

Group 2

Date: 19-04-2018

DBA625 Group Assignment 2

Prof. Nebojsa Conkic

Completed By:

Avinash Singh
Gabriel Appugliese
Eric Ferguson
Yik Chee Wong

PART : ONE

- a) Create new user called DAVE and assign RED and TEMP tablespaces to him, also DEFAULT profile. He should be allowed to use only 2M of RED tablespace, and also 1M of INDX tablespace.

```
CREATE USER DAVE  
IDENTIFIED BY abcd  
DEFAULT TABLESPACE RED  
QUOTA 2M ON RED  
TEMPORARY TABLESPACE TEMP  
QUOTA 1M ON INDX  
PROFILE DEFAULT;
```

```
User created.
```

```
GRANT CONNECT, CREATE TABLE to DAVE;
```

```
Grant succeeded.
```

- b) Create another user called LARA and assign BLUE and TEMP tablespaces to her, also DEFAULT profile, but no quota initially for her and her account should be locked. Both users should get role that will allow them to connect to SQL and individual privilege for creating tables.

```
CREATE USER LARA  
IDENTIFIED BY ABCD  
PROFILE DEFAULT  
PASSWORD EXPIRE  
ACCOUNT LOCK  
DEFAULT TABLESPACE BLUE  
TEMPORARY TABLESPACE TEMP;
```

```
User created.
```

```
GRANT CONNECT, CREATE TABLE to LARA;
```

```
Grant succeeded.
```

- c) Create new profile called ITPROF so that:
- One session per user is allowed
 - Idle CPU time is no more than 1 hour
 - Three false logins are allowed and that account should remain locked for 2 minutes after the fourth false login

```
CREATE PROFILE ITPROF
LIMIT
IDLE_TIME 60
SESSIONS_PER_USER 1
FAILED_LOGIN_ATTEMPTS 3
PASSWORD_LOCK_TIME 2/1440;
```

```
Profile created.
```

- d) Assign this profile now to DAVE and enable all restrictions for profile ITPROF. Then connect to SQL*PLUS as DAVE and try to connect to SQL*PLUS as DAVE again (in a second session). What happened?

```
ALTER USER DAVE PROFILE ITPROF;
```

```
User altered.
```

```
ALTER SYSTEM SET resource_limit=true;
```

```
System altered.
```

```
CONN DAVE/abcd
```

```
[SQL> conn dave
[Enter password:
Connected.
SQL>
```

```
CONN DAVE/abcd
```

```
[SQL> conn dave/abcd
ERROR:
ORA-02391: exceeded simultaneous SESSIONS_PER_USER limit

Warning: You are no longer connected to ORACLE.
```

- e) As SYSTEM modify profile ITPROF so that only two false logins are allowed and that password life time is only 2 months with the grace period of 5 days. Then try to login as DAVE with the wrong password 3 times. Wait only 1 minute and provide now the right password. What happened and how can you rectify this problem à show both methods?

**ALTER PROFILE ITPROF
LIMIT
FAILED_LOGIN_ATTEMPTS 2
PASSWORD_LIFE_TIME 60
PASSWORD_GRACE_TIME 5;**

```
[SQL> ALTER PROFILE ITPROF
[ 2 LIMIT
[ 3 FAILED_LOGIN_ATTEMPTS 2
[ 4 PASSWORD_LIFE_TIME 60
[ 5 PASSWORD_GRACE_TIME 5;

Profile altered.
```

CONNECTING AS DAVE with 3 WRONG PWASSWORDS.

```
[SQL> conn dave/asdf
ERROR:
ORA-01017: invalid username/password; logon denied

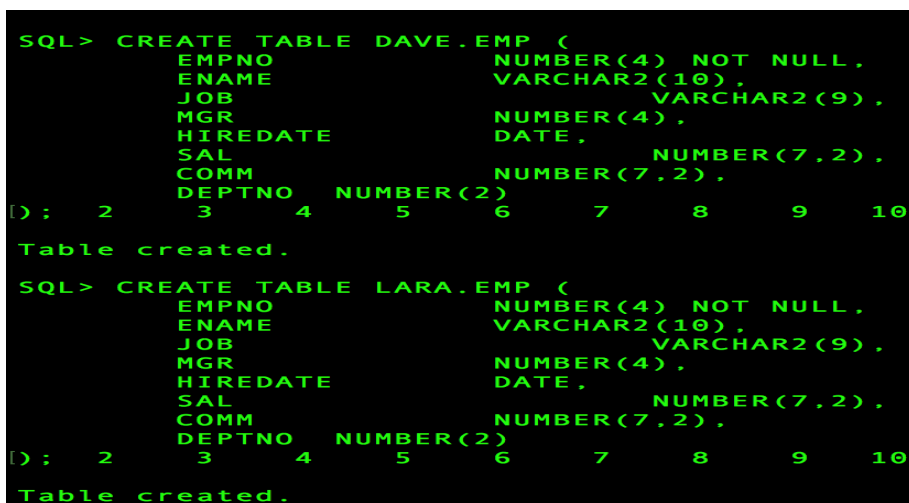
Warning: You are no longer connected to ORACLE.
[SQL> conn dave/qwer
ERROR:
ORA-01017: invalid username/password; logon denied

[SQL> conn dave/rter
ERROR:
ORA-28000: the account is locked
```

- f) As SYSTEM try to create replica of SCOTT's table EMP in both DAVE's and LARA's accounts. Was it successful in both cases? How can you fix this problem? After doing that, verify that LARA (after login) may access her table EMP.

```
CREATE TABLE LARA.EMP (  
    EMPNO    NUMBER(4) NOT NULL,  
    ENAME    VARCHAR2(10),  
    JOB      VARCHAR2(9),  
    MGR      NUMBER(4),  
    HIREDATE DATE,  
    SAL      NUMBER(7,2),  
    COMM     NUMBER(7,2),  
    DEPTNO   NUMBER(2)  
);
```

```
CREATE TABLE DAVE.EMP (  
    EMPNO    NUMBER(4) NOT NULL,  
    ENAME    VARCHAR2(10),  
    JOB      VARCHAR2(9),  
    MGR      NUMBER(4),  
    HIREDATE DATE,  
    SAL      NUMBER(7,2),  
    COMM     NUMBER(7,2),  
    DEPTNO   NUMBER(2)  
);
```



```
SQL> CREATE TABLE DAVE.EMP (  
    EMPNO    NUMBER(4) NOT NULL,  
    ENAME    VARCHAR2(10),  
    JOB      VARCHAR2(9),  
    MGR      NUMBER(4),  
    HIREDATE DATE,  
    SAL      NUMBER(7,2),  
    COMM     NUMBER(7,2),  
    DEPTNO   NUMBER(2)  
);  
2      3      4      5      6      7      8      9     10  
Table created.  
  
SQL> CREATE TABLE LARA.EMP (  
    EMPNO    NUMBER(4) NOT NULL,  
    ENAME    VARCHAR2(10),  
    JOB      VARCHAR2(9),  
    MGR      NUMBER(4),  
    HIREDATE DATE,  
    SAL      NUMBER(7,2),  
    COMM     NUMBER(7,2),  
    DEPTNO   NUMBER(2)  
);  
2      3      4      5      6      7      8      9     10  
Table created.
```

We need to unlock user LARA to be able to access EMP table.

