



10

## Backup and Recovery

by: Ahmad Syauqi Ahsan

# Terminologi Backup

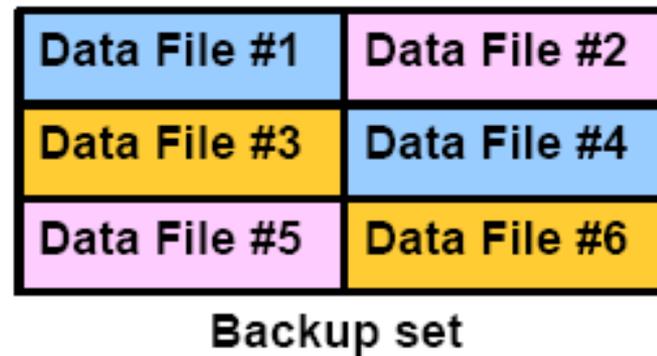
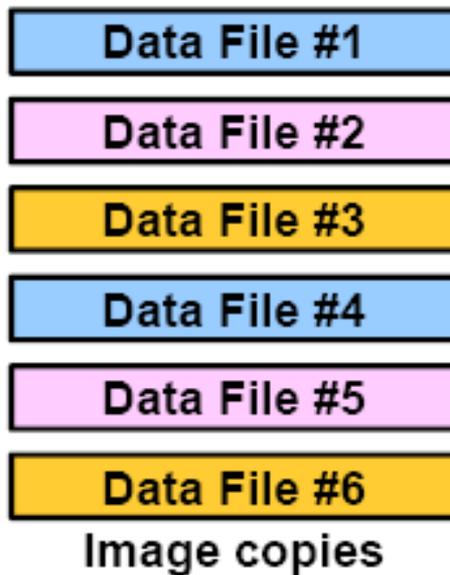
- Backup strategy boleh mengikutkan :
  - ▣ Keseluruhan database (whole)
  - ▣ Bagian dari database (partial)
- Backup type boleh berupa :
  - ▣ Segala informasi dari seluruh data files (full)
  - ▣ Hanya informasi yang telah berubah sejak pembuatan backup sebelumnya (incremental)
- Backup mode boleh berupa :
  - ▣ Offline (consistent, cold)
  - ▣ Online (inconsistent, hot)

# Terminologi

3

Backup bisa disimpan sebagai :

- Image Copies
- Backup Sets



# Recovery Manager (RMAN)

Enterprise Manager menggunakan Recovery Manager (RMAN) untuk melaksanakan operasi-operasi backup dan recovery.

- ❑ Baris perintah client untuk fungsi-fungsi advanced
- ❑ Kontrol yang sangat kuat dan bahasa scripting
- ❑ Mempublikasi API yang mengijinkan antar muka dengan software backup yang paling populer
- ❑ Backs up data, kontrol, archived log, dan file-file server paramater
- ❑ Backs up file-file ke dalam disk atau tape.

# Mengkonfigurasi Setting Backup

5

## Configure Backup Settings

**Device** [Backup Set](#) [Policy](#)

### Disk Settings

Parallelism  Test Disk Backup  
Concurrent streams to disk drives

Disk Backup Location   
An existing directory or diskgroup name where database files will be backed up. If you do not specify a location, database files will be backed up to the flash recovery area location.

Disk Backup Type  Backup Set  
An Oracle proprietary format which has to be restored before use.

Compressed Backup Set  
An Oracle proprietary format in compressed format which has to be restored before use.

Image Copy  
A bit-by-bit copy of database files that can be used as-is to perform recovery.

### Host Credentials

To save the backup settings, supply operating system login credentials.

\* Username

\* Password

Save as Preferred Credential

# Mengkonfigurasi Setting Backup

6

## Backup Policy

Automatically backup the control file and server parameter file (SPFILE) with every backup and database structural change

Autobackup Disk Location

An existing directory or diskgroup name where the control file and server parameter file will be backed up. If you do not specify a location, the files will be backed up to the flash recovery area location.

Optimize the whole database backup by skipping unchanged files such as read-only and offline datafiles that have been backed up

Enable block change tracking for faster incremental backups

Block Change Tracking File

Specify a location and file, otherwise an Oracle managed file will be created in the database area.

