



*Oracle Database Performance*

*Tablespaces, Datafiles, Users, Sessions, IO, Memory, CPU*

# **AULA PL07**

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2018 – 2019 Universidade do Minho



- Monitoring the Database
- Oracle EM Database Express
- Oracle SQL Developer
- Trabalho Prático



<http://hugoabpeixoto.github.io/aebd/>

## **Bibliografia:**

<https://goo.gl/8HCSi8>



# Monitoring the Database

Tablespaces

Datafiles

Users

Sessions

IO

Memory

CPU load

...



# Monitoring the Database

[1] Oracle Enterprise Manager Database Express

[2] SQLDeveloper

[3] DBA Views



# Oracle EM Database Express

[1] CHANGE https port (TO USE WITH CDB):

```
SQL> alter session set container=CDB$ROOT;  
SQL> exec DBMS_XDB_CONFIG.SETHTTPSPORT(5501);
```

[2] CHANGE https port (TO USE WITH PDB):

```
SQL> alter session set container= ORCL;  
SQL> exec DBMS_XDB_CONFIG.SETHTTPSPORT(5502);
```

**[3] Map both ports in Virtual Box port forwarding**



# Oracle EM Database Express

<https://127.0.0.1:5501/em> (CDB)

<https://127.0.0.1:5502/em> (PDB)



# Oracle EM Database Express







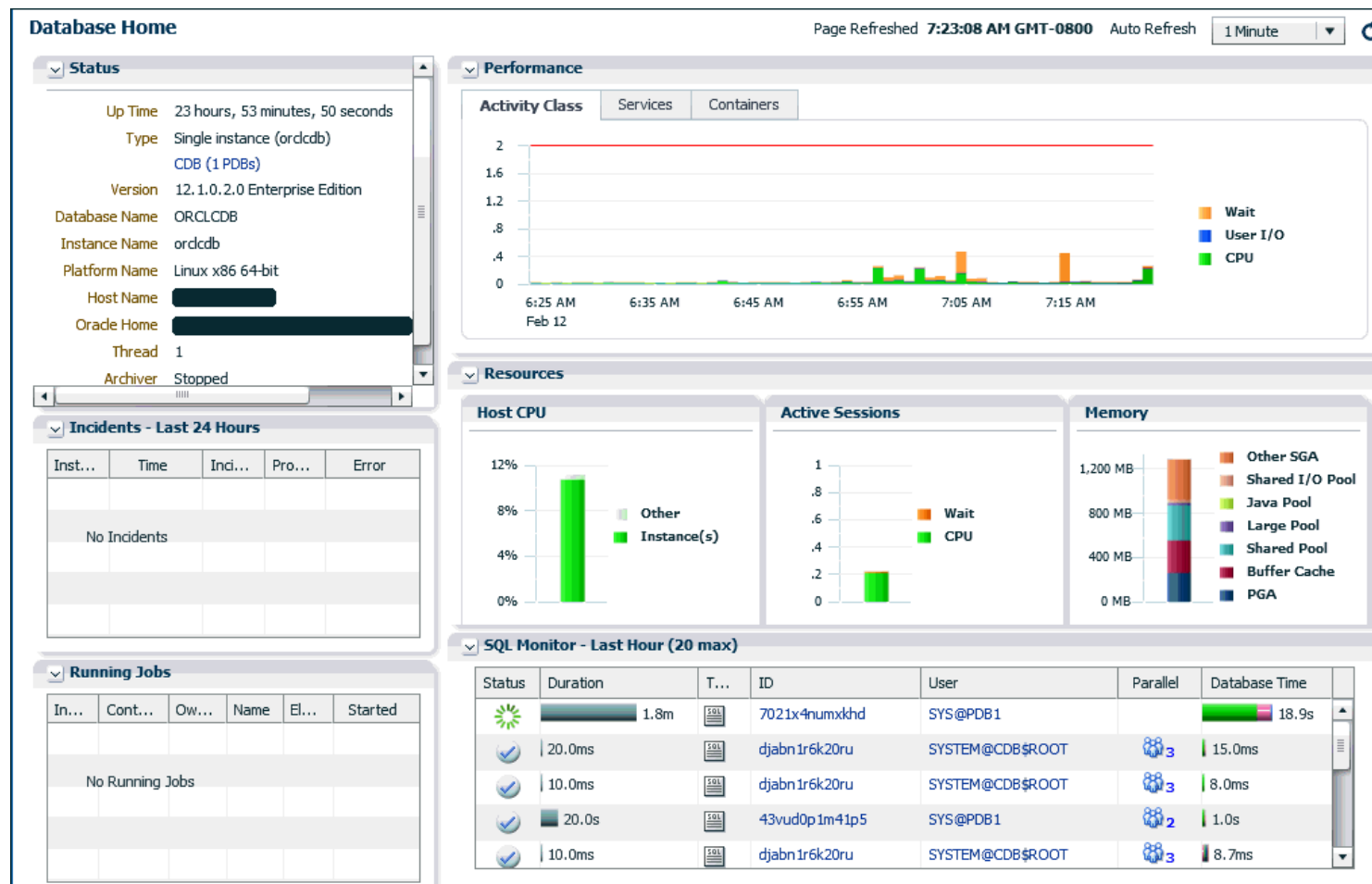
# Oracle EM Database Express

- Main features of EM:





# Oracle EM Database Express





# Oracle EM Database Express

## Main topics:

**Up Time:** Information about how long the database has been up

**Type:** The database type

**Version:** The database version number

**Database name:** The database name

**Instance name:** The name of the database instance

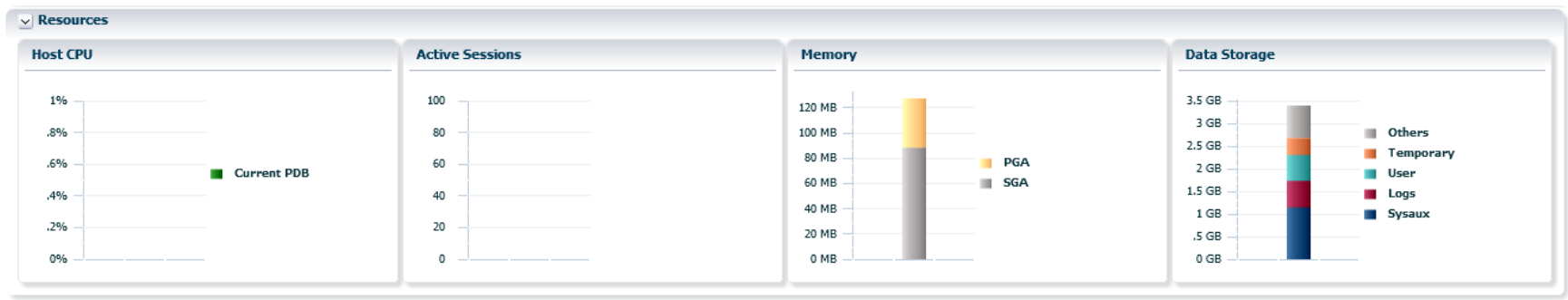
**Platform name:** The platform on which the database is running

**Host name:** The name of the host system on which the database is running



# Oracle EM Database Express

## Resources Section:





# Oracle EM Database Express

## Host CPU chart:

This chart shows the percentage of CPU time used by the database instance and other processes during the last minute.

## Active Sessions chart

This chart shows the average number of active sessions during the last minute, broken out by wait, user I/O, and CPU.

Waits: This is the value for all wait classes combined, excluding user I/O and idle wait events. Wait classes are groupings of wait events based on the type of wait.

User I/O: This is the average number of active sessions waiting for user I/O. User I/O means that the workload originating from the user causes the database to read data from disk or write data to disk.

CPU: This is the average active sessions using CPU.

## Memory (GB)

This chart shows the current memory utilization (as of the latest refresh time) broken out by the database shared pool, java pool, buffer cache, PGA, and other SGA components.

## Data Storage (GB)

This chart shows the current space usage (as of the latest refresh time) broken out by user data, database log files, undo tablespaces, and temporary, SYSAUX, and SYSTEM tablespaces.