****I think I need to give some QUOTA to LARA in TABLE SPACES.**

```

[SQL> alter user lara account unlock
[ 2 ;

User altered.

```

- g) By joining 2 dictionary views display for users DAVE and LARA their account status, when the account will expire, what profile and tablespaces are assigned and what the current and maximal byte situation is for these tablespaces?

```

SELECT      U.USERNAME,
            U.ACCOUNT_STATUS,
            U.EXPIRY_DATE,
            U.PROFILE,
            Q.TABLESPACE_NAME,
            Q.BYTES,
            Q.MAX_BYTES
FROM DBA_USERS U, DBA_TS_QUOTAS Q
WHERE       U.USERNAME = Q.USERNAME
AND         U.USERNAME IN ('DAVE','LARA');

```

| USERNAME | | | |
|-----------------|-----------|-----------|--|
| ACCOUNT_STATUS | EXPIRY_DA | | |
| PROFILE | | | |
| TABLESPACE_NAME | BYTES | MAX_BYTES | |
| DAVE | | | |
| OPEN | 15-JUN-18 | | |
| ITPROF | | | |
| RED | 0 | 2097152 | |
| DAVE | | | |
| OPEN | 15-JUN-18 | | |
| ITPROF | | | |
| INDX | 0 | 1048576 | |
| LARA | | | |
| OPEN | 14-OCT-18 | | |
| DEFAULT | | | |
| BLUE | 0 | 2097152 | |

- h) Now give individual privilege to DAVE, so that he can browse and add data in a table in any account and also that he can continue to give this privilege. Then connect as DAVE and give the same privilege to LARA?

GRANT INSERT ANY TABLE TO DAVE WITH ADMIN OPTION;

```
[SQL> GRANT INSERT ANY TABLE TO DAVE WITH ADMIN OPTION;  
Grant succeeded.
```

GRANT SELECT ANY TABLE TO DAVE WITH ADMIN OPTION;

```
[SQL> GRANT SELECT ANY TABLE TO DAVE WITH ADMIN OPTION;  
Grant succeeded.
```

CONN DAVE/abcd

**GRANT SELECT ANY TABLE TO LARA WITH ADMIN OPTION;
GRANT INSERT ANY TABLE TO LARA WITH ADMIN OPTION;**

```
[SQL> conn dave/abcd  
Connected.  
[SQL> grant select any table to lara with admin option;  
Grant succeeded.  
  
[SQL> grant insert any table to lara with admin option;  
Grant succeeded.
```

- i) As SYSTEM, check the appropriate dictionary view and observe only system privileges for those two users (show only relevant columns from this view).

```
SELECT * FROM dba_sys_privs
WHERE grantee IN ('DAVE','LARA');
```

```
[SQL>
SQL> SELECT * FROM dba_sys_privs
        WHERE grantee IN ('DAVE','LARA');
  2
GRANTEE
-----
PRIVILEGE                                ADM  COM
-----
DAVE
CREATE TABLE                          NO   NO

DAVE
INSERT ANY TABLE                      YES  NO

LARA
CREATE TABLE                          NO   NO

LARA
SELECT ANY TABLE                     YES  NO

DAVE
SELECT ANY TABLE                      YES  NO

LARA
INSERT ANY TABLE                      YES  NO
```

- j) Remove the privilege given to DAVE in h), then connect as LARA and try to ADD one row into SCOTT's table EMP. Was it successful and why? Then repeat step i) and explain what is different now?

```
REVOKE SELECT ANY TABLE FROM DAVE;
```

```
REVOKE INSERT ANY TABLE FROM DAVE;
```

```
[SQL> REVOKE SELECT ANY TABLE FROM DAVE;
Revoke succeeded.

[SQL> REVOKE INSERT ANY TABLE FROM DAVE;
Revoke succeeded.
```

```
INSERT INTO SCOTT.EMP (
```



```

EMPNO,
ENAME,
JOB,
MGR,
HIREDATE,
SAL,
COMM,
DEPTNO)
VALUES(
6199,
'Avinash',
'Developer',
7902,
'11-APR-1993',
60000,
800,
20);

```

```
1 row created.
```

Why : Beacause we have revoked privilege from DAVE's account without CASCADE option, So LARA still has the privileges.

```

SELECT * FROM dba_sys_privs
WHERE grantee IN ('DAVE','LARA');

```

```

SQL> conn system/seneca
Connected.
SQL> SELECT * FROM dba_sys_privs
        WHERE grantee IN ('DAVE','LARA');
  2
GRANTEE
-----
PRIVILEGE                                ADM COM
-----
DAVE
CREATE TABLE                            NO  NO
LARA
CREATE TABLE                            NO  NO
LARA
SELECT ANY TABLE                        YES NO
LARA
INSERT ANY TABLE                        YES NO

```

- k) In DB Express display situation for DAVE's account firstly and then for LARA's account as two different pages.

