LAPORAN PRAKTIKUM
SISTEM MENEJEMEN BASIS DATA

JOBSHEET-13: DATABASE MAINTENANCE

Oleh:

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PROGRAM STUDI TEKNIK INFORMATIKA
JURUSAN TEKNOLOGI INFORMASI
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2020

Praktikum 1. DMCC Check DB	
Langkah-langkah praktikum	
1.	Buka Microsoft SQL Server 2012, klik SQL Server Management Studio. Connect ke Server Window, type Proseware dan klik Connect. Pada File menu, klik Open, klik Project/Solution, buka D:\10775A_Labs\10775A_12_PRJ\10775A_12_PRJ.ssmssln dan Open.
2.	Pada View menu, klik Solution Explorer. Buka dan jalankan 00 – Setup.sql.
3.	Jalankan DBCC CHECKDB dengan opsi Default `DBCC CHECKDB('MarketDev');` 100 % Messages DBCC results for 'MarketDev'. Service Broker Msg 9675, State 1: Message Types analyzed: 14. Service Broker Msg 9676, State 1: Service Contracts analyzed: 6. Service Broker Msg 9667, State 1: Services analyzed: 3. Service Broker Msg 9668, State 1: Service Queues analyzed: 3. Service Broker Msg 9669, State 1: Conversation Endpoints analyzed: 0. Service Broker Msg 9674, State 1: Conversation Groups analyzed: 0. Service Broker Msg 9670, State 1: Remote Service Bindings analyzed: 0. Service Broker Msg 9605, State 1: Conversation Priorities analyzed: 0. DBCC results for 'sys.sysrscols'. There are 1362 rows in 16 pages for object "sys.sysrscols". DBCC results for 'sys.sysrowsets'. There are 186 rows in 2 pages for object "sys.sysrowsets". DBCC results for 'sys.sysclones'. There are 0 rows in 0 pages for object "sys.sysclones". DBCC results for 'sys.sysallocunits'. There are 227 rows in 3 pages for object "sys.sysallocunits". DBCC results for 'sys.sysfiles1'. There are 2 rows in 1 pages for object "sys.sysfiles1". DBCC results for 'sys.sysseobjvalues'. There are 0 rows in 0 pages for object "sys.sysseobjvalues". DBCC results for 'sys.syspriorities'. There are 0 rows in 0 pages for object "sys.syspriorities". DBCC results for 'sys.sysdbfrag'. There are 0 rows in 0 pages for object "sys.sysdbfrag". DBCC results for 'sys.sysfgfrag'. There are 0 rows in 1 pages for object "sys.sysfgfrag". DBCC results for 'sys.sysdbfiles'. There are 2 rows in 1 pages for object "sys.sysdbfiles". 100 %
4.	Catat output, dan arahkan ke pesan terakhir yang menunjukkan bahwa tidak ada error! (screenshot) DBCC results for 'sys.syscommittab'. There are 0 rows in 0 pages for object "sys.syscommittab". DBCC results for 'Marketing.Language'. There are 8 rows in 1 pages for object "Marketing.Language". DBCC results for 'Marketing.SalesTerritory'. There are 10 rows in 1 pages for object "Marketing.SalesTerritory". CHECKDB found 0 allocation errors and 0 consistency errors in database 'MarketDev'. DBCC execution completed. If DBCC printed error messages, contact your system administrator Completion time: 2020-05-05T14:17:41.8643543+07:00 100 % Query executed successfully.
5.	Jalankan DBCC CHECKDB tanpa pesan informasi, hanya pesan kesalahan yang akan muncul dengan opsi ini.

```
DBCC CHECKDB('MarketDev') WITH NO_INFOMSGS;
go
```

```
Messages
Commands completed successfully.

Completion time: 2020-05-05T14:29:15.6555331+07:00
```

Query executed successfully. DESKTOP-UF2DJV1 (15.0 RTM) | DESKTOP-UF2DJV1\Encryp...

6. Catat perbedaan output dengan perintah sebelumnya. Bagaimana output query ini? Mengapa demikian?

Jawab:

dengan adanya WITH NO_INFOMSGS yaitu Menekan semua pesan informasi yang memiliki tingkat kerusakan dari 0 sampai 10

7. Restore database yang rusak (corrupt). Perhatikan bahwa basis data ini di back up dalam keadaan rusak.

```
RESTORE DATABASE CorruptDB
FROM DISK = 'D:\Kuliah\Sem4\Sistem Manajemen Basis Data\13\Minggu-13 Database Maintenance-copy ke mhs\CorruptDB.bak'
WITH MOVE 'Northwind' TO 'D:\Kuliah\Sem4\Sistem Manajemen Basis Data\MKTG\CorruptDB.mdf',
     MOVE 'Northwind_Log' TO 'D:\Kuliah\Sem4\Sistem Manajemen Basis Data\MKTG\CorruptDB.ldf';
GO
```

```
Messages
Processed 440 pages for database 'CorruptDB', file 'Northwind' on file 1.
Processed 1 pages for database 'CorruptDB', file 'Northwind_log' on file 1.
Converting database 'CorruptDB' from version 661 to the current version 904.
Database 'CorruptDB' running the upgrade step from version 661 to version 668.
Database 'CorruptDB' running the upgrade step from version 668 to version 669.
Database 'CorruptDB' running the upgrade step from version 669 to version 670.
Database 'CorruptDB' running the upgrade step from version 670 to version 671.
Database 'CorruptDB' running the upgrade step from version 671 to version 672.
Database 'CorruptDB' running the upgrade step from version 672 to version 673.
Database 'CorruptDB' running the upgrade step from version 673 to version 674.
Database 'CorruptDB' running the upgrade step from version 674 to version 675.
Database 'CorruptDB' running the upgrade step from version 675 to version 676.
Database 'CorruptDB' running the upgrade step from version 676 to version 677.
Database 'CorruptDB' running the upgrade step from version 677 to version 679.
Database 'CorruptDB' running the upgrade step from version 679 to version 680.
Database 'CorruptDB' running the upgrade step from version 680 to version 681.
```

Query executed successfully. DESKTOP-UF2DJV1 (15.0 RTM) | DESKTOP-UF2DJV1\Encryp... | master | 00:00:03 | 0 rows

8. Catat output, dan arahkan ke pesan terakhir yang menunjukkan bahwa restore berhasil! (screenshot)

```
Database 'CorruptDB' running the upgrade step from version 902 to version 903.
Database 'CorruptDB' running the upgrade step from version 903 to version 904.
RESTORE DATABASE successfully processed 441 pages in 0.263 seconds (13.074 MB/sec).

Completion time: 2020-05-05T14:33:37.2647997+07:00
```

Query executed successfully. DESKTOP-UF2DJV1 (15.0 RTM) | DESKTOP-UF2DJV1\Encryp... | master | 00:00:03 | 0 rows

9. Jalankan DBCC CHECKDB terhadap CorruptDB.

```
DBCC CHECKDB('CorruptDB');
```

```
Messages
DBCC results for 'CorruptDB'.
Service Broker Msg 9675, State 1: Message Types analyzed: 14.
Service Broker Msg 9676, State 1: Service Contracts analyzed: 6.
Service Broker Msg 9667, State 1: Services analyzed: 3.
Service Broker Msg 9668, State 1: Service Queues analyzed: 3.
Service Broker Msg 9669, State 1: Conversation Endpoints analyzed: 0.
Service Broker Msg 9674, State 1: Conversation Groups analyzed: 0.
Service Broker Msg 9670, State 1: Remote Service Bindings analyzed: 0.
Service Broker Msg 9605, State 1: Conversation Priorities analyzed: 0.
```

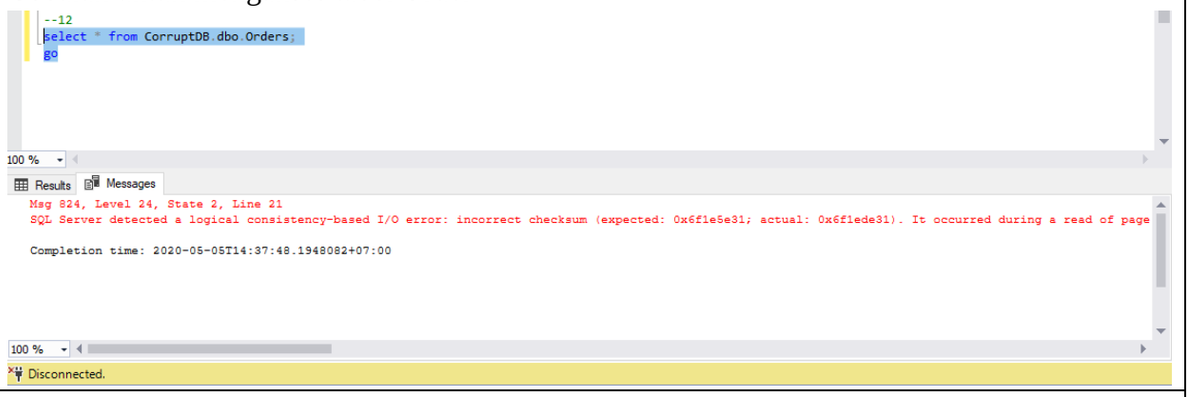
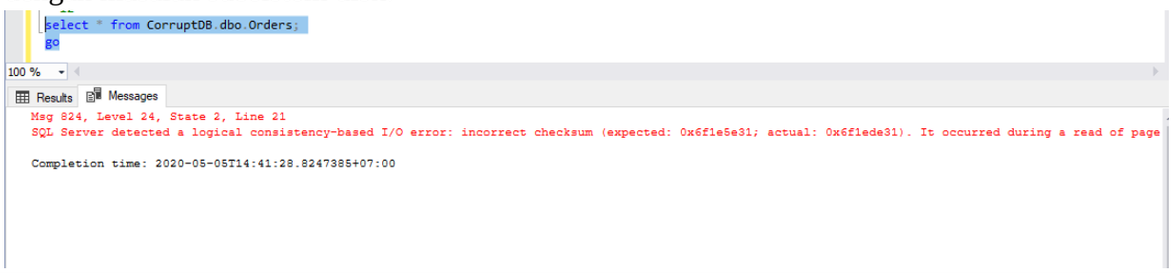
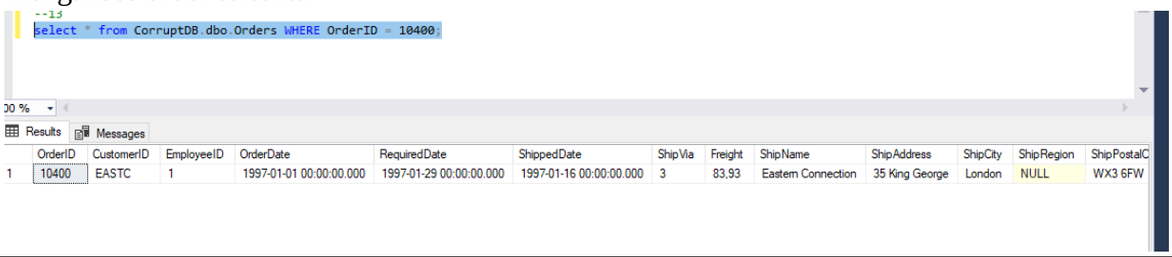
Query completed with errors. DESKTOP-UF2DJV1 (15.0 RTM) | DESKTOP-UF2DJV1\Encryp... | master | 00:00:04 | 0 rows

