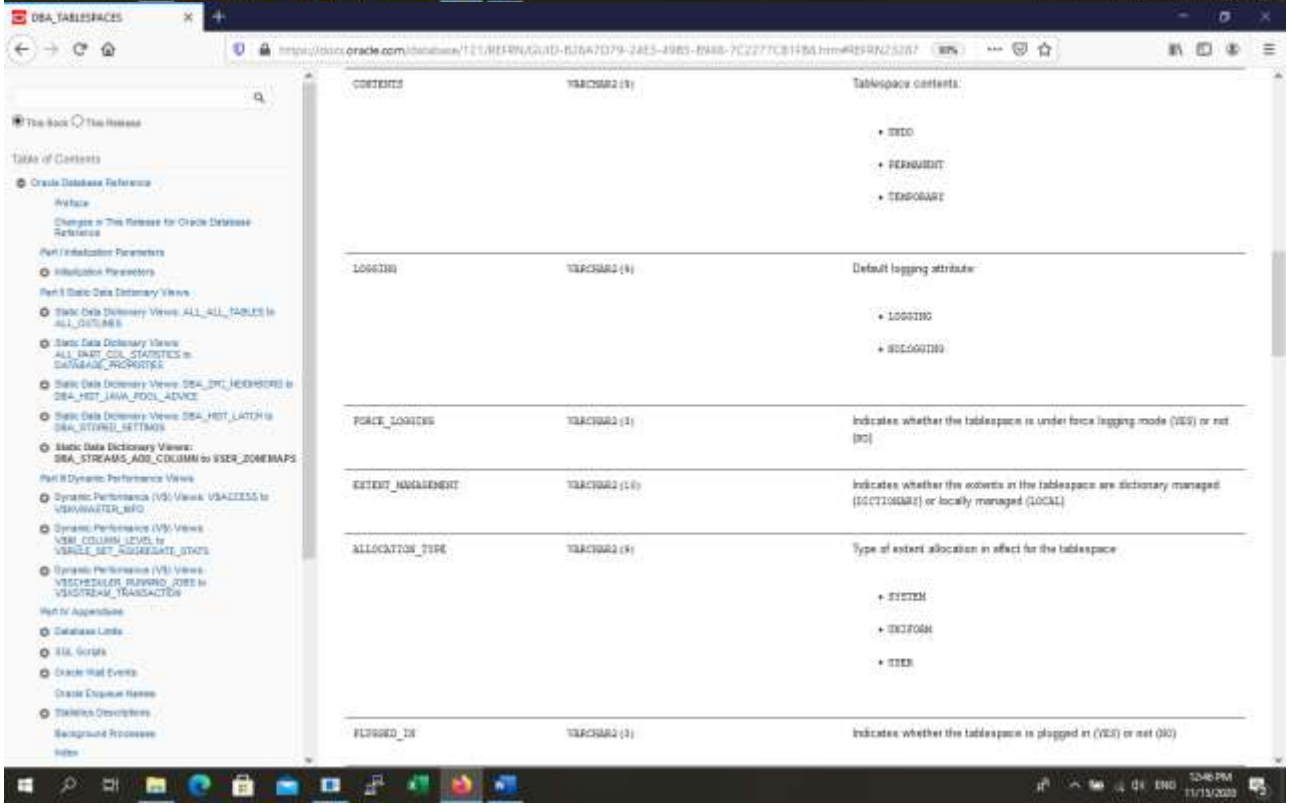
ORACLE

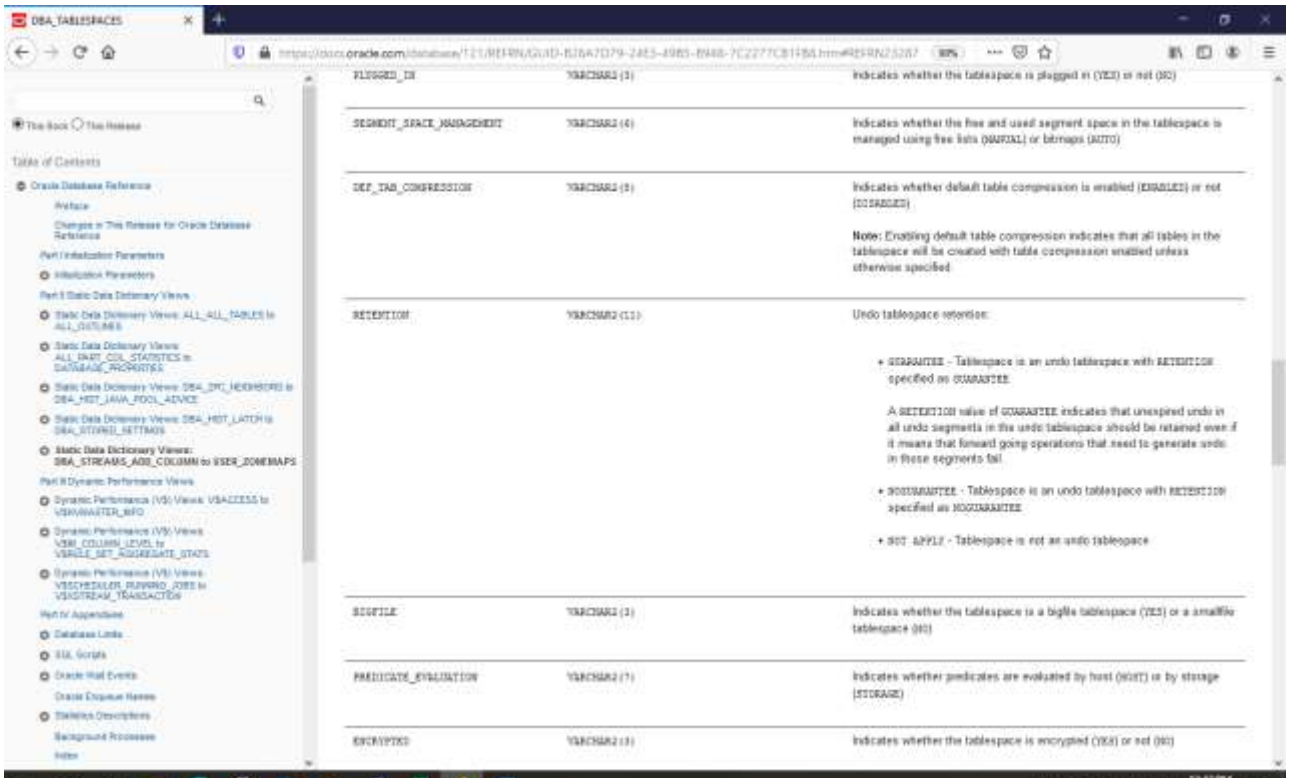
1) Informatii despre starea unui tablespace si parametrii specifici blocurilor de date:

SQL> desc dba_tablespaces

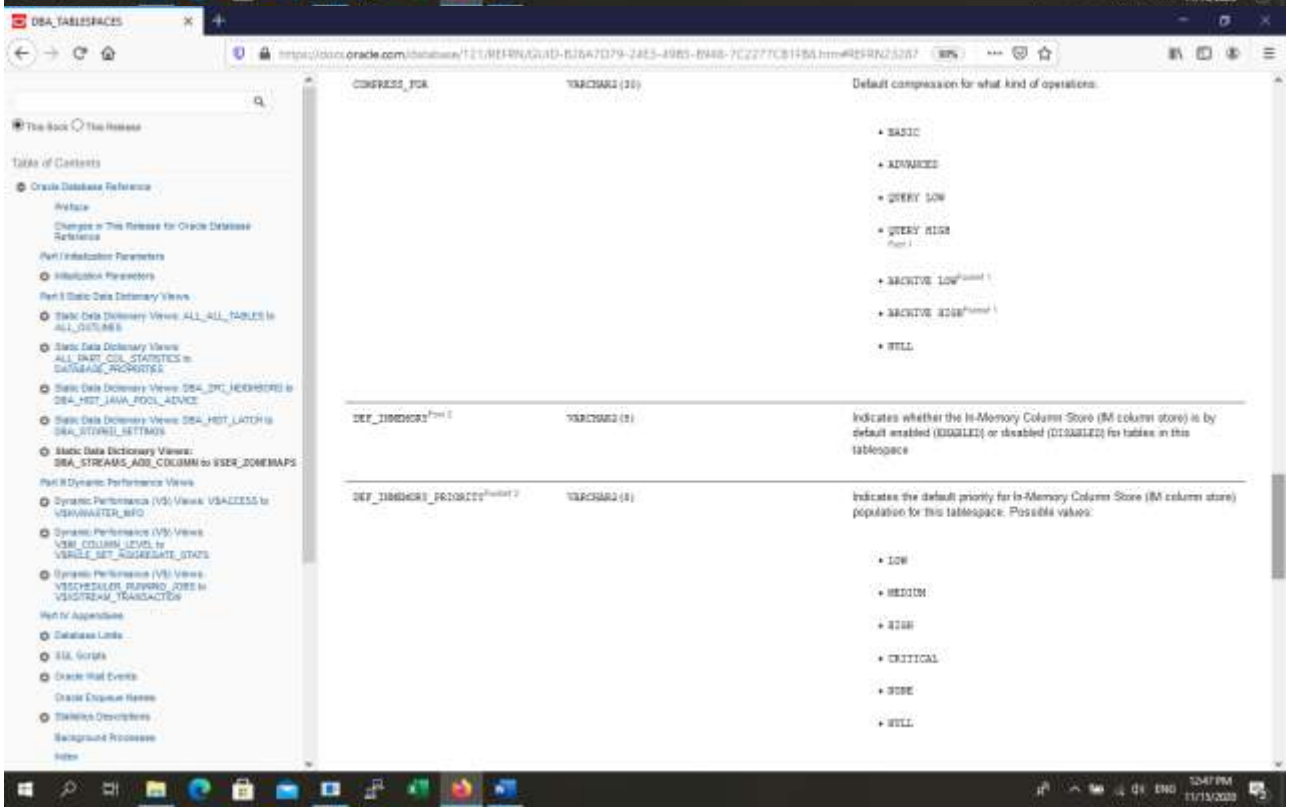
Name	Null?	Type
TABLESPACE_NAME	NOT NULL	VARCHAR2(30)
BLOCK_SIZE	NOT NULL	NUMBER
INITIAL_EXTENT		NUMBER
NEXT_EXTENT		NUMBER
MIN_EXTENTS	NOT NULL	NUMBER
MAX_EXTENTS		NUMBER
MAX_SIZE		NUMBER
PCT_INCREASE		NUMBER
MIN_EXTLEN		NUMBER
STATUS		VARCHAR2(9)
CONTENTS		VARCHAR2(9)
LOGGING		VARCHAR2(9)
FORCE_LOGGING		VARCHAR2(3)
EXTENT_MANAGEMENT		VARCHAR2(10)
ALLOCATION_TYPE		VARCHAR2(9)
PLUGGED_IN		VARCHAR2(3)
SEGMENT_SPACE_MANAGEMENT		VARCHAR2(6)
DEF_TAB_COMPRESSION		VARCHAR2(8)
RETENTION		VARCHAR2(11)
BIGFILE		VARCHAR2(3)
PREDICATE_EVALUATION		VARCHAR2(7)
ENCRYPTED		VARCHAR2(3)
COMPRESS_FOR		VARCHAR2(30)
DEF_INMEMORY		VARCHAR2(8)
DEF_INMEMORY_PRIORITY		VARCHAR2(8)
DEF_INMEMORY_DISTRIBUTE		VARCHAR2(15)
DEF_INMEMORY_COMPRESSION		VARCHAR2(17)
DEF_INMEMORY_DUPLICATE		VARCHAR2(13)


DBA_TABLESPACES
USER_TABLESPACES describes the tablespaces accessible to the current user. This view does not display the FLOODED_TS column.
Column
Datatype
NULL
Description
TABLESPACE_NAME
VARCHAR2 (30)
NOT NULL
Name of the tablespace
BLOCK_SIZE
NUMBER
NOT NULL
Tablespace block size (in bytes)
INITIAL_EXTENT
NUMBER
Default initial extent size (in bytes)
NEXT_EXTENT
NUMBER
Default incremental extent size (in bytes)
MIN_EXTENTS
NUMBER
NOT NULL
Default minimum number of extents
MAX_EXTENTS
NUMBER
Default maximum number of extents
MAX_SIZE
NUMBER
Default maximum size of segments (in Oracle blocks)
PCT_INCREASE
NUMBER
Default percent increase for extent size
MIN_EXTLEN
NUMBER
Minimum extent size for this tablespace (in bytes)
STATUS
VARCHAR2 (9)
Tablespace status
ONLINE
OFFLINE
READ ONLY

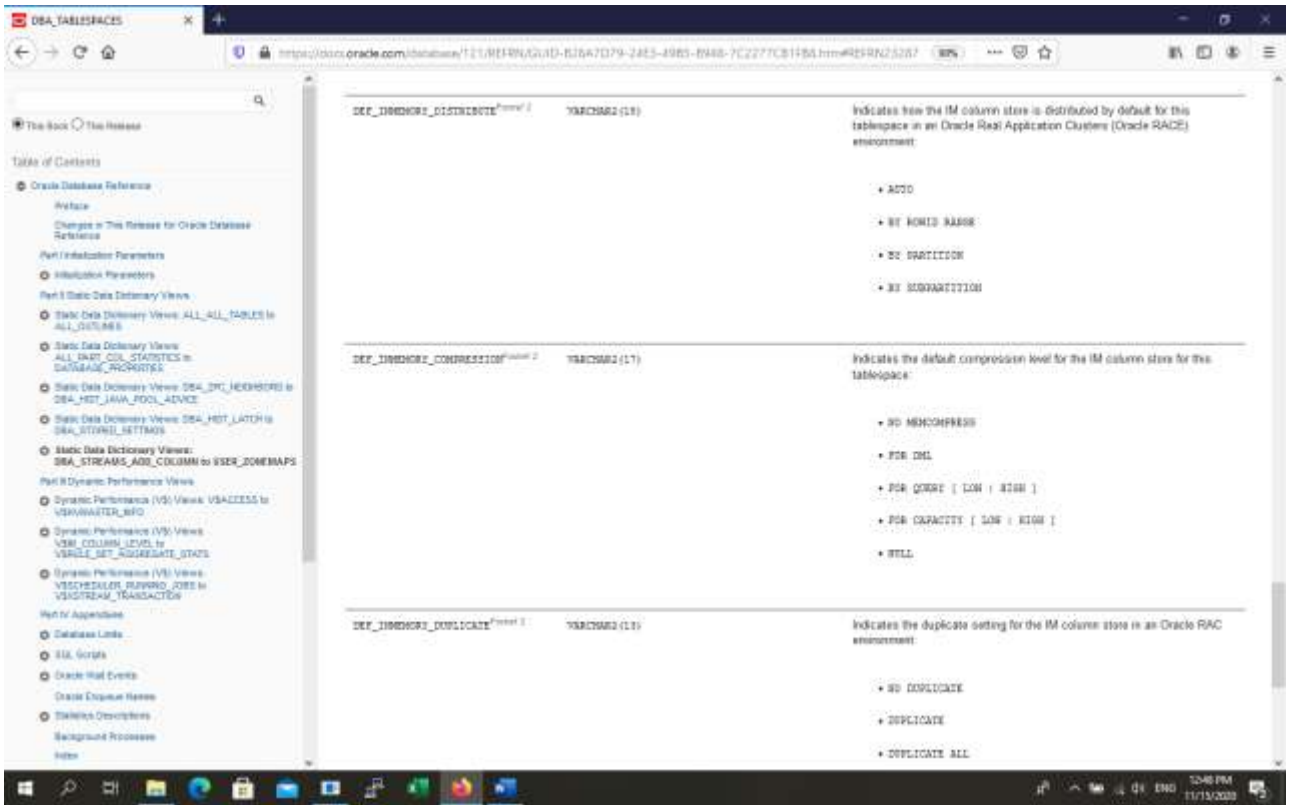

CONTENTS
VARCHAR2 (9)
Tablespace contents
UNDO
PERMANENT
TEMPORARY
LOGGING
VARCHAR2 (9)
Default logging attribute
LOGGING
NOLOGGING
FORCE_LOGGING
VARCHAR2 (3)
Indicates whether the tablespace is under force logging mode (YES) or not (NO)
EXTENT_MANAGEMENT
VARCHAR2 (10)
Indicates whether the extents in the tablespace are dictionary managed (DICTIONARY) or locally managed (LOCAL)
ALLOCATION_TYPE
VARCHAR2 (9)
Type of extent allocation in effect for the tablespace
SYSTEM
UNIFORM
USER
PLUGGED_IN
VARCHAR2 (3)
Indicates whether the tablespace is plugged in (YES) or not (NO)



PLUGGED_IN	VARCHAR2 (3)	Indicates whether the tablespace is plugged in (YES) or not (NO)
SEGMENT_SPACE_MANAGEMENT	VARCHAR2 (6)	Indicates whether the free and used segment space in the tablespace is managed using free lists (MANUAL) or bitmaps (AUTO)
DEF_TAB_COMPRESSION	VARCHAR2 (8)	Indicates whether default table compression is enabled (ENABLED) or not (DISABLED) **Note:** Enabling default table compression indicates that all tables in the tablespace will be created with table compression enabled unless otherwise specified
RETENTION	VARCHAR2 (11)	Undo tablespace retention: • GUARANTEE - Tablespace is an undo tablespace with RETENTION specified as GUARANTEE A RETENTION value of GUARANTEE indicates that unexpired undo in all undo segments in the undo tablespace should be retained even if it means that forward going operations that need to generate undo in those segments fail • NOGUARANTEE - Tablespace is an undo tablespace with RETENTION specified as NOGUARANTEE • NOT APPLY - Tablespace is not an undo tablespace
BIGFILE	VARCHAR2 (3)	Indicates whether the tablespace is a bigfile tablespace (YES) or a smallfile tablespace (NO)
PREDICATE_EVALUATION	VARCHAR2 (7)	Indicates whether predicates are evaluated by host (HOST) or by storage (STORAGE)
ENCRYPTED	VARCHAR2 (3)	Indicates whether the tablespace is encrypted (YES) or not (NO)



COMPRESS_FOR	VARCHAR2 (30)	Default compression for what kind of operations: • BASIC • ADVANCED • QUERY LOW • QUERY HIGH • ARCHIVE LOW • ARCHIVE HIGH • NULL
DEF_INMEMORY	VARCHAR2 (8)	Indicates whether the In-Memory Column Store (IM column store) is by default enabled (ENABLED) or disabled (DISABLED) for tables in this tablespace
DEF_INMEMORY_PRIORITY	VARCHAR2 (8)	Indicates the default priority for In-Memory Column Store (IM column store) population for this tablespace. Possible values: • LOW • MEDIUM • HIGH • CRITICAL • NONE • NULL



SQL> select tablespace_name,block_size,initial_extent,min_extents, max_extents, contents, status
from dba_tablespaces where tablespace_name='USERS';