DAVE

ORACLE Enterprise Manager Database Express 12c

STUDENT (12.1.0.2.0) Configuration Storage Security Performance

Help SYS Log Out oracloud12c

View User: DAVE Page Refreshed 1:13:05 AM GMT-0400

Account Summary

- Name: DAVE
- Profile: ITPROF
- Authentication: PASSWORD
- Expiration Date: Fri Jun 15, 2018 10:36:39 PM
- Default Tablespace: RED
- Temporary Tablespace: TEMP
- Account Status: OPEN
- Created: Mon Apr 16, 2018 10:36:39 PM

Details

Privileges & Roles Object Privileges Quotas

Privileges & Roles

Edit Revoke

| Privilege | With Admin | Is Role | Default Role |
|--------------|------------|---------|--------------|
| CONNECT | | ✓ | ✓ |
| CREATE TABLE | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

LARA:

ORACLE Enterprise Manager Database Express 12c

STUDENT (12.1.0.2.0) Configuration Storage Security Performance

Help SYS Log Out oracloud12c

View User: LARA Page Refreshed 1:13:40 AM GMT-0400

Account Summary

- Name: LARA
- Profile: DEFAULT
- Authentication: PASSWORD
- Expiration Date: Sun Oct 14, 2018 12:02:40 AM
- Default Tablespace: BLUE
- Temporary Tablespace: TEMP
- Account Status: OPEN
- Created: Mon Apr 16, 2018 10:44:04 PM

Details

Privileges & Roles Object Privileges Quotas

Privileges & Roles

Edit Revoke

| Privilege | With Admin | Is Role | Default Role |
|------------------|------------|---------|--------------|
| CONNECT | | ✓ | ✓ |
| CREATE TABLE | | | |
| INSERT ANY TABLE | ✓ | | |
| SELECT ANY TABLE | ✓ | | |
| | | | |
| | | | |
| | | | |
| | | | |

PART : TWO

Firstly run the script cr_orders.sql as user DAVE (you will need to adjust this script regarding Tablespace name here)

RUN

a) As DAVE, create a PK constraint for table CUSTOMERS, so that its checking can be delayed (till saving) LATER in the future, but for now it will behave like the non-delayed one. The state should be set to check only incoming data. Also add PK constraint for table ORDERS, so that its checking can be delayed PROMPTLY after its creation, while its state should be set to check both existing and incoming data. Related indexes should go to Tablespace INDX.

```
ALTER TABLE customers
ADD CONSTRAINT cust_pk PRIMARY KEY(cust_code)
DEFERRABLE INITIALLY IMMEDIATE
USING INDEX TABLESPACE indx;
```

```
SQL> ALTER TABLE customers
ADD CONSTRAINT cust_pk PRIMARY KEY(cust_code)
DEFERRABLE INITIALLY IMMEDIATE
[ USING INDEX TABLESPACE indx; 2 3 4

Table altered.
```

```
ALTER TABLE orders
ADD CONSTRAINT ord_pk PRIMARY KEY(ord_id)
DEFERRABLE INITIALLY IMMEDIATE
USING INDEX TABLESPACE indx;
```

```
ALTER TABLE orders
ADD CONSTRAINT ord_pk PRIMARY KEY(ord_id)
DEFERRABLE INITIALLY IMMEDIATE
USING INDEX TABLESPACE indx;
SQL> SQL> 2 3 4
Table altered.
```

b) Also add an UK constraint on column NAME in table CUSTOMERS, so that will have default value for either its state or mode, and sub-default for the other one. Think hard here. You may want to check question g) below in order to make a right choice. The related index will also go to tablespace INDX.

```
ALTER TABLE customers
ADD CONSTRAINT cust_uk UNIQUE(NAME)
DEFERRABLE DISABLE
```

```
SQL> ALTER TABLE customers
ADD CONSTRAINT cust_uk UNIQUE(NAME)
DEFERRABLE DISABLE
[ 2      3      4 ;

Table altered.
```

c) Create a FK constraint for table ORDERS so that might be LATER manually delayed (at save time). This constraint state follows the default value.

```
ALTER TABLE orders
ADD CONSTRAINT ord_cc_fk FOREIGN KEY(cust_code)
REFERENCES customers(cust_code)
DEFERRABLE INITIALLY IMMEDIATE;
```

```
SQL> ALTER TABLE orders
ADD CONSTRAINT ord_cc_fk FOREIGN KEY(cust_code)
REFERENCES customers(cust_code)
DEFERRABLE INITIALLY IMMEDIATE;
2      3      4
Table altered.
```

d) Then declare a CK constraint with condition that date of delivery may not be later than two weeks from the order date and also not before it. This constraint's mode is the default one, while the state follows the sub-default value.

```
ALTER TABLE orders
ADD CONSTRAINT ord_dod_ck CHECK (date_of_dely >= ord_date)
DEFERRABLE INITIALLY IMMEDIATE;
```

```
SQL> ALTER TABLE orders
/ADD CONSTRAINT ord_dod_ck CHECK (date_of_dely >= ord_date) DEFERRABLE INITIALLY IMMEDIATE; 2
Table altered.
```

e) As SYSTEM, join two most important constraint dictionary views to display the following: constraint name, type, status, validation, can be deferred or not, is it currently deferred, table name and what column(s) are involved for tables CUSTOMERS and ORDERS in DAVE's account.

```
SELECT      a.constraint_name,
            a.constraint_type,
            a.status,
            a.deferrable,
            a.deferred,
            a.validated,
            a.table_name,
            c.column_name
FROM dba_constraints a, dba_cons_columns c
WHERE a.constraint_name = c.constraint_name
AND a.table_name IN ('CUSTOMERS','ORDERS')
AND a.owner = 'DAVE'
AND c.owner = 'DAVE';
```

```

CONSTRAINT_NAME
-----
C STATUS      DEFERRABLE      DEFERRED  VALIDATED
-----
TABLE_NAME
-----
COLUMN_NAME
-----
CUST_UK
U DISABLED DEFERRABLE      IMMEDIATE NOT VALIDATED
CUSTOMERS
NAME

ORD_PK
P ENABLED  DEFERRABLE      IMMEDIATE VALIDATED
ORDERS
ORD_ID

CUST_PK
P ENABLED  DEFERRABLE      IMMEDIATE VALIDATED
CUSTOMERS
CUST_CODE

ORD_CC_FK
R ENABLED  DEFERRABLE      IMMEDIATE VALIDATED
ORDERS
CUST_CODE

ORD_DOD_CK
C ENABLED  DEFERRABLE      IMMEDIATE VALIDATED
ORDERS
DATE_OF_DELY

ORD_DOD_CK
C ENABLED  DEFERRABLE      IMMEDIATE VALIDATED
ORDERS
ORD_DATE

6 rows selected.

```

f) As DAVE, try to make a short DML script (yours and original), that will show how it is possible to insert a child record before its parent record, if the child FK constraint checking is delayed till save time. Manually perform the change that will allow this check delay.

