

Performing Recovery Part II - Switching Data Files and Performing PITR

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Objectives

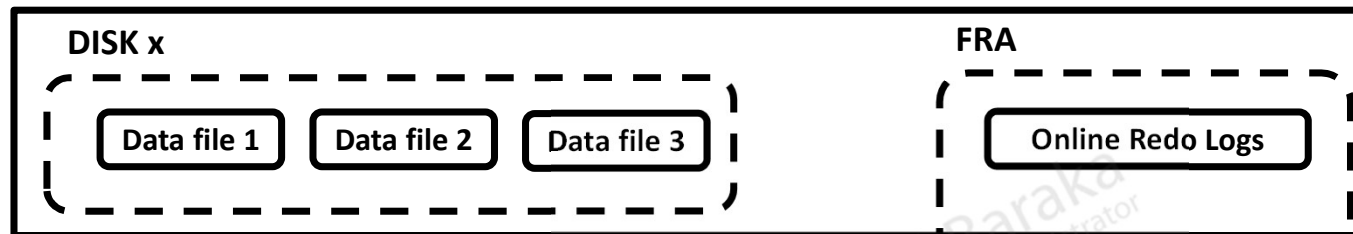
In this lecture, you will learn how to perform the following:

- Recover datafiles by switching to image copies
- Describe the levels of implementing the Point-in-Time Recovery (PITR)
- Perform database PITR

