Backup using T-SQL:

1.Setting up the Recovery Model as Full or Simple:

```
--backup using T-SQL
--step 1
--setting the recovery Model
--current recovery model
SELECT name, recovery_model_desc
FROM sys.databases
WHERE name = 'temp_database';

--changing the recovery model to simple
ALTER DATABASE temp_database SET RECOVERY SIMPLE;

--changing the recovery model to full
ALTER DATABASE temp_database SET RECOVERY FULL;
```

116 %

Results | Messages

	name	recovery_model_desc
1	temp_database	FULL

2. Full Backup – DATA AND LOGS WERE ALSO BACKED UP

```
--full backup
BACKUP DATABASE temp_database
TO DISK = 'C:\Users\Public\DB_Backups\temp_database_Full.bak'
WITH INIT, COMPRESSION, STATS = 10;
```

116 %

Messages

```
18 percent processed.
36 percent processed.
54 percent processed.
72 percent processed.
91 percent processed.
100 percent processed.
Processed 712 pages for database 'temp_database', file 'temp_db_Data' on file 1.
Processed 1 pages for database 'temp_database', file 'temp_db_Log' on file 1.
BACKUP DATABASE successfully processed 713 pages in 0.130 seconds (42.799 MB/sec).

Completion time: 2025-02-28T13:22:18.8454956+05:30
```

3.DIFFERENTIAL BACKUP – Backup only the CHANGES compared to the LAST FULL BACKUP

```
--made changes in the database
insert into temp
select * from temp ;

create table test_2(test int);

--differntial backup
BACKUP DATABASE temp_database
TO DISK = 'C:\Users\Public\DB_Backups\temp_database_differential.bak'
WITH DIFFERENTIAL, COMPRESSION, STATS = 10;
```

116 %

Messages

```
10 percent processed.
20 percent processed.
30 percent processed.
45 percent processed.
52 percent processed.
72 percent processed.
92 percent processed.
100 percent processed.
Processed 328 pages for database 'temp_database', file 'temp_db_Data' on file 1.
Processed 1 pages for database 'temp_database', file 'temp_db_Log' on file 1.
BACKUP DATABASE WITH DIFFERENTIAL successfully processed 329 pages in 0.067 seconds (38.268 MB/sec).

Completion time: 2025-02-28T14:23:21.3085454+05:30
```

4.T-Log Backup – Backup only logs for less storage

```
insert into test_2 values(1);
insert into test_2 values(2);
insert into test_2 values(3);

--T-LOG BACKUP
BACKUP LOG temp_database
TO DISK = 'C:\Users\Public\DB_Backups\temp_database_log.lrn'
WITH COMPRESSION, STATS = 10;
```

116 %

Messages

```
20 percent processed.
39 percent processed.
58 percent processed.
78 percent processed.
97 percent processed.
100 percent processed.
Processed 665 pages for database 'temp_database', file 'temp_db_Log' on file 1.
BACKUP LOG successfully processed 665 pages in 0.062 seconds (83.771 MB/sec).

Completion time: 2025-02-28T14:31:16.1169624+05:30
```

Dropping the database and then restoring with backups.

1.Restoring FULL Backup with Norecovery – still backups needs to be done

```
--drop the databse
use master;
drop database temp_database;

--restore database
RESTORE DATABASE temp_database
FROM DISK = 'C:\Users\Public\DB_Backups\temp_database_Full.bak'
WITH REPLACE,NORECOVERY, STATS = 10;
```

116 %

Messages

```
18 percent processed.
36 percent processed.
54 percent processed.
72 percent processed.
90 percent processed.
100 percent processed.
Processed 720 pages for database 'temp_database', file 'temp_db_Data' on file 1.
Processed 1 pages for database 'temp_database', file 'temp_db_Log' on file 1.
RESTORE DATABASE successfully processed 721 pages in 0.042 seconds (133.963 MB/sec).

Completion time: 2025-02-28T15:01:06.7752893+05:30
```