SET CONSTRAINT ORD_CC_FK DEFERRED;

INSERT INTO customers VALUES('J01','Sports Unlimited','West')

INSERT INTO orders VALUES(800,'01-JAN-98','J01',NULL)

```

[SQL> set constraint ord_cc_fk deferred;

Constraint set.

[SQL> INSERT INTO orders VALUES(800,'01-JAN-98','J01',NULL);

1 row created.

[SQL> INSERT INTO customers VALUES('J01','Sports Unlimited','West')
[ 2  ;

1 row created.

[SQL> commit
[ 2  ;

Commit complete.

```

g) Then make another short script that will show how it is possible to enter same names for different customers (three), if the appropriate constraint is turned off at the creation time.

SET CONSTRAINT CUST_UK DEFERRED

INSERT INTO CUSTOMERS VALUES('D14','AVINASH','NORTH');

INSERT INTO CUSTOMERS VALUES('D15','AVINASH','EAST');

```

[SQL> INSERT INTO CUSTOMERS VALUES('D14','AVINASH','NORTH');

1 row created.

[SQL> INSERT INTO CUSTOMERS VALUES('B45','AVINASH','EAST');

1 row created.

```

h) Now try to set the UK constraint in DAVE's table CUSTOMERS to the default state. What happened?

SET CONSTRAINT CUST_UK IMMEDIATE;

```

[SQL> SET CONSTRAINT CUST_UK IMMEDIATE;
SET CONSTRAINT CUST_UK IMMEDIATE
*
ERROR at line 1:
ORA-00001: unique constraint (DAVE.CUST_UK) violated

```

i) Then enable it so that it does NOT check the existing data. If not possible, fix this obstacle by creating a new object in DAVE's schema.

```
ALTER TABLE CUSTOMERS  
ENABLE CONSTRAINT CUST_UK ;
```

```
SQL> ALTER TABLE CUSTOMERS  
ENABLE CONSTRAINT CUST_UK ;  
2  
Table altered.
```

j) Next, try to enter a row with an existing customer name. What happened?

```
INSERT INTO CUSTOMERS VALUES('B14','SHAPE UP',West');
```

```
[SQL> insert into customers values ('B14','SHAPE UP','West');  
insert into customers values ('B14','SHAPE UP','West')  
*  
ERROR at line 1:  
ORA-00001: unique constraint (DAVE.CUST_UK) violated
```

k) Perform the five step recipe for consolidating the situation with the Name column in DAVE's CUSTOMERS table (get rid of all customers with duplicate names by modifying duplicates).

STEPS:

1. Inserting two duplicate values in customer table – B15 and B16 which has NAME column as Unique key.

```
[SQL> select * from customers;  
  
CUS NAME  
---  
A01 TKB SPORT SHOP West  
A02 VOLLYRITE North  
A03 JUST TENNIS North  
A04 EVERY MOUNTAIN South  
A05 SHAPE UP South  
A06 SHAPE UP West  
A07 WOMENS SPORTS South  
A08 NORTH WOODS HEALTH AND FITNESS SUPPLY CENTER East  
B15 Avinash North  
B16 Avinash North  
  
10 rows selected.
```


2. **ALTER TABLE customers
ENABLE CONSTRAINT cust_uk
EXCEPTIONS INTO exceptions;**

```
SQL> ALTER TABLE customers
        ENABLE CONSTRAINT cust_uk
        EXCEPTIONS INTO exceptions;
  2      3 ALTER TABLE customers
  *
```

ERROR at line 1:
ORA-02299: cannot validate (DAVE.CUST_UK) - duplicate keys found

SELECT * FROM EXCEPTION;

```
SQL>          SELECT * FROM EXCEPTIONS;

ROW_ID          OWNER          TABLE_NAME
-----
CONSTRAINT
-----
AABEURAAMAAAABqAAJ DAVE          CUSTOMERS
CUST_UK

AABEURAAMAAAABqAAI DAVE          CUSTOMERS
CUST_UK

AABEURAAMAAAABqAAF DAVE          CUSTOMERS
CUST_UK

AABEURAAMAAAABqAAE DAVE          CUSTOMERS
CUST_UK
```

3. **ALTER TABLE customers
ENABLE NOVALIDATE CONSTRAINT cust_uk ;**

```
SQL> ALTER TABLE customers
        ENABLE NOVALIDATE CONSTRAINT cust_uk ;
  2
Table altered.
```

4. **SELECT rowid, cust_code, name, region
FROM customers
WHERE rowid IN (SELECT row_id FROM exceptions
WHERE table_name = 'CUSTOMERS');**

```
SQL> SELECT rowid, cust_code, name, region
FROM customers
WHERE rowid IN (SELECT row_id FROM exceptions
WHERE table_name = 'CUSTOMERS'); 2 3 4
```

| ROWID | CUS NAME | REGIO |
|--------------------|--------------|-------|
| AABEURAAMAAAABqAAE | A05 SHAPE UP | South |
| AABEURAAMAAAABqAAF | A06 SHAPE UP | West |
| AABEURAAMAAAABqAAI | B15 Avinash | North |
| AABEURAAMAAAABqAAJ | B16 Avinash | North |

5. **UPDATE customers**
SET name = 'David'
WHERE rowid = 'AABEURAAMAAAABqAAJ';

```
SQL> UPDATE customers
SET name = 'David'
[WHERE rowid = 'AABEURAAMAAAABqAAJ'; 2 3
```

1 row updated.

```
[SQL> select * from customers;
```

| CUS NAME | REGIO |
|--|-------|
| A01 TKB SPORT SHOP | West |
| A02 VOLLYRITE | North |
| A03 JUST TENNIS | North |
| A04 EVERY MOUNTAIN | South |
| A05 SHAPE UP | South |
| A06 SHAPE UP | West |
| A07 WOMENS SPORTS | South |
| A08 NORTH WOODS HEALTH AND FITNESS SUPPLY CENTER | East |
| B15 Avinash | North |
| B16 David | North |

10 rows selected.

Three:

You should create folders BACKUP and ARCHIVE and turn ON archiving here (if you did not do it so far), like shown in Session15.