10. Catat output, ada berapa jumlah error? Table apa yang error?

Jawab:

```
Messages
There are 3 rows in 1 pages for object "Shippers".
DBCC results for 'Suppliers'.
There are 29 rows in 1 pages for object "Suppliers".
Msg 8939, Level 16, State 98, Line 18
Table error: Object ID 149575571, index ID 1, partition ID 72057594039697408, alloc unit ID 72057594040942592 (type In-row data), page (1:283). Test (IS_OF
Msg 8928, Level 16, State 1, Line 18
Object ID 149575571, index ID 1, partition ID 72057594039697408, alloc unit ID 72057594040942592 (type In-row data): Page (1:283) could not be processed.
Msg 8980, Level 16, State 1, Line 18
Table error: Object ID 149575571, index ID 1, partition ID 72057594039697408, alloc unit ID 72057594040942592 (type In-row data). Index node page (1:309),
```

Query completed with errors. DESKTOP-UF2DJV1 (15.0 RTM) | DESKTOP-UF2DJV1\Encryp... | master | 00:00:04 | 0 rows

11.	Baris output terakhir memberi tahu anda tingkat perbaikan minimum yang diperlukan
12.	Cobalah untuk mengakses tabel Order 
13.	Perhatikan bahwa terdapat error Msg 824. Ini adalah kesalahan umum yang berhubungan dengan masalah subsistem disk. 
14.	Perhatikan bahwa error mungkin hanya berlaku untuk page tertentu dalam tabel. Cobalah mengakses order tertentu 
15.	Perhatikan bahwa baris dapat di return, mengapa demikian? **Jawab:** Karena yang dituju dan yang bisa diakses hanya OrderID = 10400
16.	Solusi terbaik untuk permasalahan ini adalah restore dari back up yang dibuat sebelum kerusakan terjadi. Tetapi, satu-satunya back up yang dimiliki rusak atau corrupt sehingga kita tidak memiliki pilihan selain mencoba recover database. Ini adalah opsi darurat dan hanya boleh digunakan sebagai pilihan terakhir. Tidak ada jaminan konsistensi dalam database yang disediakan dan bias terdapat kehilangan data.
17.	Atur basis data dalam mode SINGLE_USER dan lakukan repair.

```
alter Database CorruptDB set single_user with rollback immediate;
go

dbcc checkdb('CorruptDB', repair_allow_data_loss);
go
```

```
Messages
DBCC results for 'CorruptDB'.
Service Broker Msg 9675, State 1: Message Types analyzed: 14.
Service Broker Msg 9676, State 1: Service Contracts analyzed: 6.
Service Broker Msg 9667, State 1: Services analyzed: 3.
Service Broker Msg 9668, State 1: Service Queues analyzed: 3.
Service Broker Msg 9669, State 1: Conversation Endpoints analyzed: 0.
Service Broker Msg 9674, State 1: Conversation Groups analyzed: 0.
Service Broker Msg 9670, State 1: Remote Service Bindings analyzed: 0.
Service Broker Msg 9605, State 1: Conversation Priorities analyzed: 0.
DBCC results for 'sys.sysrscols'.
There are 1397 rows in 17 pages for object "sys.sysrscols".
DBCC results for 'sys.sysrowsets'.
There are 206 rows in 3 pages for object "sys.sysrowsets".
DBCC results for 'sys.sysclones'.
```

18. Tunjukkan pesan bahwa error telah diperbaiki! (screenshot)

```
Messages
Table error: Object ID 149575571, index ID 1 will be rebuilt.
        The error has been repaired.
Msg 8928, Level 16, State 1, Line 31
Object ID 149575571, index ID 1, partition ID 72057594039697408, alloc unit ID 72057594040942592 (type In-row data): Page (1:283) could not be processed.
        The error has been repaired.
Msg 8939, Level 16, State 98, Line 31
Table error: Object ID 149575571, index ID 1, partition ID 72057594039697408, alloc unit ID 72057594040942592 (type In-row data), page (1:283). Test (IS_OF
        The error has been repaired.
Msg 8980, Level 16, State 1, Line 31
Table error: Object ID 149575571, index ID 1, partition ID 72057594039697408, alloc unit ID 72057594040942592 (type In-row data). Index node page (1:309),
        The error has been repaired.
Msg 8978, Level 16, State 1, Line 31
Table error: Object ID 149575571, index ID 1, partition ID 72057594039697408, alloc unit ID 72057594040942592 (type In-row data). Page (1:310) is missing a
        The error has been repaired.
```

19. Lakukan rollback ke multi user mode

```
alter Database CorruptDB set multi_user with rollback immediate;
go
```

```
Messages
Commands completed successfully.

Completion time: 2020-05-05T14:45:39.2946760+07:00
```

Query executed successfully. | DESKTOP-UF2DJV1 (15.0 RTM) | DESKTOP-UF2DJV1\Encryp... | master | 00:00:00 | 0 rows

20. Cek apakah kita sudah bias mengakses tabel Order, tunjukkan hasilnya! (screenshot)

```
select * from CorruptDB.dbo.Orders;
go
```

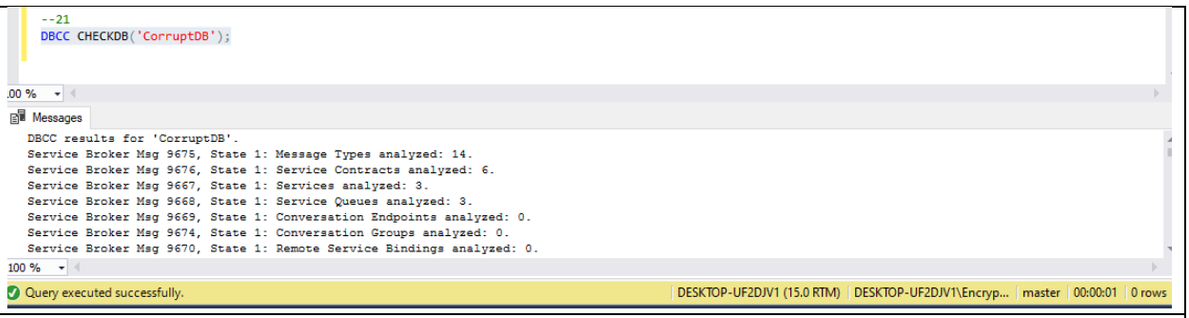
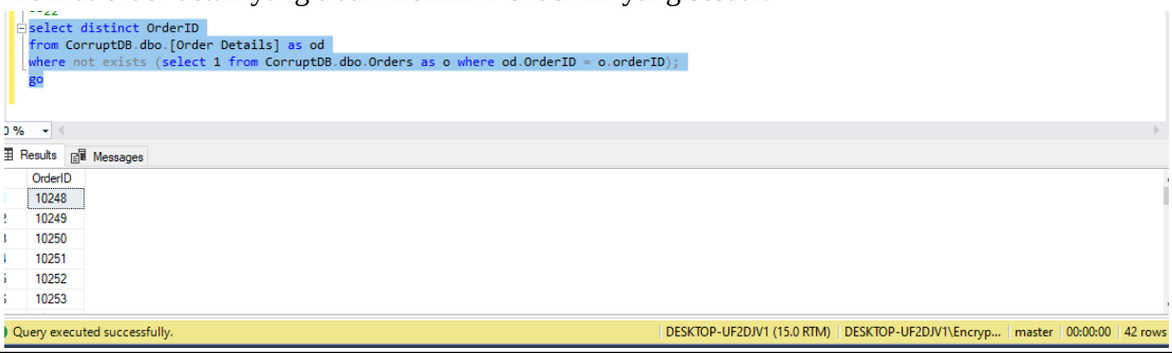
Results | Messages

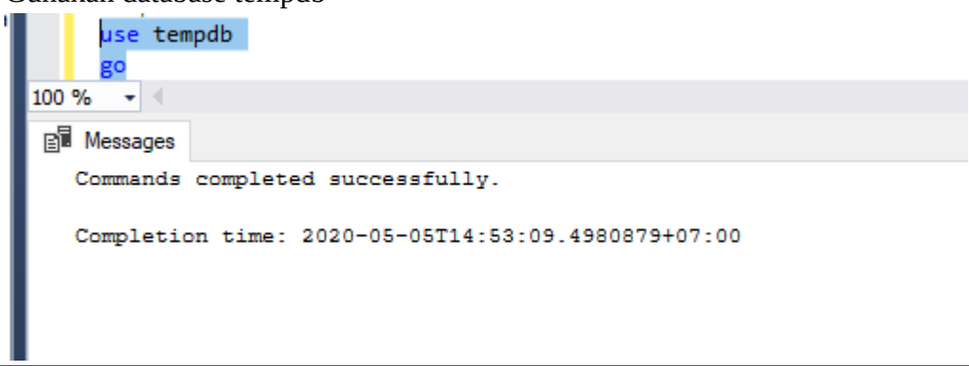
	OrderID	CustomerID	EmployeeID	OrderDate	RequiredDate	ShippedDate	ShipVia	Freight	ShipName	ShipAddress
1	10290	COMMI	8	1996-08-27 00:00:00.000	1996-09-24 00:00:00.000	1996-09-03 00:00:00.000	1	79,70	Comércio Mineiro	Av. dos Lusíadas, 23
2	10291	QUEDE	6	1996-08-27 00:00:00.000	1996-09-24 00:00:00.000	1996-09-04 00:00:00.000	2	6,40	Que Delícia	Rua da Panificadora, 12
3	10292	TRADH	1	1996-08-28 00:00:00.000	1996-09-25 00:00:00.000	1996-09-02 00:00:00.000	2	1,35	Tradiçao Hipermercados	Av. Inês de Castro, 414
4	10293	TORTU	1	1996-08-29 00:00:00.000	1996-09-26 00:00:00.000	1996-09-11 00:00:00.000	3	21,18	Tortuga Restaurante	Avda. Azteca 123
5	10294	RATTC	4	1996-08-30 00:00:00.000	1996-09-27 00:00:00.000	1996-09-05 00:00:00.000	2	147,26	Rattlesnake Canyon Grocery	2817 Milton Dr.
6	10295	VINET	2	1996-09-02 00:00:00.000	1996-09-30 00:00:00.000	1996-09-10 00:00:00.000	2	1,15	Vins et alcools Chevalier	59 rue de l'Abbaye
7	10296	LILAS	6	1996-09-03 00:00:00.000	1996-10-01 00:00:00.000	1996-09-11 00:00:00.000	1	0,12	LILA-Supermercado	Carrera 52 con Ave. Bolívar #65-98 Llano L
8	10297	BLONP	5	1996-09-04 00:00:00.000	1996-10-16 00:00:00.000	1996-09-10 00:00:00.000	2	5,74	Blondel père et fils	24, place Kléber
9	10298	HUNGO	6	1996-09-05 00:00:00.000	1996-10-03 00:00:00.000	1996-09-11 00:00:00.000	2	168,22	Hungry Owl All-Night Grocers	8 Johnstown Road
10	10299	RICAR	4	1996-09-06 00:00:00.000	1996-10-04 00:00:00.000	1996-09-13 00:00:00.000	2	29,76	Ricardo Adocicados	Av. Copacabana, 267