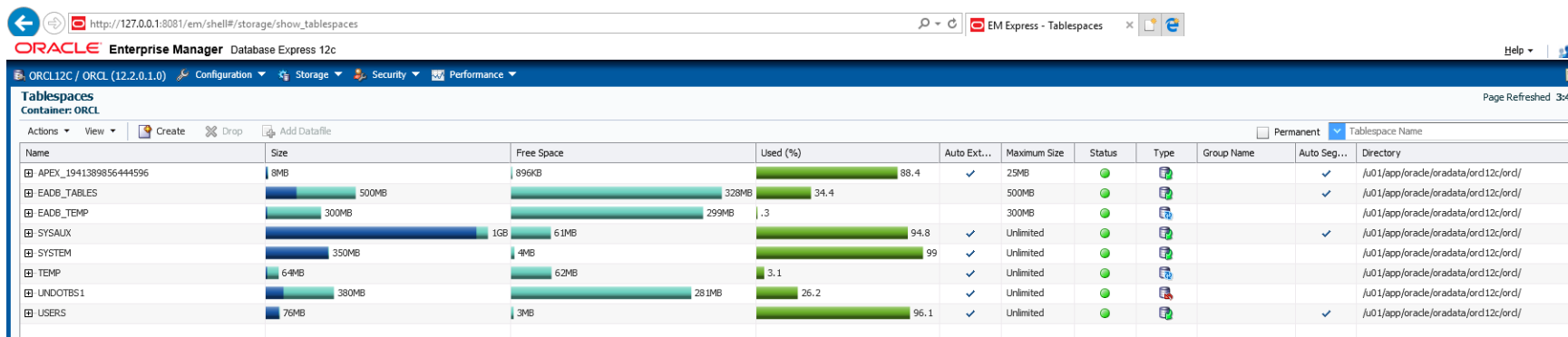


# Oracle EM Database Express





# Oracle EM Database Express





# Oracle EM Database Express

Oracle Enterprise Manager Database Express 12c

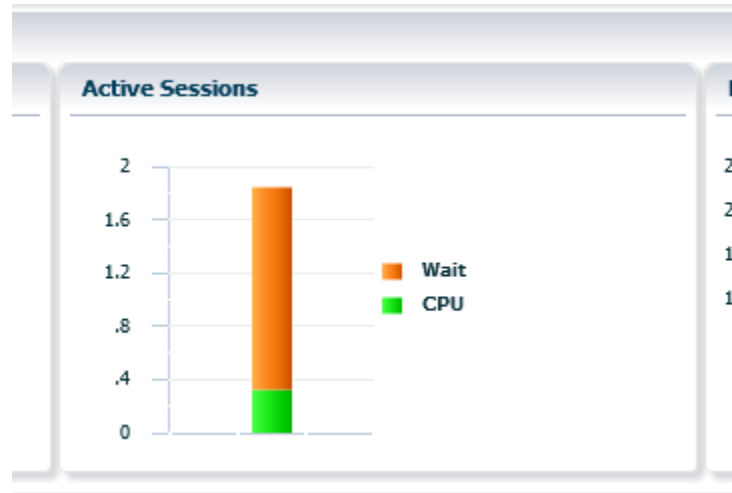
Users Container: ORCL

Name	Account Status	Common	Expiration Date	Default Tablespace	Temporary Tablespace	Profile	Created
ANONYMOUS	✓	✓		SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 2:45:13 PM
APEX_050100	✓			SYSAUX	TEMP	DEFAULT	Mon Jun 12, 2017 3:59:07 PM
APEX_INSTANCE_ADMIN_USER	✓		Mon Jun 12, 2017 4:05:56 PM	USERS	TEMP	DEFAULT	Mon Jun 12, 2017 4:05:56 PM
APEX_LISTENER	✓			USERS	TEMP	DEFAULT	Mon Jun 12, 2017 4:21:31 PM
APEX_PUBLIC_USER	✓			USERS	TEMP	DEFAULT	Mon Jun 12, 2017 3:59:06 PM
APEX_REST_PUBLIC_USER	✓			USERS	TEMP	DEFAULT	Mon Jun 12, 2017 4:21:31 PM
APQOSSYS	✓	✓	Thu Jan 26, 2017 2:43:31 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 2:43:31 PM
AUDSYS	✓	✓	Thu Jan 26, 2017 1:53:26 PM	USERS	TEMP	DEFAULT	Thu Jan 26, 2017 1:53:26 PM
CTXSYS	✓	✓	Mon Jun 12, 2017 3:47:49 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 2:57:01 PM
DBJN	✓			USERS	TEMP	DEFAULT	Mon Jun 12, 2017 4:45:19 PM
DBSFWRUSER	✓	✓	Thu Jan 26, 2017 2:32:33 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 2:32:33 PM
DBSNMP	✓	✓	Thu Jan 26, 2017 2:43:30 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 2:43:30 PM
DIP	✓	✓	Thu Jan 26, 2017 2:31:42 PM	USERS	TEMP	DEFAULT	Thu Jan 26, 2017 2:31:42 PM
DVF	✓	✓	Thu Jan 26, 2017 3:27:29 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 3:26:44 PM
DVSY	✓	✓	Thu Jan 26, 2017 3:27:03 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 3:26:44 PM
EADB	✓			EADB_TABLES	EADB_TEMP	DEFAULT	Sat Oct 21, 2017 11:33:41 AM
FLAWS_FILES	✓			SYSAUX	TEMP	DEFAULT	Mon Jun 12, 2017 3:59:06 PM
GGSYS	✓	✓	Thu Jan 26, 2017 2:43:42 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 2:43:42 PM
GSMADMIN_INTERNAL	✓	✓	Thu Jan 26, 2017 2:31:25 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 2:31:25 PM
GSMCATUSER	✓	✓	Thu Jan 26, 2017 2:43:38 PM	USERS	TEMP	DEFAULT	Thu Jan 26, 2017 2:43:38 PM
GSMUSER	✓	✓	Thu Jan 26, 2017 2:31:25 PM	USERS	TEMP	DEFAULT	Thu Jan 26, 2017 2:31:25 PM
HR	✓			USERS	TEMP	DEFAULT	Mon Jun 12, 2017 4:48:10 PM
HRREST	✓			USERS	TEMP	DEFAULT	Mon Jun 12, 2017 4:26:48 PM
LBACSYS	✓	✓	Thu Jan 26, 2017 3:27:29 PM	SYSTEM	TEMP	DEFAULT	Thu Jan 26, 2017 3:25:55 PM
MDDATA	✓	✓	Thu Jan 26, 2017 3:27:29 PM	USERS	TEMP	DEFAULT	Thu Jan 26, 2017 3:19:18 PM
MDSYS	✓	✓	Thu Jan 26, 2017 2:57:49 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 2:57:49 PM
MYDBA	✓			USERS	TEMP	DEFAULT	Mon Jun 12, 2017 4:27:52 PM
OBE	✓			APEX_1941389856444596	TEMP	DEFAULT	Mon Jun 12, 2017 4:48:14 PM
OJMSYS	✓	✓	Thu Jan 26, 2017 2:52:27 PM	USERS	TEMP	DEFAULT	Thu Jan 26, 2017 2:52:27 PM
OLAPSYS	✓	✓	Thu Jan 26, 2017 3:12:58 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 3:12:58 PM
ORACLE_OCM	✓	✓	Thu Jan 26, 2017 2:34:00 PM	USERS	TEMP	DEFAULT	Thu Jan 26, 2017 2:34:00 PM
ORDDATA	✓	✓	Thu Jan 26, 2017 2:57:49 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 2:57:49 PM
ORDPLUGINS	✓	✓	Thu Jan 26, 2017 2:57:49 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 2:57:49 PM
ORDSYS	✓	✓	Thu Jan 26, 2017 2:57:49 PM	SYSAUX	TEMP	DEFAULT	Thu Jan 26, 2017 2:57:49 PM
ORDS_METADATA	✓		Mon Jun 12, 2017 4:21:48 PM	SYSAUX	TEMP	DEFAULT	Mon Jun 12, 2017 4:21:48 PM