Also, delete in RMAN all previous backup sets (if you have them) by using syntax **DELETE BACKUPSET BS#** (like shown in Session15). Then you may start this part.

a) Configure following options in RMAN

- Number of copies before becoming obsolete is 2
- Turn on auto backup of Control File
- Default folder to hold backup sets is **/home/oracle/BACKUP** and default name for these sets is **hot_%u_%s_%p**
- Exclude all MGMT tablespaces from every backup

CONFIGURE RETENTION POLICY TO REDUNDANCY 2;
 CONFIGURE CONTROLFILE AUTOBACKUP ON;
 CONFIGURE CHANNEL DEVICE TYPE DISK FORMAT
 '/home/oracle/BACKUP/hot_%u_%s_%p';
 configure exclude for tablespace MGMT_TABLESPACE;
 configure exclude for tablespace MGMT_ECM_DEPOT_TS;
 configure exclude for tablespace MGMT_AD4J_TS;

```

RMAN> CONFIGURE RETENTION POLICY TO REDUNDANCY 2;
CONFIGURE CONTROLFILE AUTOBACKUP ON;
CONFIGURE CHANNEL DEVICE TYPE DISK FORMAT '/home/oracle/BACKUP/hot_%u_%s_%p';
configure exclude for tablespace MGMT_TABLESPACE;
configure exclude for tablespace MGMT_ECM_DEPOT_TS;
configure exclude for tablespace MGMT_AD4J_TS;
using target database control file instead of recovery catalog
new RMAN configuration parameters:
CONFIGURE RETENTION POLICY TO REDUNDANCY 2;
new RMAN configuration parameters are successfully stored

RMAN>
new RMAN configuration parameters:
CONFIGURE CONTROLFILE AUTOBACKUP ON;
new RMAN configuration parameters are successfully stored

RMAN>
new RMAN configuration parameters:
CONFIGURE CHANNEL DEVICE TYPE DISK FORMAT '/home/oracle/BACKUP/hot_%u_%s_%p';
new RMAN configuration parameters are successfully stored

RMAN>
Tablespace MGMT_TABLESPACE will be excluded from future whole database backups
new RMAN configuration parameters are successfully stored

RMAN>
Tablespace MGMT_ECM_DEPOT_TS will be excluded from future whole database backups
new RMAN configuration parameters are successfully stored

RMAN> configure exclude for tablespace MGMT_AD4J_TS;

Tablespace MGMT_AD4J_TS will be excluded from future whole database backups
new RMAN configuration parameters are successfully stored

Tablespace MGMT_AD4J_TS will be excluded from future whole database backups
new RMAN configuration parameters are successfully stored
  
```

- b) Perform WHOLE, FULL and COLD database backup. This one may be used later as a base for Incremental backups. Allow only 4 files per set (peace)
 Now show all backup sets created so far

shutdown immediate
 startup mount
 HOST
 rman target /
 backup incremental level 0 database filesperset=4;

```
EXIT
exit
alter database open;
```

```
SQL> shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> startup mount
ORACLE instance started.
```

```
Total System Global Area 1073741824 bytes
Fixed Size                  2932632 bytes
Variable Size               377487464 bytes
Database Buffers            687865856 bytes
Redo Buffers                 5455872 bytes
Database mounted.
```

```
RMAN> backup incremental level 0 database filesperiset=4;

Starting backup at 19-APR-18
using target database control file instead of recovery catalog
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=240 device type=DISK
file 2 is excluded from whole database backup
file 5 is excluded from whole database backup
file 7 is excluded from whole database backup
channel ORA_DISK_1: starting incremental level 0 datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00003 name=/opt/oracle/oradata/student/sysaux01.dbf
input datafile file number=00013 name=/opt/oracle/oradata/DISK2/red01.dbf
input datafile file number=00014 name=/opt/oracle/oradata/DISK4/red02.dbf
channel ORA_DISK_1: starting piece 1 at 19-APR-18
channel ORA_DISK_1: finished piece 1 at 19-APR-18
piece handle=/home/oracle/BACKUP/hot_0at0njj5_10_1 tag=TAG20180419T103101 comment=NON
E
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:35
channel ORA_DISK_1: starting incremental level 0 datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00001 name=/opt/oracle/oradata/student/system01.dbf
input datafile file number=00009 name=/opt/oracle/oradata/student/joke01.dbf
input datafile file number=00012 name=/opt/oracle/oradata/student/river02.dbf
input datafile file number=00010 name=/opt/oracle/oradata/DISK2/joke02.dbf
channel ORA_DISK_1: starting piece 1 at 19-APR-18
channel ORA_DISK_1: finished piece 1 at 19-APR-18
piece handle=/home/oracle/BACKUP/hot_0bt0njk8_11_1 tag=TAG20180419T103101 comment=NON
E
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:25
channel ORA_DISK_1: starting incremental level 0 datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00004 name=/opt/oracle/oradata/DISK3/undotbs01.dbf
input datafile file number=00008 name=/opt/oracle/oradata/student/mine01.dbf
input datafile file number=00011 name=/opt/oracle/oradata/student/river01.dbf
input datafile file number=00006 name=/opt/oracle/oradata/student/users01.dbf
channel ORA_DISK_1: starting piece 1 at 19-APR-18
channel ORA_DISK_1: finished piece 1 at 19-APR-18
piece handle=/home/oracle/BACKUP/hot_0ct0nj11_12_1 tag=TAG20180419T103101 comment=NON
E
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 19-APR-18

Starting Control File and SPFILE Autobackup at 19-APR-18
piece handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_19/01_mf_s_973
852104_ffkb3641_.bkp comment=NONE
Finished Control File and SPFILE Autobackup at 19-APR-18

RMAN> EXIT

Recovery Manager complete.
[oracle@oracloud12c BACKUP]$ EXIT
bash: EXIT: command not found
[oracle@oracloud12c BACKUP]$ exit
exit

SQL> alter database open;

Database altered.
```

c) Perform HOT and Incremental-Cumulative backup of tablespaces MINE and RED Then show all backups of tablespace MINE

