Universidad Nacional de Costa Rica

Escuela de Informática

Curso: Administración de Bases de Datos

Laboratorio: Estrategias de Backup

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1. Construya tres estrategias de respaldo tipo Rman

backup_total.rcv

```
RUN {
    BACKUP DATABASE PLUS ARCHIVELOG;
}
```

backup_parcial.rcv

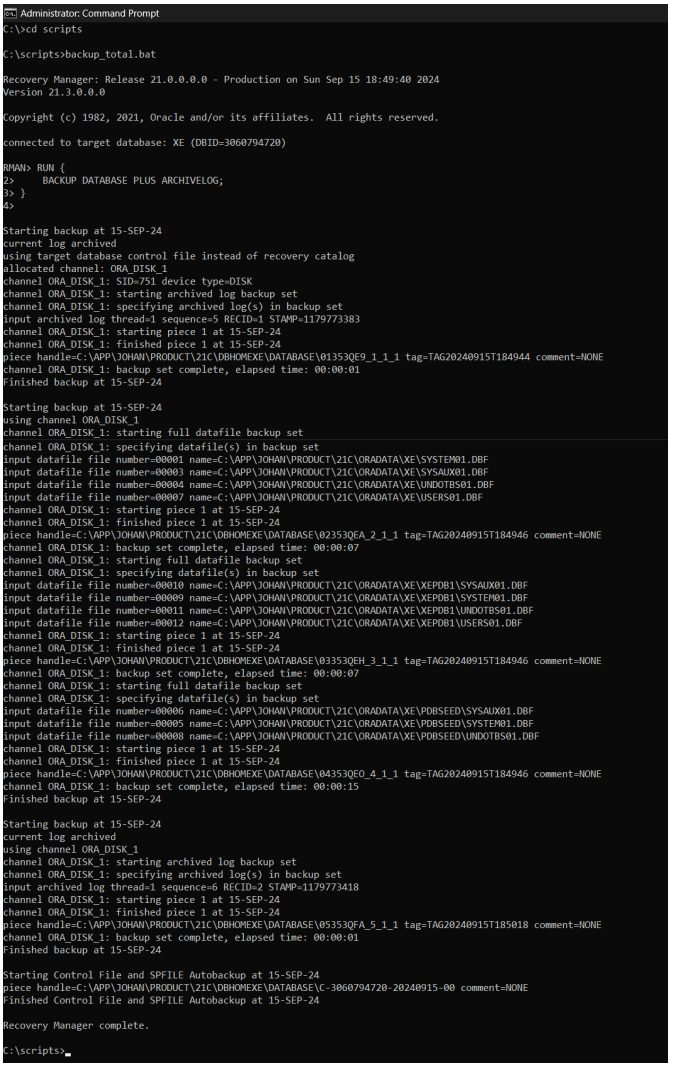
```
RUN {
    BACKUP TABLESPACE users;
}
```

backup_incremental.rcv

```
RUN {
    BACKUP INCREMENTAL LEVEL 1 TABLESPACE users;
}
```