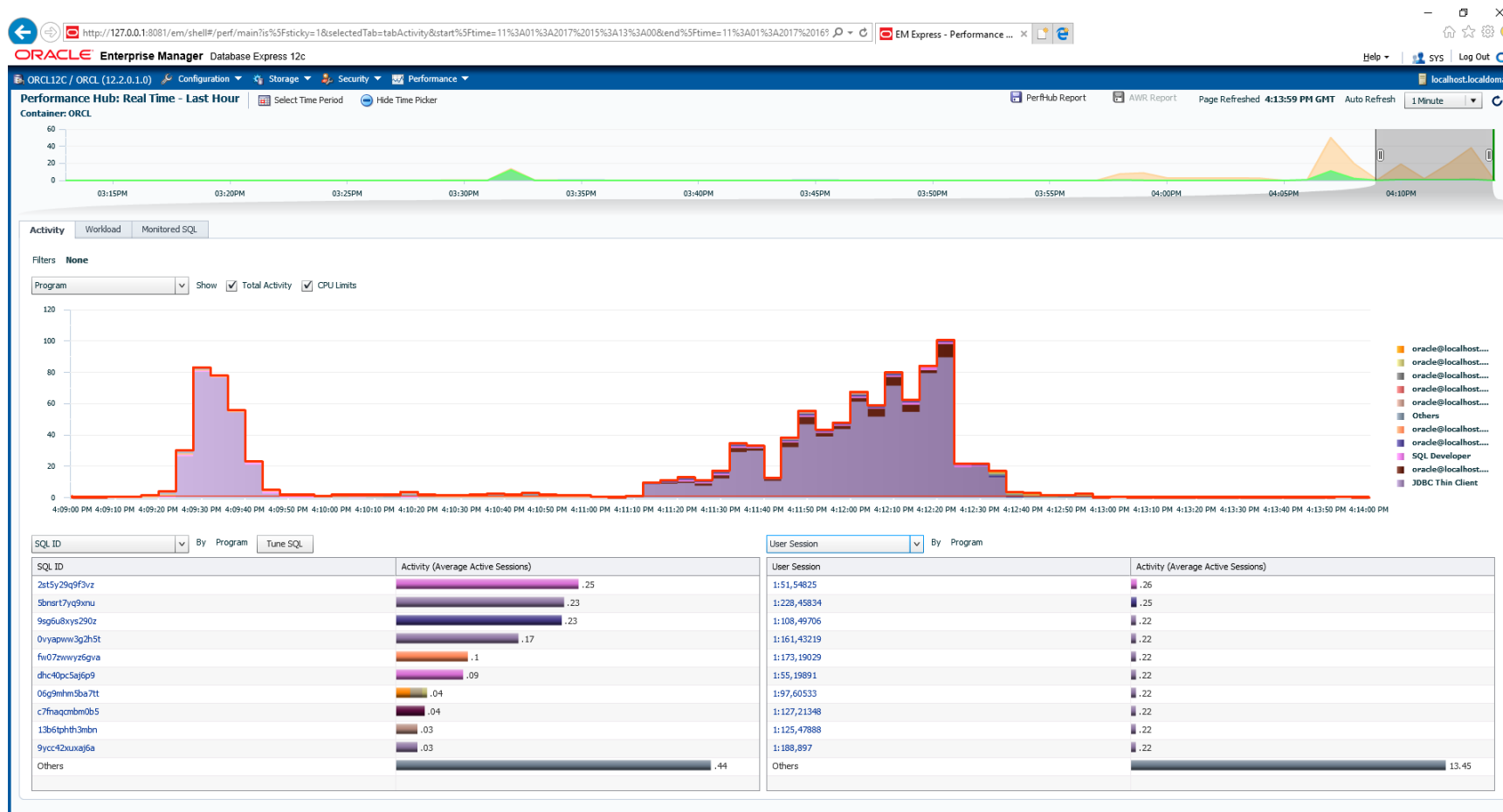


# Oracle EM Database Express





# Oracle EM Database Express





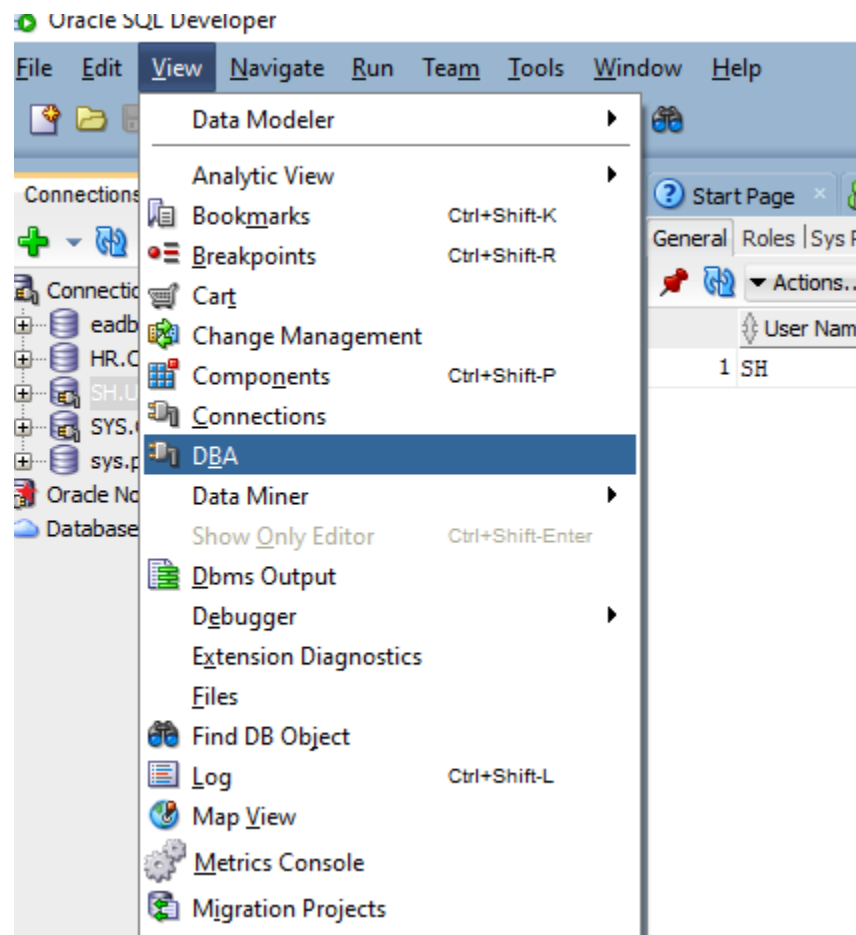
# Oracle EM Database Express

## SQL Monitor - Last Hour (20 max)

Status	Duration	Type	ID	User Name	Parallel	Database Time	SQL Text
	70.0ms		61tcc0bwcpunc	SOE	12	71.4ms	CREATE UNIQUE INDEX order_pk ON orders (order_id) reverse tablespace E...
	1.0s		2wryaq76x103s	SOE	12	1.5s	CREATE UNIQUE INDEX card_details_pk ON card_details (card_id) reverse ta...
	0.2s		004rwmv6y244w	SOE	12	0.2s	CREATE INDEX whs_location_ix ON warehouses (location_id) tablespace EAD...
	0.2s		62w526zqx9by	SOE	12	0.2s	CREATE INDEX inv_warehouse_ix ON inventories (warehouse_id) tablespace...
	1.0s		gmyqptnd3t3wb	SOE	12	0.1s	CREATE UNIQUE INDEX prd_desc_pk ON product_descriptions(product_id,lan...
	0.3s		83g9jjbqk7yf5	SOE	12	0.3s	CREATE INDEX inv_product_ix ON inventories (product_id) tablespace EADB...
	90.0ms		f3j8t7dhh1v2z	SOE	12	87.8ms	CREATE INDEX item_order_ix ON order_items (order_id) REVERSE tablespac...
	0.2s		7vrysppq4j80q	SOE	12	0.2s	CREATE INDEX ord_order_date_ix ON orders (order_date) REVERSE tablesp...
	90.0ms		0524tdzv3uya	SOE	12	94.2ms	CREATE INDEX ord_sales_rep_ix ON orders (sales_rep_id) REVERSE tablesp...