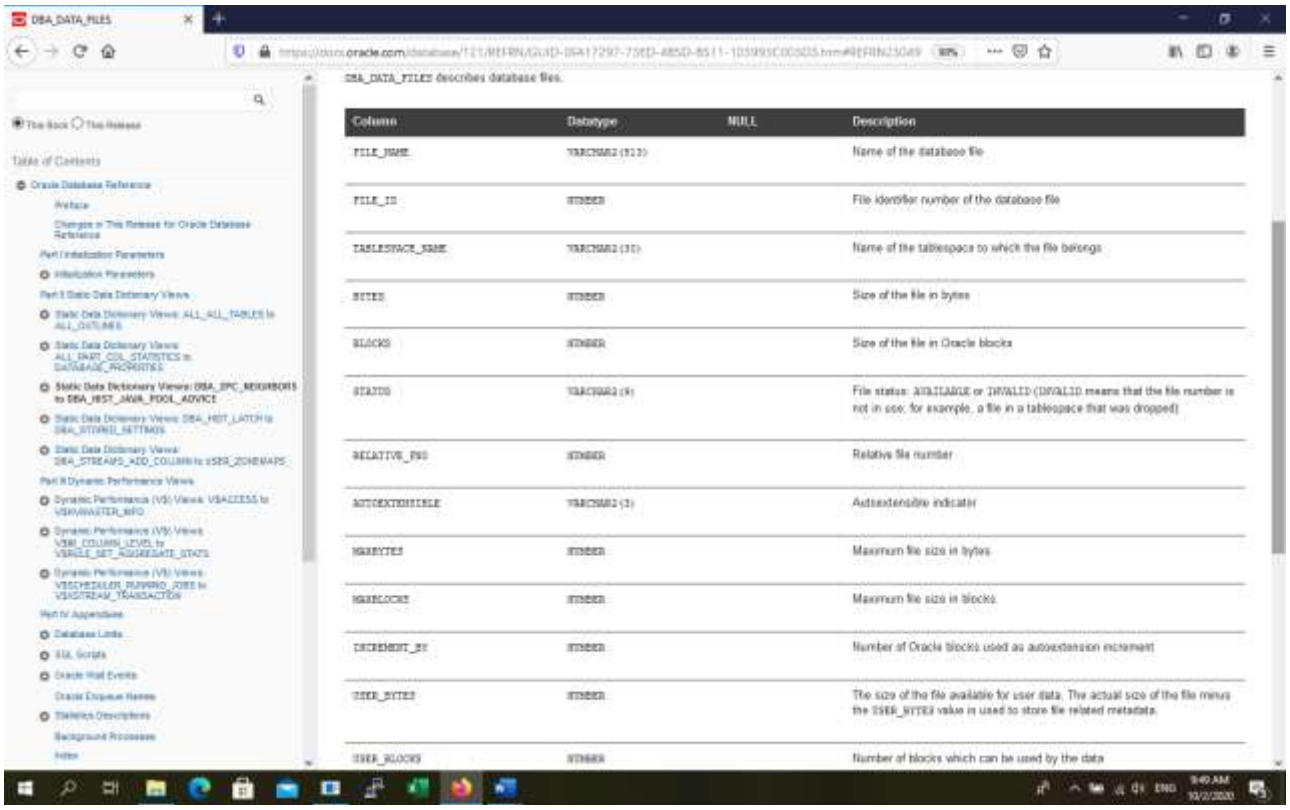
TABLESPACE_NAME	BLOCK_SIZE	INITIAL_EXTENT	MIN_EXTENTS	MAX_EXTENTS	CONTENTS	STATUS
USERS	8192	65536	1	2147483645	PERMANENT	ONLINE

2) Informatii despre un tablespace, fisierul de date alocat, numarul total de blocuri si dimensiunea lor:

SQL> desc dba_data_files;

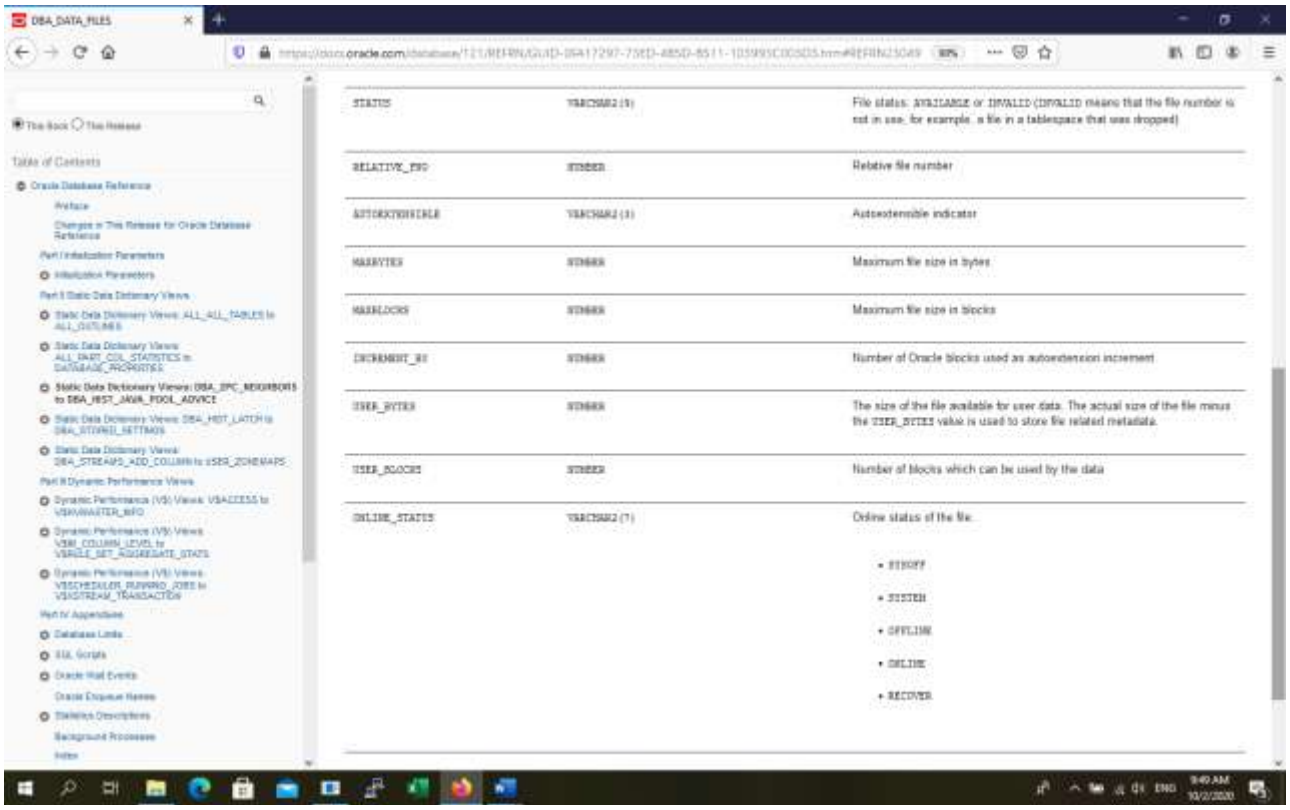
Name	Null?	Type
FILE_NAME		VARCHAR2(513)
FILE_ID		NUMBER
TABLESPACE_NAME		VARCHAR2(30)
BYTES		NUMBER
BLOCKS		NUMBER
STATUS		VARCHAR2(9)
RELATIVE_FNO		NUMBER
AUTOEXTENSIBLE		VARCHAR2(3)
MAXBYTES		NUMBER
MAXBLOCKS		NUMBER

INCREMENT_BY	NUMBER
USER_BYTES	NUMBER
USER_BLOCKS	NUMBER
ONLINE_STATUS	VARCHAR2(7)



DBA_DATA_FILES describes database files.

Column	Datatype	NULL	Description
FILE_NAME	VARCHAR2 (513)		Name of the database file
FILE_ID	NUMBER		File identifier number of the database file
TABLESPACE_NAME	VARCHAR2 (30)		Name of the tablespace to which the file belongs
BYTES	NUMBER		Size of the file in bytes
BLOCKS	NUMBER		Size of the file in Oracle blocks
STATUS	VARCHAR2 (9)		File status: AVAILABLE or INVALID (INVALID means that the file number is not in use, for example, a file in a tablespace that was dropped)
RELATIVE_FNO	NUMBER		Relative file number
AUTOEXTENSIBLE	VARCHAR2 (3)		Autoextensible indicator
MAXBYTES	NUMBER		Maximum file size in bytes
MAXBLOCKS	NUMBER		Maximum file size in blocks
INCREMENT_BY	NUMBER		Number of Oracle blocks used as autoextension increment
USER_BYTES	NUMBER		The size of the file available for user data. The actual size of the file minus the USER_BYTES value is used to store file related metadata.
USER_BLOCKS	NUMBER		Number of blocks which can be used by the data



SQL> select tablespace_name, file_id, file_name, blocks, bytes from dba_data_files
where tablespace_name='USERS';

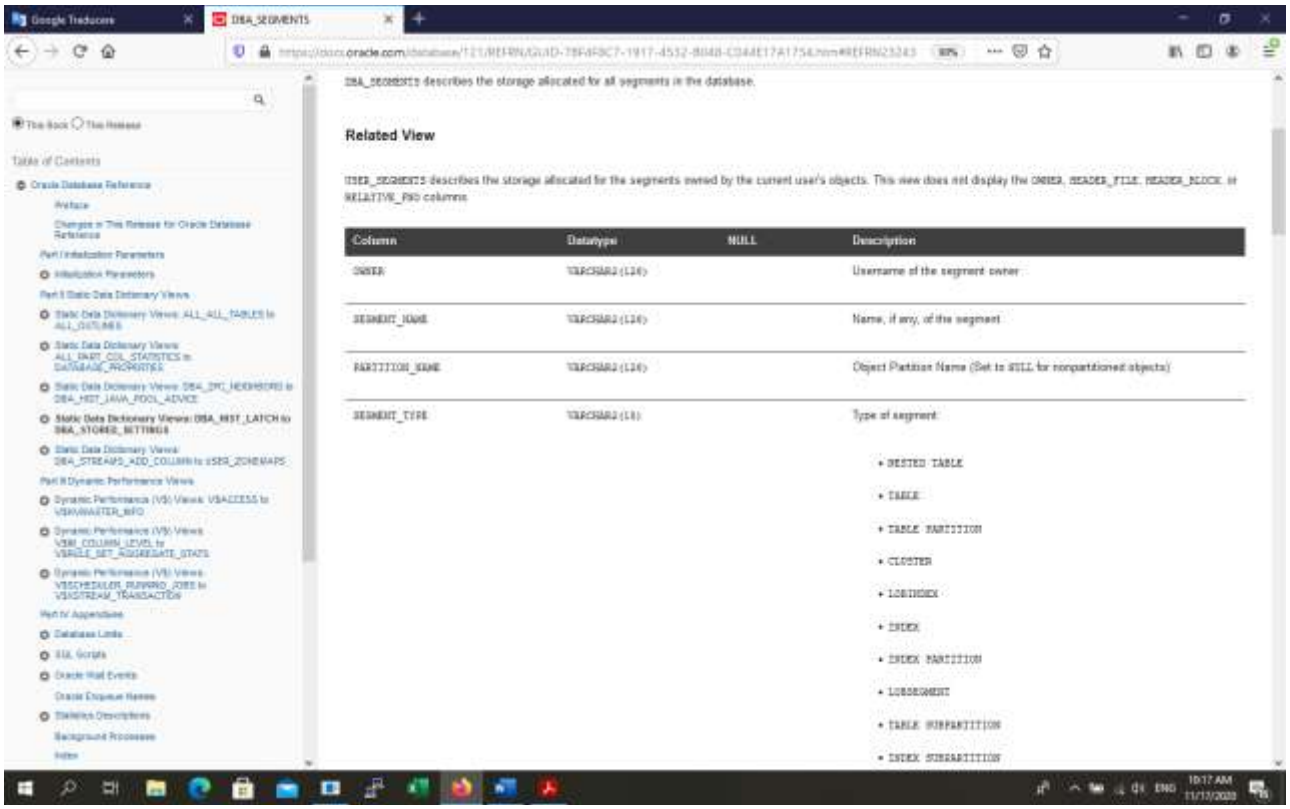
TABLESPACE_NAME	FILE_ID	FILE_NAME	BLOCKS	BYTES
USERS	6	C:\ORACLE_12C\ORADATA\BD\USERS01.DBF	640	5242880

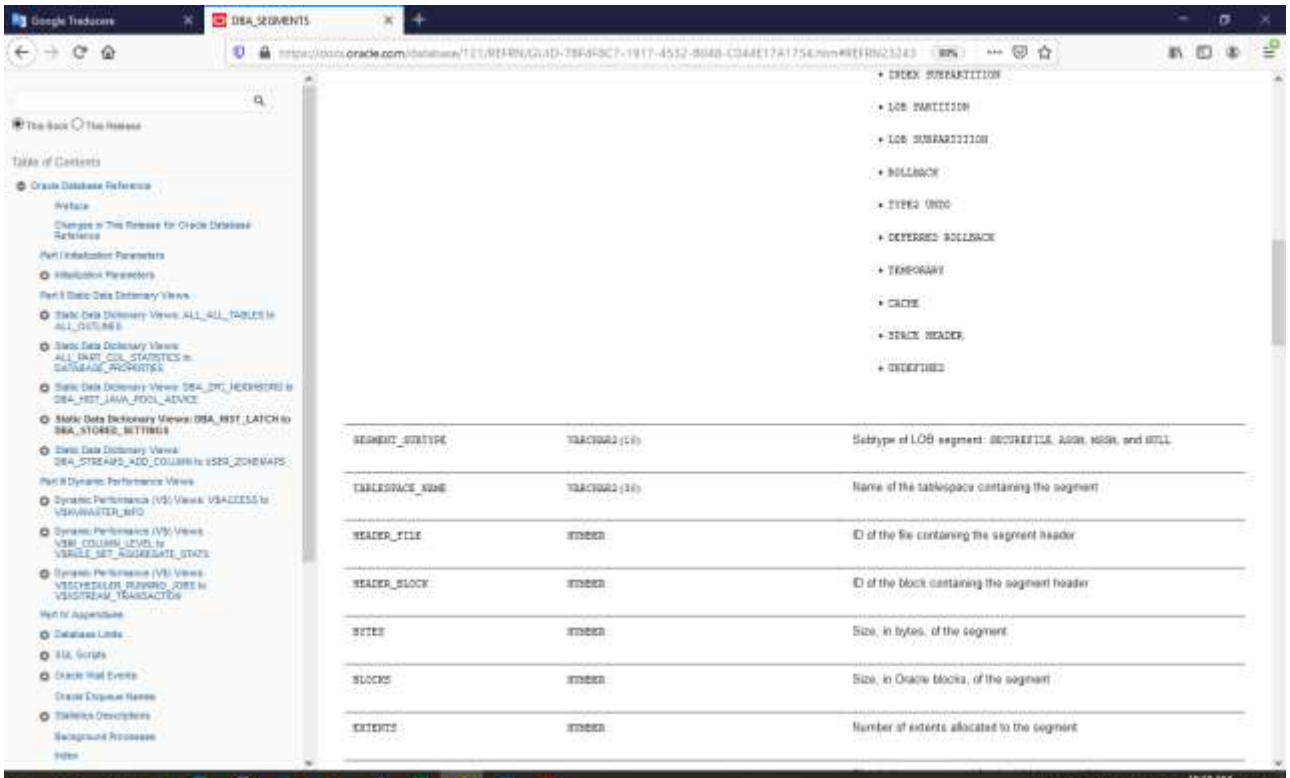
3) Informatii despre segmentele de tip tabela create intr-un tablespace :

SQL> desc dba_segments;

Name	Null?	Type
OWNER		VARCHAR2(128)
SEGMENT_NAME		VARCHAR2(128)
PARTITION_NAME		VARCHAR2(128)
SEGMENT_TYPE		VARCHAR2(18)
SEGMENT_SUBTYPE		VARCHAR2(10)
TABLESPACE_NAME		VARCHAR2(30)
HEADER_FILE		NUMBER
HEADER_BLOCK		NUMBER
BYTES		NUMBER
BLOCKS		NUMBER
EXTENTS		NUMBER
INITIAL_EXTENT		NUMBER
NEXT_EXTENT		NUMBER

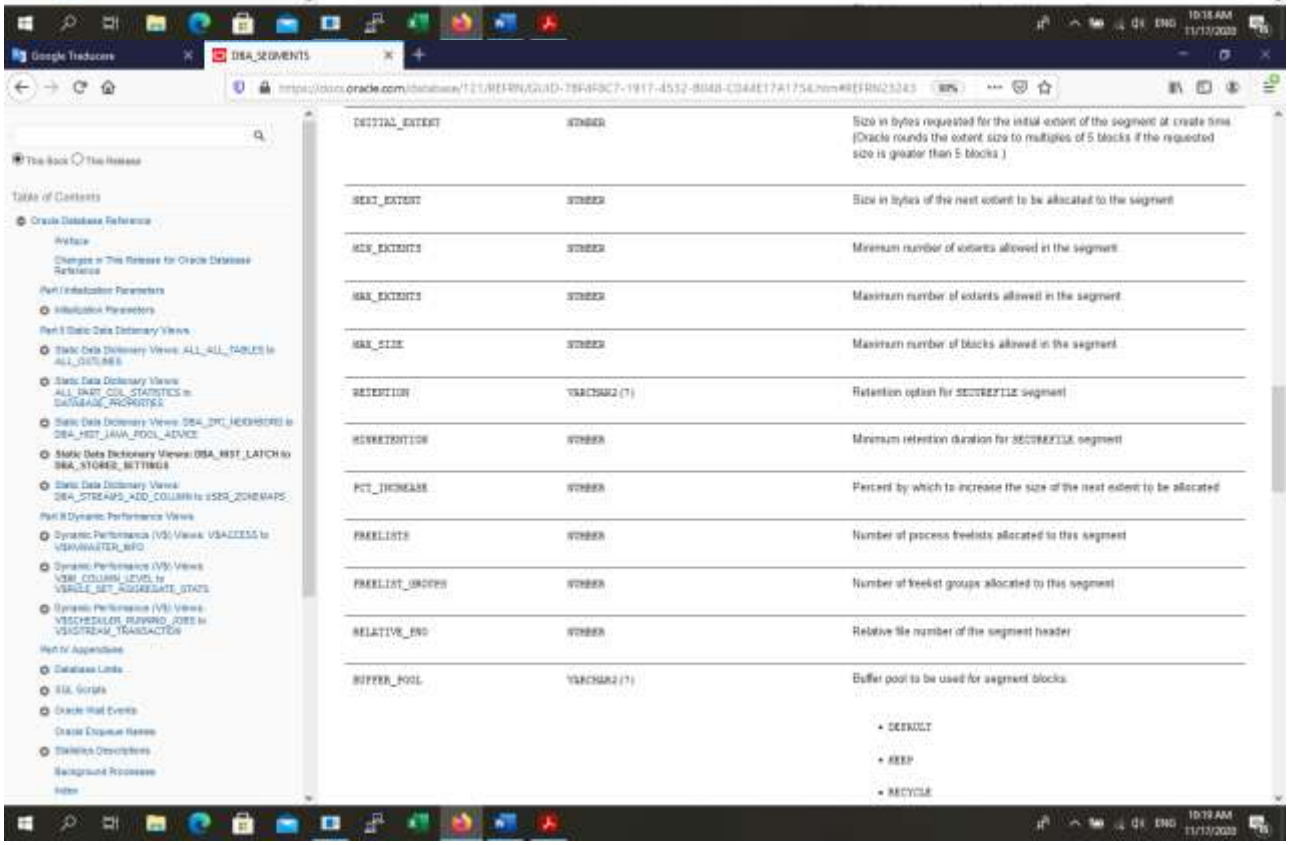
MIN_EXTENTS	NUMBER
MAX_EXTENTS	NUMBER
MAX_SIZE	NUMBER
RETENTION	VARCHAR2(7)
MINRETENTION	NUMBER
PCT_INCREASE	NUMBER
FREELISTS	NUMBER
FREELIST_GROUPS	NUMBER
RELATIVE_FNO	NUMBER
BUFFER_POOL	VARCHAR2(7)
FLASH_CACHE	VARCHAR2(7)
CELL_FLASH_CACHE	VARCHAR2(7)
INMEMORY	VARCHAR2(8)
INMEMORY_PRIORITY	VARCHAR2(8)
INMEMORY_DISTRIBUTE	VARCHAR2(15)
INMEMORY_DUPLICATE	VARCHAR2(13)
INMEMORY_COMPRESSION	VARCHAR2(17)