2.Restoring the Differential Backups with norecovery

```
--differential backup
RESTORE DATABASE temp_database
FROM DISK = 'C:\Users\Public\DB_Backups\temp_database_differential.bak'
WITH NORECOVERY, STATS = 10;

--restore t-log backup
RESTORE LOG temp_database
FROM DISK = 'C:\Users\Public\DB_Backups\temp_database_log.lrn'
WITH RECOVERY, STATS = 10;
```

116 %

Messages

```
20 percent processed.
39 percent processed.
58 percent processed.
78 percent processed.
97 percent processed.
100 percent processed.
Processed 0 pages for database 'temp_database', file 'temp_db_Data' on file 1.
Processed 665 pages for database 'temp_database', file 'temp_db_Log' on file 1.
RESTORE LOG successfully processed 665 pages in 0.056 seconds (92.747 MB/sec).

Completion time: 2025-02-28T15:17:20.6245544+05:30
```

3.T-log Backup

```sql
--differential backup
RESTORE DATABASE temp_database
FROM DISK = 'C:\Users\Public\DB_Backups\temp_database_differential.bak'
WITH NORECOVERY, STATS = 10;

--restore t-log backup
RESTORE LOG temp_database
FROM DISK = 'C:\Users\Public\DB_Backups\temp_database_log.lrn'
WITH RECOVERY, STATS = 10;
```