Query executed successfully. | DESKTOP-UF2DJV1 (15.0 RTM) | DESKTOP-UF2DJV1\Encryp... | master | 00:00:00 | 788 rows

21. Jalankan DBCC CHECKDB terhadap CorruptDB lagi, apakah terdapat error? (screenshot)

Jawab:

	
22.	Apakah kami kehilangan data? Perhatikan bahwa ada foreign key antara tabel Orders dan tabel [Order Details] berdasarkan PesananID. Hal ini berarti bahwa suatu Order harus ada untuk setiap Order Details. Lakukan query untuk melihat order detail yang tidak memiliki Order ID yang sesuai. 
23.	Ada berapa banyak data yang hilang? (screenshot) **Jawab:** 746 data

<u>Praktikum 2. Pemeliharaan Indeks</u>	
Langkah-langkah praktikum	
1.	Gunakan database tempdb 
2.	Buat tabel phoneLog dengan primary key seperti berikut

```
create table dbo.PoneLog
(   PhoneLogID int IDENTITY(1,1) PRIMARY KEY,
    LOGRECORDED datetime2 not null,
    PhoneNumberCalled nvarchar(100) not null,
    CallDurationMs int not null
);
go
```

```
Messages
Commands completed successfully.

Completion time: 2020-05-05T14:55:31.5217014+07:00
```

```
-UF2DJV1 (15.0 RTM) | DESKTOP-UF2DJV1\Encryp... | tempdb | 00:00:00 | 0 rows
```

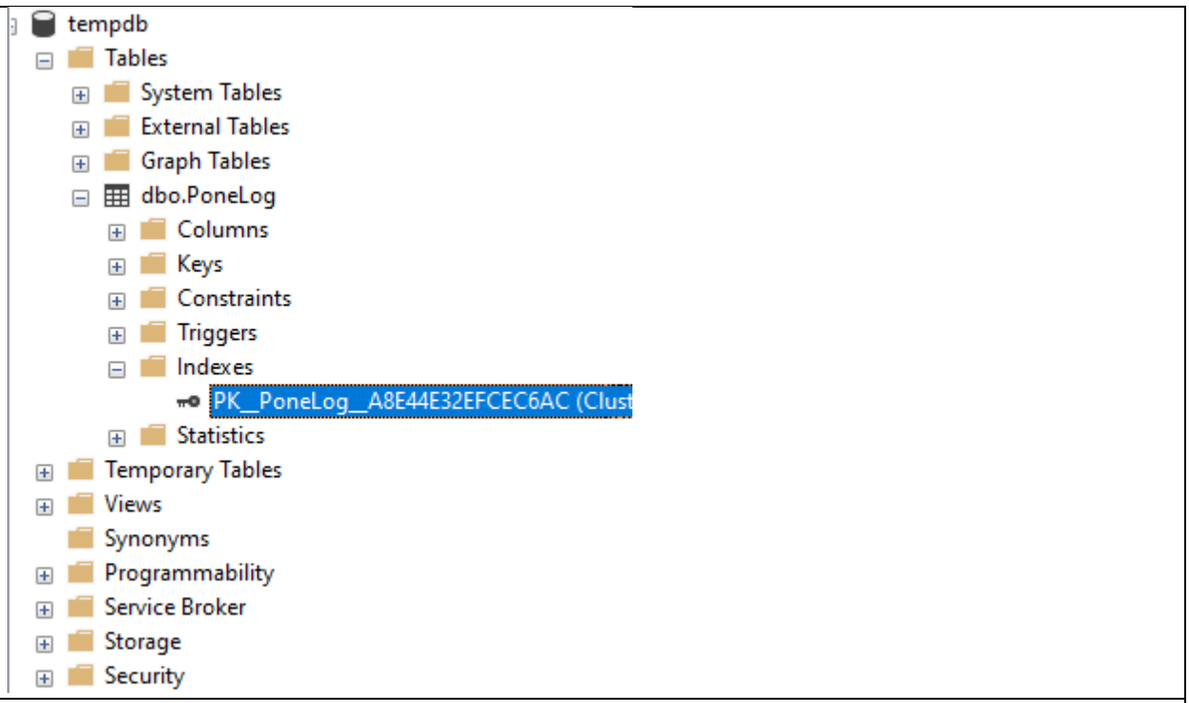
3. Masukkan beberapa data ke tabel tersebut

```
set nocount on;

declare @Counter int = 0;

while @Counter < 10000 begin
    insert dbo.PhoneLog (LogRecorded, PhoneNumberCalled, CallDurationMs)
        values(SYSDATETIME(), '999-9999', CAST(RAND()*1000 as int));
        set @Counter += 1;
end;
go
```

```
Messages
Commands completed successfully.

Completion time: 2020-05-05T15:01:06.8300422+07:00
```

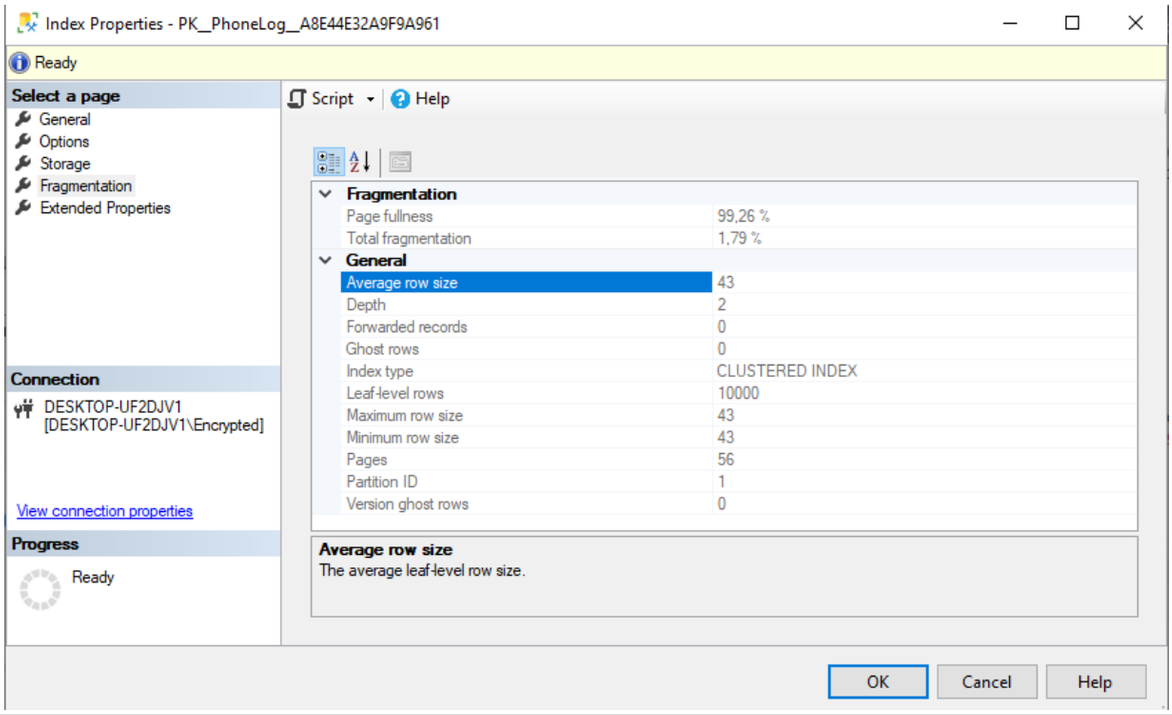
```
Query... | DESKTOP-UF2DJV1 (15.0 RTM) | DESKTOP-UF2DJV1\Encryp... | tempdb | 00:00:00 | 0 rov
```