BACKUP INCREMENTAL LEVEL 0 TABLESPACE RED, MINE;
LIST BACKUP OF TABLESPACE MINE;

```

RMAN> BACKUP INCREMENTAL LEVEL 0 TABLESPACE RED, MINE;

Starting backup at 19-APR-18
using target database control file instead of recovery catalog
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=260 device type=DISK
channel ORA_DISK_1: starting incremental level 0 datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00008 name=/opt/oracle/oradata/student/mine01.dbf
input datafile file number=00013 name=/opt/oracle/oradata/DISK2/red01.dbf
input datafile file number=00014 name=/opt/oracle/oradata/DISK4/red02.dbf
channel ORA_DISK_1: starting piece 1 at 19-APR-18
channel ORA_DISK_1: finished piece 1 at 19-APR-18
piece handle=/home/oracle/BACKUP/hot_0et0nk3q_14_1 tag=TAG20180419T103954 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 19-APR-18

Starting Control File and SPFILE Autobackup at 19-APR-18
piece handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_19/ol_mf_s_973
852795_ffkbkwlt_.bkp comment=NONE
Finished Control File and SPFILE Autobackup at 19-APR-18

RMAN> LIST BACKUP OF TABLESPACE MINE;

List of Backup Sets
=====

BS Key   Type LV Size       Device Type Elapsed Time Completion Time
-----
11        Incr 0  11.03M    DISK            00:00:01      19-APR-18
   BP Key: 11   Status: AVAILABLE Compressed: NO   Tag: TAG20180419T103101
   Piece Name: /home/oracle/BACKUP/hot_0ct0nj11_12_1
   List of Datafiles in backup set 11
   File LV Type Ckp SCN    Ckp Time  Name
   -----
    8      0   Incr 22673050  19-APR-18 /opt/oracle/oradata/student/mine01.dbf

BS Key   Type LV Size       Device Type Elapsed Time Completion Time
-----
13        Incr 0   1.17M    DISK            00:00:00      19-APR-18
   BP Key: 13   Status: AVAILABLE Compressed: NO   Tag: TAG20180419T103954
   Piece Name: /home/oracle/BACKUP/hot_0et0nk3q_14_1
   List of Datafiles in backup set 13
   File LV Type Ckp SCN    Ckp Time  Name
   -----
    8      0   Incr 22676559  19-APR-18 /opt/oracle/oradata/student/mine01.dbf
```

d) Perform HOT and Incremental-Differential backup of datafile that belongs to tablespace USERS. Then show all backups of that datafile

```
SELECT FILE#, Name FROM v$datafile;  
BACKUP INCREMENTAL LEVEL 1 DATAFILE 6;  
LIST BACKUP OF DATAFILE 6;
```

```
6  
/opt/oracle/oradata/student/users01.dbf
```

```
RMAN> BACKUP INCREMENTAL LEVEL 1 DATAFILE 6;  
  
Starting backup at 19-APR-18  
allocated channel: ORA_DISK_1  
channel ORA_DISK_1: SID=274 device type=DISK  
channel ORA_DISK_1: starting incremental level 1 datafile backup set  
channel ORA_DISK_1: specifying datafile(s) in backup set  
input datafile file number=00006 name=/opt/oracle/oradata/student/users01.dbf  
channel ORA_DISK_1: starting piece 1 at 19-APR-18  
channel ORA_DISK_1: finished piece 1 at 19-APR-18  
piece handle=/home/oracle/BACKUP/hot_0it0nl2u_18_1 tag=TAG20180419T105630 comment=NONE  
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01  
Finished backup at 19-APR-18  
  
Starting Control File and SPFILE Autobackup at 19-APR-18  
piece handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_19/ol_mf_s_973  
853791_ffkcjzhp_.bkp comment=NONE  
Finished Control File and SPFILE Autobackup at 19-APR-18  
  
RMAN> LIST BACKUP OF DATAFILE 6;  
  
List of Backup Sets  
=====
```

| BS Key | Type | LV | Size | Device | Type | Elapsed Time | Completion Time |
|--|------|------|----------|--------|-----------|---|-----------------|
| 4 | Full | | 18.90M | DISK | | 00:00:05 | 18-APR-18 |
| BP Key: 4 Status: AVAILABLE Compressed: NO Tag: TAG20180418T174542 | | | | | | | |
| Piece Name: /opt/oracle/fast_recovery_area/STUDENT/backupset/2018_04_18/ol_mf_nnndf_TAG20180418T174542_ffhhclj7_.bkp | | | | | | | |
| List of Datafiles in backup set 4 | | | | | | | |
| File | LV | Type | Ckp | SCN | Ckp Time | Name | |
| 6 | | Full | 22421532 | | 18-APR-18 | /opt/oracle/oradata/student/users01.dbf | |

```
BS Key Type LV Size Device Type Elapsed Time Completion Time  
-----  
11 Incr 0 11.03M DISK 00:00:01 19-APR-18  
BP Key: 11 Status: AVAILABLE Compressed: NO Tag: TAG20180419T103101  
Piece Name: /home/oracle/BACKUP/hot_0ct0nj11_12_1  
List of Datafiles in backup set 11  
File LV Type Ckp SCN Ckp Time Name  
-----  
6 0 Incr 22673050 19-APR-18 /opt/oracle/oradata/student/users01.dbf
```

| BS Key | Type | LV | Size | Device | Type | Elapsed Time | Completion Time |
|---|--------|------|----------|--------|-----------|---|-----------------|
| 17 | Incr 1 | | 32.00K | DISK | | 00:00:00 | 19-APR-18 |
| BP Key: 17 Status: AVAILABLE Compressed: NO Tag: TAG20180419T105630 | | | | | | | |
| Piece Name: /home/oracle/BACKUP/hot_0it0nl2u_18_1 | | | | | | | |
| List of Datafiles in backup set 17 | | | | | | | |
| File | LV | Type | Ckp | SCN | Ckp Time | Name | |
| 6 | 1 | Incr | 22681028 | | 19-APR-18 | /opt/oracle/oradata/student/users01.dbf | |

- e) Display all files that are due for backup regarding retention policy established in a)

REPORT NEED BACKUP;

```

RMAN> REPORT NEED BACKUP;

RMAN retention policy will be applied to the command
RMAN retention policy is set to redundancy 2
Report of files with less than 2 redundant backups
File #bkps Name
-----
1      1      /opt/oracle/oradata/student/system01.dbf
file 2 is excluded from whole database backup
file 5 is excluded from whole database backup
file 7 is excluded from whole database backup
9      1      /opt/oracle/oradata/student/joke01.dbf
12     1      /opt/oracle/oradata/student/river02.dbf