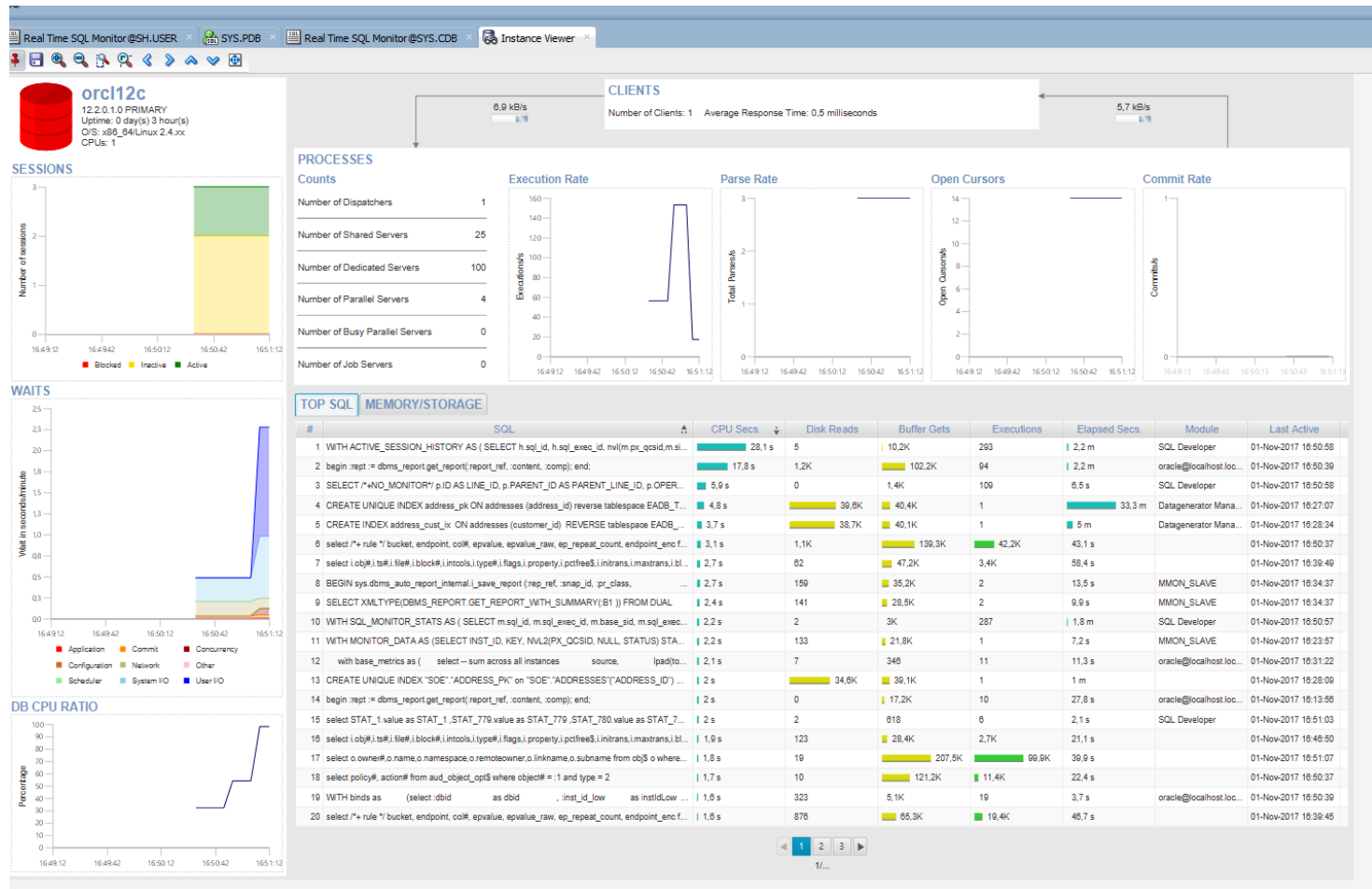


# Oracle SQL Developer





# Oracle SQL Developer





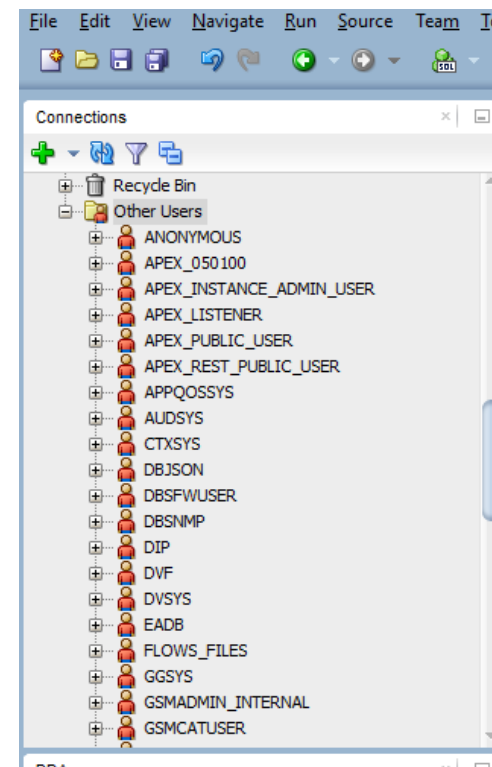
# Oracle SQL Developer

▼ ACTIONS...							
File Name	Tablespace	Status	Size (MB)	Used (MB)	Used (Proportion)	Used (%)	Auto Extend
1 /u01/app/oracle/oradata/orcl12c/orcl/aedb_tables_01.dbf	EADB_TABLES	ONLINE	300.000	172.000		57.33	NO
2 /u01/app/oracle/oradata/orcl12c/orcl/aedb_temp_01.dbf	EADB_TEMP	ONLINE	300.000	0.000		0	NO
3 /u01/app/oracle/oradata/orcl12c/orcl/APEX_1941389856444596.dbf	APEX_1941389856444596	ONLINE	7.563	6.688		88.43	YES
4 /u01/app/oracle/oradata/orcl12c/orcl/sysaux01.dbf	SYS_AUX	ONLINE	1170.000	1109.125		94.80	YES
5 /u01/app/oracle/oradata/orcl12c/orcl/system01.dbf	SYSTEM	SYSTEM	350.000	346.375		98.96	YES
6 /u01/app/oracle/oradata/orcl12c/orcl/temp01.dbf	TEMP	ONLINE	64.000	2.000		3	YES
7 /u01/app/oracle/oradata/orcl12c/orcl/undotbs01.dbf	UNDOTBS1	ONLINE	380.000	18.188		4.79	YES
8 /u01/app/oracle/oradata/orcl12c/orcl/users01.dbf	USERS	ONLINE	76.250	73.313		96.15	YES