## Tablespaces Excluded From Whole Database Backup

Populate this table with the tablespaces you want to exclude from a whole database backup. Use the Add button to add tablespaces to this table.

Add

Select	Tablespace Name	Tablespace Number	Status	Contents
<input type="checkbox"/>	No Items Selected			

**TIP** These tablespaces can be backed up separately using tablespace backup.

## Retention Policy

Retain All Backups

You must manually delete any backups

Retain backups that are necessary for a recovery to any time within the specified number of days (point-in-time recovery)

Days

31

Recovery Window

Retain at least the specified number of full backups for each datafile

Backups

1

Redundancy

# Menjadwal Backup: Strategi

7

Memilih keseluruhan atau sebagian untuk backup database

## Schedule Backup: Strategy

Based on your disk and/or tape configuration, Oracle provides an automated backup strategy, or you can develop your own backup strategy with customized options.

Backup Strategy

Object Type

- Whole Database
- Tablespaces
- Datafiles
- Archivelogs
- All Recovery Files on Disk  
These files include all archivelogs and disk backups that are not already backed up to tape

### Host Credentials

To perform a backup, supply operating system login credentials.

\* Username

\* Password

Save as Preferred Credential

### Backup Strategies

Oracle-suggested:

- Provides an out-of-the-box backup strategy based on the backup destination. Options may vary based on the database version.
- Sets up recovery window for backup management
- Automates backup management
- Schedules recurring backups

Customized:

- Specify the objects to be backed up
- Choose a disk or tape backup destination
- Override the default backup settings
- Schedule the backup

# Menjadwal Backup: Option

8

Backup Strategy	<b>Customized</b>
Object Type	<b>Whole Database</b>

---

### Backup Type

Full Backup

Use as the base of an incremental backup strategy

Incremental Backup (Level 1)  
Level 1 incremental backup includes all the changed blocks since the most recent level 0 backup (cumulative).

Refresh the latest datafile copy on disk to the current time using the incremental backup

---

### Backup Mode

Online Backup  
The backup can be performed when the database is OPEN.

Offline Backup  
If the database is OPEN at the time of backup, the database will be shut down and mounted before the backup. The database will be opened after the backup.

---

### Advanced

Back up all archived logs on disk

Delete all archived logs from disk after they are successfully backed up

Use proxy copy supported by media management software to perform a backup  
If proxy copy of the selected files is not supported, Recovery Manager will perform a conventional backup.

Delete obsolete backups  
Delete backups that are no longer needed to satisfy the retention policy.

Maximum Files per Backup Set

The maximum number of input files in each backup set.

# Menjadwal Backup: Setting

9

Options Settings Schedule Review

## Schedule Backup: Settings

Cancel Back Step 2 of 4 Next

Database **orcl**  
Backup Strategy **Customized**  
Object Type **Whole Database**

Here are the settings for your current backup job. You can select your backup destination directly from this page. You can also view the default settings or override the settings by clicking the buttons below.

Disk  
Flash Recovery Area `/oracle/flash_recovery_area/`

Tape  
Media Management Vendor(MMV) Library Parameters **not specified**

[View Default Settings](#) [Override Current Settings](#)

Changed settings will only apply to the current backup.

Setting konfigurasi persistent backup sebelumnya, dapat ditimpa dengan untuk backup saat ini dengan meng-klik **Override Current Settings**.

# Menjadwal Backup: Jadwal

10

## Schedule Backup: Schedule

Cancel Back Step 3 of 4 Next

Database **orcl.oracle.com**  
Backup Strategy **Customized**  
Object Type **Whole Database**

### Job

\* Job Name   
Job Description

### Schedule

Time Zone

#### Start

- Immediately  
 Later

Date    
(example: Feb 16, 2004)

Time    AM  PM

#### Repeat

- One Time Only  
 Interval  
 Monthly  
 Yearly

Frequency

#### Repeat Until

- Indefinite  
 Custom

Date    
(example: Feb 16, 2004)

Time    AM  PM  
(Ignored except when repeating by minutes or hours.)