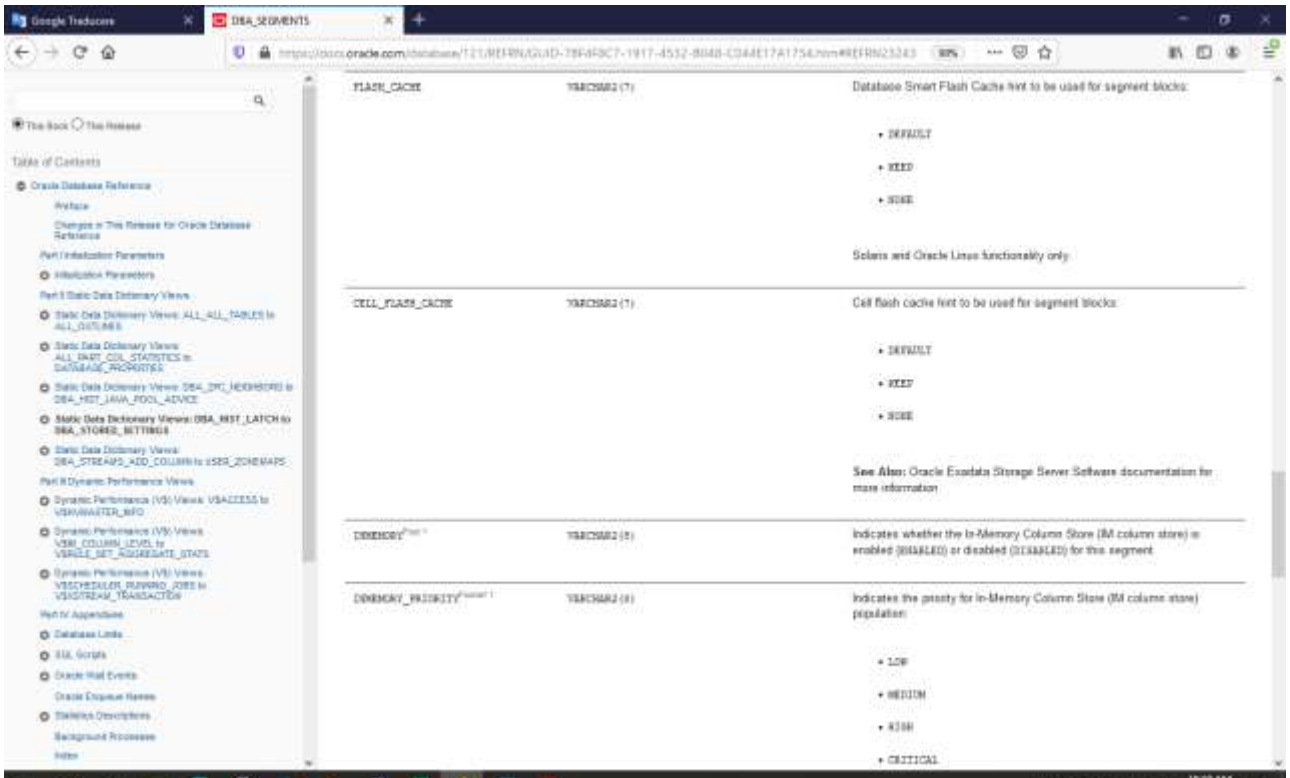
- INDEX SUBPARTITION
- LOB PARTITION
- LOB SUBPARTITION
- ROLLBACK
- TYPE2 UNDO
- DEFERRED ROLLBACK
- TEMPORARY
- CACHE
- SPACE HEADER
- UNDEFINED

SEGMENT_SUBTYPE	VARCHAR2 (10)	Subtype of LOB segment: SECUREFILE, ASSM, MSSM, and NULL
TABLESPACE_NAME	VARCHAR2 (30)	Name of the tablespace containing the segment
HEADER_FILE	NUMBER	ID of the file containing the segment header
HEADER_BLOCK	NUMBER	ID of the block containing the segment header
BYTES	NUMBER	Size, in bytes, of the segment
BLOCKS	NUMBER	Size, in Oracle blocks, of the segment
EXTENTS	NUMBER	Number of extents allocated to the segment

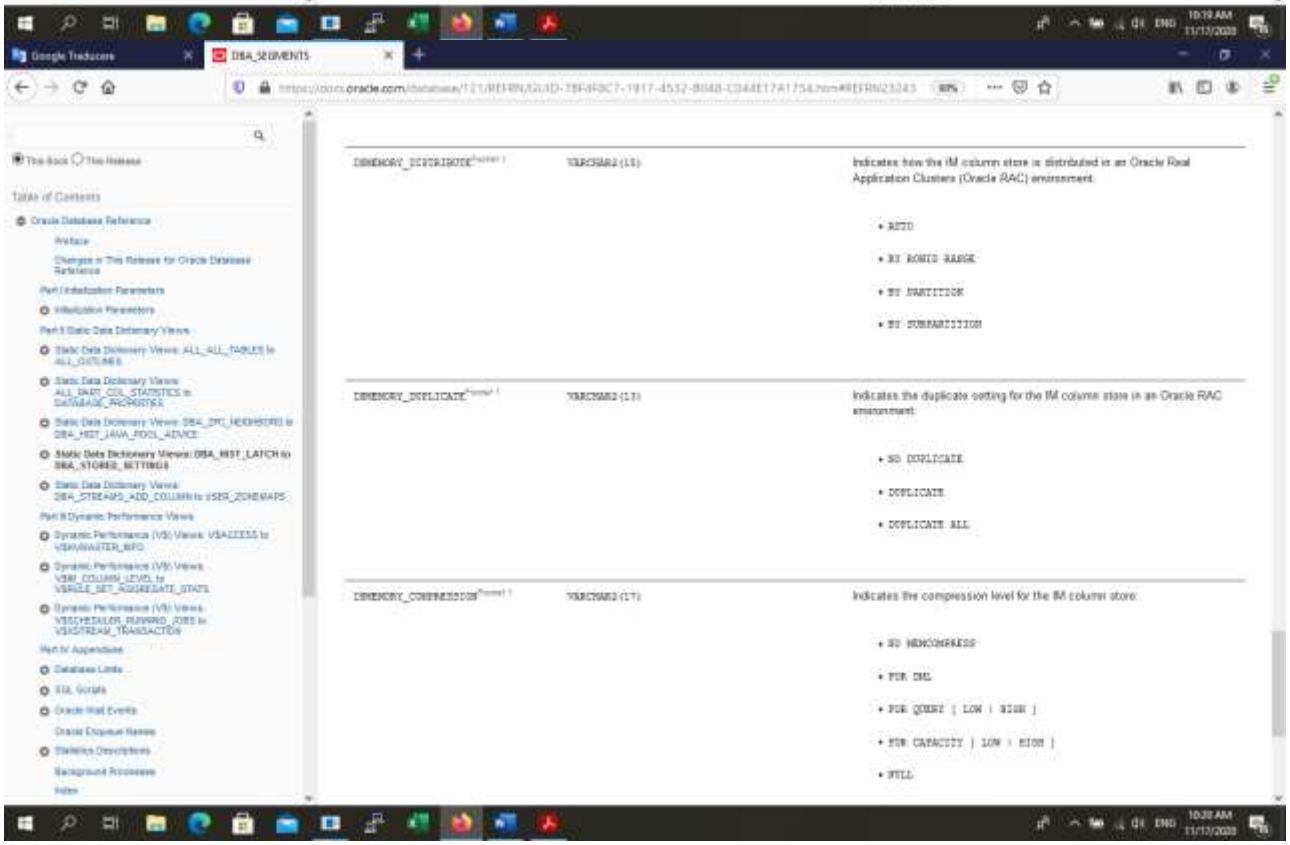


INITIAL_EXTENT	NUMBER	Size in bytes requested for the initial extent of the segment at create time (Oracle rounds the extent size to multiples of 5 blocks if the requested size is greater than 5 blocks.)
NEXT_EXTENT	NUMBER	Size in bytes of the next extent to be allocated to the segment
MIN_EXTENTS	NUMBER	Minimum number of extents allowed in the segment
MAX_EXTENTS	NUMBER	Maximum number of extents allowed in the segment
MAX_SIZE	NUMBER	Maximum number of blocks allowed in the segment
RETENTION	VARCHAR2 (7)	Retention option for SECUREFILE segment
MINRETENTION	NUMBER	Minimum retention duration for SECUREFILE segment
PCT_INCREASE	NUMBER	Percent by which to increase the size of the next extent to be allocated
FREELISTS	NUMBER	Number of process freelists allocated to this segment
FREELIST_GROUPS	NUMBER	Number of freelist groups allocated to this segment
RELATIVE_FNO	NUMBER	Relative file number of the segment header
BUFFER_POOL	VARCHAR2 (7)	Buffer pool to be used for segment blocks

- DEFAULT
- KEEP
- RECYCLE



FLASH_CACHE	VARCHAR2 (7)	Database Smart Flash Cache hint to be used for segment blocks: • DEFAULT • KEEP • NONE Solaris and Oracle Linux functionality only.
CELL_FLASH_CACHE	VARCHAR2 (7)	Cell flash cache hint to be used for segment blocks: • DEFAULT • KEEP • NONE **See Also:** Oracle Exadata Storage Server Software documentation for more information
INMEMORY[Note 1]	VARCHAR2 (8)	Indicates whether the In-Memory Column Store (IM column store) is enabled (ENABLED) or disabled (DISABLED) for this segment
INMEMORY_PRIORITY[Note 1]	VARCHAR2 (8)	Indicates the priority for In-Memory Column Store (IM column store) population: • LOW • MEDIUM • HIGH • CRITICAL



INMEMORY_DISTRIBUTE[Note 1]	VARCHAR2 (15)	Indicates how the IM column store is distributed in an Oracle Real Application Clusters (Oracle RAC) environment: • AUTO • BY ROWID RANGE • BY PARTITION • BY SUBPARTITION
INMEMORY_DUPLICATE[Note 1]	VARCHAR2 (13)	Indicates the duplicate setting for the IM column store in an Oracle RAC environment: • NO DUPLICATE • DUPLICATE • DUPLICATE ALL
INMEMORY_COMPRESSION[Note 1]	VARCHAR2 (17)	Indicates the compression level for the IM column store: • NO MEMCOMPRESS • FOR DML • FOR QUERY [LOW | HIGH] • FOR CAPACITY [LOW | HIGH] • NULL

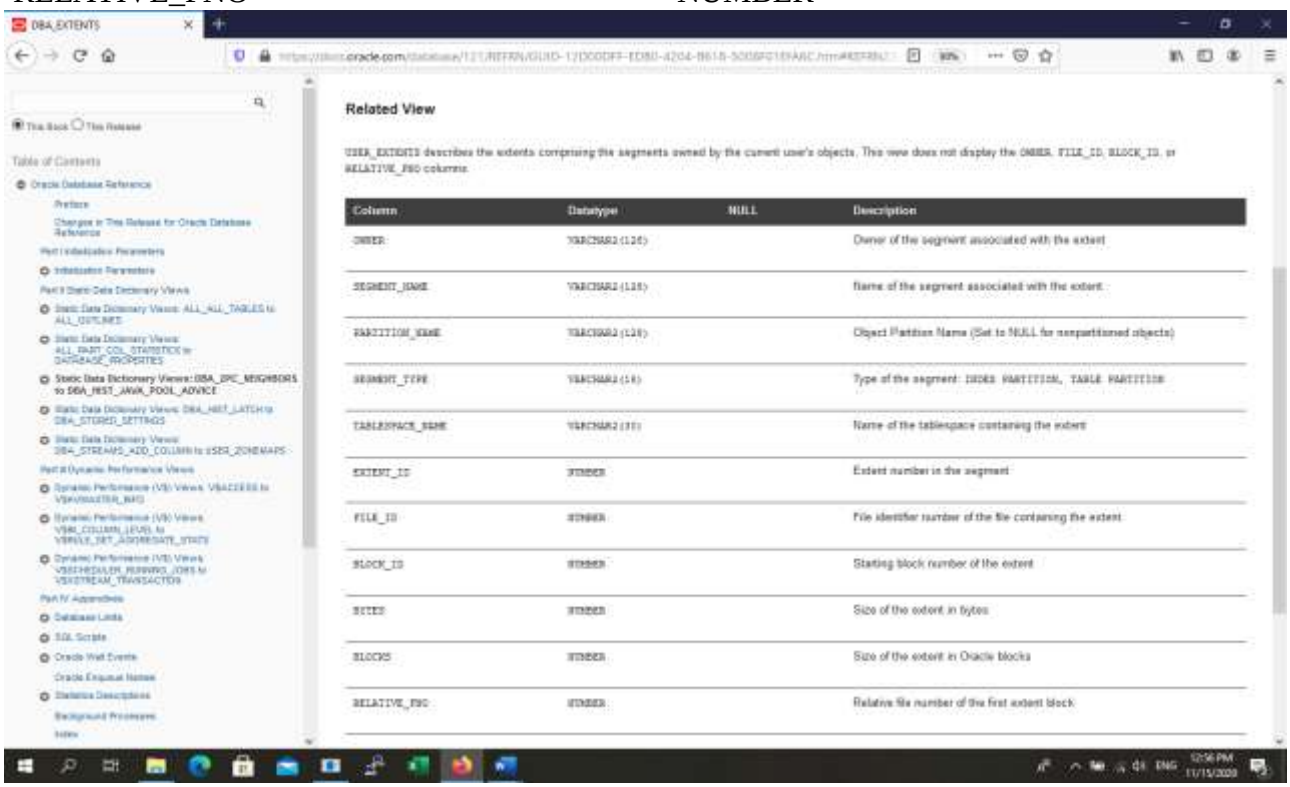
SQL> select owner,segment_name,segment_type, tablespace_name, blocks, extents
from dba_segments where owner='SCOTT'and segment_type='TABLE';

OWNER	SEGMENT_NA	SEGMENT_TYPE	TABLESPACE	BLOCKS	EXTENTS
SCOTT	DEPT	TABLE	USERS	8	1
SCOTT	EMP	TABLE	USERS	8	1
SCOTT	SALGRADE	TABLE	USERS	8	1

4) Informatii despre dimensiunea extensiilor alocate unui segment:

SQL> desc dba_extents

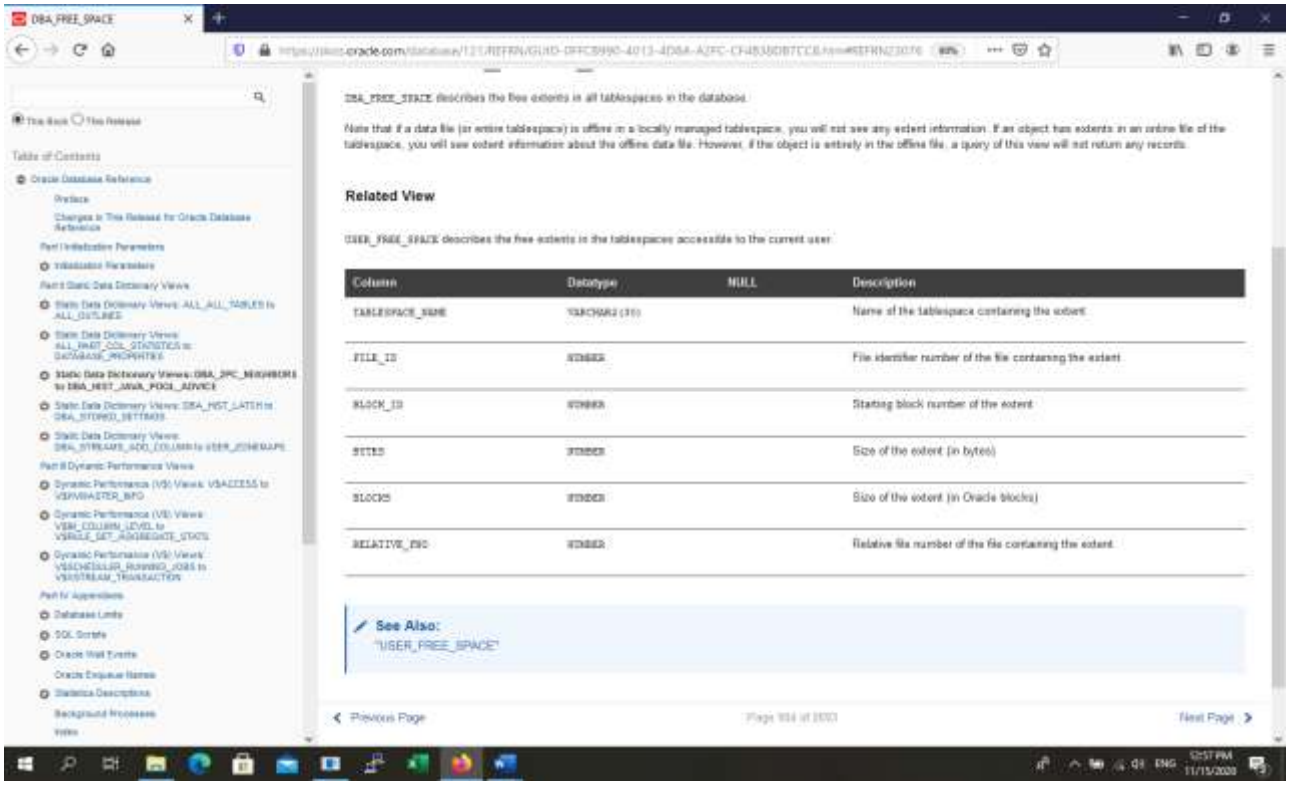
Name	Null?	Type
OWNER		VARCHAR2(30)
SEGMENT_NAME		VARCHAR2(81)
PARTITION_NAME		VARCHAR2(30)
SEGMENT_TYPE		VARCHAR2(18)
TABLESPACE_NAME		VARCHAR2(30)
EXTENT_ID		NUMBER
FILE_ID		NUMBER
BLOCK_ID		NUMBER
BYTES		NUMBER
BLOCKS		NUMBER
RELATIVE_FNO		NUMBER



```
SQL>  select owner, segment_name, segment_type, tablespace_name from
        dba_extents where owner='SCOTT' and segment_name='EMP';

OWNER                          SEGMENT_NAME      SEGMENT_TYPE       TABLESPACE_NAME
------------------------------ ------------      ------------------ ------------------------------
SCOTT                          EMP               TABLE              USERS

SQL> select  segment_name, extent_id, file_id, block_id, blocks, bytes from dba_extents
       where owner='SCOTT' and segment_name='EMP' ;

SEGMENT_NAME                                                      EXTENT_ID    FILE_ID     BLOCK_ID     BLOCKS  BYTES
----------------------------------------------------------------- ---------- ---------- ---------- ---------- ----------
EMP                                                                        0          6        192          8      65536
```

5) Informatii despre tablespace, fisierul de date alocat, numarul de blocuri si spatiul liber in fiecare bloc :

```
SQL> desc dba_free_space

 Name                           Null?    Type
 ------------------------------ -------- ----
 TABLESPACE_NAME                         VARCHAR2(30)
 FILE_ID                                 NUMBER
 BLOCK_ID                                NUMBER
 BYTES                                   NUMBER
 BLOCKS                                  NUMBER
 RELATIVE_FNO                            NUMBER
```