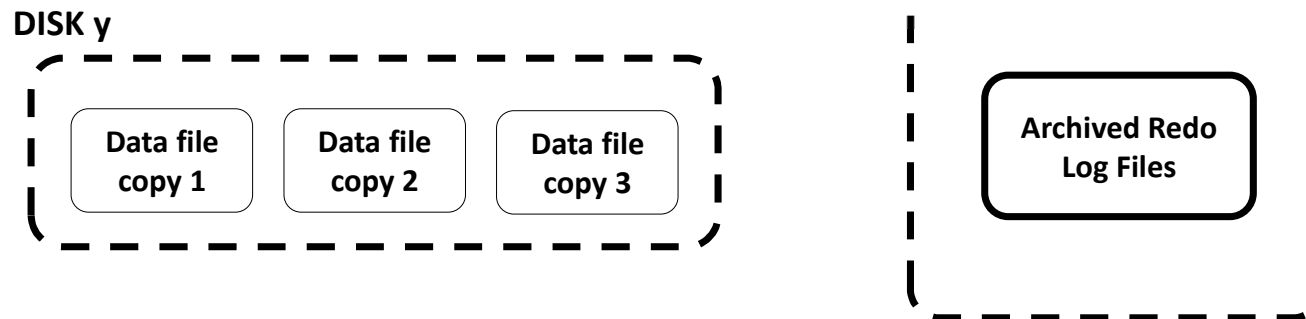


Recovery by Switching to Data File Copies

Database

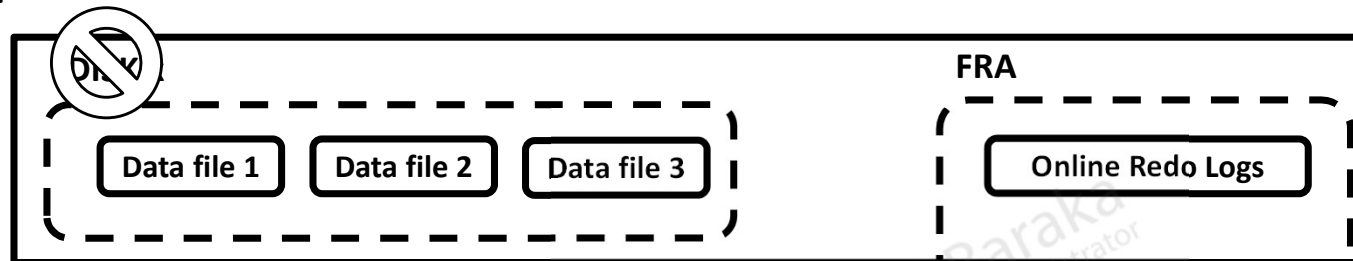


Backup Files



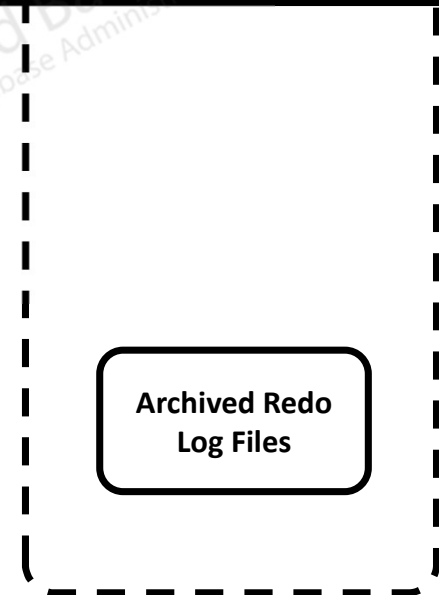
Recovery by Switching to Data File Copies