# Menjadwal Backup: Review

11

**Schedule Backup: Review**

[Cancel](#) [Edit RMAN Script](#) [Back](#) Step 4 of 4 [Submit Job](#)

Database	<b>orcl</b>
Backup Strategy	<b>Customized</b>
Object Type	<b>Whole Database</b>
Backup Type	<b>Full Backup</b>
Backup Mode	<b>Online Backup</b>

[Settings](#)

Flash Recovery Area `/oracle/flash_recovery_area/`

**Review: Edit RMAN Script**

[Cancel](#) [Submit Job](#)

You can modify the RMAN script before submitting it. However, you will not be able to go back to previous wizard pages if you modify the script.

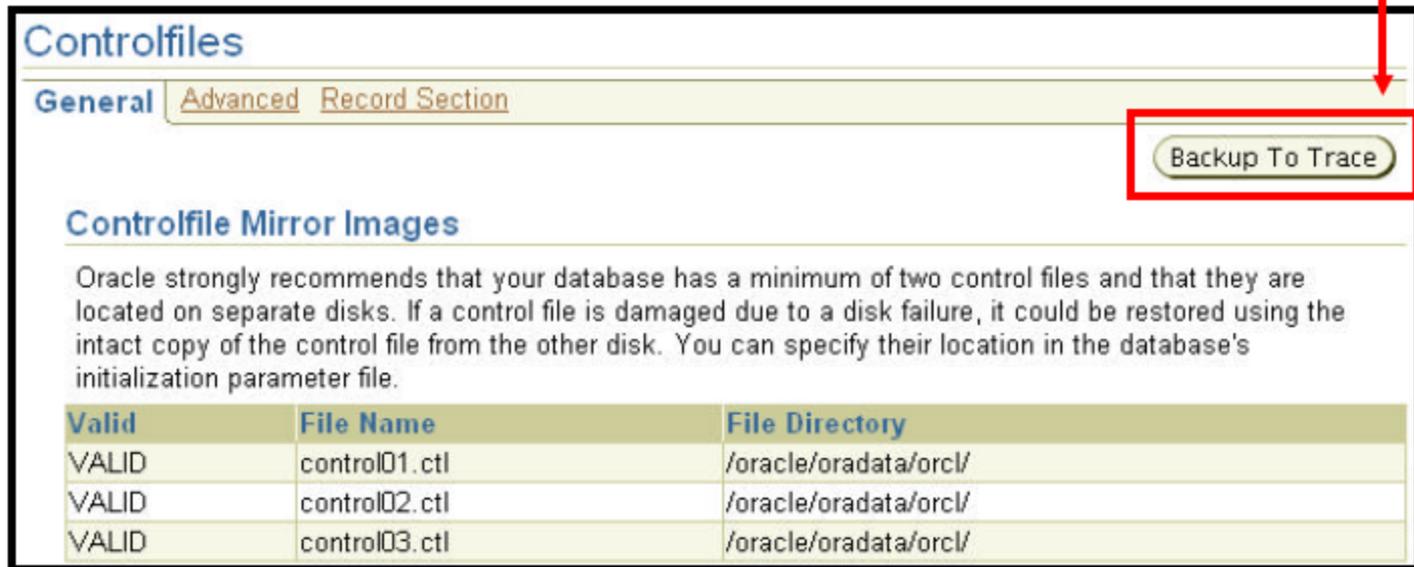
```
backup device type disk tag '%TAG' database include current controlfile;
backup device type disk tag '%TAG' archivelog all;
```

Klik Edit RMAN Script untuk mereview perintah2 RMAN

# Mem-backup Control File ke Trace

12

Control file mempunyai opsi tambahan untuk melakukan backup



**Controlfiles**

**General** [Advanced](#) [Record Section](#)

**Backup To Trace**

**Controlfile Mirror Images**

Oracle strongly recommends that your database has a minimum of two control files and that they are located on separate disks. If a control file is damaged due to a disk failure, it could be restored using the intact copy of the control file from the other disk. You can specify their location in the database's initialization parameter file.

Valid	File Name	File Directory
VALID	control01.ctf	/oracle/oradata/orcl/
VALID	control02.ctf	/oracle/oradata/orcl/
VALID	control03.ctf	/oracle/oradata/orcl/

Backup control file ke trace dapat digunakan untuk recovery bila terjadi kehilangan semua control file

# Mengelola Backup

13

## Manage Current Backups

[Catalog Additional Files](#) [Crosscheck All](#) [Delete All Obsolete](#) [Delete All Expired](#)

This backup data was retrieved from the database control file.