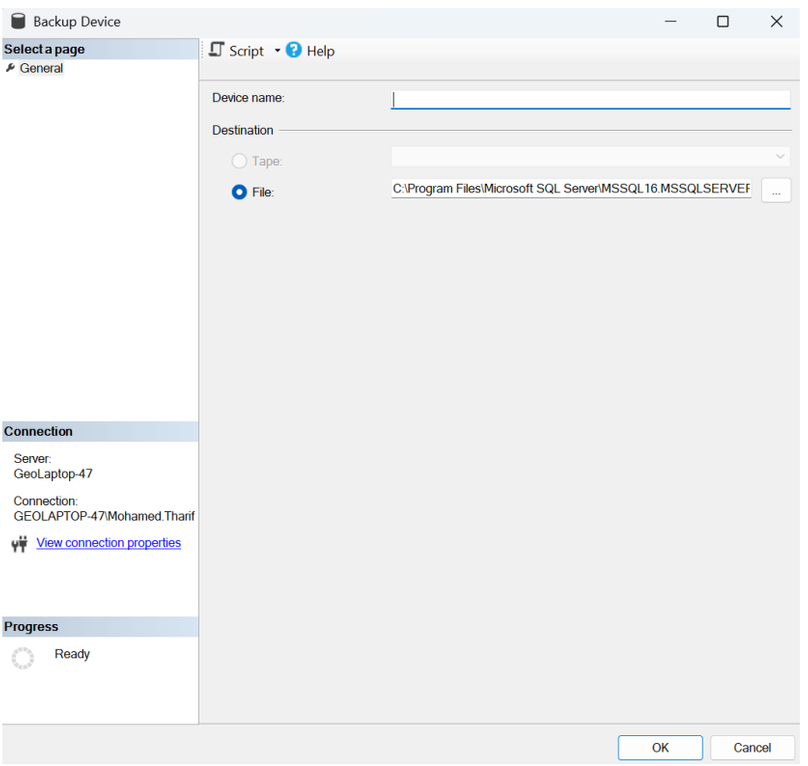
116 %

Messages

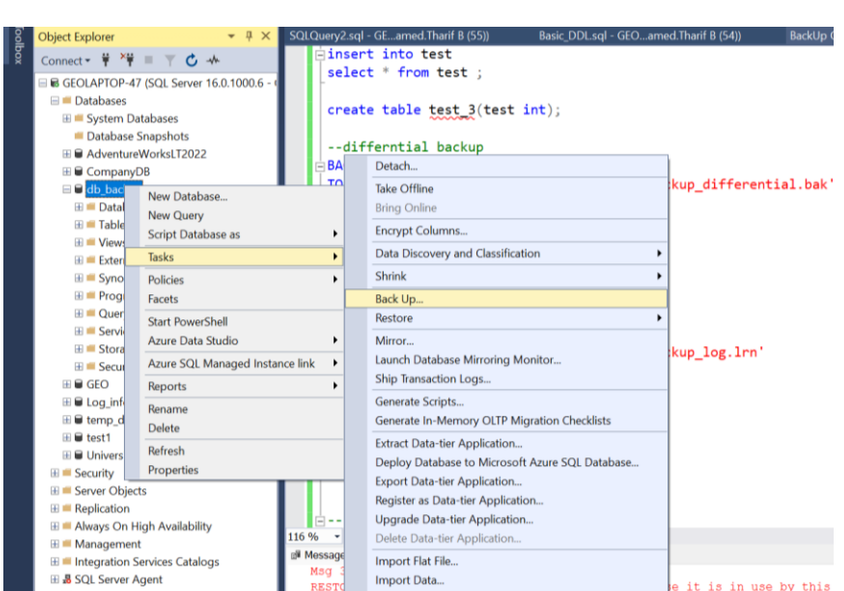
```
20 percent processed.
39 percent processed.
58 percent processed.
78 percent processed.
97 percent processed.
100 percent processed.
Processed 0 pages for database 'temp_database', file 'temp_db_Data' on file 1.
Processed 665 pages for database 'temp_database', file 'temp_db_Log' on file 1.
RESTORE LOG successfully processed 665 pages in 0.056 seconds (92.747 MB/sec).

Completion time: 2025-02-28T15:17:20.6245544+05:30
```

Backup using GUI

Backup Location-if we have multiple locations, we specify that location.

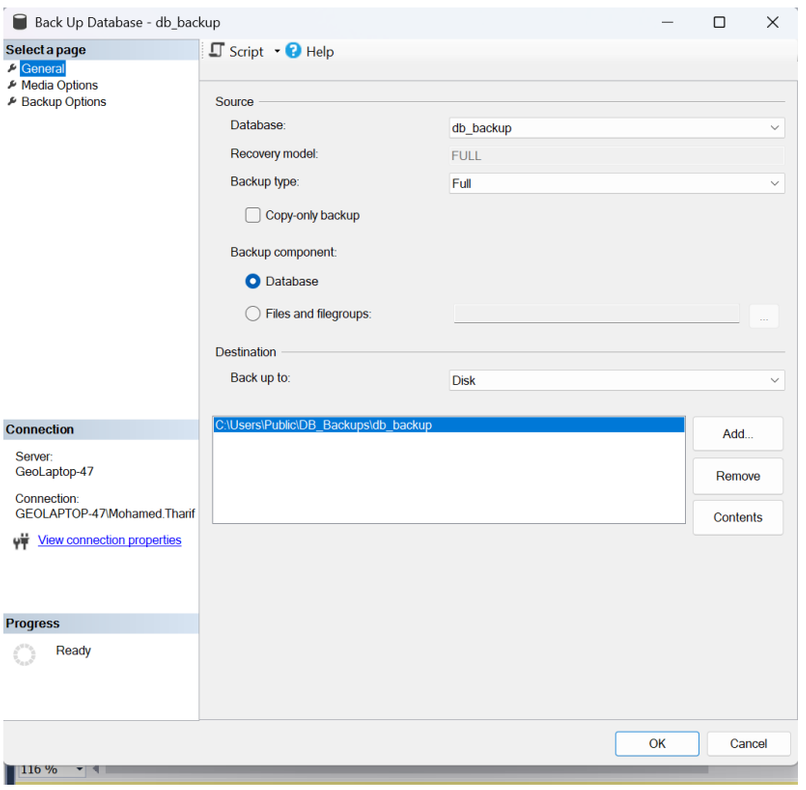


1.choose a database on Object Explorer, right click on database then chose tasks,on then select Backups