Database



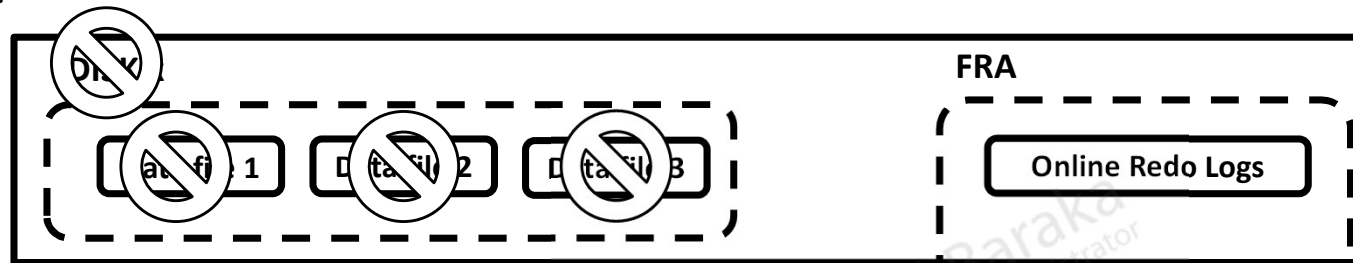
Backup Files

DISK y



Recovery by Switching to Data File Copies

Database