Figura 1. Archivos .rcv para cada tipo de *Backup*

2. Aplique las estrategias desde la terminal (evidencias)



```
Administrator: Command Prompt
C:\>cd scripts

C:\scripts>backup_total.bat

Recovery Manager: Release 21.0.0.0.0 - Production on Sun Sep 15 18:49:40 2024
Version 21.3.0.0.0

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connected to target database: XE (DBID=3060794720)

RMAN> RUN {
2>     BACKUP DATABASE PLUS ARCHIVELOG;
3> }
4>

Starting backup at 15-SEP-24
current log archived
using target database control file instead of recovery catalog
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=751 device type=DISK
channel ORA_DISK_1: starting archived log backup set
channel ORA_DISK_1: specifying archived log(s) in backup set
input archived log thread=1 sequence=5 RECID=1 STAMP=1179773383
channel ORA_DISK_1: starting piece 1 at 15-SEP-24
channel ORA_DISK_1: finished piece 1 at 15-SEP-24
piece handle=C:\APP\JOHAN\PRODUCT\21C\DBHOMEXE\DATABASE\01353QE9_1_1_1 tag=TAG20240915T184944 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 15-SEP-24

Starting backup at 15-SEP-24
using channel ORA_DISK_1
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00001 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\SYSTEM01.DBF
input datafile file number=00003 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\SYSAUX01.DBF
input datafile file number=00004 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\UNDOTBS01.DBF
input datafile file number=00007 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\USERS01.DBF
channel ORA_DISK_1: starting piece 1 at 15-SEP-24
channel ORA_DISK_1: finished piece 1 at 15-SEP-24
piece handle=C:\APP\JOHAN\PRODUCT\21C\DBHOMEXE\DATABASE\02353QEA_2_1_1 tag=TAG20240915T184946 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:07
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00010 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\XEPDB1\SYSAUX01.DBF
input datafile file number=00009 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\XEPDB1\SYSTEM01.DBF
input datafile file number=00011 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\XEPDB1\UNDOTBS01.DBF
input datafile file number=00012 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\XEPDB1\USERS01.DBF
channel ORA_DISK_1: starting piece 1 at 15-SEP-24
channel ORA_DISK_1: finished piece 1 at 15-SEP-24
piece handle=C:\APP\JOHAN\PRODUCT\21C\DBHOMEXE\DATABASE\03353QEH_3_1_1 tag=TAG20240915T184946 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:07
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00006 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\PDBSEED\SYSAUX01.DBF
input datafile file number=00005 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\PDBSEED\SYSTEM01.DBF
input datafile file number=00008 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\PDBSEED\UNDOTBS01.DBF
channel ORA_DISK_1: starting piece 1 at 15-SEP-24
channel ORA_DISK_1: finished piece 1 at 15-SEP-24
piece handle=C:\APP\JOHAN\PRODUCT\21C\DBHOMEXE\DATABASE\04353QEO_4_1_1 tag=TAG20240915T184946 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:15
Finished backup at 15-SEP-24

Starting backup at 15-SEP-24
current log archived
using channel ORA_DISK_1
channel ORA_DISK_1: starting archived log backup set
channel ORA_DISK_1: specifying archived log(s) in backup set
input archived log thread=1 sequence=6 RECID=2 STAMP=1179773418
channel ORA_DISK_1: starting piece 1 at 15-SEP-24
channel ORA_DISK_1: finished piece 1 at 15-SEP-24
piece handle=C:\APP\JOHAN\PRODUCT\21C\DBHOMEXE\DATABASE\05353QFA_5_1_1 tag=TAG20240915T185018 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 15-SEP-24

Starting Control File and SPFILE Autobackup at 15-SEP-24
piece handle=C:\APP\JOHAN\PRODUCT\21C\DBHOMEXE\DATABASE\C-3060794720-20240915-00 comment=NONE
Finished Control File and SPFILE Autobackup at 15-SEP-24

Recovery Manager complete.

C:\scripts>
```

Figura 1. *Full Backup*

```
C:\scripts>backup_parcial.bat

Recovery Manager: Release 21.0.0.0.0 - Production on Sun Sep 15 18:58:38 2024
Version 21.3.0.0.0

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connected to target database: XE (DBID=3060794720)

RMAN> RUN {
2>     BACKUP TABLESPACE users;
3> }
4>
Starting backup at 15-SEP-24
using target database control file instead of recovery catalog
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=13 device type=DISK
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00007 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\USERS01.DBF
channel ORA_DISK_1: starting piece 1 at 15-SEP-24
channel ORA_DISK_1: finished piece 1 at 15-SEP-24
piece handle=C:\APP\JOHAN\PRODUCT\21C\DBHOMEXE\DATABASE\07353QV1_7_1_1 tag=TAG20240915T185841 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 15-SEP-24

Starting Control File and SPFILE Autobackup at 15-SEP-24
piece handle=C:\APP\JOHAN\PRODUCT\21C\DBHOMEXE\DATABASE\C-3060794720-20240915-01 comment=NONE
Finished Control File and SPFILE Autobackup at 15-SEP-24

Recovery Manager complete.
```