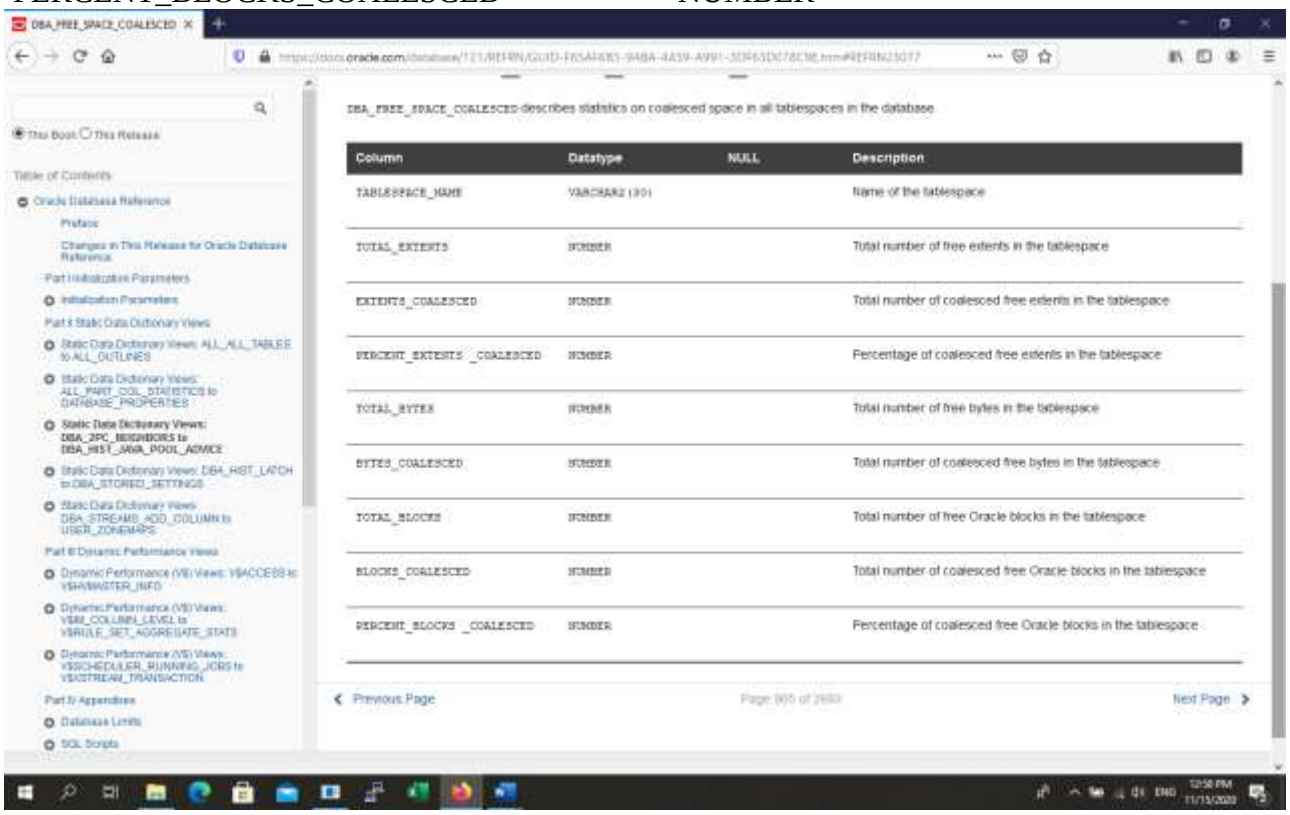


```
SQL> select * from dba_free_space where tablespace_name='USERS' ;

TABLESPACE      FILE_ID   BLOCK_ID     BYTES     BLOCKS     RELATIVE_FNO
---------------- ---------- ---------- ---------- ---------- ------------
USERS                 6        216       3473408      424            6
USERS                 6        216           264        8            6
USERS                 6        216           272        8            6

SQL> select tablespace_name, count(*), max(blocks), sum(blocks) from dba_free_space
        group by tablespace_name;

TABLESPACE_NAME                COUNT(*)      MAX(BLOCKS)      SUM(BLOCKS)
------------------------------ ----------  -----------  -----------
BI_IAS_OPSS                         1          384          384
SYSAUX                              140        5104         9632
UNDOTBS1                            12         76544        78416
BI_IAU                              1          7488         7488
BI_STB                              1          1040         1040
USERS                               1          424          424
SYSTEM                              3          128          304
EXAMPLE                             2          5200         5328
BI_BIPLATFORM                       1          14744        14744
BI_WLS                              1          7520         7520
BI_IAS_UMS                          1          11760        11760
BI_MDS                              2          10496        10536

SQL> select tablespace_name, blocks from dba_free_space where
          tablespace_name='SYSTEM';

TABLESPACE_NAME        BLOCKS
------------------------------ ----------
SYSTEM                  64
SYSTEM                 112
SYSTEM                 128
```

6) Unificarea spatiilor contigue dintr-un tablespace(defragmentare):

```
SQL> desc dba_free_space_coalesced
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------
 TABLESPACE_NAME                                    VARCHAR2(30)
 TOTAL_EXTENTS                                      NUMBER
 EXTENTS_COALESCED                                  NUMBER
 PERCENT_EXTENTS_COALESCED                          NUMBER
 TOTAL_BYTES                                        NUMBER
 BYTES_COALESCED                                    NUMBER
 TOTAL_BLOCKS                                       NUMBER
```

BLOCKS_COALESCED NUMBER
PERCENT_BLOCKS_COALESCED NUMBER

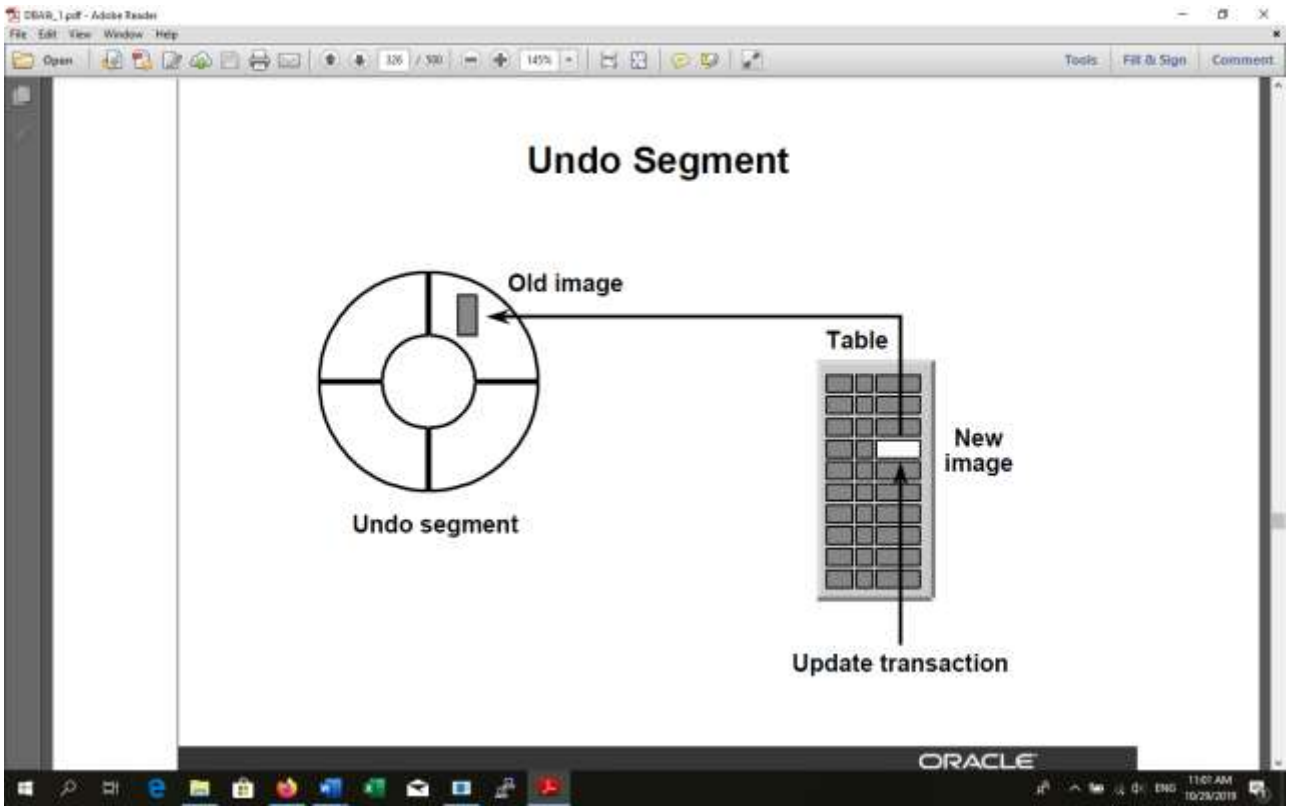


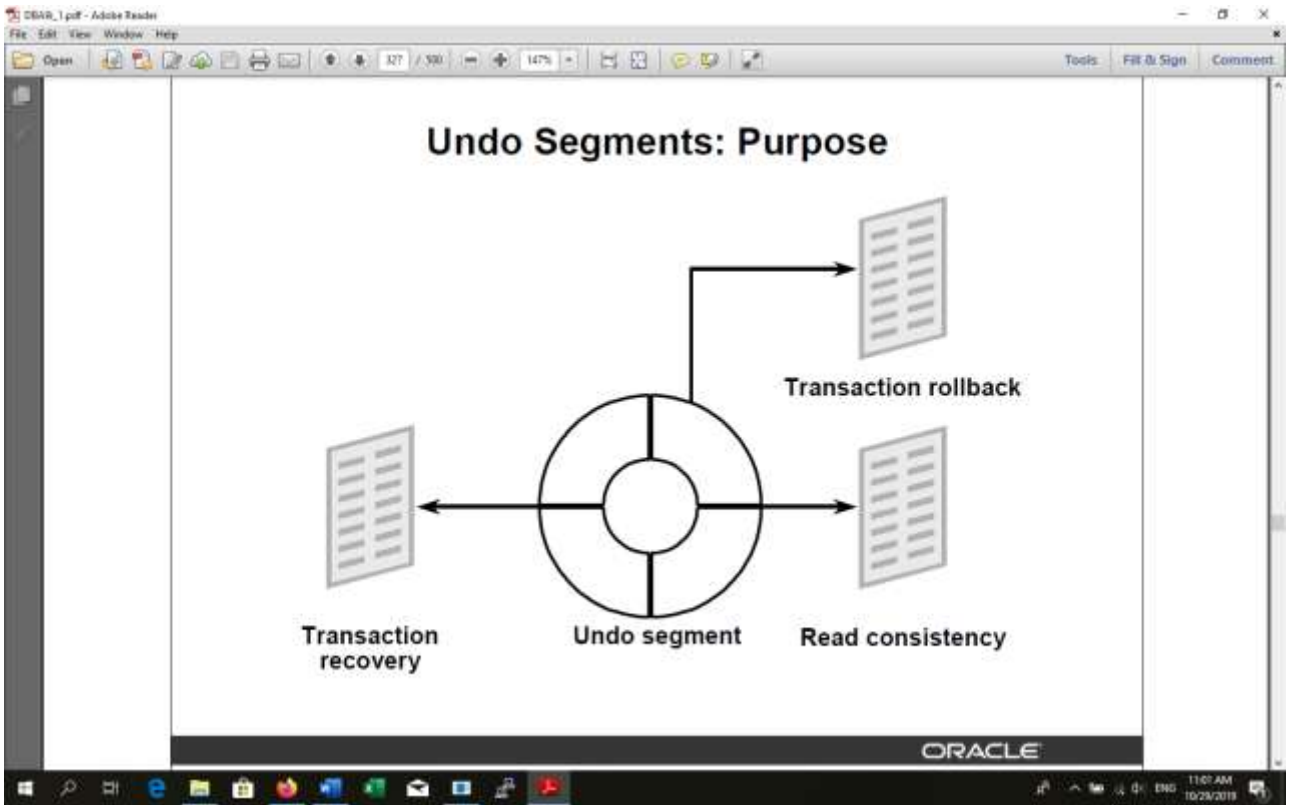
SQL> alter tablespace BD coalesce ;

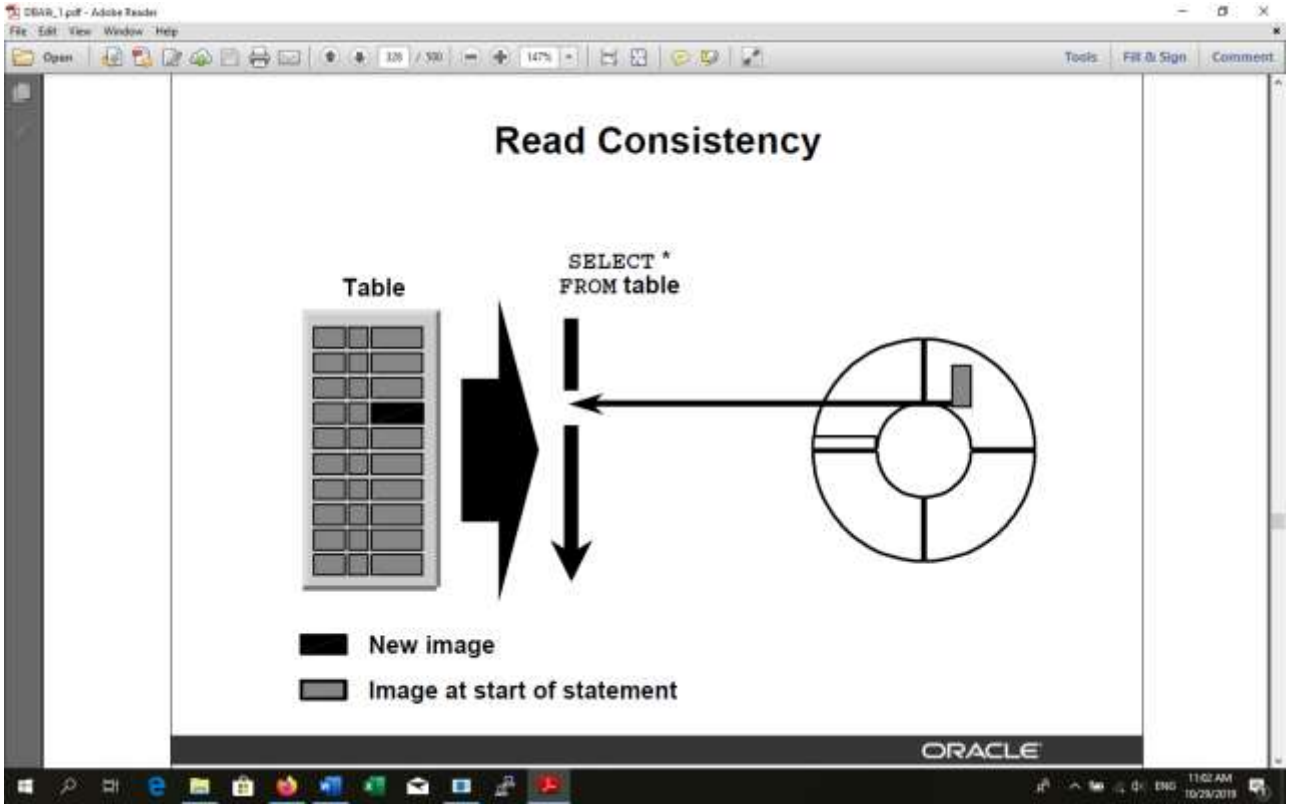
SQL> select tablespace_name,total_extents, percent_extents_coalesced from
dba_free_space_coalesced;

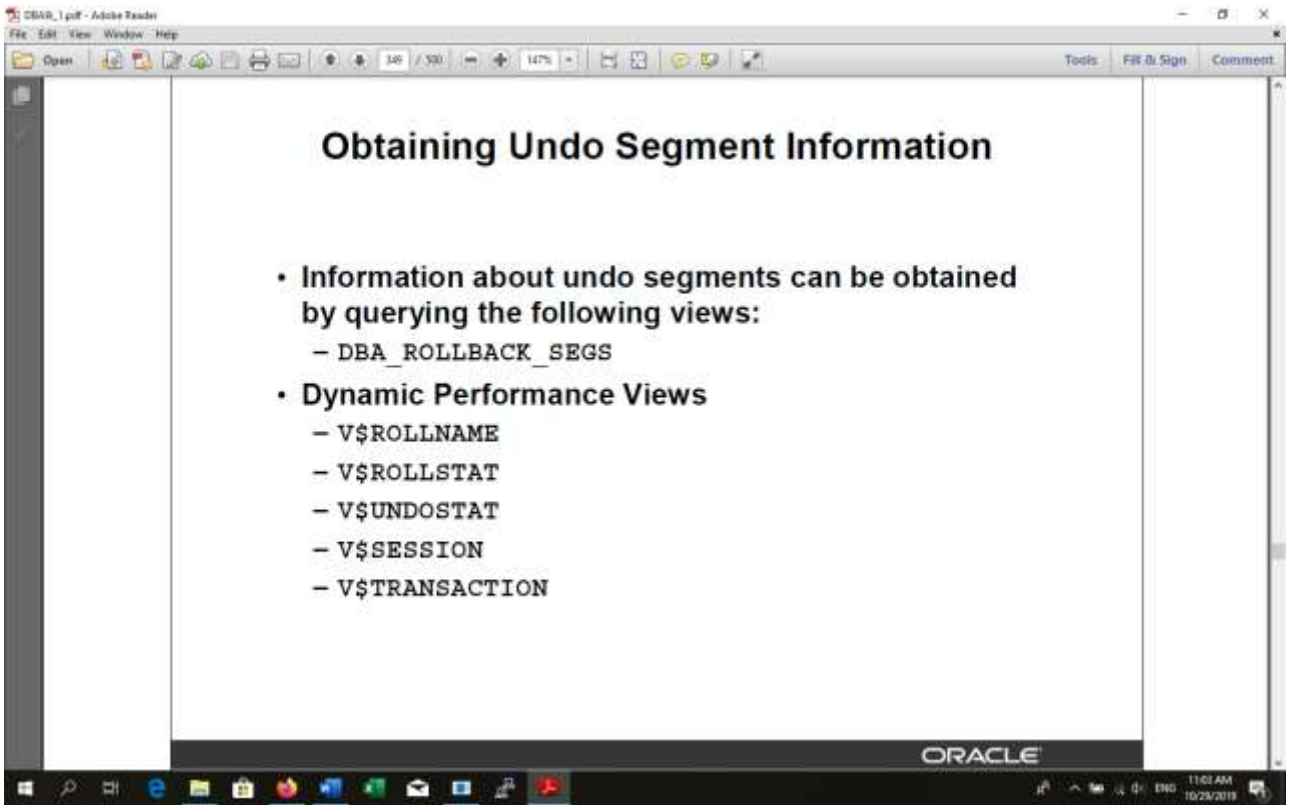
TABLESPACE_NAME	TOTAL_EXTENTS	PERCENT_EXTENTS_COALESCED
SYSAUX	144	100
BI_IAS_OPSS	1	100
BI_BIPLATF	1	100
BI_STB	1	100
UNDOTBS1	10	100
USERS	1	100
EXAMPLE	2	100
BI_IAS_UMS	1	100
SYSTEM	3	100
BI_MDS	2	100
BI_IAU	1	100
BI_WLS	1	100

B. Segmente de undo si sortare




Undo Segments: Purpose
Transaction rollback
Transaction recovery
Undo segment
Read consistency
ORACLE


Read Consistency
Table
SELECT *
FROM table
New image
Image at start of statement
ORACLE



7) Crearea unui tablespace de undo:

SQL> create undo tablespace ABD_UNDO datafile 'g:\temp\abd_undo_db01.dbf' size 2M;

Tablespace created.

8) Crearea unui segment de undo in tablespace-ul de undo:

SQL> create rollback segment ABD_UNDO_SEG tablespace ABD_UNDO
storage (initial 100k next 100k optimal 4M minextents 20 maxextents 100);

Rollback segment created.

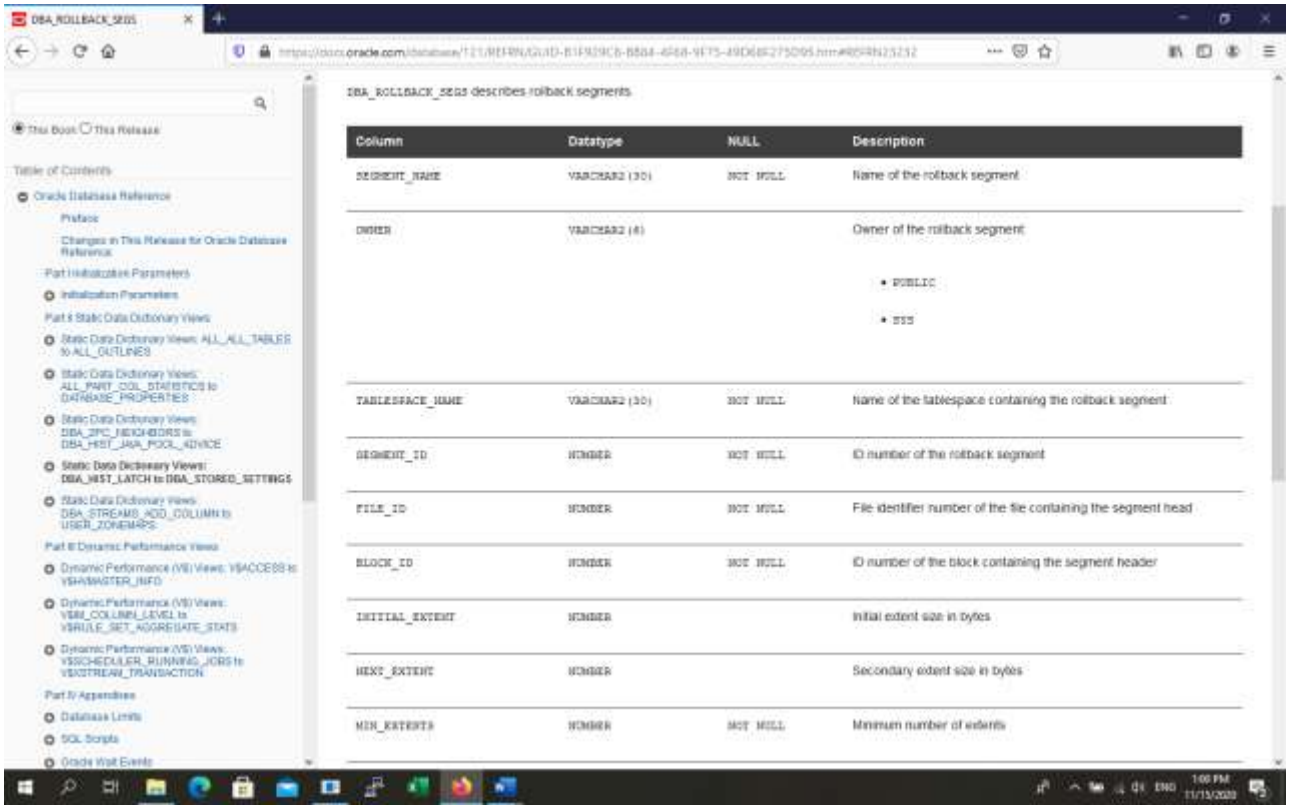
Obs. Daca la startarea bazei de date parametrul UNDO_MANAGEMENT= AUTO atunci segmentul nu poate fi utilizat online.