4. Periksa fragmentasi dengan mengecek properties pada Indeks yg terdapat pada database PhoneLog

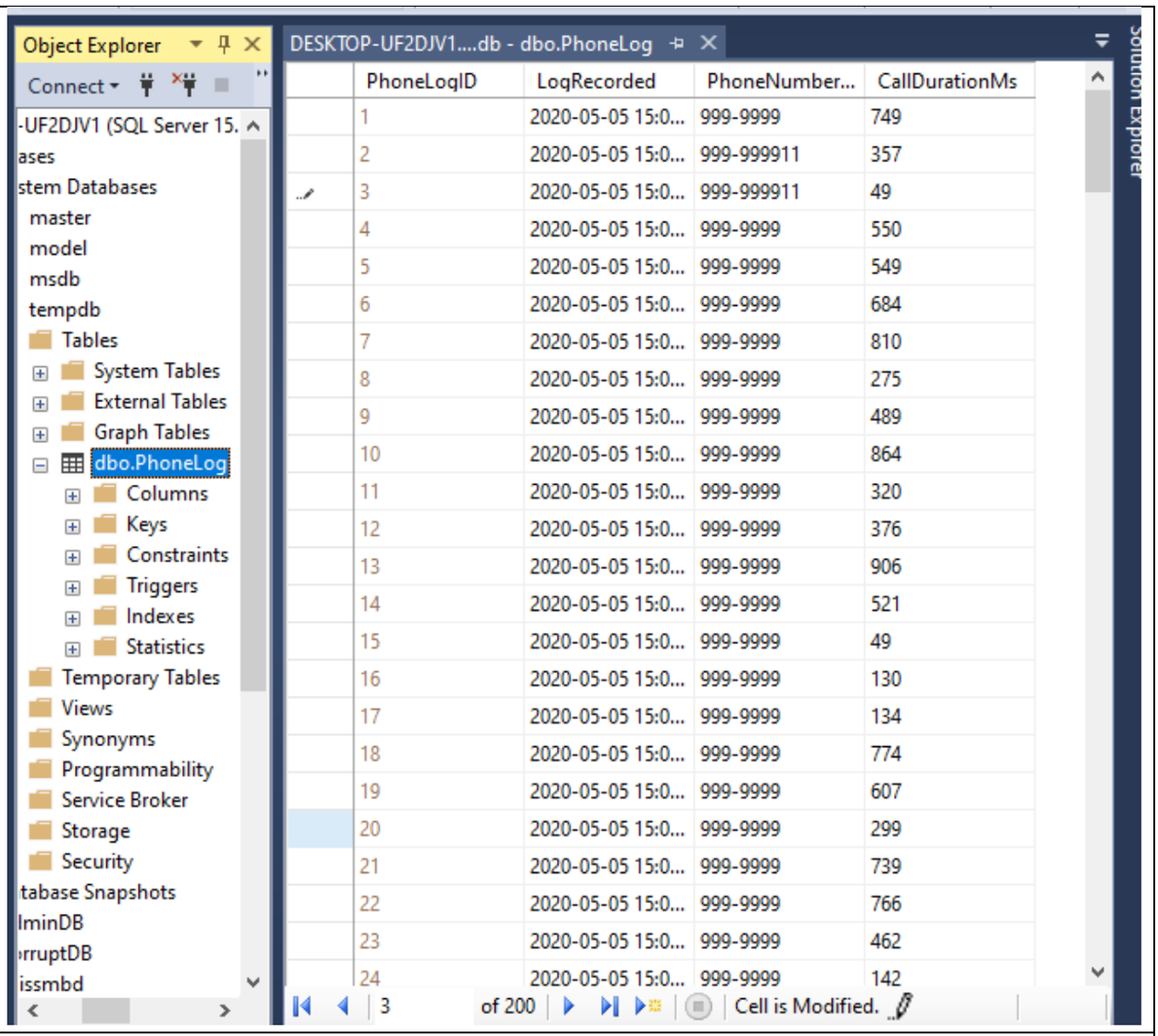


5. Berapa persen fragmentasi dan page yang digunakan pada tabel tersebut? (screenshot)

Jawab:



6. Lakukan modifikasi data pada table PhoneLog



7. Periksa tingkat fragmentasi melalui sys.dm_db_index_physical_stats.

```
--/
select * from sys.dm_db_index_physical_stats(
DB_ID(), OBJECT_ID('dbo.PhoneLog'),NULL, NULL, 'DETAILED'
);
```

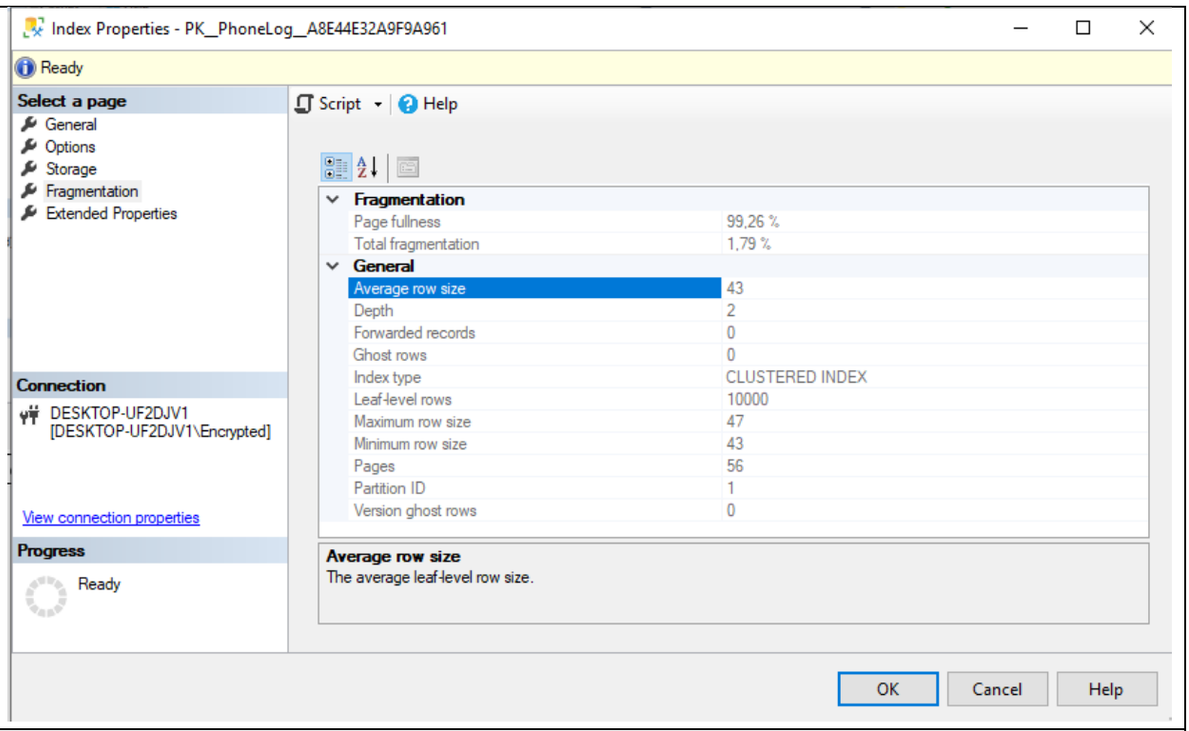
100 %

Results | Messages

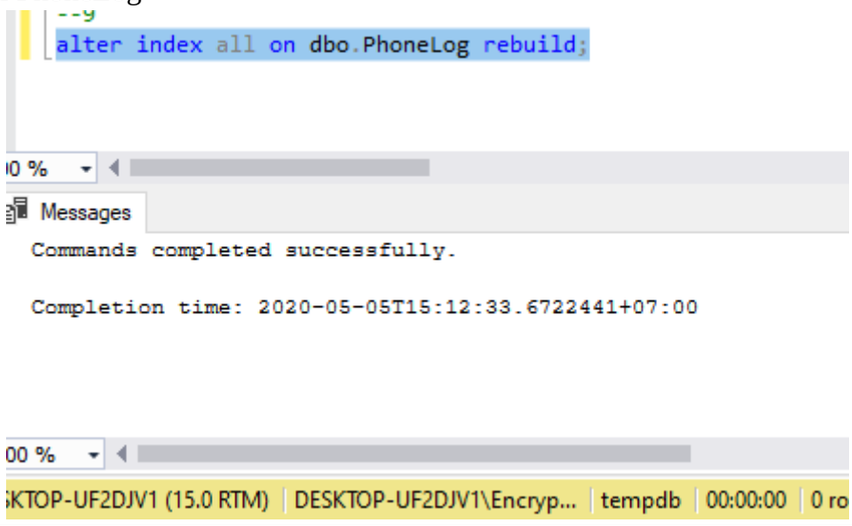
	database_id	object_id	index_id	partition_number	index_type_desc	alloc_unit_type_desc	index_depth	index_level	avg_fragmentation_in_percent	fragment_count	avg_fragment_size_in_pages	page_cou
1	2	693577509	1	1	CLUSTERED INDEX	IN_ROW_DATA	2	0	1,78571428571429	9	6,22222222222222	56
2	2	693577509	1	1	CLUSTERED INDEX	IN_ROW_DATA	2	1	0	1	1	1

8. Perhatikan avg_fragmentation_in_percent dan avg_page_space_used_in_percent lagi, berapa angkanya? (screenshot)

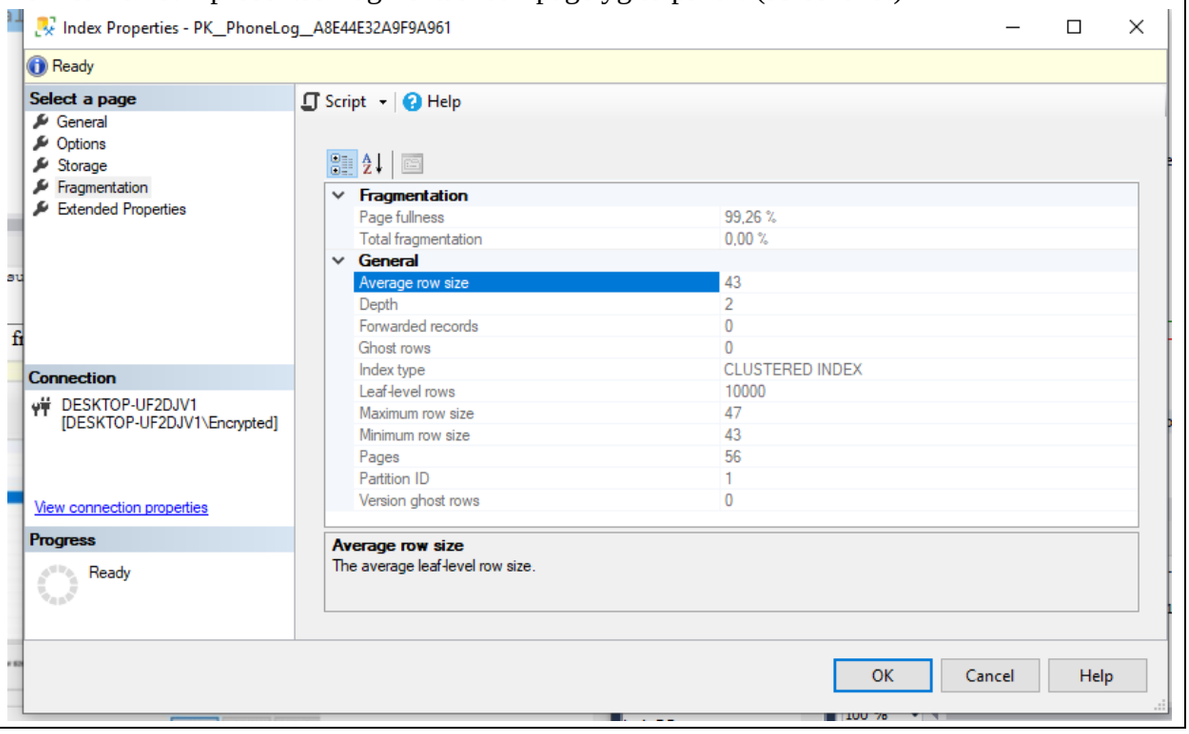
Jawab:



9. Rebuild tabel PhoneLog



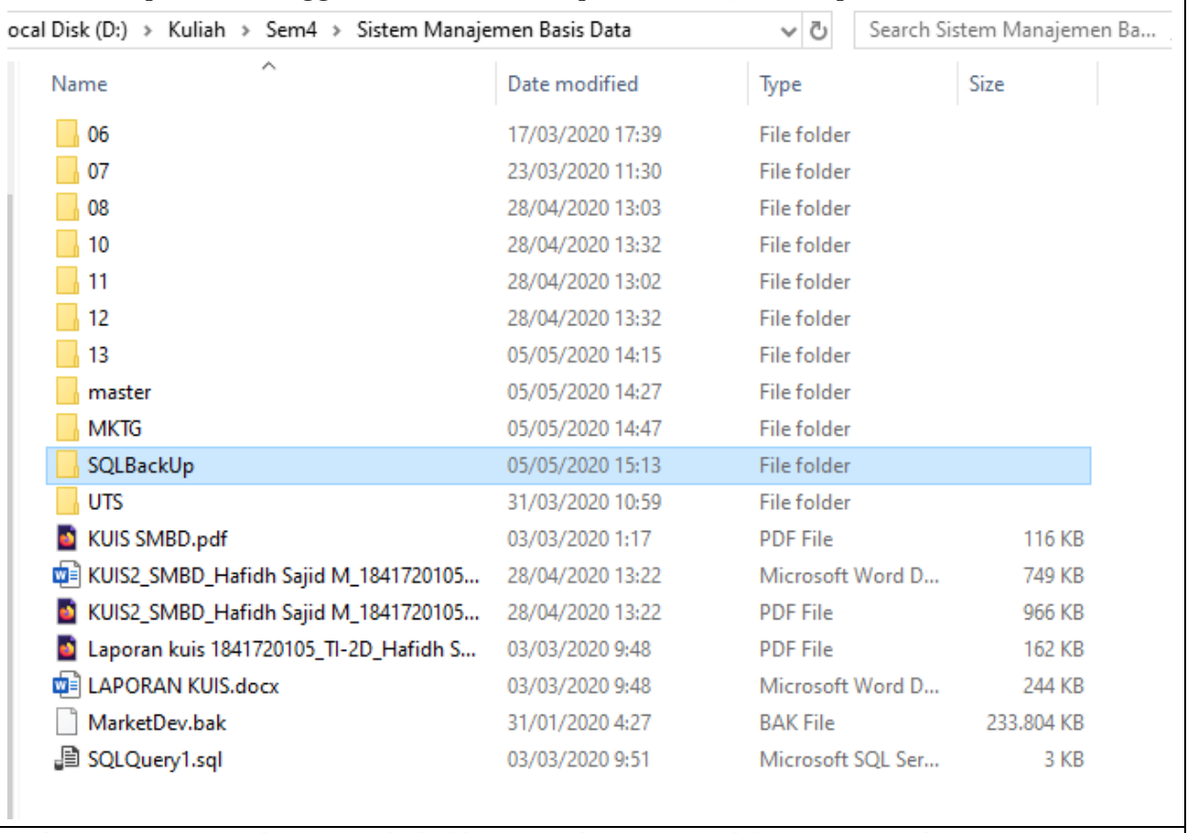
10. Periksa kembali prosentse fragmentasi dan page yg terpakai! (screenshot)



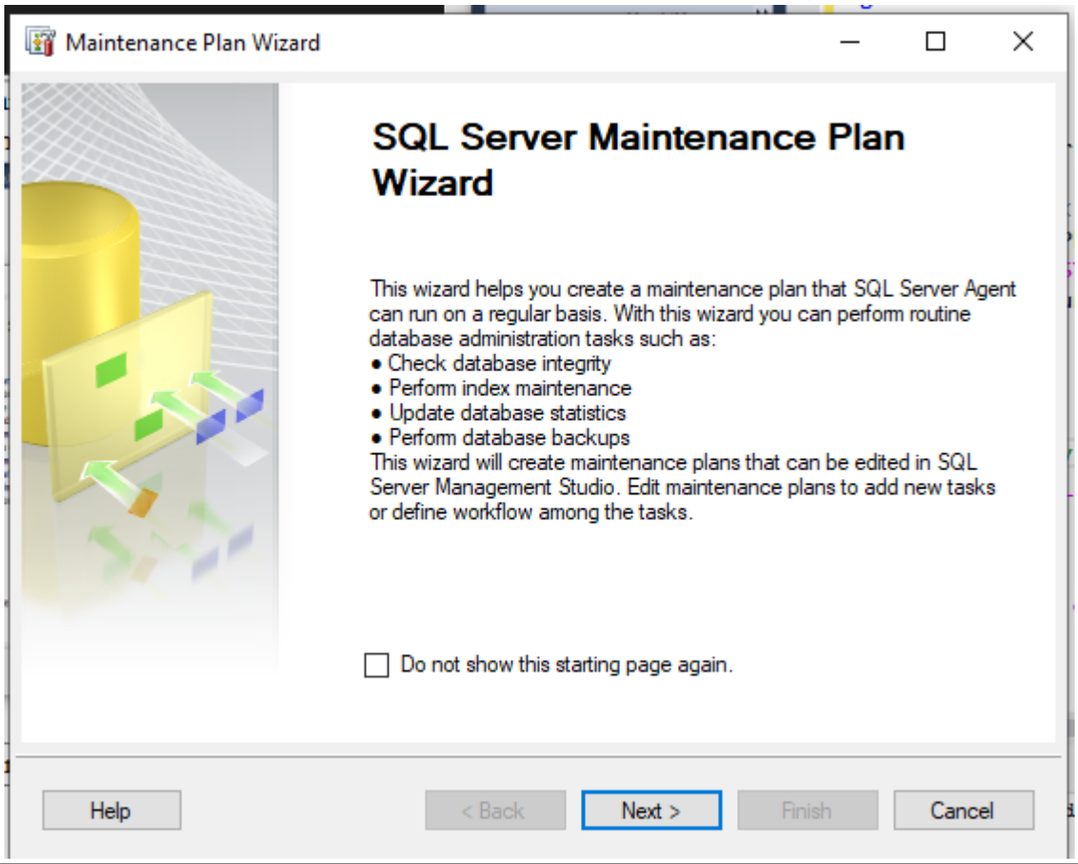
Praktikum 3. Otomasi Pemeliharaan Database

Langkah-langkah praktikum

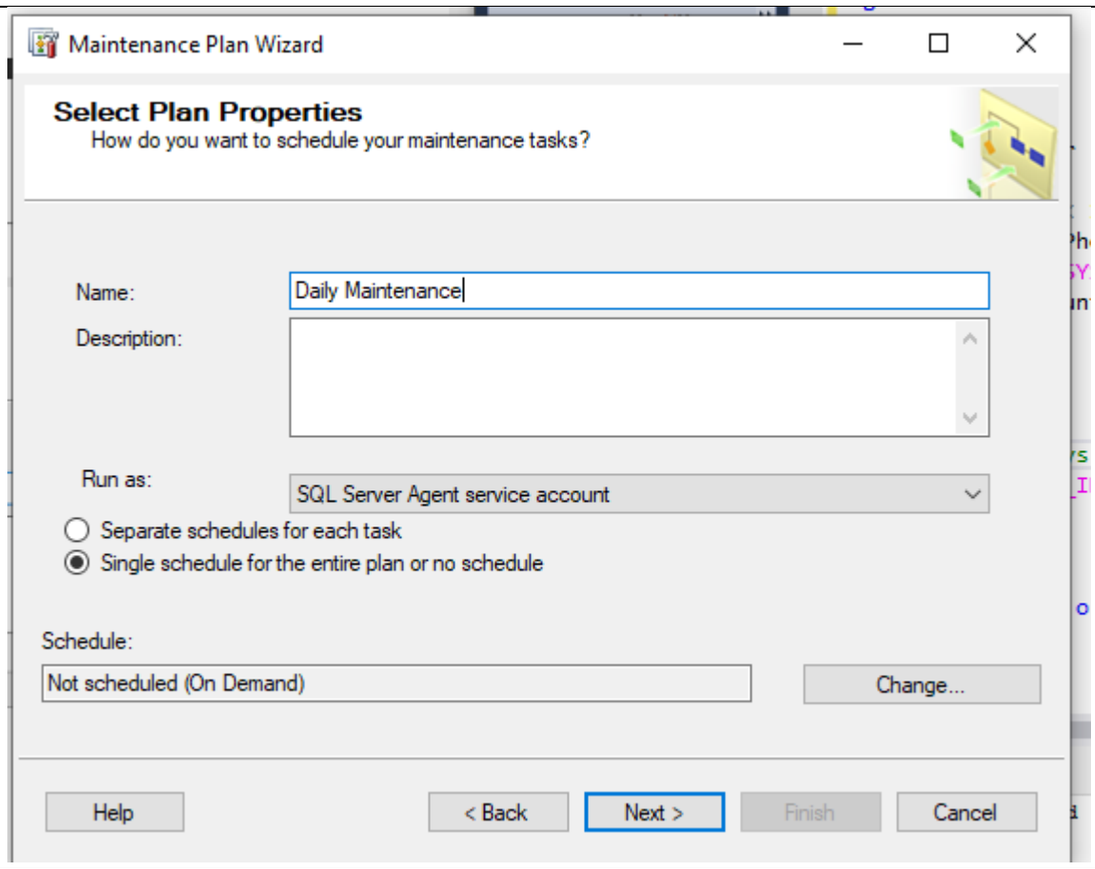
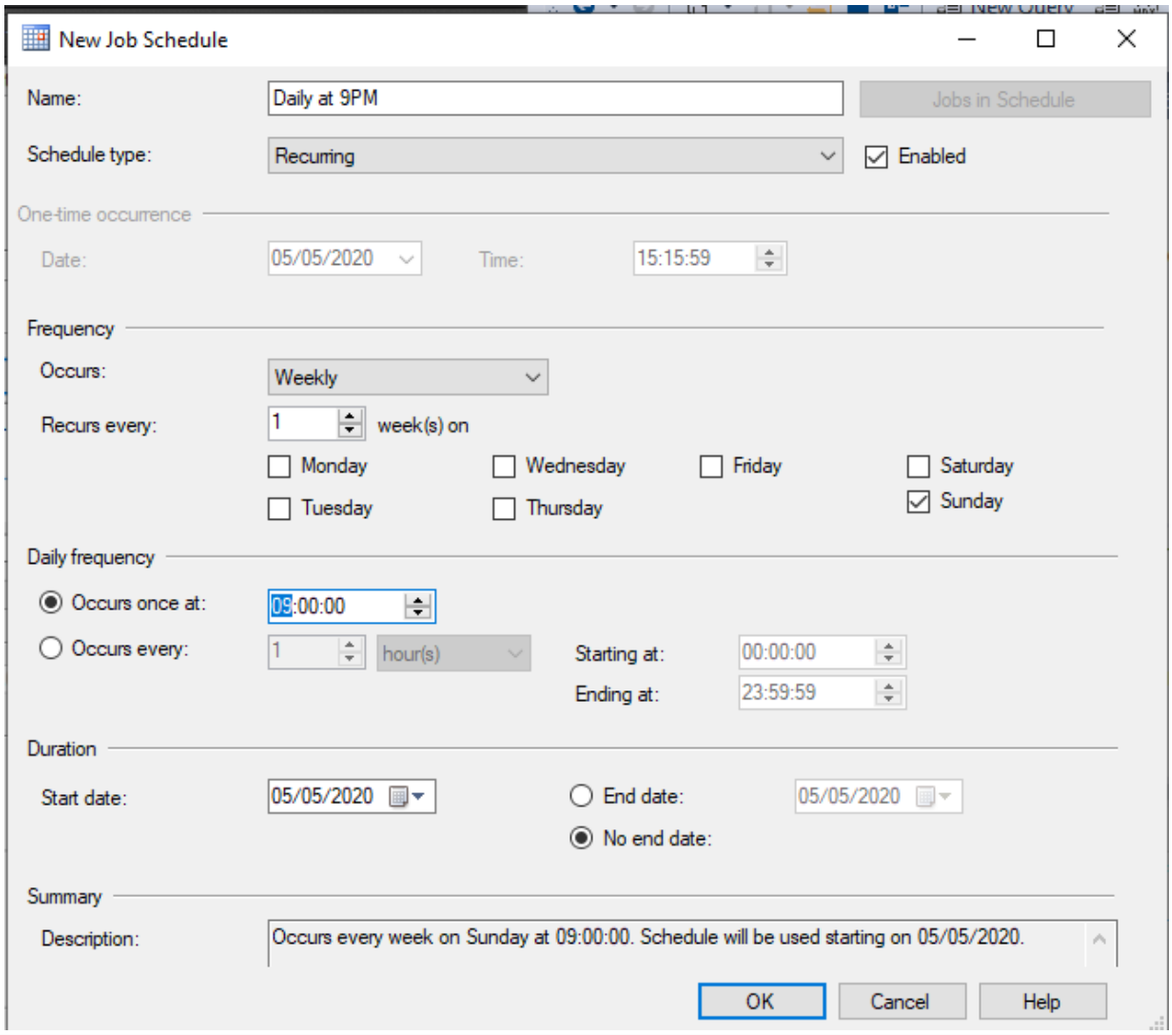
1. Buat backup folder menggunakan windows Explorer E:\SQLBackUp