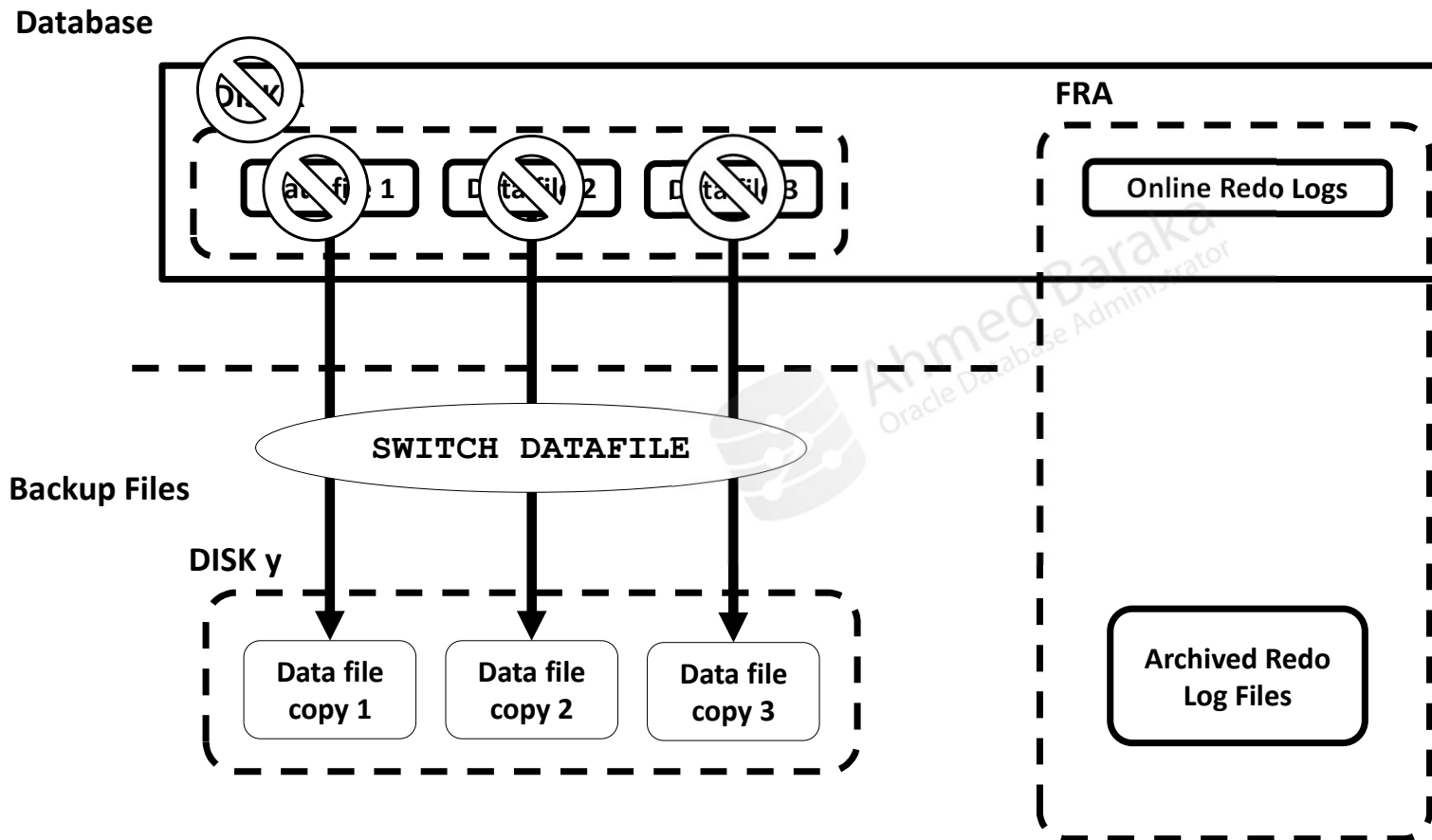
Backup Files

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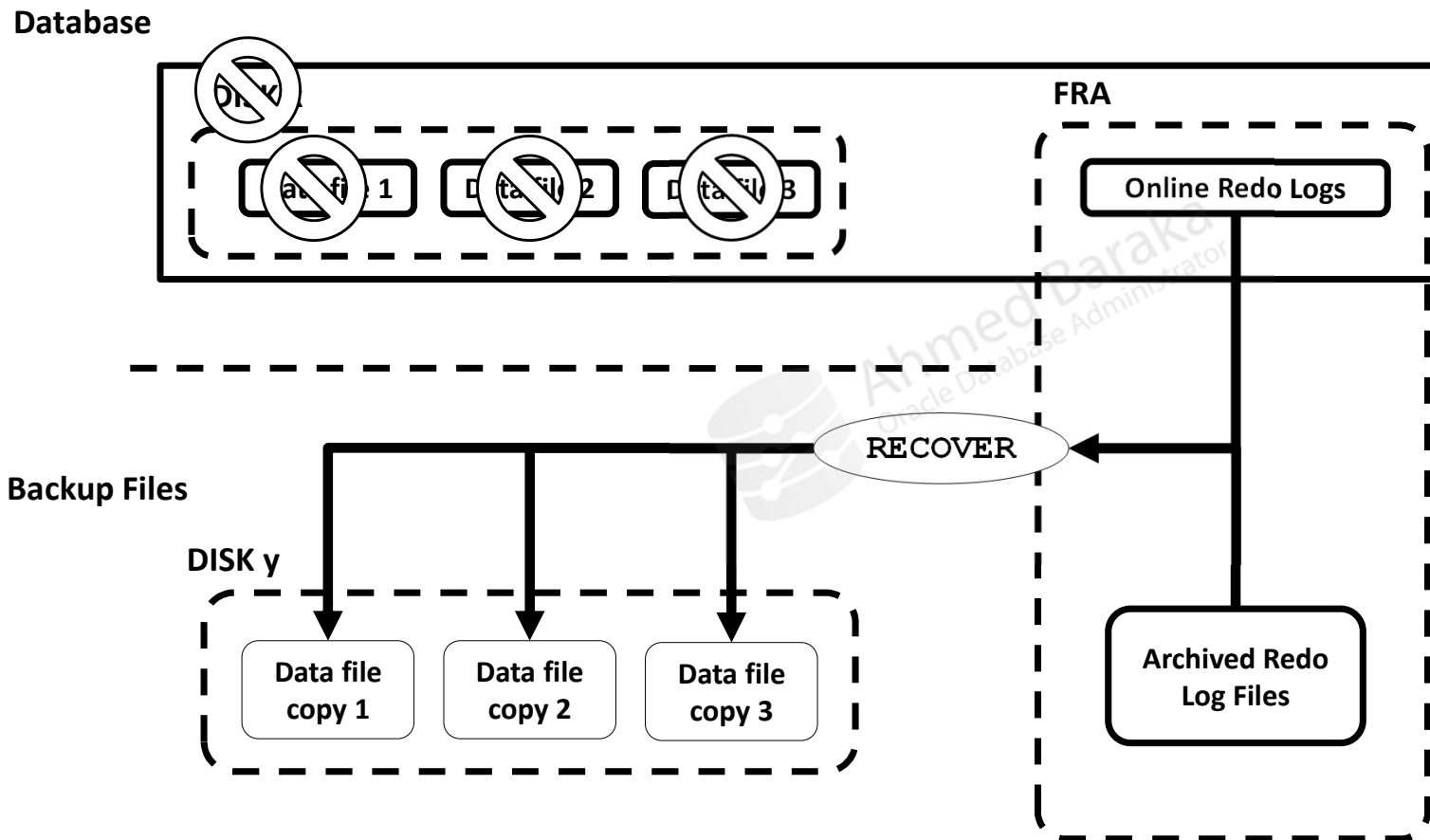