Figura 2. *Partial Backup*

```
C:\scripts>backup_incremental.bat

Recovery Manager: Release 21.0.0.0.0 - Production on Sun Sep 15 19:05:25 2024
Version 21.3.0.0.0

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connected to target database: XE (DBID=3060794720)

RMAN> RUN {
2>     BACKUP INCREMENTAL LEVEL 1 TABLESPACE users;
3> }
4>
Starting backup at 15-SEP-24
using target database control file instead of recovery catalog
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=13 device type=DISK
no parent backup or copy of datafile 7 found
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=00007 name=C:\APP\JOHAN\PRODUCT\21C\ORADATA\XE\USERS01.DBF
channel ORA_DISK_1: starting piece 1 at 15-SEP-24
channel ORA_DISK_1: finished piece 1 at 15-SEP-24
piece handle=C:\APP\JOHAN\PRODUCT\21C\DBHOMEXE\DATABASE\09353RBO_9_1_1 tag=TAG20240915T190528 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 15-SEP-24

Starting Control File and SPFILE Autobackup at 15-SEP-24
piece handle=C:\APP\JOHAN\PRODUCT\21C\DBHOMEXE\DATABASE\C-3060794720-20240915-02 comment=NONE
Finished Control File and SPFILE Autobackup at 15-SEP-24

Recovery Manager complete.
```

Figura 3. *Incremental Backup*

3. Instale la base de datos Sqlite3

```
C:\Windows\System32>sqlite3 --version
3.46.1 2024-08-13 09:16:08 c9c2ab54ba1f5f46360f1b4f35d849cd3f080e6fc2b6c60e91b16c63f69a1e33 (64-bit)
```

Figura 4. Versión de la base de datos Sqlite3 instalada

4. Crear una base de datos llamada Iv3.db

```
C:\Windows\System32>sqlite3 Iv3.db
SQLite version 3.46.1 2024-08-13 09:16:08 (UTF-16 console I/O)
Enter ".help" for usage hints.
```

Figura 5. Creación de la base de datos Iv3

5. Crear una tabla llamadas estrategias con esquema (nombre_estrategia, ruta_estrategia, estatus

```
sqlite> CREATE TABLE estrategias (
(x1...>     nombre_estrategia TEXT,
(x1...>     ruta_estrategia TEXT,
(x1...>     estatus INTEGER
(x1...> );
```

Figura 6. Tabla estrategias

6. Inserte en la tabla el, nombre, la ruta, y estatus = 1, para las estrategias Rman del paso 1

```
sqlite> -- Inserta la estrategia de respaldo total
sqlite> INSERT INTO estrategias (nombre_estrategia, ruta_estrategia, estatus)
   ...> VALUES ('Backup Total', 'C:/scripts/backup_total.bat', 1);
sqlite> -- Inserta la estrategia de respaldo parcial
sqlite> INSERT INTO estrategias (nombre_estrategia, ruta_estrategia, estatus)
   ...> VALUES ('Backup Parcial', 'C:/scripts/backup_parcial.bat', 1);
sqlite> -- Inserta la estrategia de respaldo incremental
sqlite> INSERT INTO estrategias (nombre_estrategia, ruta_estrategia, estatus)
   ...> VALUES ('Backup Incremental', 'C:/scripts/backup_incremental.bat', 1);
sqlite> SELECT * FROM estrategias;
Backup Total|C:/scripts/backup_total.bat|1
Backup Parcial|C:/scripts/backup_parcial.bat|1
Backup Incremental|C:/scripts/backup_incremental.bat|1
```

Figura 7. Datos insertados en la tabla estrategias

7. Implemente un programa Restrategias (robot estrategias) en lenguaje Python, que realice los siguientes pasos
    - Abra la base de datos
    - Lea las estrategias de la tabla
    - Para cada una de las estrategias (en estatus = 1), ejecute la estrategia, utilizando una petición al sistema operativo