9) Informatii din dictionar privind segmentele de undo:

SQL> desc dba_rollback_segs

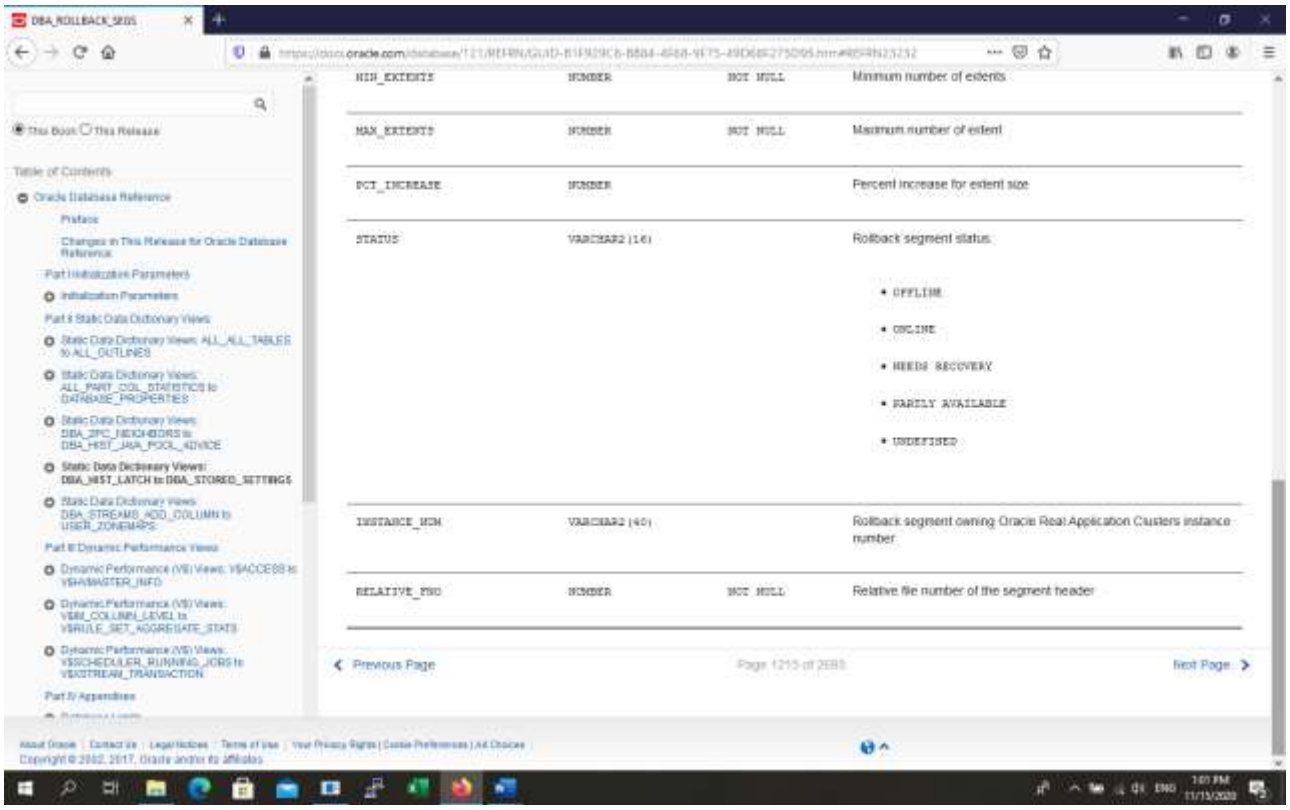
Name	Null?	Type
SEGMENT_NAME	NOT NULL	VARCHAR2(30)

OWNER		VARCHAR2(6)
TABLESPACE_NAME	NOT NULL	VARCHAR2(30)
SEGMENT_ID	NOT NULL	NUMBER
FILE_ID	NOT NULL	NUMBER
BLOCK_ID	NOT NULL	NUMBER
INITIAL_EXTENT	NUMBER	
NEXT_EXTENT	NUMBER	
MIN_EXTENTS	NOT NULL	NUMBER
MAX_EXTENTS	NOT NULL	NUMBER
PCT_INCREASE		NUMBER
STATUS		VARCHAR2(16)
INSTANCE_NUM		VARCHAR2(40)
RELATIVE_FNO	NOT NULL	NUMBER



DBA_ROLLBACK_SEGS describes rollback segments.

Column	Datatype	NULL	Description
SEGMENT_NAME	VARCHAR2 (30)	NOT NULL	Name of the rollback segment
OWNER	VARCHAR2 (6)		Owner of the rollback segment • PUBLIC • SYS
TABLESPACE_NAME	VARCHAR2 (30)	NOT NULL	Name of the tablespace containing the rollback segment
SEGMENT_ID	NUMBER	NOT NULL	ID number of the rollback segment
FILE_ID	NUMBER	NOT NULL	File identifier number of the file containing the segment head
BLOCK_ID	NUMBER	NOT NULL	ID number of the block containing the segment header
INITIAL_EXTENT	NUMBER		Initial extent size in bytes
NEXT_EXTENT	NUMBER		Secondary extent size in bytes
MIN_EXTENTS	NUMBER	NOT NULL	Minimum number of extents



SQL> select segment_name,tablespace_name,owner,status from dba_rollback_segs;

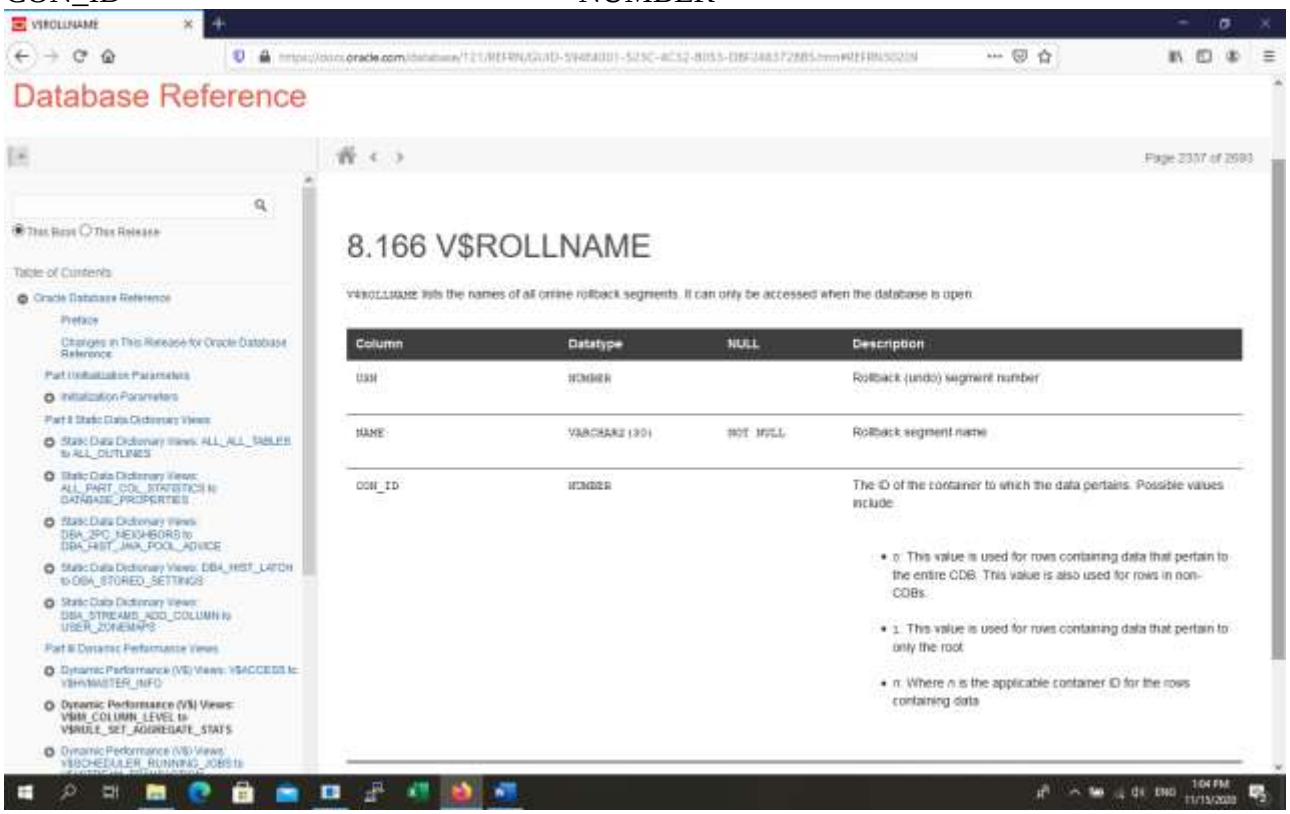
SEGMENT_NAME	TABLESPACE	OWNER	STATUS
SYSTEM	SYSTEM	SYS	ONLINE
_SYSSMU11_1204745426$	UNDOTBS1	PUBLIC	OFFLINE
_SYSSMU10_3901898544$	UNDOTBS1	PUBLIC	ONLINE
_SYSSMU9_889291946$	UNDOTBS1	PUBLIC	ONLINE
_SYSSMU8_153572397$	UNDOTBS1	PUBLIC	ONLINE
_SYSSMU7_233526786$	UNDOTBS1	PUBLIC	ONLINE
_SYSSMU6_3822221795$	UNDOTBS1	PUBLIC	ONLINE
_SYSSMU5_3484600714$	UNDOTBS1	PUBLIC	ONLINE
_SYSSMU4_910366693$	UNDOTBS1	PUBLIC	ONLINE
_SYSSMU3_2165878102$	UNDOTBS1	PUBLIC	ONLINE
_SYSSMU2_3197760948$	UNDOTBS1	PUBLIC	ONLINE
_SYSSMU1_1607784644$	UNDOTBS1	PUBLIC	ONLINE
_SYSSMU19_2088400043$	BD_UNDO	PUBLIC	OFFLINE
_SYSSMU18_1275962030$	BD_UNDO	PUBLIC	OFFLINE
_SYSSMU17_46852941$	BD_UNDO	PUBLIC	OFFLINE
_SYSSMU16_2926588256$	BD_UNDO	PUBLIC	OFFLINE
_SYSSMU15_3531944707$	BD_UNDO	PUBLIC	OFFLINE
_SYSSMU14_3622294764$	BD_UNDO	PUBLIC	OFFLINE

_SYSSMU13_3677523389$	BD_UNDO	PUBLIC	OFFLINE
_SYSSMU12_4129524475$	BD_UNDO	PUBLIC	OFFLINE

10) Segmentele de undo folosite de instanta curenta:

SQL> desc v$rollname

Name	Null?	Type
USN		NUMBER
NAME	NOT NULL	VARCHAR2(30)
CON_ID		NUMBER



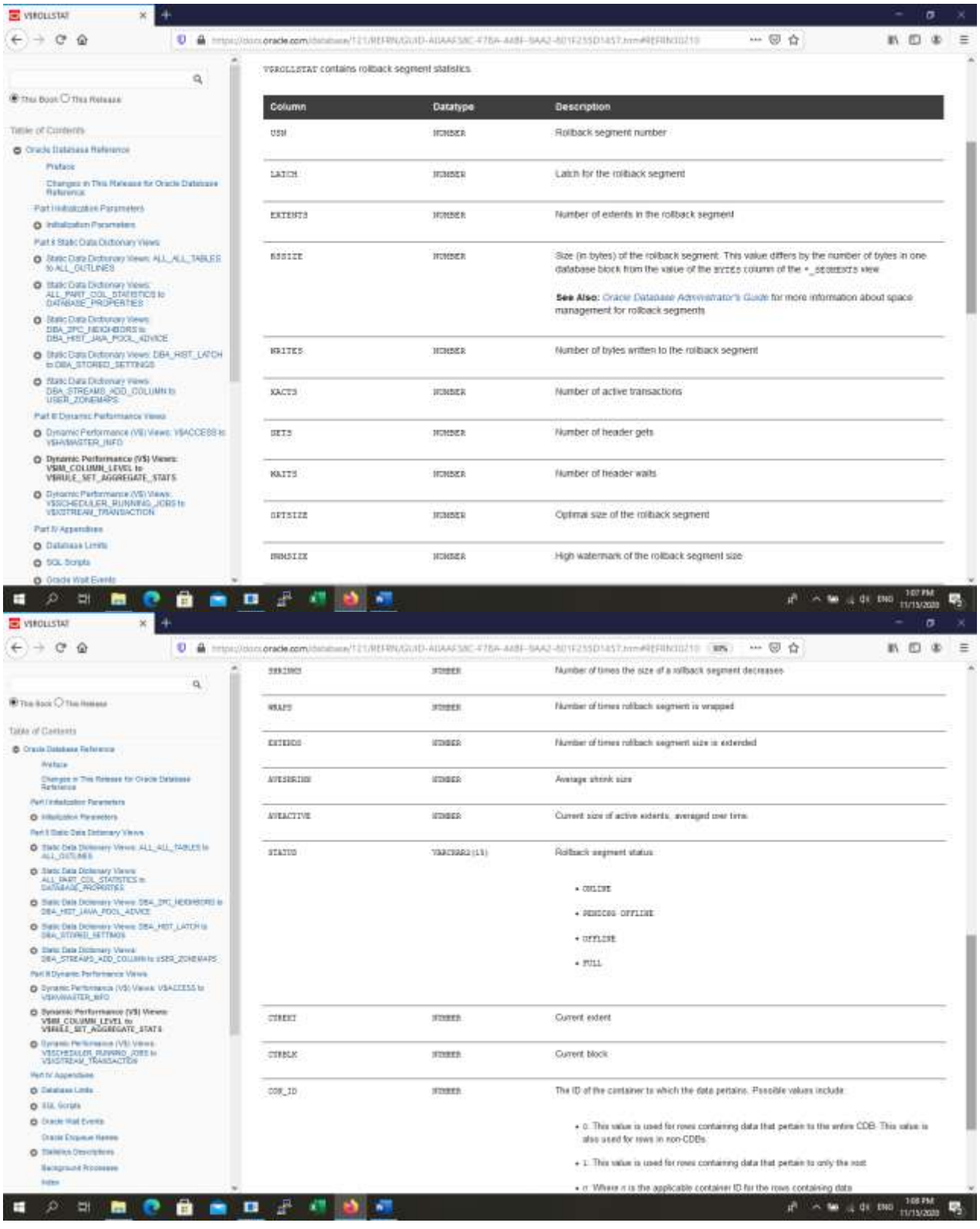
SQL> select * from v$rollname;

USN	NAME	CON_ID
0	SYSTEM	0
1	_SYSSMU1_1607784644$	0
2	_SYSSMU2_3197760948$	0
3	_SYSSMU3_2165878102$	0
4	_SYSSMU4_910366693$	0
5	_SYSSMU5_3484600714$	0
6	_SYSSMU6_3822221795$	0
7	_SYSSMU7_233526786$	0

8	_SYSSMU8_153572397$	0
9	_SYSSMU9_889291946$	0
10	_SYSSMU10_3901898544$	0

11) Statistici despre segmentele de undo:

```
SQL> desc v$rollstat
 Name                      Null?    Type
 ------------------------- -----    -------- ----
 USN                                NUMBER
 LATCH                              NUMBER
 EXTENTS                            NUMBER
 RSSIZE                             NUMBER
 WRITES                             NUMBER
 XACTS                              NUMBER
 GETS                               NUMBER
 WAITS                              NUMBER
 OPTSIZE                            NUMBER
 HWMSIZE                            NUMBER
 SHRINKS                            NUMBER
 WRAPS                              NUMBER
 EXTENDS                            NUMBER
 AVESHRINK                          NUMBER
 AVEACTIVE                          NUMBER
 STATUS                             VARCHAR2(15)
 CUREXT                             NUMBER
 CURBLK                             NUMBER
 CON_ID                            NUMBER
```



V$ROLLSTAT contains rollback segment statistics

Column	Datatype	Description
USN	NUMBER	Rollback segment number
LATCH	NUMBER	Latch for the rollback segment
EXTENTS	NUMBER	Number of extents in the rollback segment
RSSIZE	NUMBER	Size (in bytes) of the rollback segment. This value differs by the number of bytes in one database block from the value of the BYTES column of the *_SEGMENTS view **See Also:** *Oracle Database Administrator's Guide* for more information about space management for rollback segments
WRITES	NUMBER	Number of bytes written to the rollback segment
XACTS	NUMBER	Number of active transactions
GETS	NUMBER	Number of header gets
WAITS	NUMBER	Number of header waits
OPTSIZE	NUMBER	Optimal size of the rollback segment
HWMSIZE	NUMBER	High watermark of the rollback segment size
SHRINKS	NUMBER	Number of times the size of a rollback segment decreases
WRAPS	NUMBER	Number of times rollback segment is wrapped
EXTENDS	NUMBER	Number of times rollback segment size is extended
AVESHRINK	NUMBER	Average shrink size
AVEACTIVE	NUMBER	Current size of active extents, averaged over time
STATUS	VARCHAR2(15)	Rollback segment status • ONLINE • PENDING OFFLINE • OFFLINE • FULL
CUREXT	NUMBER	Current extent
CURBLK	NUMBER	Current block
CON_ID	NUMBER	The ID of the container to which the data pertains. Possible values include • 0: This value is used for rows containing data that pertain to the entire CDB. This value is also used for rows in non-CDBs • 1: This value is used for rows containing data that pertain to only the root • n: Where n is the applicable container ID for the rows containing data

SQL> select usn, rssize, extents, status from v$rollstat;