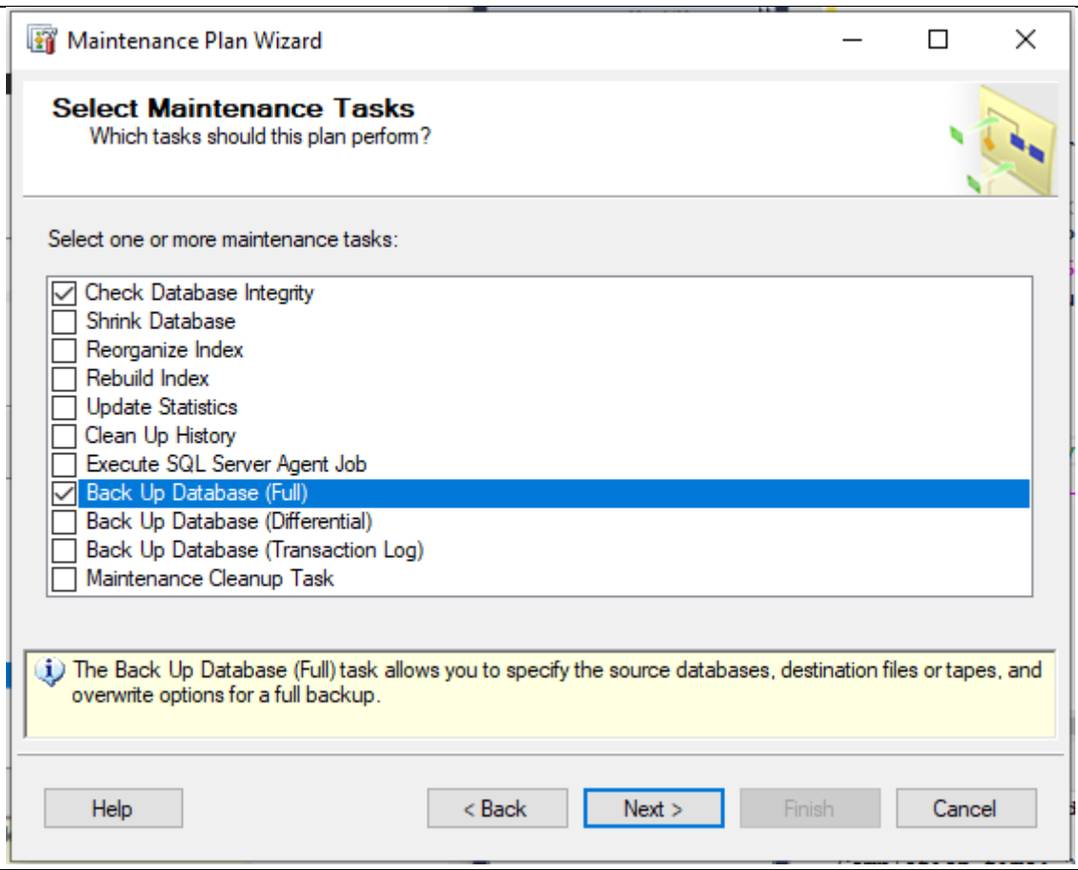
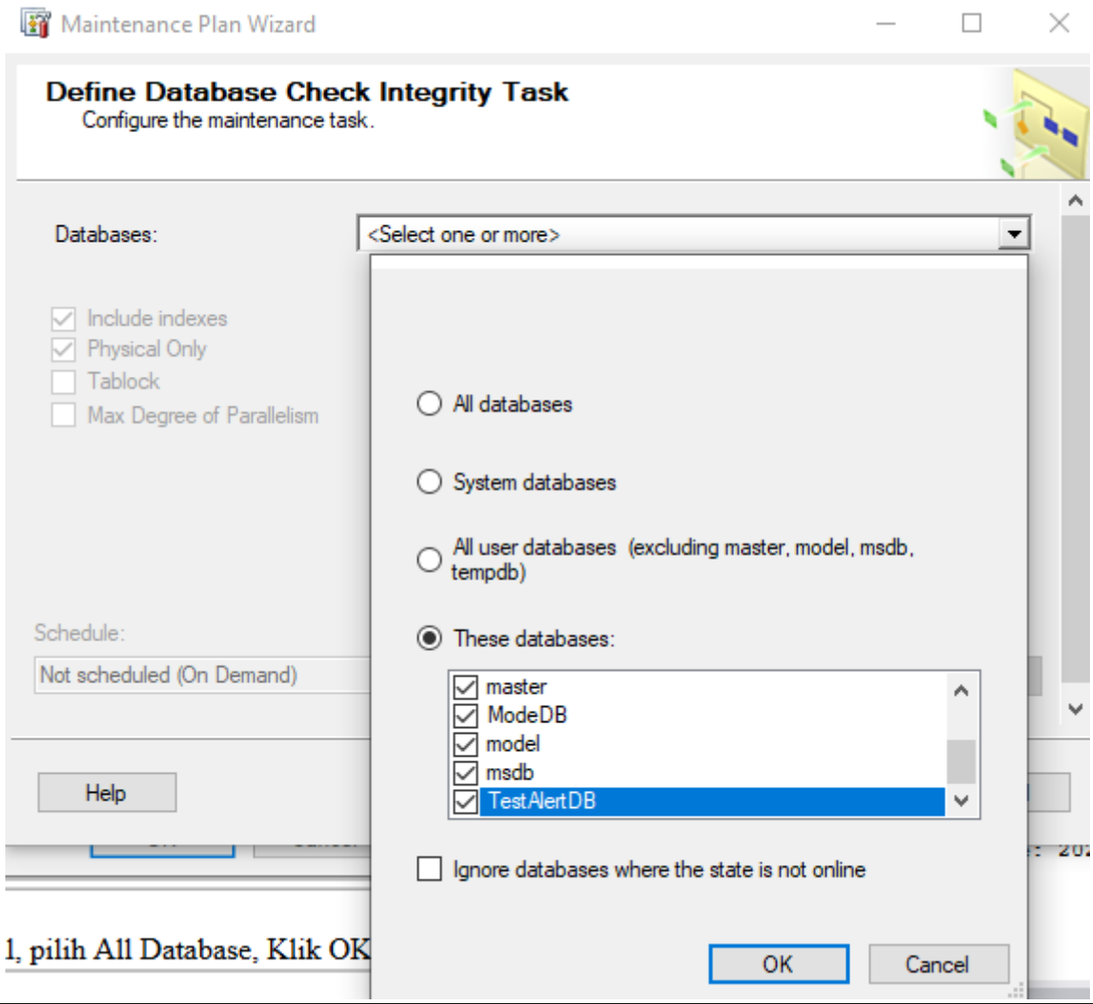