Archived Redo
Log Files

Recovery by Switching to Data File Copies

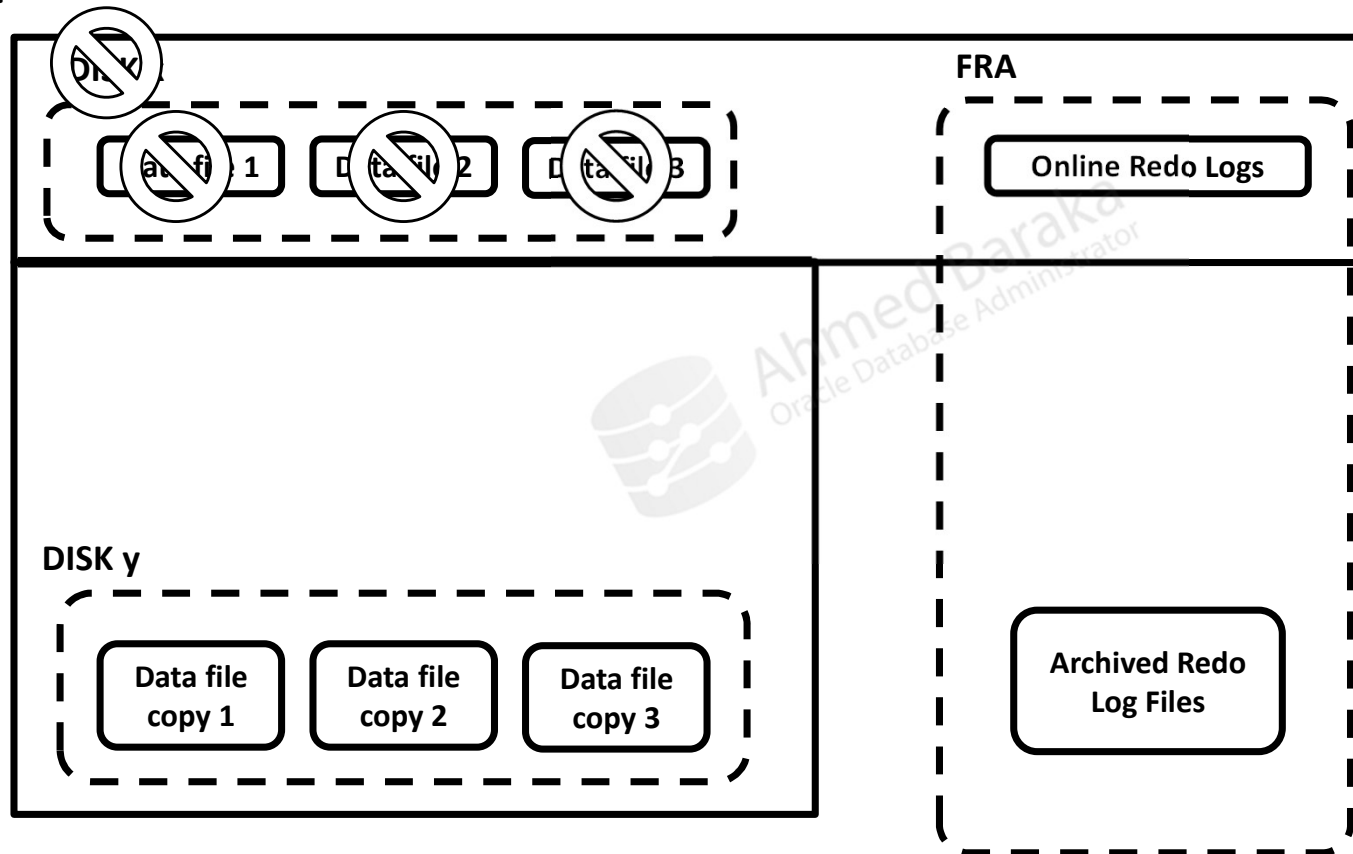


Recovery by Switching to Data File Copies



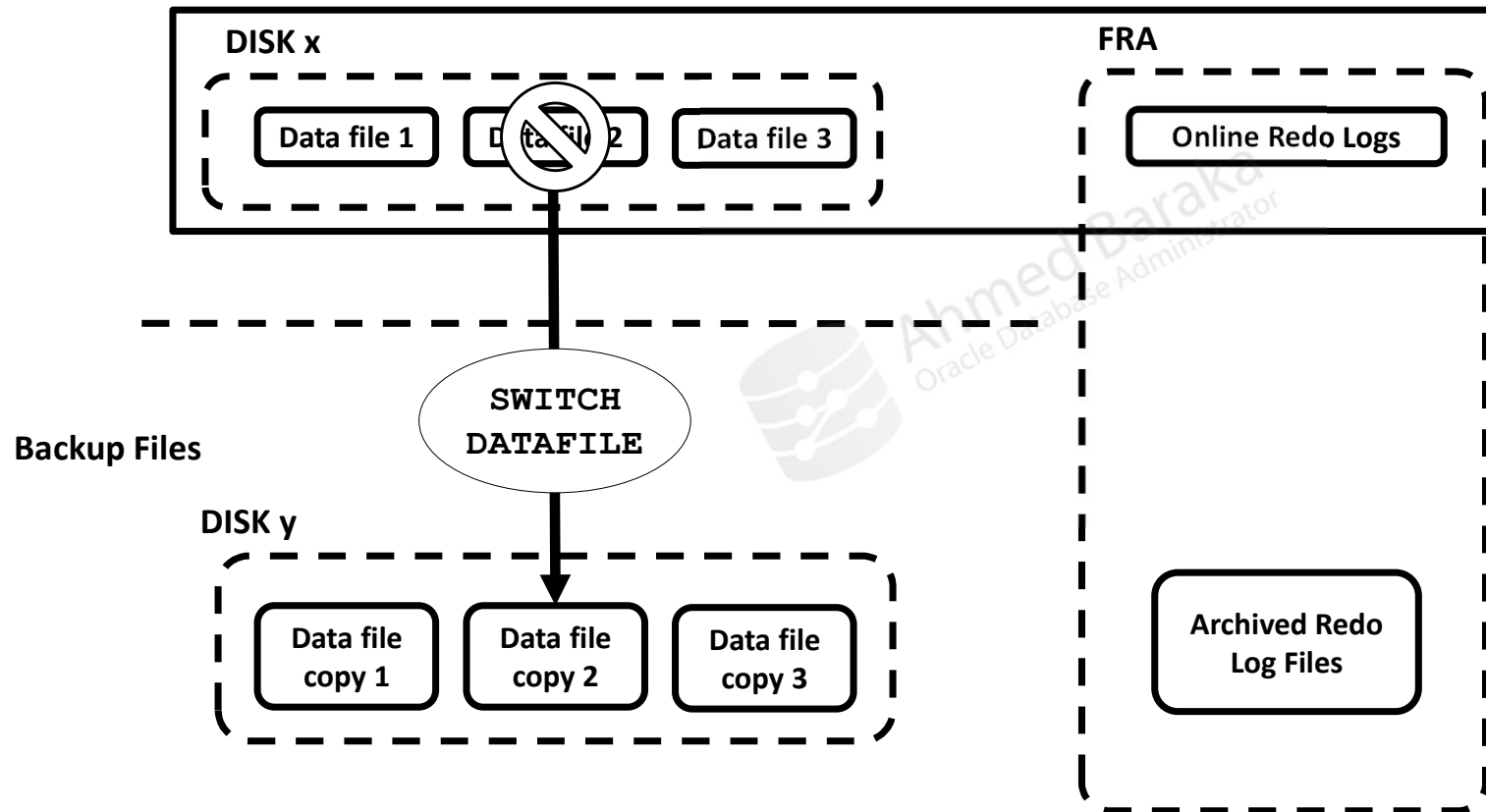
Recovery by Switching to Data File Copies

Database



Recovery by Switching to Data File Copies

Database



About Switching to Datafile Copies

- **Pros**
 - Fast recovery time
- **Cons**
 - Practically requires high specs backup storage



Switching to a Database Copy

- **Scenario:** all the database datafiles are corrupted or lost