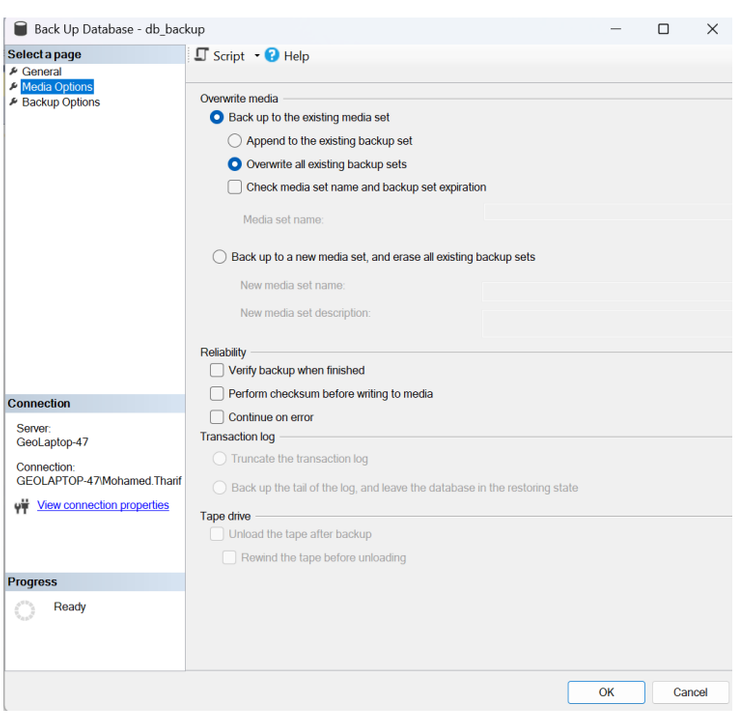


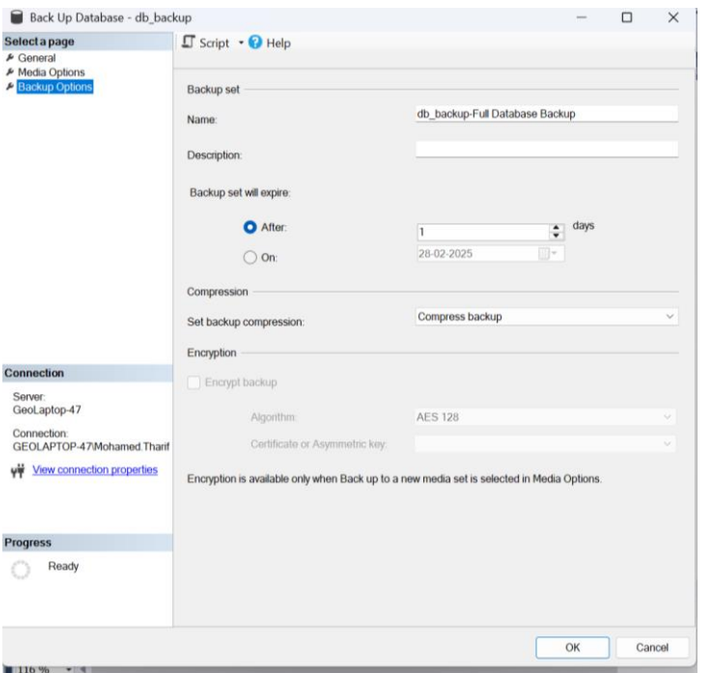
2.Choose Full Backup

2.Select Full which stores data as well as log