```

- f) Perform HOT and Incremental-Cumulative backup of database

backup incremental level 0 database;

```

RMAN> backup incremental level 0 database;

Starting backup at 19-APR-18
using channel ORA_DISK_1
file 2 is excluded from whole database backup
file 5 is excluded from whole database backup
file 7 is excluded from whole database backup
channel ORA_DISK_1: starting incremental level 0 datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00003 name=/opt/oracle/oradata/student/sysaux01.dbf
input datafile file number=00001 name=/opt/oracle/oradata/student/system01.dbf
input datafile file number=00004 name=/opt/oracle/oradata/DISK3/undotbs01.dbf
input datafile file number=00008 name=/opt/oracle/oradata/student/mine01.dbf
input datafile file number=00011 name=/opt/oracle/oradata/student/river01.dbf
input datafile file number=00006 name=/opt/oracle/oradata/student/users01.dbf
input datafile file number=00009 name=/opt/oracle/oradata/student/joke01.dbf
input datafile file number=00012 name=/opt/oracle/oradata/student/river02.dbf
input datafile file number=00010 name=/opt/oracle/oradata/DISK2/joke02.dbf
input datafile file number=00013 name=/opt/oracle/oradata/DISK2/red01.dbf
input datafile file number=00014 name=/opt/oracle/oradata/DISK4/red02.dbf
channel ORA_DISK_1: starting piece 1 at 19-APR-18
channel ORA_DISK_1: finished piece 1 at 19-APR-18
piece handle=/home/oracle/BACKUP/hot_0kt0nl81_20_1 tag=TAG20180419T105913 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:16
Finished backup at 19-APR-18

Starting Control File and SPFILE Autobackup at 19-APR-18
piece handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_19/o1_mf_s_973
853969_ffkcpk4d_.bkp comment=NONE
Finished Control File and SPFILE Autobackup at 19-APR-18

```

- g) Display all backup sets that are beyond retention policy established in a). Then delete all these sets.

**REPORT OBSOLETE;
DELETE OBSOLETE;**

```
RMAN> REPORT OBSOLETE;

RMAN retention policy will be applied to the command
RMAN retention policy is set to redundancy 2
Report of obsolete backups and copies
Type                Key      Completion Time      Filename/Handle
-----
Backup Set          2       18-APR-18
  Backup Piece      2       18-APR-18            /opt/oracle/fast_recovery_area/STUDENT
/backupset/2018_04_18/o1_mf_nnndf_TAG20180418T174542_ffhh841p_.bkp
Backup Set          4       18-APR-18
  Backup Piece      4       18-APR-18            /opt/oracle/fast_recovery_area/STUDENT
/backupset/2018_04_18/o1_mf_nnndf_TAG20180418T174542_ffhhclj7_.bkp
Archive Log         3       18-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1081.log
Backup Set          8       18-APR-18
  Backup Piece      8       18-APR-18            /opt/oracle/fast_recovery_area/STUDENT
/backupset/2018_04_18/o1_mf_nnndf_TAG20180418T175041_ffhhfkc0_.bkp
Archive Log         4       18-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1082.log
Archive Log         5       18-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1083.log
Archive Log         6       18-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1084.log
Archive Log         7       18-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1085.log
Archive Log         8       18-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1086.log
Archive Log         9       18-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1087.log
Archive Log        10       19-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1088.log
Archive Log        11       19-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1089.log
Archive Log        12       19-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1090.log
Archive Log        13       19-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1091.log
Archive Log        14       19-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1092.log
Archive Log        15       19-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1093.log
Archive Log        16       19-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1094.log
Archive Log        17       19-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1095.log
Archive Log        18       19-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1096.log
Archive Log        19       19-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1097.log
Archive Log        20       19-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1098.log
Archive Log        21       19-APR-18            /home/oracle/ARCHIVE/arch_950182417_1_
1099.log
Backup Set          12       19-APR-18
  Backup Piece      12       19-APR-18            /opt/oracle/fast_recovery_area/STUDENT
/autobackup/2018_04_19/o1_mf_s_973852104_ffkb3641_.bkp
Backup Set          14       19-APR-18
  Backup Piece      14       19-APR-18            /opt/oracle/fast_recovery_area/STUDENT
/autobackup/2018_04_19/o1_mf_s_973852795_ffkbkw1t_.bkp
Backup Set          16       19-APR-18
  Backup Piece      16       19-APR-18            /opt/oracle/fast_recovery_area/STUDENT
/autobackup/2018_04_19/o1_mf_s_973853251_ffkc033y_.bkp
```



```
RMAN> DELETE OBSOLETE;
```

```
RMAN retention policy will be applied to the command
```

```
RMAN retention policy is set to redundancy 2
```

```
using channel ORA_DISK_1
```

```
Deleting the following obsolete backups and copies:
```

| Type | Key | Completion Time | Filename/Handle |
|--------------|-------|-----------------|--|
| ----- | ----- | ----- | ----- |
| Backup Set | 2 | 18-APR-18 | |
| Backup Piece | 2 | 18-APR-18 | /opt/oracle/fast_recovery_area/STUDENT |
| | | | /backupset/2018_04_18/ol_mf_nnndf_TAG20180418T174542_ffhh841p_.bkp |
| Backup Set | 4 | 18-APR-18 | |
| Backup Piece | 4 | 18-APR-18 | /opt/oracle/fast_recovery_area/STUDENT |
| | | | /backupset/2018_04_18/ol_mf_nnndf_TAG20180418T174542_ffhhclj7_.bkp |
| Archive Log | 3 | 18-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1081.log |
| Backup Set | 8 | 18-APR-18 | |
| Backup Piece | 8 | 18-APR-18 | /opt/oracle/fast_recovery_area/STUDENT |
| | | | /backupset/2018_04_18/ol_mf_nnndf_TAG20180418T175041_ffhhfk0_.bkp |
| Archive Log | 4 | 18-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1082.log |
| Archive Log | 5 | 18-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1083.log |
| Archive Log | 6 | 18-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1084.log |
| Archive Log | 7 | 18-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1085.log |
| Archive Log | 8 | 18-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1086.log |
| Archive Log | 9 | 18-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1087.log |
| Archive Log | 10 | 19-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1088.log |
| Archive Log | 11 | 19-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1089.log |
| Archive Log | 12 | 19-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1090.log |
| Archive Log | 13 | 19-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1091.log |
| Archive Log | 14 | 19-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1092.log |
| Archive Log | 15 | 19-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1093.log |
| Archive Log | 16 | 19-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1094.log |
| Archive Log | 17 | 19-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1095.log |
| Archive Log | 18 | 19-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1096.log |
| Archive Log | 19 | 19-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1097.log |
| Archive Log | 20 | 19-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1098.log |
| Archive Log | 21 | 19-APR-18 | /home/oracle/ARCHIVE/arch_950182417_1_1099.log |
| Backup Set | 12 | 19-APR-18 | |
| Backup Piece | 12 | 19-APR-18 | /opt/oracle/fast_recovery_area/STUDENT |
| | | | /autobackup/2018_04_19/ol_mf_s_973852104_ffkb3641_.bkp |
| Backup Set | 14 | 19-APR-18 | |
| Backup Piece | 14 | 19-APR-18 | /opt/oracle/fast_recovery_area/STUDENT |
| | | | /autobackup/2018_04_19/ol_mf_s_973852795_ffkbkwlt_.bkp |
| Backup Set | 16 | 19-APR-18 | |
| Backup Piece | 16 | 19-APR-18 | /opt/oracle/fast_recovery_area/STUDENT |
| | | | /autobackup/2018_04_19/ol_mf_s_973853251_ffkc033y_.bkp |

```
Do you really want to delete the above objects (enter YES or NO)? YES
```