- **Assumption:** the database is shut down, image copies of all the damaged data files are available
- **Solution:**

```
STARTUP MOUNT  
SWITCH DATABASE TO COPY;  
RECOVER DATABASE;  
ALTER DATABASE OPEN;
```

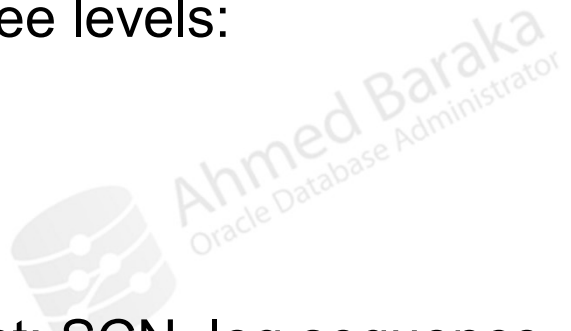
Switching to a Data File Copy

- **Scenario:** one or more user tablespace datafiles are lost
- **Assumption:** the database is open, datafile copy is available
- **Solution:**

```
ALTER DATABASE DATAFILE 4 OFFLINE;  
SWITCH DATAFILE 4 TO COPY;  
RECOVER DATAFILE 4;  
ALTER DATABASE DATAFILE 4 ONLINE;
```