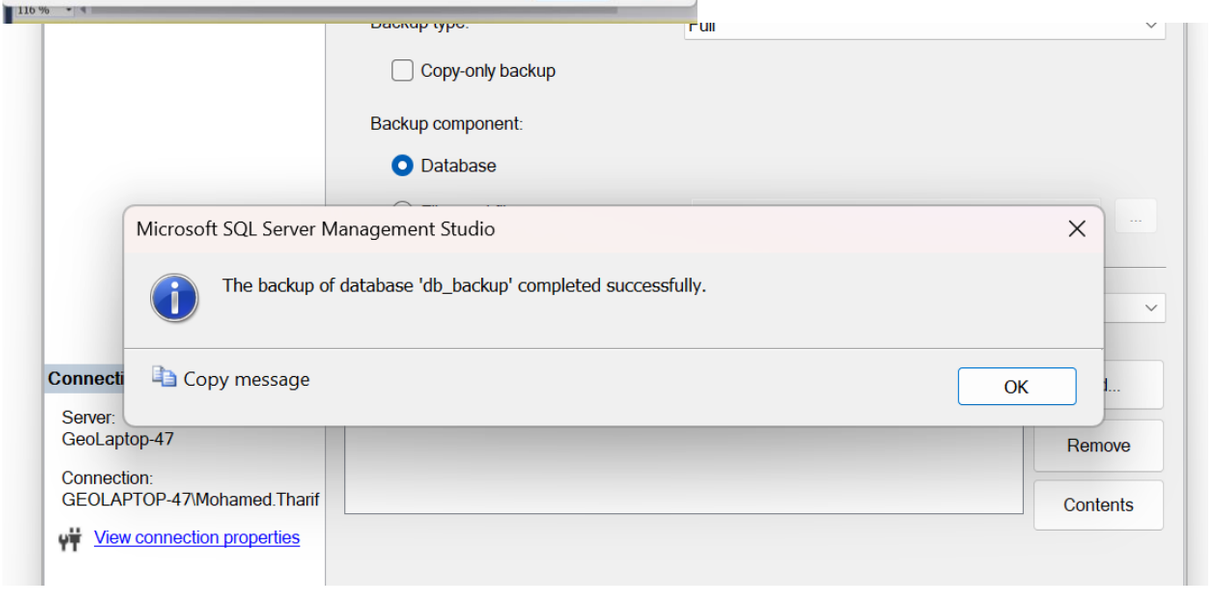
3.Choose Overwrite all existing Backups





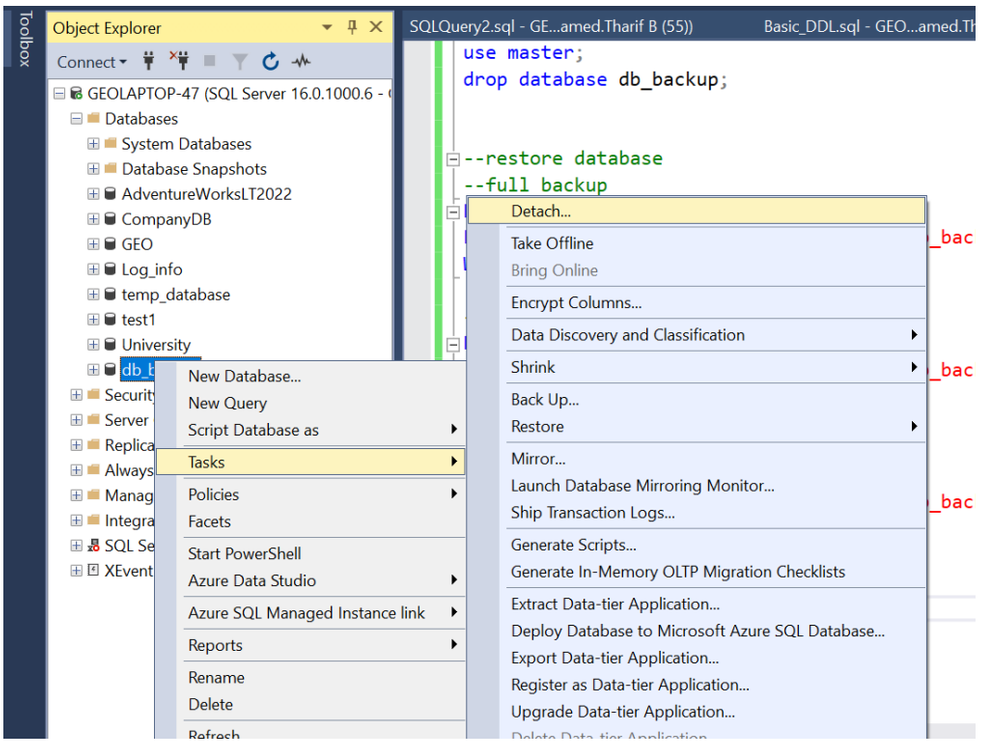
4. Set compression backup for compressing the size of Database.