h) Now show all backup sets remained. Also, show the content of `/home/oracle/BACKUP` folder

list backup

HOST

ls -al

```
RMAN> list backup
2> ;
```

List of Backup Sets

```
=====
```

| BS Key | Type | LV | Size | Device | Type | Elapsed Time | Completion Time |
|--|------|------|----------|-----------|----------|--|-----------------|
| 9 | Incr | 0 | 1.50G | DISK | | 00:00:27 | 19-APR-18 |
| BP Key: 9 Status: AVAILABLE Compressed: NO Tag: TAG20180419T103101 | | | | | | | |
| Piece Name: /home/oracle/BACKUP/hot_0at0nj5_10_1 | | | | | | | |
| List of Datafiles in backup set 9 | | | | | | | |
| File | LV | Type | Ckp | SCN | Ckp Time | Name | |
| 3 | 0 | Incr | 22673050 | 19-APR-18 | | /opt/oracle/oradata/student/sysaux01.dbf | |
| 13 | 0 | Incr | 22673050 | 19-APR-18 | | /opt/oracle/oradata/DISK2/red01.dbf | |
| 14 | 0 | Incr | 22673050 | 19-APR-18 | | /opt/oracle/oradata/DISK4/red02.dbf | |

| BS Key | Type | LV | Size | Device | Type | Elapsed Time | Completion Time |
|---|------|------|----------|-----------|----------|--|-----------------|
| 10 | Incr | 0 | 933.42M | DISK | | 00:00:20 | 19-APR-18 |
| BP Key: 10 Status: AVAILABLE Compressed: NO Tag: TAG20180419T103101 | | | | | | | |
| Piece Name: /home/oracle/BACKUP/hot_0bt0nj8_11_1 | | | | | | | |
| List of Datafiles in backup set 10 | | | | | | | |
| File | LV | Type | Ckp | SCN | Ckp Time | Name | |
| 1 | 0 | Incr | 22673050 | 19-APR-18 | | /opt/oracle/oradata/student/system01.dbf | |
| 9 | 0 | Incr | 22673050 | 19-APR-18 | | /opt/oracle/oradata/student/joke01.dbf | |
| 10 | 0 | Incr | 22673050 | 19-APR-18 | | /opt/oracle/oradata/DISK2/joke02.dbf | |
| 12 | 0 | Incr | 22673050 | 19-APR-18 | | /opt/oracle/oradata/student/river02.dbf | |

| BS Key | Type | LV | Size | Device | Type | Elapsed Time | Completion Time |
|---|------|------|----------|-----------|----------|---|-----------------|
| 11 | Incr | 0 | 11.03M | DISK | | 00:00:01 | 19-APR-18 |
| BP Key: 11 Status: AVAILABLE Compressed: NO Tag: TAG20180419T103101 | | | | | | | |
| Piece Name: /home/oracle/BACKUP/hot_0ct0nj11_12_1 | | | | | | | |
| List of Datafiles in backup set 11 | | | | | | | |
| File | LV | Type | Ckp | SCN | Ckp Time | Name | |
| 4 | 0 | Incr | 22673050 | 19-APR-18 | | /opt/oracle/oradata/DISK3/undotbs01.dbf | |
| 6 | 0 | Incr | 22673050 | 19-APR-18 | | /opt/oracle/oradata/student/users01.dbf | |
| 8 | 0 | Incr | 22673050 | 19-APR-18 | | /opt/oracle/oradata/student/mine01.dbf | |
| 11 | 0 | Incr | 22673050 | 19-APR-18 | | /opt/oracle/oradata/student/river01.dbf | |

| BS Key | Type | LV | Size | Device | Type | Elapsed Time | Completion Time |
|---|------|------|----------|-----------|----------|--|-----------------|
| 13 | Incr | 0 | 1.17M | DISK | | 00:00:00 | 19-APR-18 |
| BP Key: 13 Status: AVAILABLE Compressed: NO Tag: TAG20180419T103954 | | | | | | | |
| Piece Name: /home/oracle/BACKUP/hot_0et0nk3q_14_1 | | | | | | | |
| List of Datafiles in backup set 13 | | | | | | | |
| File | LV | Type | Ckp | SCN | Ckp Time | Name | |
| 8 | 0 | Incr | 22676559 | 19-APR-18 | | /opt/oracle/oradata/student/mine01.dbf | |
| 13 | 0 | Incr | 22676559 | 19-APR-18 | | /opt/oracle/oradata/DISK2/red01.dbf | |

```
[oracle@oracloud12c BACKUP]$ ls -al
total 5094820
drwxr-xr-x.  2 oracle dba      4096 Apr 19 10:59 .
drwx----- 10 oracle dba      4096 Apr 19 10:15 ..
-rw-r-----. 1 oracle dba 1615577088 Apr 19 10:31 hot_0at0nj5_10_1
-rw-r-----. 1 oracle dba  978771968 Apr 19 10:31 hot_0bt0nj8_11_1
-rw-r-----. 1 oracle dba  11575296 Apr 19 10:32 hot_0ct0nj11_12_1
-rw-r-----. 1 oracle dba   1236992 Apr 19 10:39 hot_0et0nk3q_14_1
-rw-r-----. 1 oracle dba   1081344 Apr 19 10:47 hot_0gt0nk11_16_1
-rw-r-----. 1 oracle dba    40960 Apr 19 10:56 hot_0it0nl2u_18_1
-rw-r-----. 1 oracle dba 2608791552 Apr 19 10:59 hot_0kt0nl81_20_1
```