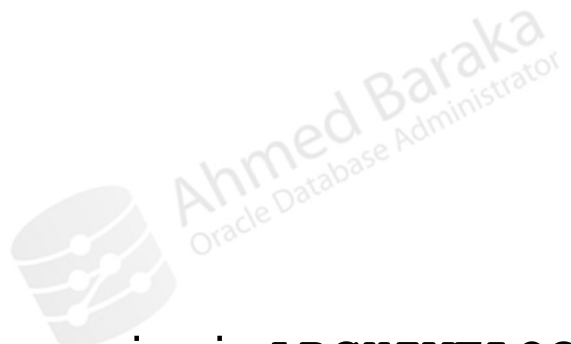
About Point-in-Time Recovery PITR

- Aims at returning the database or database object to its state at a previous point in time
- Can be achieved in three levels:
 - Database (DBPITR)
 - Tablespace (TSPITR)
 - Table
- Required recovery point: SCN, log sequence, restore point, or time
- Use Flashback Technology instead, if possible



About Database Point-in-Time Recovery

- **Pros:**
 - Rewind the entire database to some past point in time
- **Cons:**
 - DB must be offline
 - Time-consuming
- **Requirements:**
 - Your database must be running in **ARCHIVELOG** mode
 - You must have backups of all data files before the target SCN



About OPEN RESETLOGS Operations

- Must be performed after every DBPITR
- The following actions took place:
 - If online redo logs are available, current log file got archived
 - If online redo logs are not there, they got automatically created
 - Updates data files and online redo logs with the new RESETLOGS SCN and time stamp
 - Database incarnation incremented
- Database can be restored from backups that were made when the database was running with the same incarnation
- Unwanted OPEN RESETLOGS can be rewound using Flashback Database

Determining DBID of Target Database

- DBID is displayed when RMAN connects to a target database

```
rman TARGET /  
Recovery Manager: Release 12.1.0.1.0 - Production  
..  
connected to target database: PROD (DBID=38771009)
```

- If the default format of the controlfile **AUTOBACKUP** file is used:

- c-**IIIIIIIIII**-YYYYMMDD-QQ

```
c-38771009-20221001-03
```

- Save the **DBID** in a file with the backup files.

Performing Database Point-in-Time Recovery (DBPITR)

1. Determine the required recovery point
2. Execute the following commands:

```
RUN { SET UNTIL SCN 1234;  
      RESTORE DATABASE;  
      RECOVER DATABASE; }
```

3. Open the database using RESETLOGS option

```
ALTER DATABASE OPEN RESETLOGS;
```

Note: other ways to set the recovery point:

```
SET UNTIL TIME 'Oct 1 2018 09:00:00';  
SET UNTIL SEQUENCE 100;  
SET TO RESTORE POINT before_update;
```

Performing Database Point-in-Time Recovery (DBPITR) – Alternative Method

```
SHUTDOWN IMMEDIATE;  
STARTUP NOMOUNT;  
SET DBID <DBID>;  
RESTORE CONTROLFILE FROM AUTOBACKUP;  
ALTER DATABASE MOUNT;  
  
RUN { SET UNTIL TIME '<YYYY-MM-DD:HH24:MI:SS>';  
      RESTORE DATABASE;  
      RECOVER DATABASE; }  
  
ALTER DATABASE OPEN READ ONLY;
```

```
ALTER DATABASE OPEN RESETLOGS;
```

Summary

In this lecture, you should have learnt how to perform the following:

- Recover datafiles by switching to image copies
- Perform database PITR