**Backup Sets** [Image Copies](#)

### Search

Status:

Contents:  Datafile  Archived Redo Log  SPFILE  Control File

Completion Time:  [GO](#)

### Results

[Crosscheck](#) [Change to Unavailable](#) [Delete](#)

[Select All](#) | [Select None](#)

Select	Key	Tag	Completion Time	Contents	Device Type	Status	Obsolete	Keep	Pieces
<input type="checkbox"/>	3	BACKUP_ORCL_000006_120303103223	Dec 3, 2003 10:48:48 AM	<a href="#">ARCHIVED LOG</a>	DISK	AVAILABLE	NO	NO	1
<input type="checkbox"/>	2	BACKUP_ORCL_000006_120303103223	Dec 3, 2003 10:41:41 AM	<a href="#">DATAFILE</a> <a href="#">SPFILE</a> <a href="#">CONTROLFILE</a>	DISK	AVAILABLE	NO	NO	1

Klik Edit RMAN Script untuk mereview perintah2 RMAN

# Flash Recovery Area

14

## Monitor Flash Recovery Area

- ❑ Mengatur flashback logging
- ❑ Ukuran recovery area
- ❑ Monitor kebutuhan space yang digunakan

### Flash Recovery Area

It is highly recommended that you use flash recovery area to automate your disk backup management.

Flash Recovery Area Location

Flash Recovery Area Size

Flash Recovery Area Size must be set when the location is set

Used Flash Recovery Area Size (GB) **1.75**

Enable flashback logging for fast database point-in-time recovery\*

The flash recovery area must be set to enable flashback logging. When using flashback logs, you may recover your entire database to a prior point-in-time without restoring files. Flashback is the preferred point-in-time recovery method in the recovery wizard when appropriate.

Specify how far back you wish to flash the database in the future

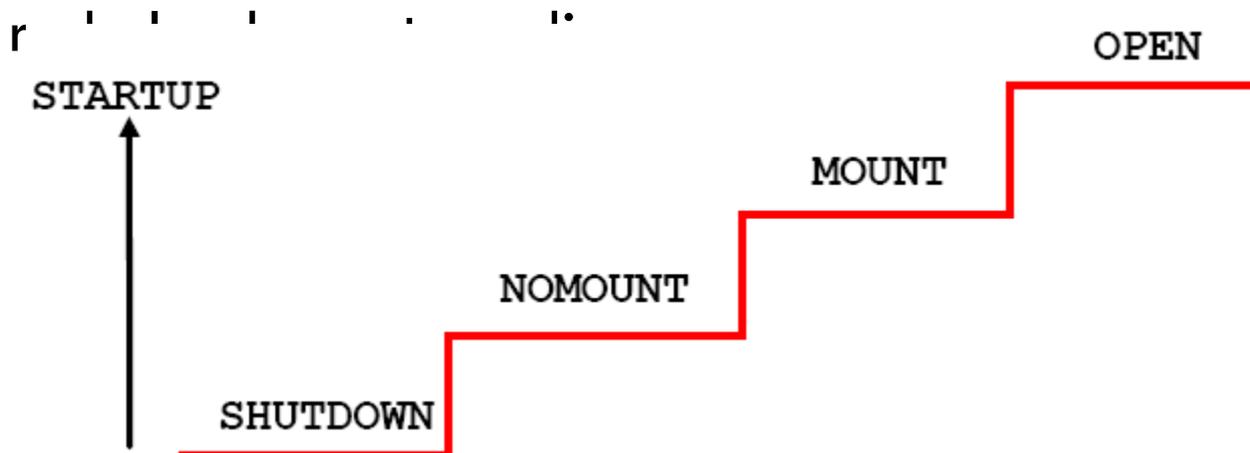
Flashback Retention Time

# Membuka Sebuah Database

15

Untuk membuka sebuah database :