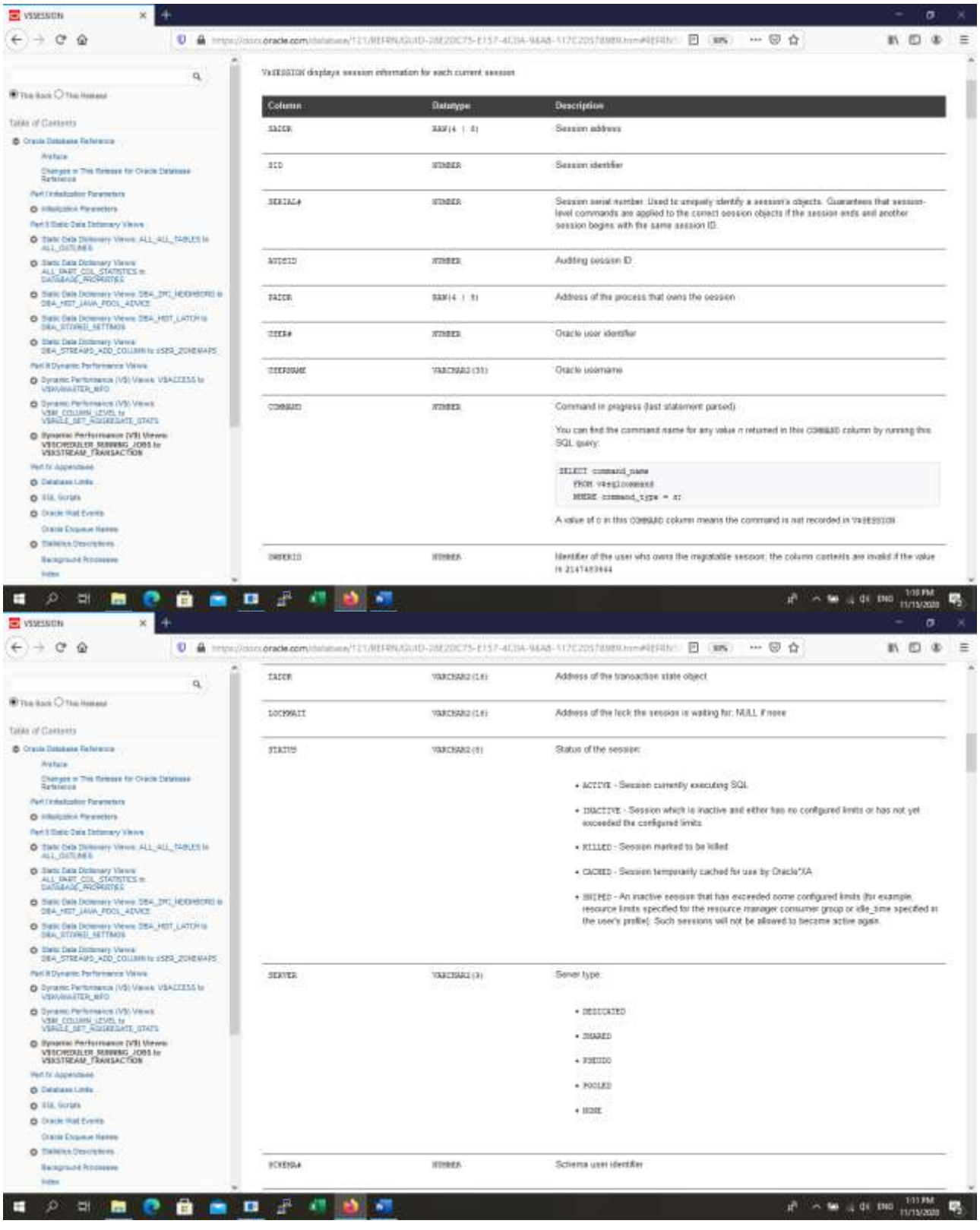
USN	RSSIZE	EXTENTS	STATUS
0	385024	6	ONLINE
1	1171456	3	ONLINE
2	1171456	3	ONLINE
3	1171456	3	ONLINE
4	1171456	3	ONLINE
5	1171456	3	ONLINE
6	1171456	3	ONLINE
7	1171456	3	ONLINE
8	385024	6	ONLINE
9	1171456	3	ONLINE
10	1171456	3	ONLINE

12) Informatii despre useri si sesiuni:

SQL> desc v$session

Name	Null?	Type
SADDR		RAW(4)
SID		NUMBER
SERIAL#		NUMBER
AUDSID		NUMBER
PADDR		RAW(4)
USER#		NUMBER
USERNAME		VARCHAR2(30)
COMMAND		NUMBER
OWNERID		NUMBER
TADDR		VARCHAR2(8)
LOCKWAIT		VARCHAR2(8)
STATUS		VARCHAR2(8)
SERVER		VARCHAR2(9)
SCHEMA#		NUMBER
SCHEMANAME		VARCHAR2(30)
OSUSER		VARCHAR2(30)
PROCESS		VARCHAR2(12)
MACHINE		VARCHAR2(64)

TERMINAL	VARCHAR2(16)
PROGRAM	VARCHAR2(64)
TYPE	VARCHAR2(10)
SQL_ADDRESS	RAW(4)
SQL_HASH_VALUE	NUMBER
PREV_SQL_ADDR	RAW(4)
PREV_HASH_VALUE	NUMBER
MODULE	VARCHAR2(48)
MODULE_HASH	NUMBER
ACTION	VARCHAR2(32)
ACTION_HASH	NUMBER
CLIENT_INFO	VARCHAR2(64)
FIXED_TABLE_SEQUENCE	NUMBER
ROW_WAIT_OBJ#	NUMBER
ROW_WAIT_FILE#	NUMBER
ROW_WAIT_BLOCK#	NUMBER
ROW_WAIT_ROW#	NUMBER
LOGON_TIME	DATE
LAST_CALL_ET	NUMBER
PDML_ENABLED	VARCHAR2(3)
FAILOVER_TYPE	VARCHAR2(13)
FAILOVER_METHOD	VARCHAR2(10)
FAILED_OVER	VARCHAR2(3)
RESOURCE_CONSUMER_GROUP	VARCHAR2(32)
PDML_STATUS	VARCHAR2(8)
PDDL_STATUS	VARCHAR2(8)
PQ_STATUS	VARCHAR2(8)
CURRENT_QUEUE_DURATION	NUMBER
CLIENT_IDENTIFIER	VARCHAR2(64)
…..	
SERVICE_NAME	VARCHAR2(64)
SQL_TRACE	VARCHAR2(8)
SQL_TRACE_WAITS	VARCHAR2(5)
SQL_TRACE_BINDS	VARCHAR2(5)
SQL_TRACE_PLAN_STATS	VARCHAR2(10)
SESSION_EDITION_ID	NUMBER
CREATOR_ADDR	RAW(8)
CREATOR_SERIAL#	NUMBER
ECID	VARCHAR2(64)
SQL_TRANSLATION_PROFILE_ID	NUMBER
PGA_TUNABLE_MEM	NUMBER
CON_ID	NUMBER
EXTERNAL_NAME	VARCHAR2(1024)

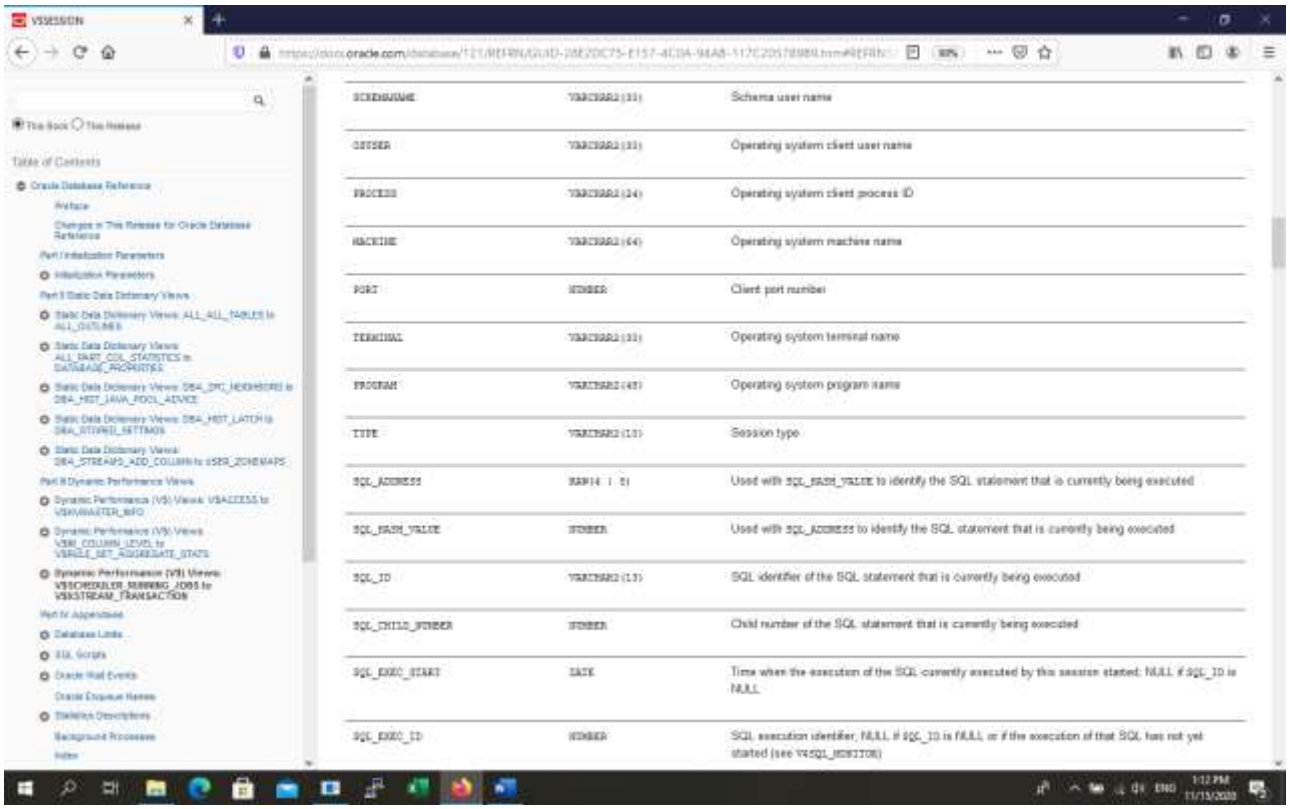


V$SESSION displays session information for each current session.

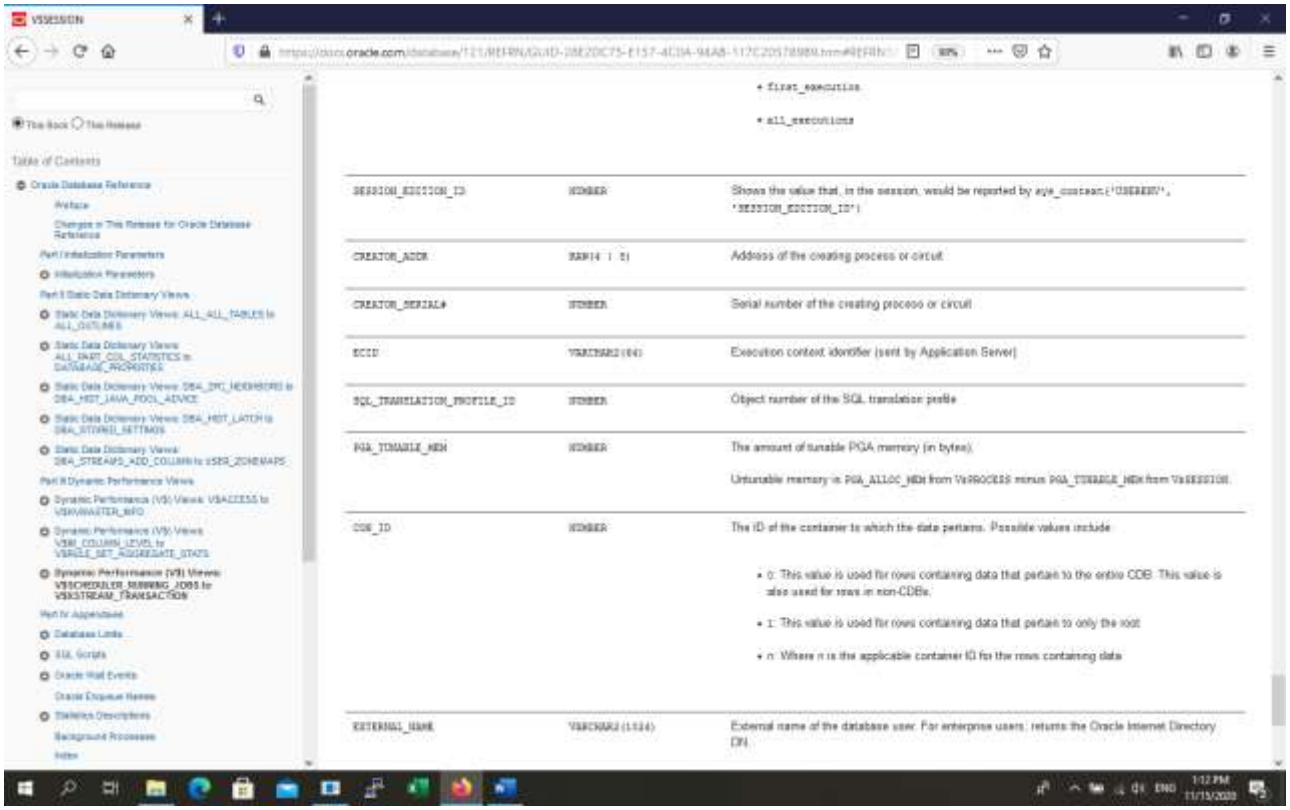
Column	Datatype	Description
SADDR	RAW(4 | 8)	Session address
SID	NUMBER	Session identifier
SERIAL#	NUMBER	Session serial number. Used to uniquely identify a session's objects. Guarantees that session-level commands are applied to the correct session objects if the session ends and another session begins with the same session ID.
AUDSID	NUMBER	Auditing session ID
PADDR	RAW(4 | 8)	Address of the process that owns the session
USER#	NUMBER	Oracle user identifier
USERNAME	VARCHAR2(30)	Oracle username
COMMAND	NUMBER	Command in progress (last statement parsed) You can find the command name for any value n returned in this COMMAND column by running this SQL query: `SELECT command_name FROM v$sqlcommand WHERE command_type = n;` A value of 0 in this COMMAND column means the command is not recorded in V$SESSION.
OWNERID	NUMBER	Identifier of the user who owns the migratable session; the column contents are invalid if the value is 2147483644

Column	Datatype	Description
TADDR	VARCHAR2(16)	Address of the transaction state object
LOCKWAIT	VARCHAR2(16)	Address of the lock the session is waiting for; NULL if none
STATUS	VARCHAR2(8)	Status of the session: • ACTIVE - Session currently executing SQL • INACTIVE - Session which is inactive and either has no configured limits or has not yet exceeded the configured limits • KILLED - Session marked to be killed • CACHED - Session temporarily cached for use by Oracle*XA • SNIPED - An inactive session that has exceeded some configured limits (for example, resource limits specified for the resource manager consumer group or idle_time specified in the user's profile). Such sessions will not be allowed to become active again.
SERVER	VARCHAR2(9)	Server type: • DEDICATED • SHARED • PSEUDO • POOLED • NONE
SCHEMA#	NUMBER	Schema user identifier

.....



SCHEMANAME	VARCHAR2(30)	Schema user name
OSUSER	VARCHAR2(30)	Operating system client user name
PROCESS	VARCHAR2(24)	Operating system client process ID
MACHINE	VARCHAR2(64)	Operating system machine name
PORT	NUMBER	Client port number
TERMINAL	VARCHAR2(30)	Operating system terminal name
PROGRAM	VARCHAR2(48)	Operating system program name
TYPE	VARCHAR2(10)	Session type
SQL_ADDRESS	RAW(4 | 8)	Used with SQL_HASH_VALUE to identify the SQL statement that is currently being executed
SQL_HASH_VALUE	NUMBER	Used with SQL_ADDRESS to identify the SQL statement that is currently being executed
SQL_ID	VARCHAR2(13)	SQL identifier of the SQL statement that is currently being executed
SQL_CHILD_NUMBER	NUMBER	Child number of the SQL statement that is currently being executed
SQL_EXEC_START	DATE	Time when the execution of the SQL currently executed by this session started; NULL if SQL_ID is NULL
SQL_EXEC_ID	NUMBER	SQL execution identifier; NULL if SQL_ID is NULL or if the execution of that SQL has not yet started (see V$SQL_MONITOR)



- first_execution
- all_executions

SESSION_EDITION_ID	NUMBER	Shows the value that, in the session, would be reported by sys_context('USERENV', 'SESSION_EDITION_ID')
CREATOR_ADDR	RAW(4 | 8)	Address of the creating process or circuit
CREATOR_SERIAL#	NUMBER	Serial number of the creating process or circuit
ECID	VARCHAR2(64)	Execution context identifier (sent by Application Server)
SQL_TRANSLATION_PROFILE_ID	NUMBER	Object number of the SQL translation profile
PGA_TUNABLE_MEM	NUMBER	The amount of tunable PGA memory (in bytes). Untunable memory is PGA_ALLOC_MEM from V$PROCESS minus PGA_TUNABLE_MEM from V$SESSION.
CON_ID	NUMBER	The ID of the container to which the data pertains. Possible values include • 0: This value is used for rows containing data that pertain to the entire CDB. This value is also used for rows in non-CDBs. • 1: This value is used for rows containing data that pertain to only the root • n: Where n is the applicable container ID for the rows containing data
EXTERNAL_NAME	VARCHAR2(1024)	External name of the database user. For enterprise users, returns the Oracle Internet Directory DN.

SQL> select username, sid, saddr, service_name from v$session;

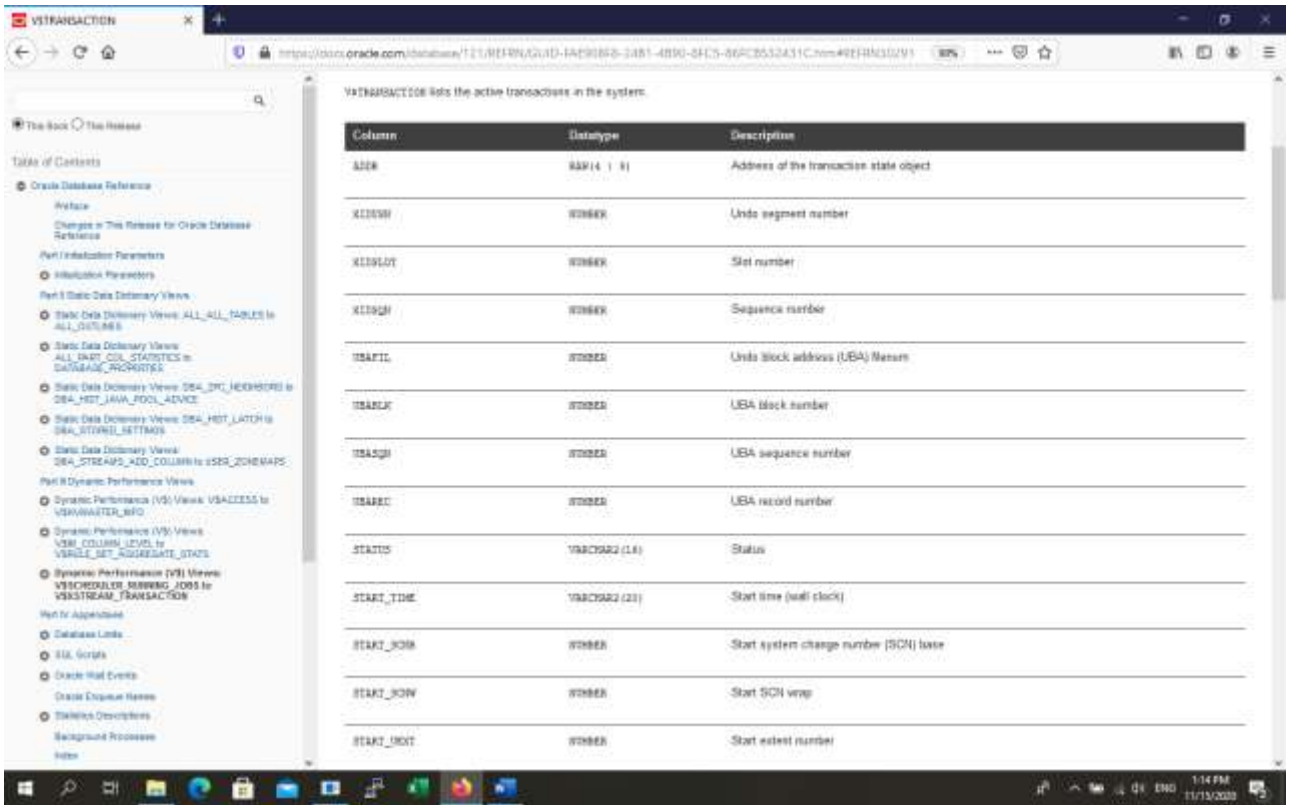
USERNAME	SID	SADDR	SERVICE_NAME
	1	00007FFC6DD1F780	SYS$BACKGROUND
	2	00007FFC6DD1D6B0	SYS$BACKGROUND
	3	00007FFC6DD1B5E0	SYS$BACKGROUND
	4	00007FFC6DD19510	SYS$BACKGROUND
	5	00007FFC6DD17440	SYS$BACKGROUND
	6	00007FFC6DD15370	SYS$BACKGROUND
	7	00007FFC6DD132A0	SYS$BACKGROUND
	8	00007FFC6DD111D0	SYS$BACKGROUND
	9	00007FFC6DD0F100	SYS$BACKGROUND
	10	00007FFC6DD0D030	SYS$BACKGROUND
	13	00007FFC6DD06DC0	SYS$BACKGROUND
	14	00007FFC6DD04CF0	SYS$BACKGROUND
SCOTT	16	00007FFC6DD00B50	SYS$USERS
	40	00007FFC6DCCF7D0	SYS$BACKGROUND