# Oracle SQL Developer

USERNAME	USER_ID	CREATED	COMMON	ORACLE_MAINTAINED	INHERITED	DEFAULT_COLLATION	IMPLICIT	ALL_SHARD
1 SYS	0	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
2 AUDSYS	8	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
3 SYSTEM	9	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
4 SYSBACKUP	2147483617	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
5 SYSDG	2147483618	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
6 SYSKM	2147483619	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
7 SYSRAC	2147483620	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
8 OUTLN	13	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
9 XS\$NULL	2147483638	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
10 GSMADMIN_INTERNAL	21	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
11 GSMUSER	22	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
12 DIP	23	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
13 REMOTE_SCHEDULER_AGENT	34	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
14 DBSFUSER	35	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
15 ORACLE_OCM	39	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
16 SYS\$UMF	46	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
17 DBSNMP	54	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
18 APPQOSSYS	55	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
19 GSMCATUSER	59	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
20 GGSYS	60	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
21 XDB	62	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
22 ANONYMOUS	63	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
23 WMSYS	72	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
24 OJVMSYS	81	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
25 CTXSYS	84	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
26 ORDSYS	86	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
27 ORDDATA	87	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
28 ORDPLUGINS	88	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
29 SI_INFORMTN_SCHEMA	89	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
30 MDSYS	90	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
31 OLAPSYS	93	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO
32 MDDATA	96	26-01-2017	YES	Y	YES	USING_NLS_COMP	NO	NO





# Oracle SQL Developer

Oracle SQL Developer: Sessions

File Edit View Navigate Run Team Tools Window Help

Connections

- Materialized Views
- Materialized View Logs
- Synonyms
- Public Synonyms
- Database Links
- Public Database Links
- Directories
- Editions
- Application Express
- Java
- XML Schemas
- XML DB Repository
- OLAP Option
- Analytic Views
- Scheduler
- RDF Semantic Graph
- Recycle Bin
- Other Users
- SYS.CDB
- SYS.PDB
- Oracle NoSQL Connections
- Database Schema Service Connections

DBA

- Database Configuration
- Database Status
- Data Pump
- Performance
  - Snapshots (Filtered)
  - Baselines
  - Baseline Templates
  - Automatic Database Diagnostic Monitor (Filter)
  - ASH Report Viewer
  - AWR
- RMAN Backup/Recovery
- Resource Manager
- SQL Translator Framework
- Scheduler
- Security
- Storage
  - Archive Logs
  - Control Files
  - Datfiles
  - Redo Log Groups
  - Rollback Segments
  - Tablespaces
  - Temporary Tablespace Groups
  - Tuning
  - Real Time SQL Monitor

Real Time SQL Monitor@SH.USER

Refresh: 0

INST_ID	SID	SERIAL	SQL_ID	SQL_CHILD_NUMBER	Username	Seconds in Wait	Command	Machine	OS User	Status	Module	Action	RESOURCE_CONSUMER_GROUP	CLIENT_INFO
1	1	24	8454 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
2	1	25	24988 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
3	1	28	47148 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	SQL Developer	(null)	OTHER_GROUPS	(null)
4	1	34	47521 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
5	1	46	34641 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
6	1	51	54825 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	SQL Developer	(null)	OTHER_GROUPS	Metrics Engine
7	1	53	17983 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
8	1	54	58333 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
9	1	56	19226 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
10	1	64	43102 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
11	1	65	58287 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
12	1	77	10634 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
13	1	79	3017 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
14	1	82	33533 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
15	1	85	41676 dnc40pc5aj6p9	0	SYS	0	SELECT	pc_home	Hugo	active	SQL Developer	(null)	SYS_GROUP	(null)
16	1	87	63745 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
17	1	88	22940 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
18	1	90	9573 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
19	1	91	1431 (null)	(null)	SYS	(null)	(null)	localhost.localdomain oracle	inactive	sqlplus@localhost.localdomain (TNS V1-V3)	(null)	SYS_GROUP	(null)	
20	1	92	63193 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
21	1	93	58196 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
22	1	98	27499 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
23	1	99	40900 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
24	1	100	12925 (null)	(null)	SYS	(null)	(null)	localhost.localdomain oracle	inactive	sqlplus@localhost.localdomain (TNS V1-V3)	(null)	SYS_GROUP	(null)	
25	1	105	31734 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
26	1	106	16325 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
27	1	107	55845 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
28	1	110	40481 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
29	1	111	46163 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
30	1	112	30724 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
31	1	114	25555 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
32	1	115	17020 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener
33	1	117	37969 (null)	(null)	SH	(null)	(null)	pc_home	Hugo	inactive	Swingbench User Thread	(null)	OTHER_GROUPS	Swingbench Load Gener