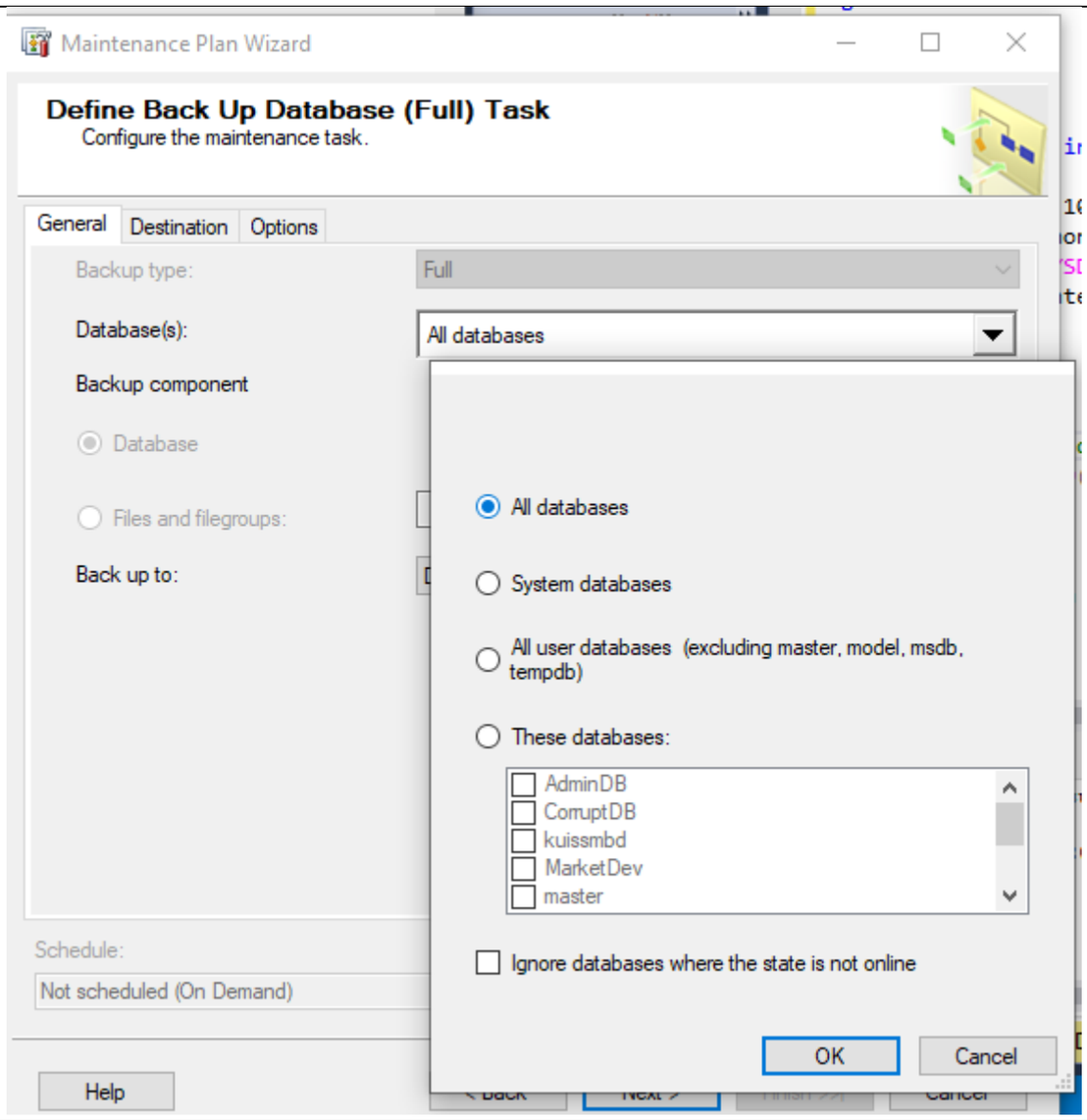
2. Buka Maintenance Plan Wizard, di Object Explorer, expand Server, expand Management, klik kanan Maintenance Plans, dan klik Maintenance Plan Wizard).

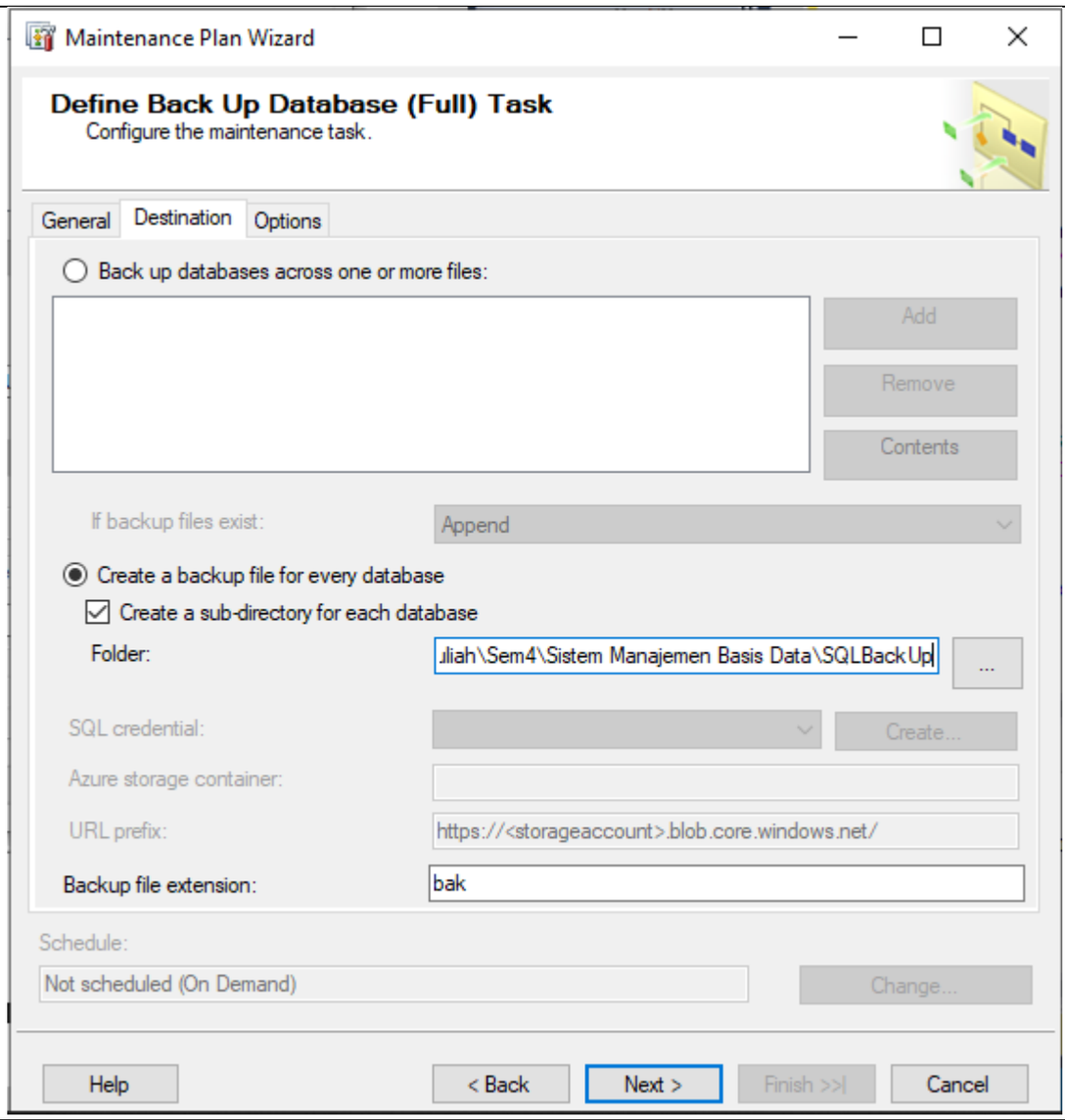


3. Buat plan baru dengan klik Next dan beri nama daily maintenance

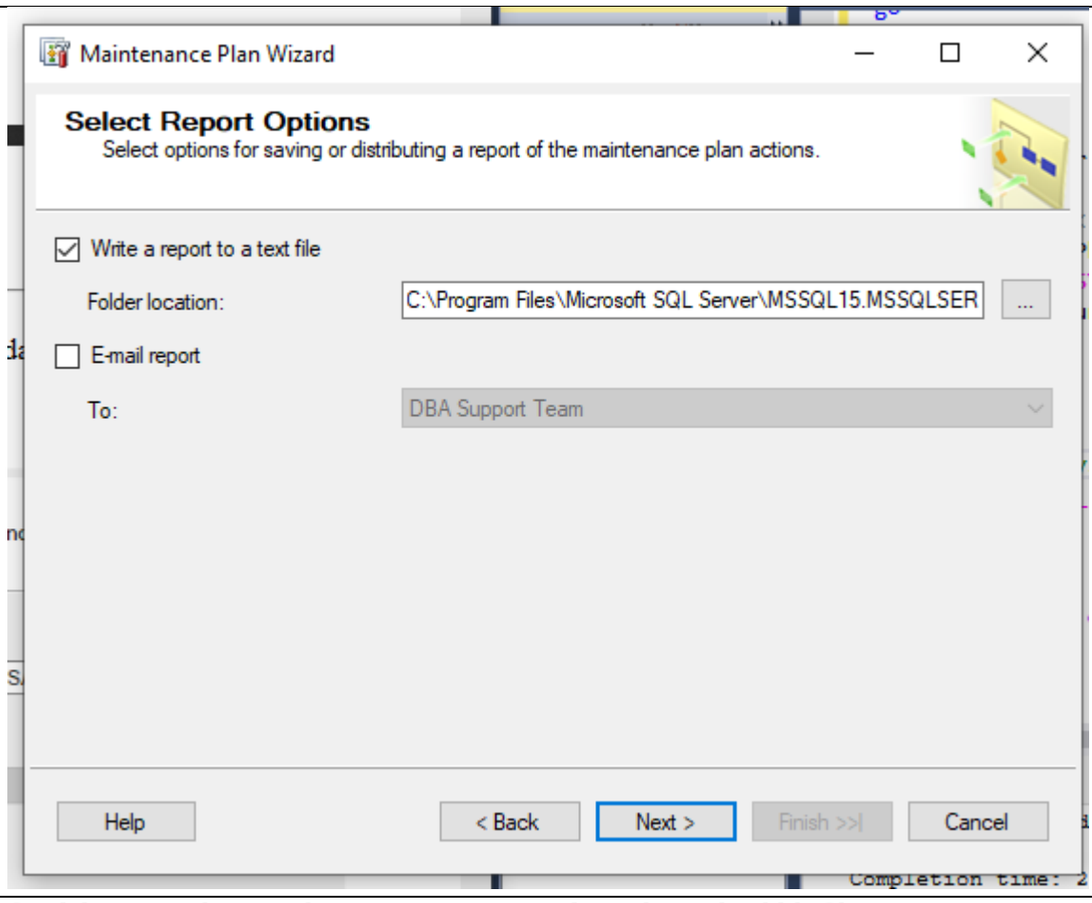
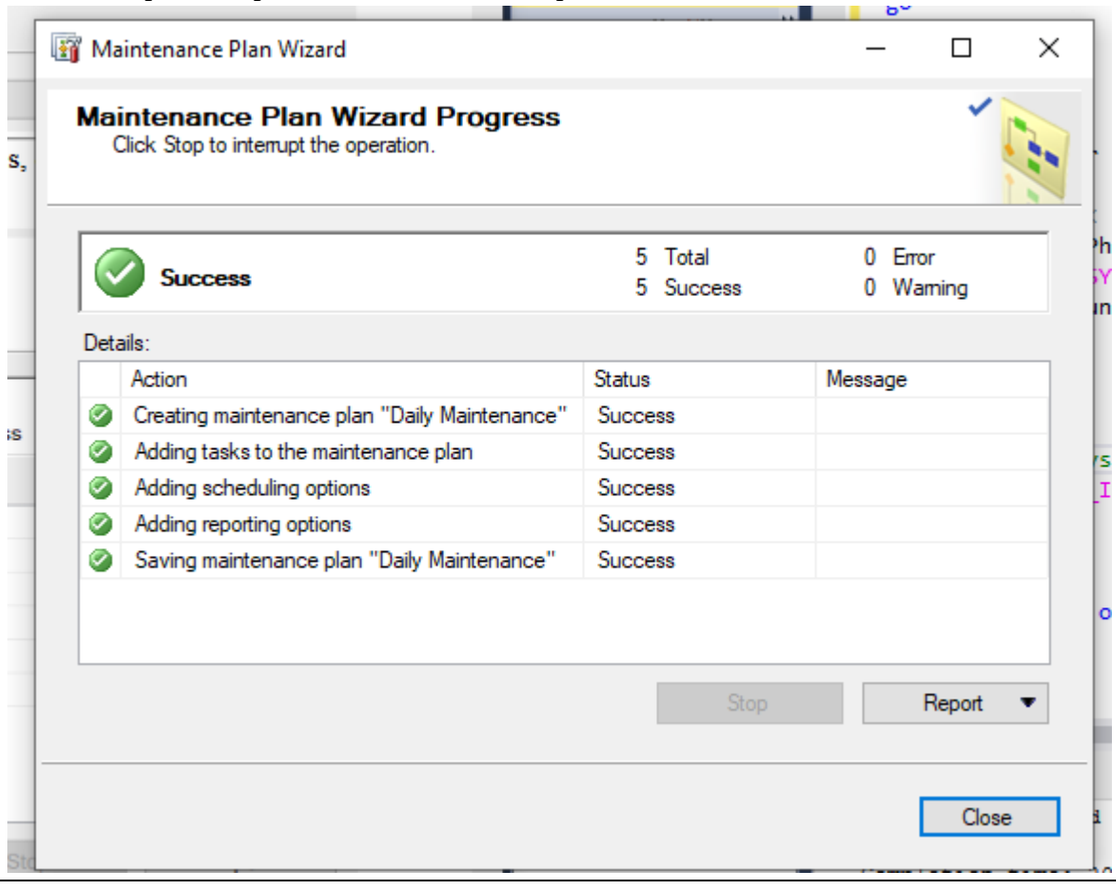
<table>
<tr><td></td><td> 
</td></tr>
<tr><td>4.</td><td>Atur Schedule dengan klik change dan set jadwal maintenance tiap hari pada pukul 9 malam, klik OK, Klik Next.
 