13) Informatii despre tranzactii(adresele tranzactiilor pot fi relationate cu sesiunile prin ses_addr):

SQL> desc v$transaction

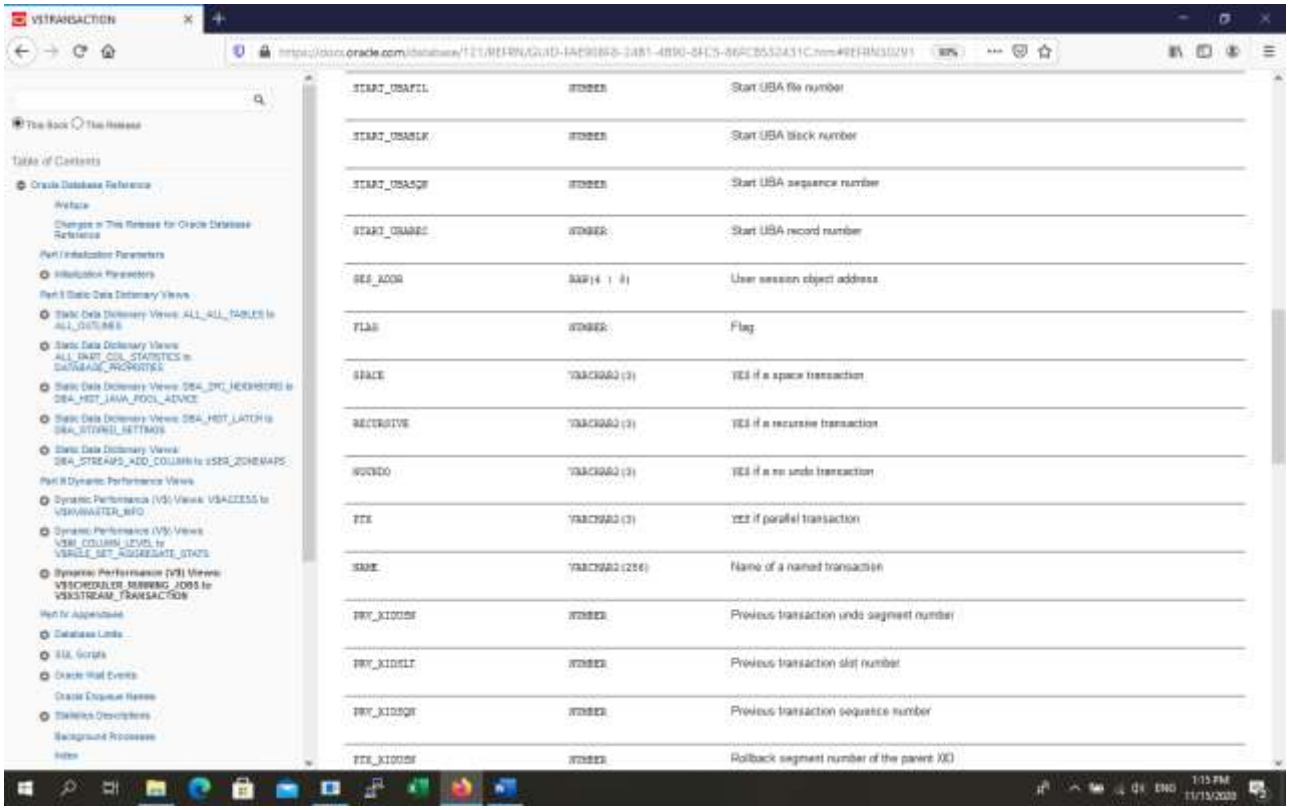
Name	Null?	Type
ADDR		RAW(4)
XIDUSN		NUMBER
XIDSLOT		NUMBER
XIDSQN		NUMBER
UBAFIL		NUMBER
UBABLK		NUMBER
UBASQN		NUMBER
UBAREC		NUMBER
STATUS		VARCHAR2(16)
START_TIME		VARCHAR2(20)
START_SCNB		NUMBER
START_SCNW		NUMBER
START_UEXT		NUMBER
START_UBAFIL		NUMBER
START_UBABLK		NUMBER
START_UBASQN		NUMBER
START_UBAREC		NUMBER
SES_ADDR		RAW(4)

FLAG	NUMBER
SPACE	VARCHAR2(3)
RECURSIVE	VARCHAR2(3)
NOUNDO	VARCHAR2(3)
PTX	VARCHAR2(3)
NAME	VARCHAR2(256)
PRV_XIDUSN	NUMBER
PRV_XIDSLT	NUMBER
PRV_XIDSQN	NUMBER
PTX_XIDUSN	NUMBER
PTX_XIDSLT	NUMBER
PTX_XIDSQN	NUMBER
DSCN-B	NUMBER
DSCN-W	NUMBER
USED_UBLK	NUMBER
USED_UREC	NUMBER
LOG_IO	NUMBER
PHY_IO	NUMBER
CR_GET	NUMBER
CR_CHANGE	NUMBER
START_DATE	DATE
DSCN_BASE	NUMBER
DSCN_WRAP	NUMBER
START_SCN	NUMBER
DEPENDENT_SCN	NUMBER
XID	RAW(8)
PRV_XID	RAW(8)
PTX_XID	RAW(8)
CON_ID	NUMBER

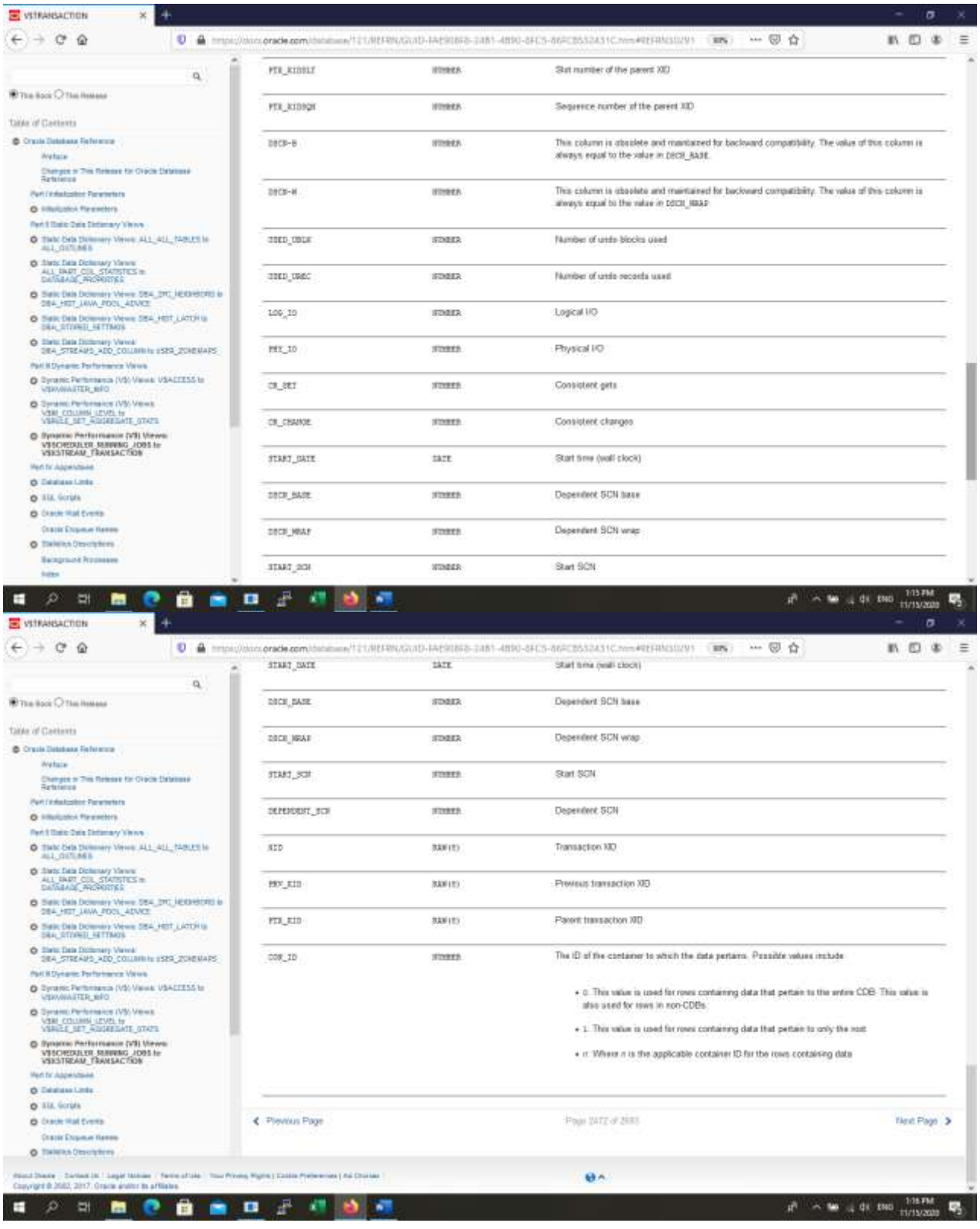


V$TRANSACTION lists the active transactions in the system.

Column	Datatype	Description
ADDR	RAW(4 | 8)	Address of the transaction state object
XIDUSN	NUMBER	Undo segment number
XIDSLOT	NUMBER	Slot number
XIDSQN	NUMBER	Sequence number
UBAFIL	NUMBER	Undo block address (UBA) filenum
UBABLK	NUMBER	UBA block number
UBASQN	NUMBER	UBA sequence number
UBAREC	NUMBER	UBA record number
STATUS	VARCHAR2 (16)	Status
START_TIME	VARCHAR2 (20)	Start time (wall clock)
START_SCN	NUMBER	Start system change number (SCN) base
START_SCNW	NUMBER	Start SCN wrap
START_UEXT	NUMBER	Start extent number



START_UBAFIL	NUMBER	Start UBA file number
START_UBABLK	NUMBER	Start UBA block number
START_UBASQN	NUMBER	Start UBA sequence number
START_UBAREC	NUMBER	Start UBA record number
SES_ADDR	RAW(4 | 8)	User session object address
FLAG	NUMBER	Flag
SPACE	VARCHAR2 (3)	YES if a space transaction
RECURSIVE	VARCHAR2 (3)	YES if a recursive transaction
NOUNDO	VARCHAR2 (3)	YES if a no undo transaction
PTX	VARCHAR2 (3)	YES if parallel transaction
NAME	VARCHAR2 (256)	Name of a named transaction
PRV_XIDUSN	NUMBER	Previous transaction undo segment number
PRV_XIDSLT	NUMBER	Previous transaction slot number
PRV_XIDSQN	NUMBER	Previous transaction sequence number
PTX_XIDUSN	NUMBER	Rollback segment number of the parent XID



SQL> insert into emp values (999, 'TEST','TRANZACT',1111,sysdate, 100,0,10);
1 row created.

SQL> select addr, xidusn, used_ublk,start_uext, start_ubafil from v$transaction;

ADDR	XIDUSN	USED_UBLK	START_UEXT	START_UBAFIL
00007FFC695843D8	2	1	2	5

ADDR – adresa sesiunii
XIDUSN – nr. segmentului de undo
USED_UBLK – nr. de blocuri de undo generate de tranzactie
START_UEXT- extensia segmentului de undo pentru care tranzactia a inceput scrierea
START_UBAFIL – fisierul de undo in care tranzactia curenta a inceput scrierea
UBABLK – numarul blocului de undo utilizat

14) Informatii despre blocurile de undo folosite de tranzactia curenta:

SQL> SELECT s.username, t.xidusn, t.ubafil, t.ubablk, t.used_ublk FROM v$session s,
v$transaction t WHERE s.saddr = t.ses_addr;

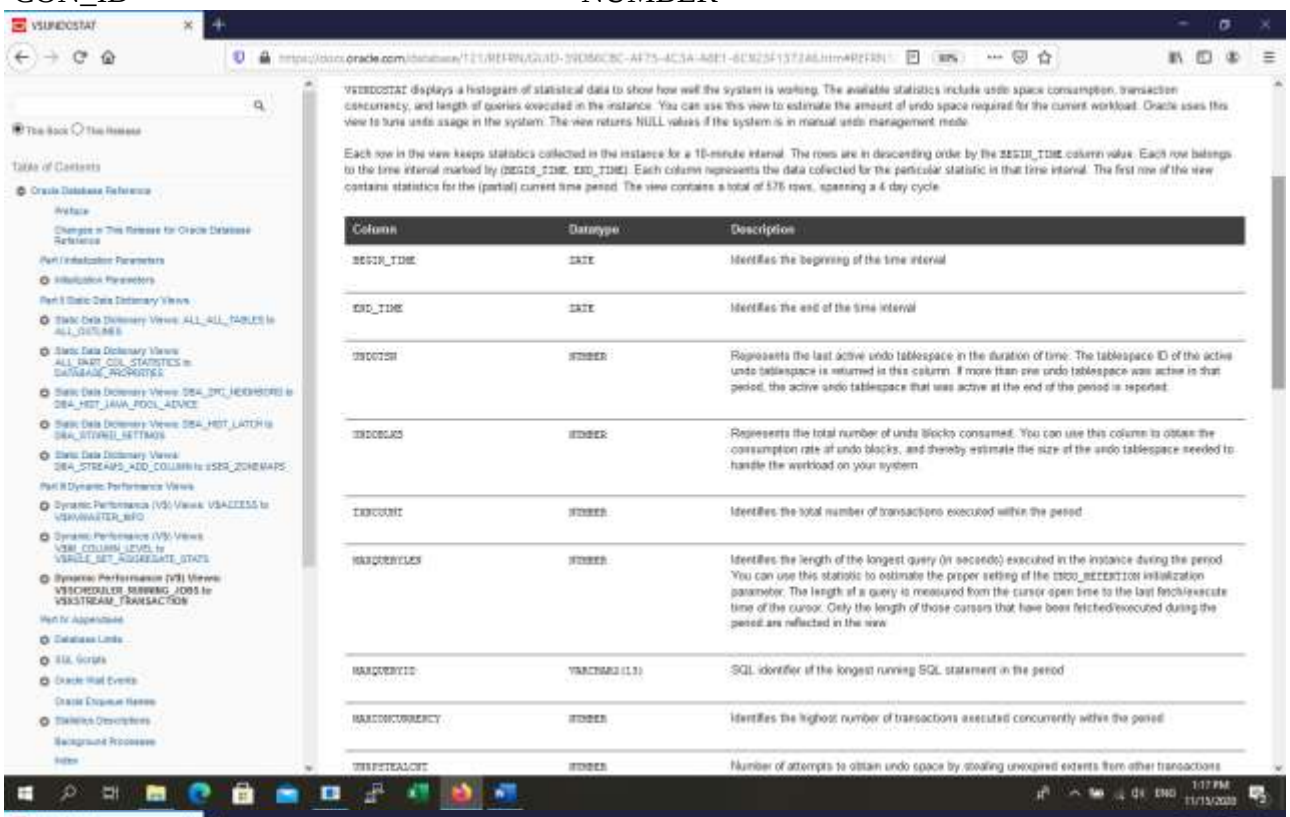
USERNAME	XIDUSN	UBAFIL	UBABLK	USED_UBLK
SCOTT	2	5	441	1

15) Statistici privind dimensiunea spatiului de undo:

SQL> desc v$undostat

Name	Null?	Type
BEGIN_TIME		DATE
END_TIME		DATE
UNDOTSN		NUMBER
UNDOBLKS		NUMBER
TXNCOUNT		NUMBER
MAXQUERYLEN		NUMBER
MAXQUERYID		VARCHAR2(13)
MAXCONCURRENCY		NUMBER
UNXPSTEALCNT		NUMBER
UNXPBLKRELCNT		NUMBER
UNXPBLKREUCNT		NUMBER
EXPSTEALCNT		NUMBER
EXPBLKRELCNT		NUMBER
EXPBLKREUCNT		NUMBER
SSOLDERRCNT		NUMBER
NOSPACEERRCNT		NUMBER
ACTIVEBLKS		NUMBER
UNEXPIREDBLKS		NUMBER

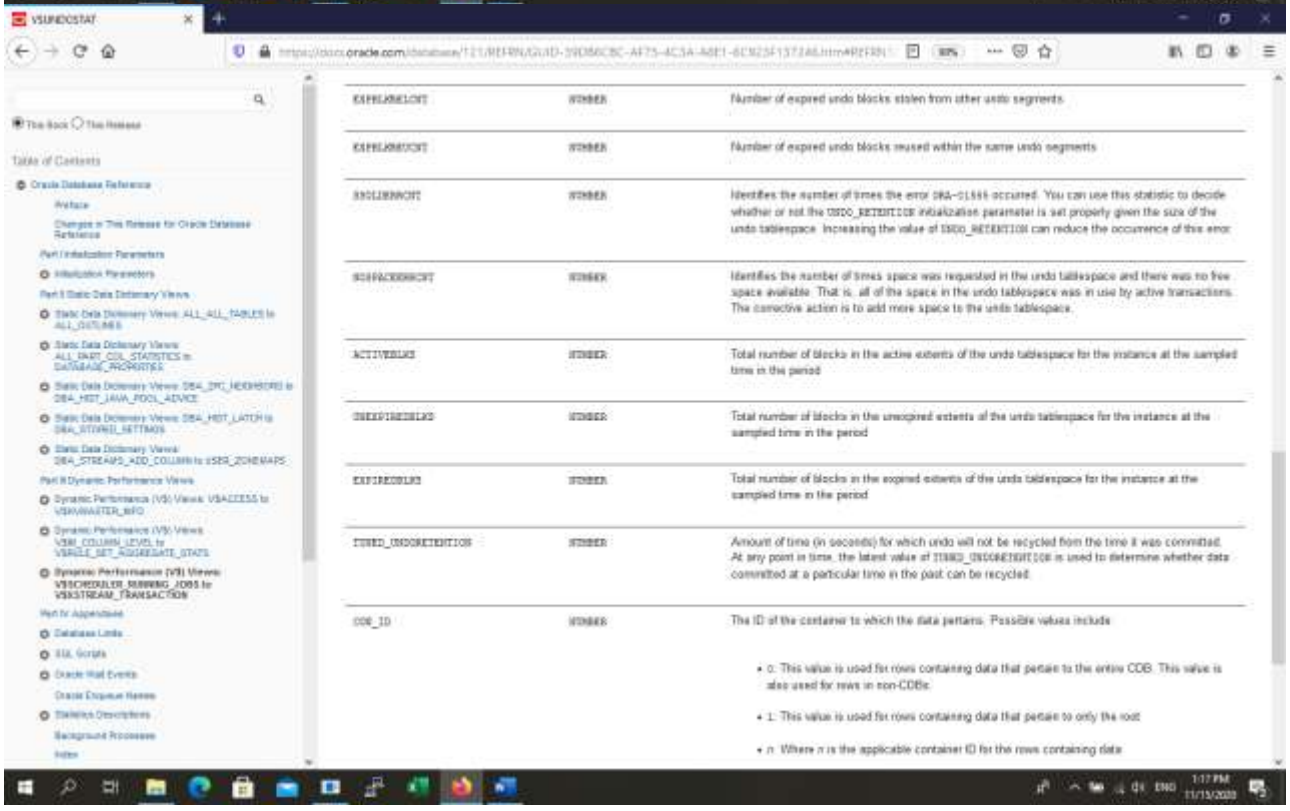
EXPIREDBLKS	NUMBER
TUNED_UNDORETENTION	NUMBER
CON_ID	NUMBER



V$UNDOSTAT displays a histogram of statistical data to show how well the system is working. The available statistics include undo space consumption, transaction concurrency, and length of queries executed in the instance. You can use this view to estimate the amount of undo space required for the current workload. Oracle uses this view to tune undo usage in the system. The view returns NULL values if the system is in manual undo management mode.

Each row in the view keeps statistics collected in the instance for a 10-minute interval. The rows are in descending order by the BEGIN_TIME column value. Each row belongs to the time interval marked by (BEGIN_TIME, END_TIME). Each column represents the data collected for the particular statistic in that time interval. The first row of the view contains statistics for the (partial) current time period. The view contains a total of 576 rows, spanning a 4 day cycle.