Active SQL Explain Plan Waits Server Client Application Contention Long Opsq

Refresh: 0

No Text Available





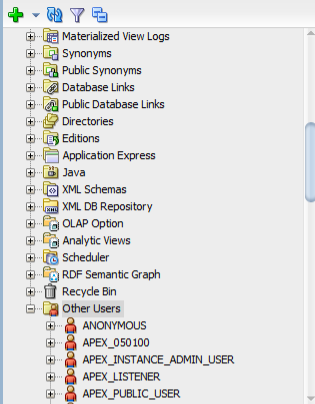
# Real Time SQL Monitor – SQLDeveloper

Oracle SQL Developer : SQL\_MONITOR SYS:null@SYS.CDB

File Edit View Navigate Run Team Tools Window Help



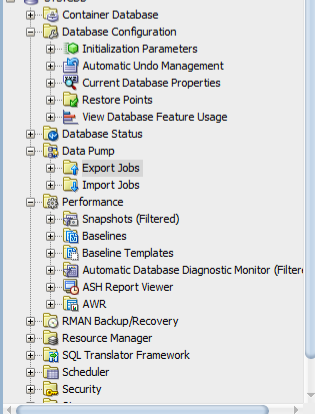
Connections



DBA

Connections

SYS.CDB



Status	Duration	Type	Sql Id	Plan Hash	User	Parallel	Database Time	I/O Requests	I/O Bytes	Buffer Gets	Start Time	End Time	SQL Text
✓	34 s		5c2dbb050d2d	461067578	SH	0	5.7 m	1,0K	178.4...	26.5K	01-Nov-2017 13:58:26	01-Nov-2017 13:59:00	CREATE BITMAP INDEX SALES_CUST_BIX ON SALES (CUST_ID) TABLESPACE EADB_T...
✓	43 s		142gprnqcs22	207228230	SH	0	2.5 m	380	99.9MB	20.7K	01-Nov-2017 13:57:42	01-Nov-2017 13:58:25	CREATE BITMAP INDEX SALES_PROD_BIX ON SALES (PROD_ID) TABLESPACE EADB...
✓	1 s		ad9fzrcub1gx	551204813	SH	12	68.8 ms	0	0B	840	01-Nov-2017 13:57:41	01-Nov-2017 13:57:42	CREATE BITMAP INDEX PRODUCTS_PROD_CAT_IX ON PRODUCTS (PROD_CATEGORY...
✓	1 s		84agyk4g98m	1505704829	SH	0	77.5 ms	0	0B	1.6K	01-Nov-2017 13:57:40	01-Nov-2017 13:57:41	CREATE BITMAP INDEX PRODUCTS_PROD_SUBCAT_IX ON PRODUCTS (PROD_SUBCA...
✓	1 s		3bwtrpvcbx4	742292805	SH	0	96.0 ms	0	0B	849	01-Nov-2017 13:57:39	01-Nov-2017 13:57:40	CREATE BITMAP INDEX PRODUCTS_PROD_STATUS_BIX ON PRODUCTS (PROD_STAT...
✓	4 s		8mkjybyq4954h	286745879	SH	0	21.5 s	106	37.9MB	10K	01-Nov-2017 13:57:35	01-Nov-2017 13:57:39	CREATE BITMAP INDEX CUSTOMERS_GENDER_BIX ON CUSTOMERS (CUST_GENDER)...
✓	11 s		a8h5pyr1raqw2	964461407	SH	0	36.5 s	181	38.3MB	11K	01-Nov-2017 13:57:24	01-Nov-2017 13:57:35	CREATE BITMAP INDEX CUSTOMERS_YOB_BIX ON CUSTOMERS (CUST_YEAR_OF_BIR...
✓	29 s		52y73j21h0q7	2804545055	SH	0	24.5 s	108	38MB	13.2K	01-Nov-2017 13:56:53	01-Nov-2017 13:57:22	CREATE BITMAP INDEX CUSTOMERS_MARITAL_BIX ON CUSTOMERS (CUST_MARITAL...
✓	13 s		9k5207588w9ry	1388734953		0	0.3 s	702	6.3MB	67K	01-Nov-2017 13:11:16	01-Nov-2017 13:11:29	SELECT DBMS_REPORT.GET_REPORT(51) FROM DUAL
✓	17 s		fh8upax5csz	0		0	11.0 s	841	7.4MB	77.8K	01-Nov-2017 13:11:15	01-Nov-2017 13:11:32	BEGIN sys.dbms_auto_report_internal.save_report(rep_ref.snap_id.pr_class...

PLAN STATISTICS	PLAN	METRICS	PARALLEL											
Operation	Line	Object Name	Plan Rows	Plan Cost	Executions	Timeline	Actual Rows	Memory	Max. Mem.	Temp. Mem.	Max. Temp.	I/O Requests	I/O Bytes	Activity %
▼ CREATE INDEX STATEMENT	0				25		12							
▼ PX COORDINATOR	1				25		12							
▼ PX SEND (QC (ORDER))	2	:TQ10001	72		12		12							
▼ INDEX BUILD (NON UNIQUE)	3	PRODUCTS_PROD...			12		12							
▼ BITMAP COMPACTION	4				12		9							
▼ SORT (CREATE INDEX)	5		72		12		9		12KB					
▼ PX RECEIVE	6		72	2	12		9							
▼ PX SEND (RANGE)	7	:TQ10000	72	2	12		69							
▼ PX BLOCK (ITERATOR)	8		72	2	24		69							
▼ BITMAP CONSTRUCTION	9				17		69		6279KB					
TABLE ACCESS (FULL)	10	PRODUCTS	72	2	17		938							



# Trabalho Prático

Enunciado na página da UC

Grupos de 4

Deverá cobrir todos os pontos práticos de BD Oracle abordados

40% da avaliação



*Oracle Database Performance*

*Tablespaces, Datafiles, Users, Sessions, IO, Memory, CPU*

# **AULA PL07**

Hugo Peixoto

2018 – 2019 Universidade do Minho