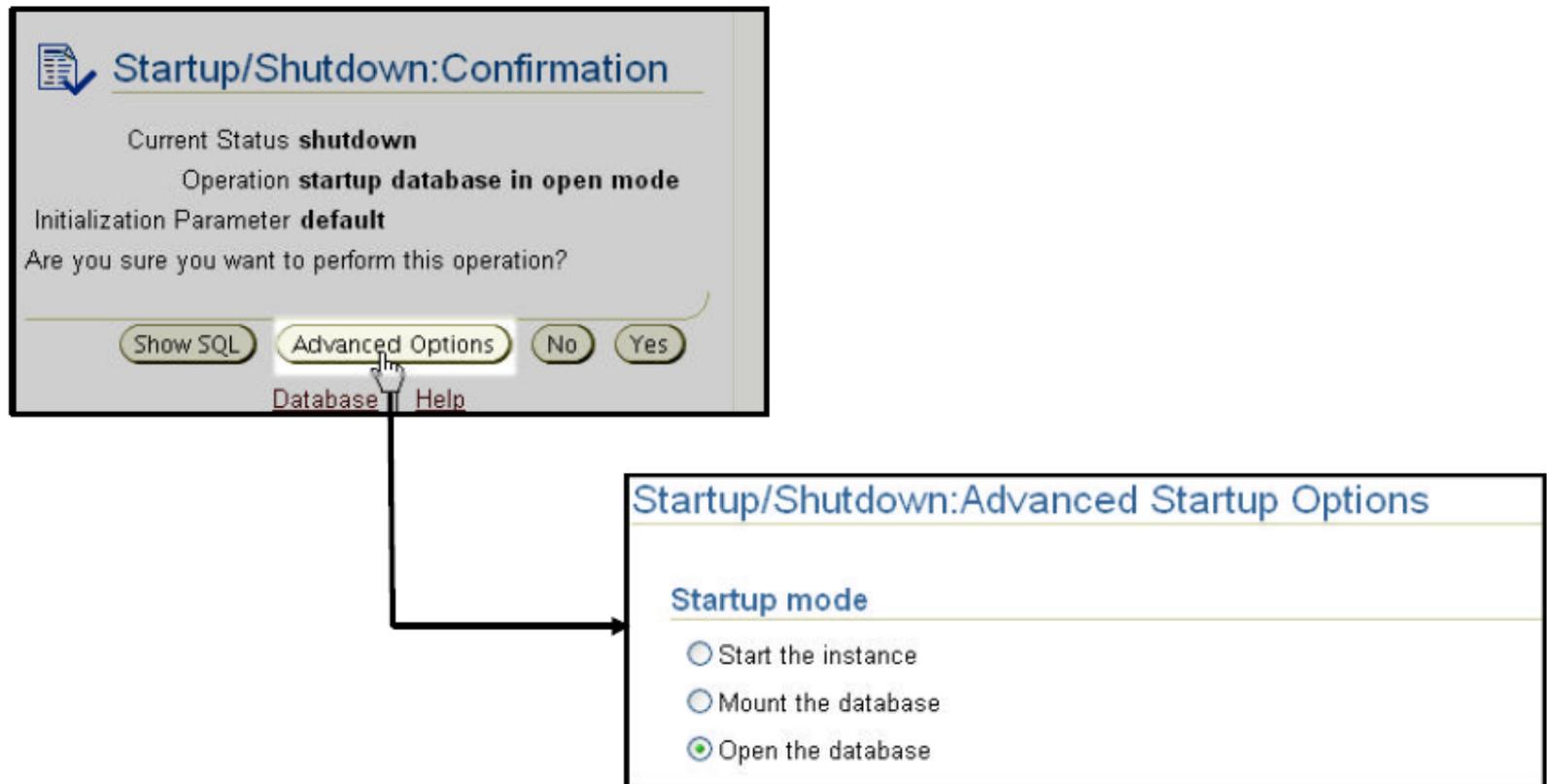
- Semua control file harus tersedia dan tersinkronisasi
- Semua data file yang online harus tersedia dan tersinkronisasi
- Paling tidak ada satu anggota dari setiap kelompok



# Mengubah Status Proses

16

Menggunakan Database Control untuk mengubah status instance:



# Menjaga Database Pada state Open

Setelah open, instance akan error ketika :

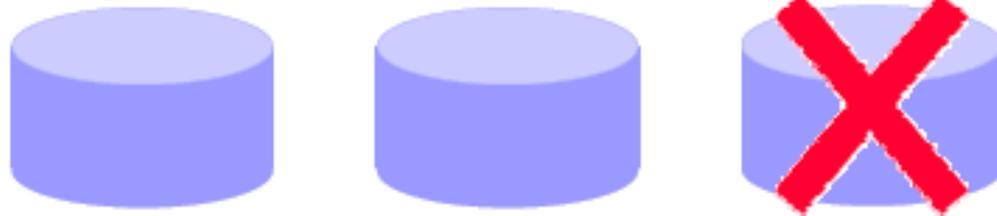
- Kehilangan beberapa file control
- Kehilangan sebuah file data yang ada pada sistem atau tablespaces yang sebelumnya
- Kehilangan semua kelompok redo log. Selama paling tidak ada satu anggota dari kelompok yang ada, proses akan terbuka kembali.