Column	Datatype	Description
BEGIN_TIME	DATE	Identifies the beginning of the time interval
END_TIME	DATE	Identifies the end of the time interval
UNDOTSN	NUMBER	Represents the last active undo tablespace in the duration of time. The tablespace ID of the active undo tablespace is returned in this column. If more than one undo tablespace was active in that period, the active undo tablespace that was active at the end of the period is reported.
UNDOBLKS	NUMBER	Represents the total number of undo blocks consumed. You can use this column to obtain the consumption rate of undo blocks, and thereby estimate the size of the undo tablespace needed to handle the workload on your system.
TXNCOUNT	NUMBER	Identifies the total number of transactions executed within the period
MAXQUERYLEN	NUMBER	Identifies the length of the longest query (in seconds) executed in the instance during the period. You can use this statistic to estimate the proper setting of the UNDO_RETENTION initialization parameter. The length of a query is measured from the cursor open time to the last fetch/execute time of the cursor. Only the length of those cursors that have been fetched/executed during the period are reflected in the view.
MAXQUERYID	VARCHAR2(13)	SQL identifier of the longest running SQL statement in the period
MAXCONCURRENCY	NUMBER	Identifies the highest number of transactions executed concurrently within the period
UNXPSTEALCNT	NUMBER	Number of attempts to obtain undo space by stealing unexpired extents from other transactions



EXPSTEALCNT	NUMBER	Number of expired undo blocks stolen from other undo segments
EXPBLKRELCNT	NUMBER	Number of expired undo blocks reused within the same undo segments
EXPBLKREUSCNT	NUMBER	Identifies the number of times the error ORA-01555 occurred. You can use this statistic to decide whether or not the UNDO_RETENTION initialization parameter is set properly given the size of the undo tablespace. Increasing the value of UNDO_RETENTION can reduce the occurrence of this error.
SSOLDERRCNT	NUMBER	Identifies the number of times space was requested in the undo tablespace and there was no free space available. That is, all of the space in the undo tablespace was in use by active transactions. The corrective action is to add more space to the undo tablespace.
NOSPACEERRCNT	NUMBER	Total number of blocks in the active extents of the undo tablespace for the instance at the sampled time in the period
ACTIVEBLKS	NUMBER	Total number of blocks in the unexpired extents of the undo tablespace for the instance at the sampled time in the period
UNEXPIREDBLKS	NUMBER	Total number of blocks in the expired extents of the undo tablespace for the instance at the sampled time in the period
EXPIREDBLKS	NUMBER	Amount of time (in seconds) for which undo will not be recycled from the time it was committed. At any point in time, the latest value of TUNED_UNDORETENTION is used to determine whether data committed at a particular time in the past can be recycled.
TUNED_UNDORETENTION	NUMBER	The ID of the container to which the data pertains. Possible values include: • 0: This value is used for rows containing data that pertain to the entire CDB. This value is also used for rows in non-CDBs. • 1: This value is used for rows containing data that pertain to only the root. • n: Where n is the applicable container ID for the rows containing data.
CON_ID	NUMBER	

SQL> SELECT to_char(begin_time, 'dd-mm-yyyy hh:mi:ss') start_time, to_char(end_time,'dd-mm-yyyy hh:mi:ss') end_time, ((end_time-begin_time)* 24)*60 minute, undoblks FROM v$undostat;

START_TIME	END_TIME	MINUTE	UNDOBLKS
29-10-2019 11:53:53	29-10-2019 12:01:36	7.71666667	171
29-10-2019 11:43:53	29-10-2019 11:53:53	10	7
29-10-2019 11:33:53	29-10-2019 11:43:53	10	1
29-10-2019 11:23:53	29-10-2019 11:33:53	10	4
29-10-2019 11:13:53	29-10-2019 11:23:53	10	3
29-10-2019 11:03:53	29-10-2019 11:13:53	10	7
29-10-2019 10:53:53	29-10-2019 11:03:53	10	174
29-10-2019 10:43:53	29-10-2019 10:53:53	10	1

SQL> SELECT (SUM(undoblks) / SUM ((end_time - begin_time) * 24*60*60)) nr_med_blocuri_undo_sec FROM v$undostat;

NR_MED_BLOCURI_UNDO_SEC
0 .114826753

16) Reducerea spatiului alocat unui segment de undo:

SQL> alter rollback segment abd_undo_seg shrink to 4M;
Rollback segment altered.

17) Stergerea din dictionar a unui segment de undo:

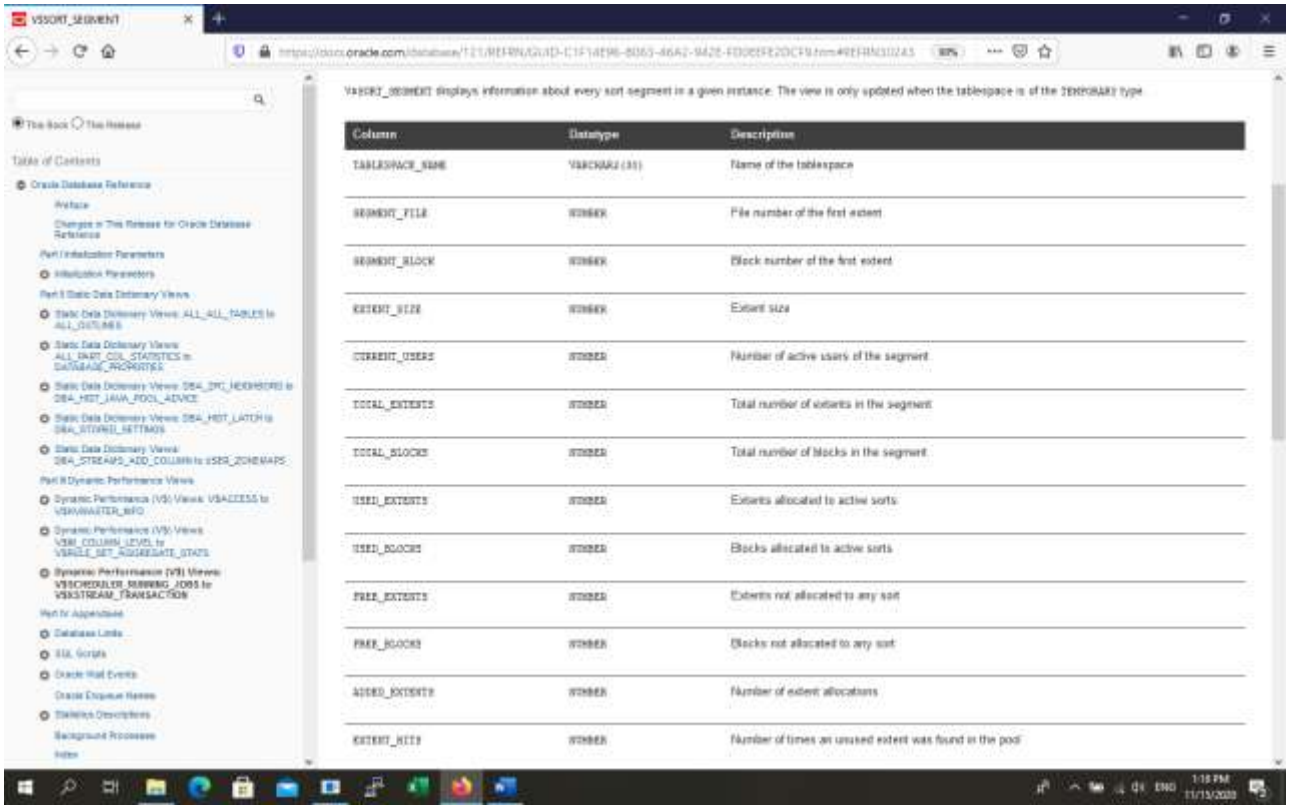
SQL> drop rollback segment abd_undo_seg;
Rollback segment dropped.

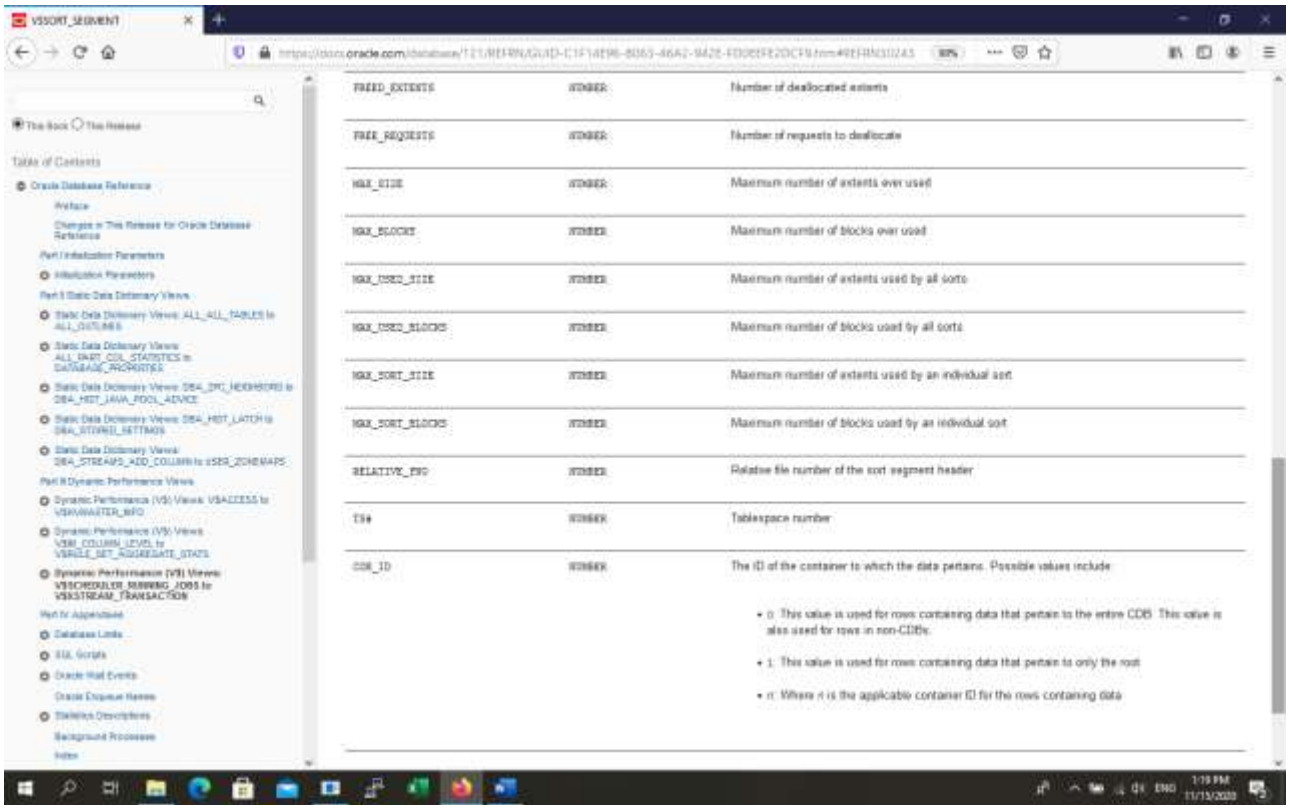
18) Informatii despre segmentele temporare de sortare (folosite in comenzile SQL de sortare):

SQL> desc v$sort_segment

Name	Null?	Type
TABLESPACE_NAME		VARCHAR2(31)
SEGMENT_FILE		NUMBER
SEGMENT_BLOCK		NUMBER
EXTENT_SIZE		NUMBER
CURRENT_USERS		NUMBER
TOTAL_EXTENTS		NUMBER
TOTAL_BLOCKS		NUMBER

USED_EXTENTS	NUMBER
USED_BLOCKS	NUMBER
FREE_EXTENTS	NUMBER
FREE_BLOCKS	NUMBER
ADDED_EXTENTS	NUMBER
EXTENT_HITS	NUMBER
FREED_EXTENTS	NUMBER
FREE_REQUESTS	NUMBER
MAX_SIZE	NUMBER
MAX_BLOCKS	NUMBER
MAX_USED_SIZE	NUMBER
MAX_USED_BLOCKS	NUMBER
MAX_SORT_SIZE	NUMBER
MAX_SORT_BLOCKS	NUMBER
RELATIVE_FNO	NUMBER
TS#	NUMBER
CON_ID	NUMBER





SQL> select tablespace_name,max_sort_size,extent_size,max_sort_blocks from v$sort_segment;

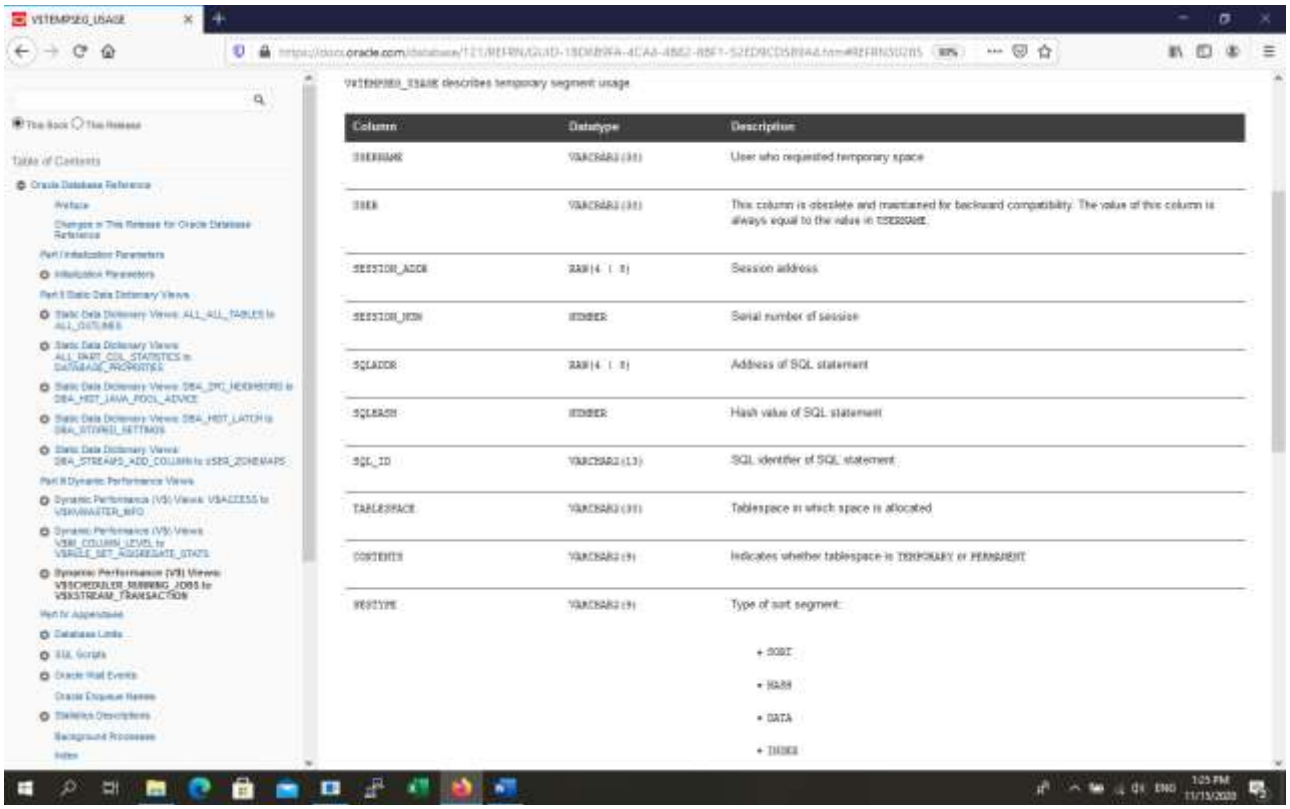
TABLESPACE_NAME	MAX_SORT_SIZE	EXTENT_SIZE	MAX_SORT_BLOCKS
TEMP	1	128	128
UBD_TEMP	1	512	512

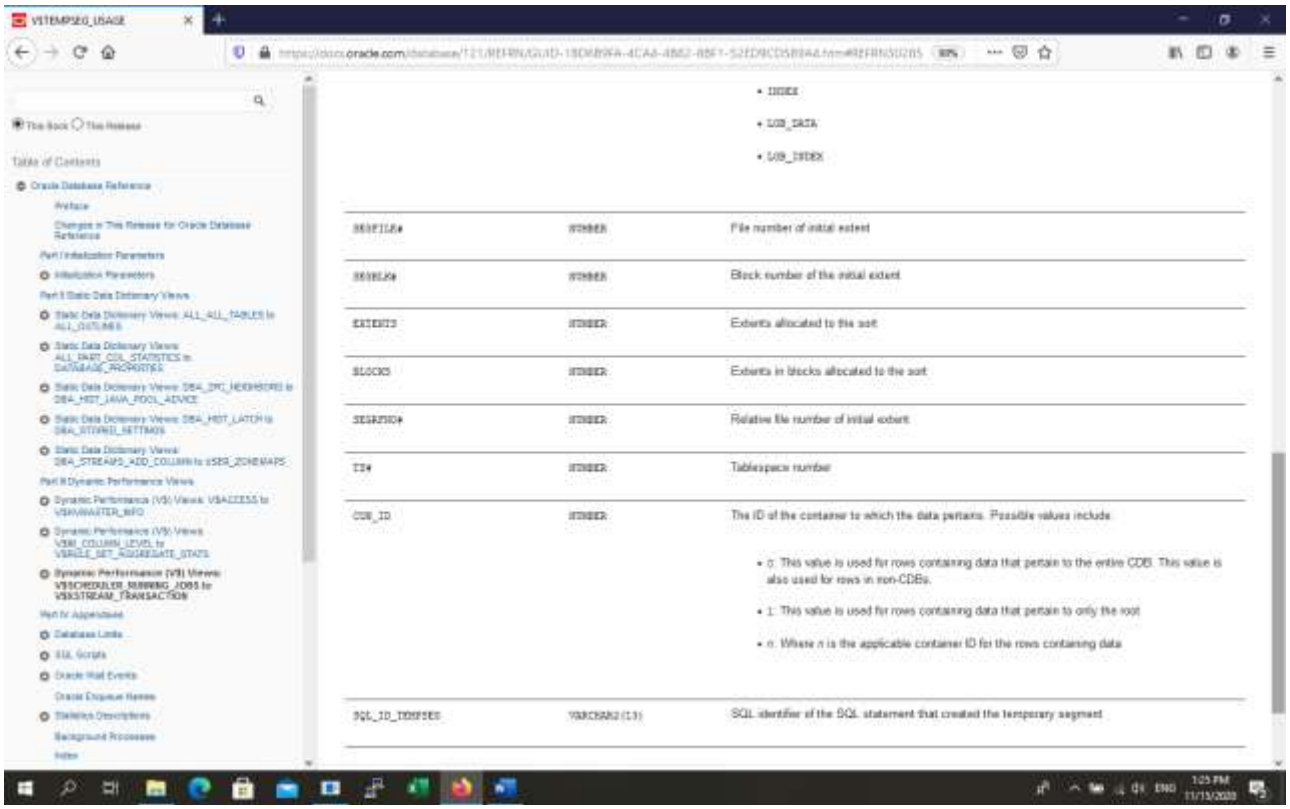
19) Informatii despre sesiuni si tablespace-ul in care se afla segmentele temporare de sortare folosite in sesiunea curenta:

SQL> desc v$tempseg_usage (v$sort_usage)

Name	Null?	Type
USERNAME		VARCHAR2(30)
USER		VARCHAR2(30)
SESSION_ADDR		RAW(4)
SESSION_NUM		NUMBER
SQLADDR		RAW(4)
SQLHASH		NUMBER
TABLESPACE		VARCHAR2(31)
CONTENTS		VARCHAR2(9)

SEGTYPE	VARCHAR2(9)
SEGFILE#	NUMBER
SEGBLK#	NUMBER
EXTENTS	NUMBER
BLOCKS	NUMBER
SEGRFNO#	NUMBER
TS#	NUMBER
CON_ID	NUMBER
SQL_ID_TEMPSEG	VARCHAR2(13)





SQL> select username,user,tablespace,contents,extents,blocks from v$tempseg_usage;

USERNAME	USER	TABLESPACE	CONTENTS	EXTENTS	BLOCKS
SYS	SCOTT	TEMP	TEMPORARY	1	128

20) Setarea zonei de memorie utilizata pentru sortare in sesiunea curenta la 10K.

SQL> alter system set sort_area_size=10240 deferred;