5.Press Ok will process the backup.

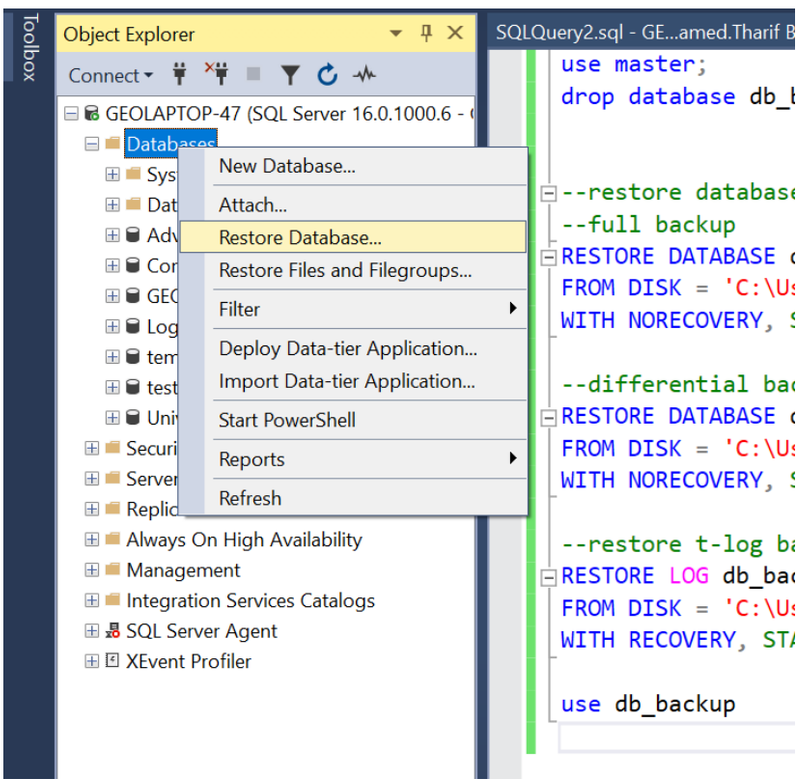


Restoring the Database

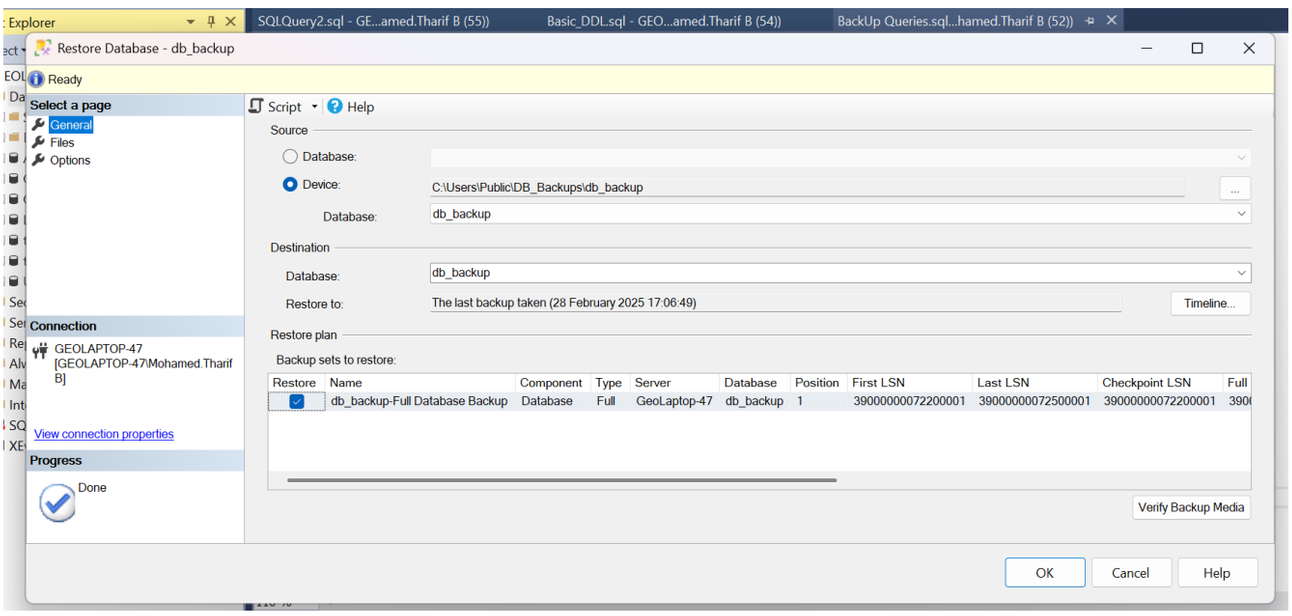