# Kehilangan Control File

18

Jika sebuah control file hilang atau rusak :

1. Proses secara normal akan dibatalkan. Jika proses tetap terbuka, segera Matikan.
2. Kembalikan file control yang hilang dengan mengcopy file control yang sudah ada.
3. Mulailah prosesnya.



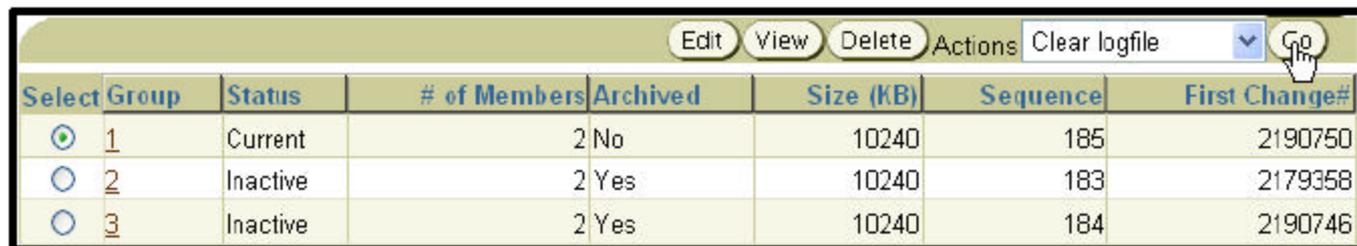
**Control files**

# Kehilangan Redo Log File

19

Jika anggota kelompok redo log file hilang, selama masih ada satu anggota yang tersisa:

- ❑ Operasi Normal dari proses tidak akan berpengaruh.
- ❑ Anda akan menerima sebuah pesan pada alert log yang mengingatkan anda bahwa sebuah anggota tidak ditemukan.
- ❑ Kembalikan file log yang hilang dengan mengcopy satu dari file yang tersisa dari kelompok yang sama.



Select	Group	Status	# of Members	Archived	Size (KB)	Sequence	First Change#
<input checked="" type="radio"/>	<u>1</u>	Current	2	No	10240	185	2190750
<input type="radio"/>	<u>2</u>	Inactive	2	Yes	10240	183	2179358
<input type="radio"/>	<u>3</u>	Inactive	2	Yes	10240	184	2190746

# Hilangnya suatu Data file NOARCHIVELOG Mode

20

Jika database terdapat di dalam NOARCHIVELOG Mode, dan data file manapun hilang:

1. Tutup kejadian yang terakhir jika itu bukan yang terakhir.
2. Mengembalikan keseluruhan database, yang mencakup semua data dan file control dari backup. buka database
3. Sudahkah para pemakai masuk kembali untuk membuat perubahan karena backup yang terakhir itu.



# Hilangnya Data Noncritical di ARCHIVELOG Mode

21

- Jika data file hilang atau rusak, dan file tersebut tidak ada di sistem atau di undo
- Tablespace, kemudian mengembalikan dan memulikan file yang rusak.

**Type**

Object Type

Operation Type  Recover to current time or a previous point-in-time  
Datafile will be restored as required.

Restore datafiles  
Need to specify Time, SCN or log sequence. The backup taken at or prior to that time will be used.

Recover from previously restored datafiles

Block Recovery



**Users**

# Hilangnya suatu Sistem dan Kritisnya datafile ARCHIVELOG mode.

Jika suatu data file itu hilang atau rusak dan mempengaruhi sistem atau undo tablespace :

1. Boleh tidaknya shutdown secara otomatis. Jika tidak boleh maka menggunakan SHUTDOWN ABORT untuk shutdown.
2. Mount database.
3. Mengembalikan dan memulikan file data yang hilang.
4. Open database.

# Tanya Jawab

Terima Kasih