</td></tr>
<tr><td>5.</td><td>Pilih Maintenance Task, Pada halaman Select Maintenance Task pilih BackUp Database (Full) dan Check Database Integrity, klik Next.</td></tr>
</table>

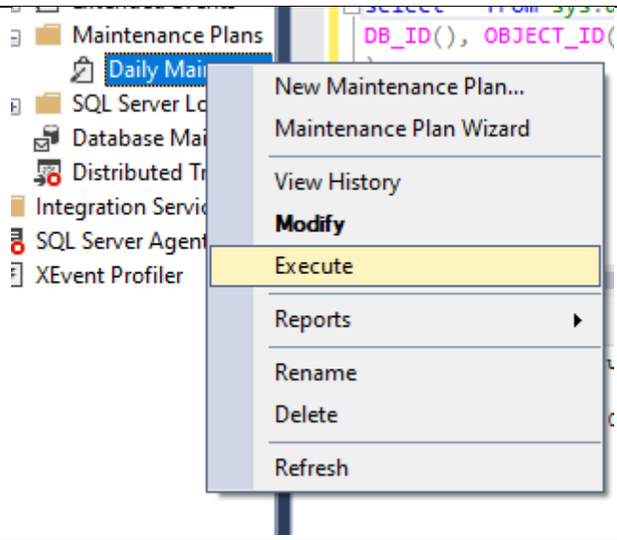
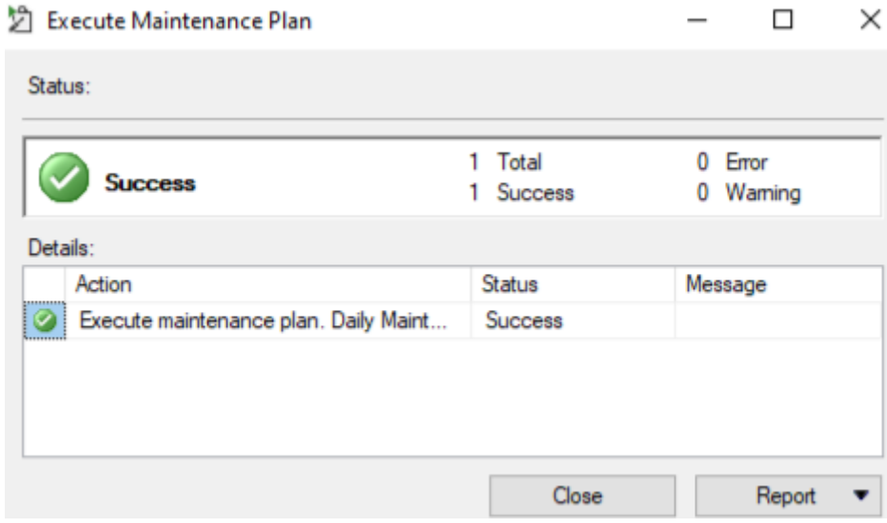
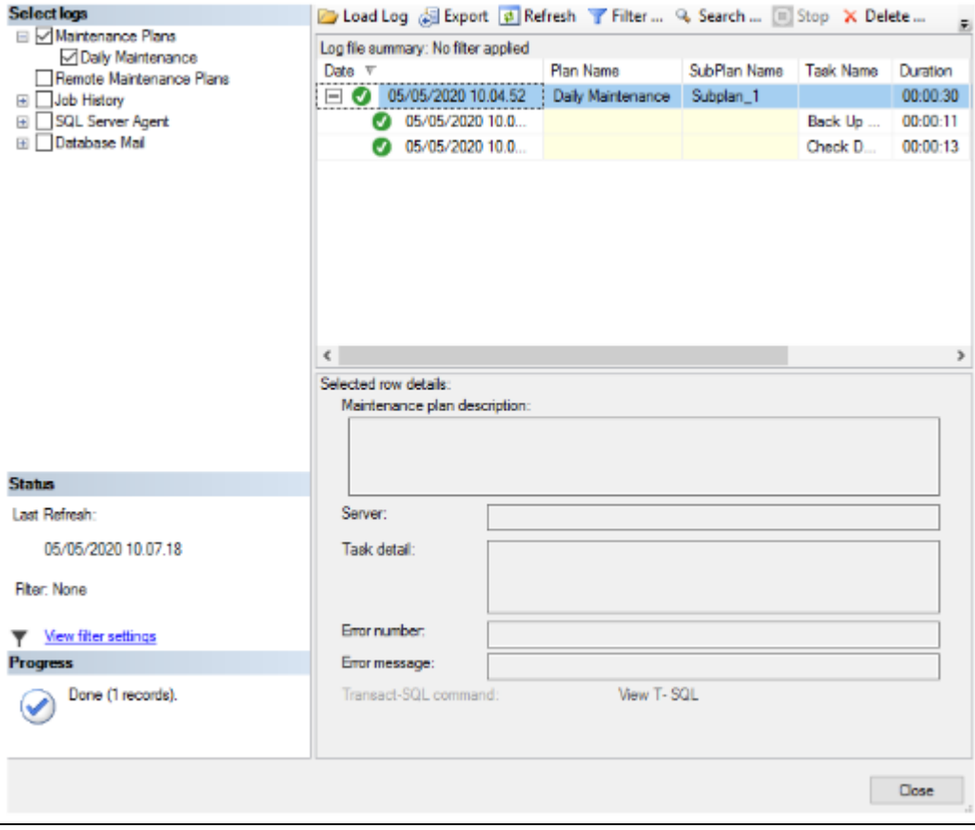
	
6.	Atur pengecekan Integritas database. Pada halaman Define database Integity Check pilih semua database kecuali CoreAdmin, klik OK, klik Next.  1, pilih All Database, Klik OK
7.	Atur pencadangan database penuh. Pada halaman Define Backup Database (Full), tab General, pilih All Database, Klik OK.

	
8.	Pada tab Destination set folder ke E:\SQLBackUp dan centang (check) opsi Create subdirectory, klik Next.



9.	Atur opsi pelaporan dan selesaikan wizard. Pada halaman select report options check write a report dan set folder ke E:\SQLBackUp, klik Next, Klik Finish.

<table>
<tr><td></td><td> 
</td></tr>
<tr><td>10.</td><td>Setelah itu pastikan pembuatan maintenance plan sukses, dan klik Close.
 
</td></tr>
<tr><td>11</td><td>Eksekusi Daily maintenance secara manual, expand Maintenance Plan, klik kanan, klik Execute.</td></tr>
</table>

	
12.	Tunggu hingga proses sukses, dan klik Close. 
13.	Lihat Daily Maintenance History.
14.	Pada Log File Viewer Summary Klik baris Check Database Integrity dan klik view T-SQL. 

15.	Perhatikan window yang muncul, jelaskan maksudnya! (screenshot) **Jawab:**
16.	Lihat file Backup, folder, dan laporan, Menggunakan Windows Explorer, navigasikan ke folder E:\SQLBackup dan periksa isinya dan isi dari sub folder. Jelaskan apa yang ada fahami dari proses ini! (screenshot) **Jawab:** Dari folder yang kita buka tersebut isi di dalamnya adalah hasil dari backup semua file dari Microsoft Sql lalu di pindahkan ke dalam folder F:\sqlbackup
17	Dalam folder E:\SQLBackup buka dokumen teks menggunakan editor teks, lihat Laporan Daily Maintenance, Jelaskan apa yang ada fahami dari proses ini! (screenshot) **Jawab:** Yang Dari file tersebut berisikan laporan pemberitahuan sukses atau tidaknya dalam melakukan backup data

-- Selamat Mengerjakan --