1.Detach the Database



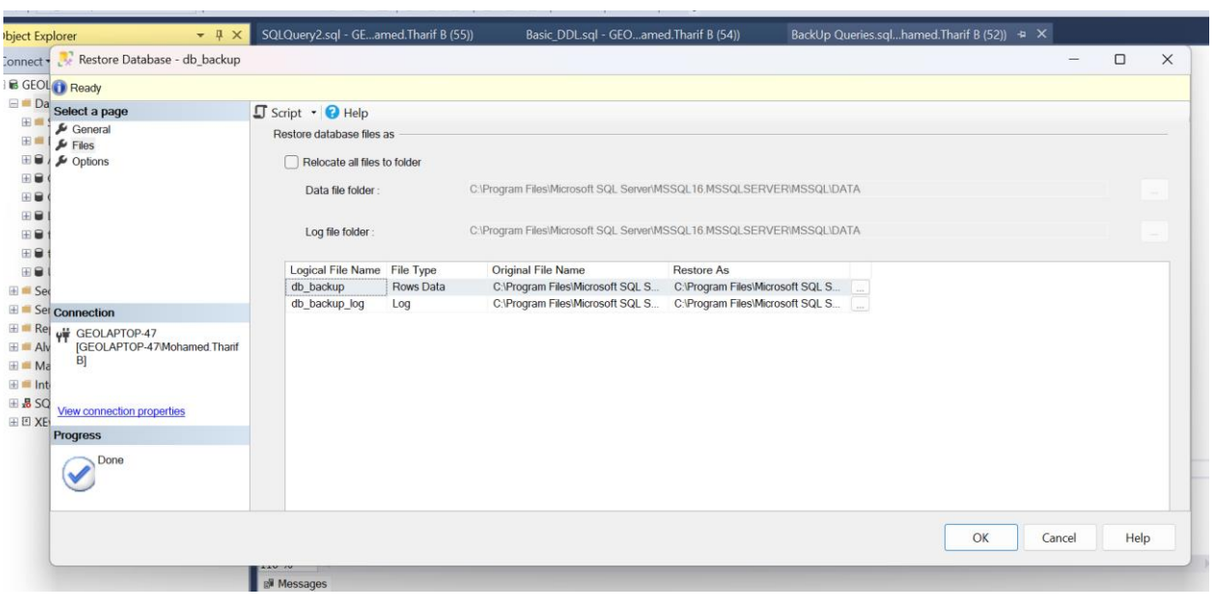
2.Select Database and choose restore database



3.Select the Device and choose Location of the backup file

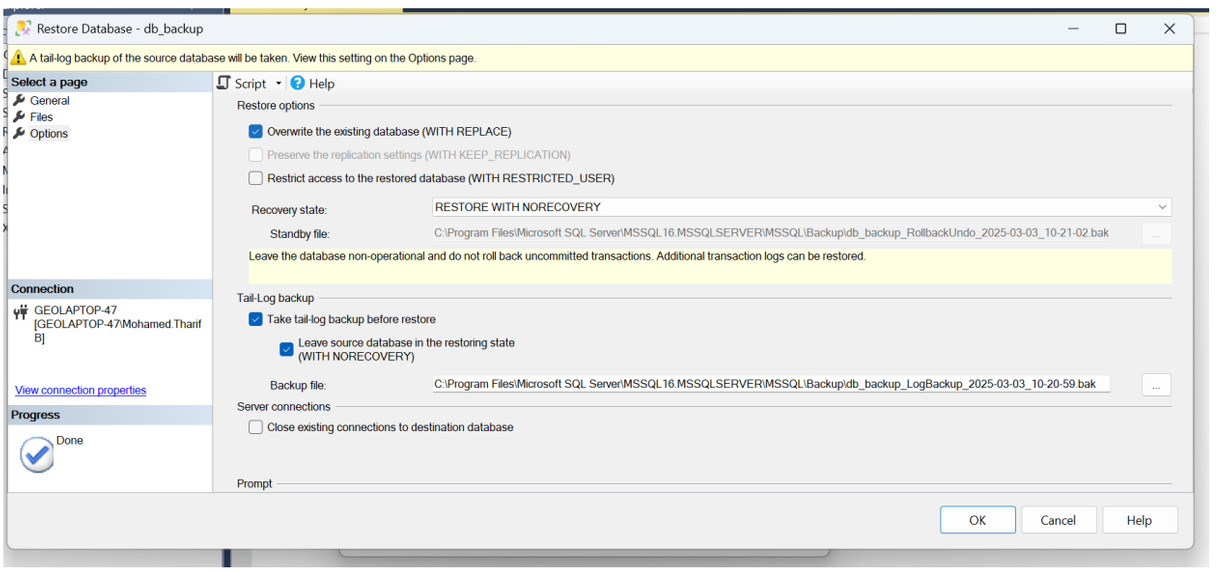


4. Choose files and check both data and log were present



5.choose options and select RESTORE WITH NORECOVERY for restoring other backups too.

RESTORE WITH NORECOVERY –Makes the database in Recovering State rather than bringing online for use.



6.If differential or T-Log backups are present, then again Repeat the 1-4 steps

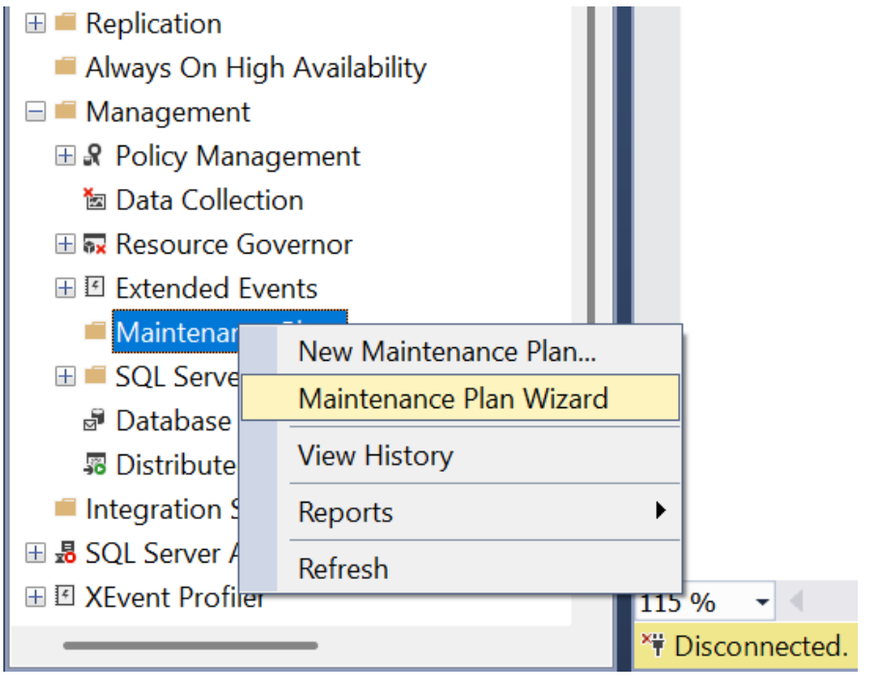
7.Choose Differential Backup and select the recovery state as RESTORE WITH NORECOVERY.

8.if T-log backup present, then again repeat step 1-4, but select the Recovery state as RESTORE WITH RECOVERY.

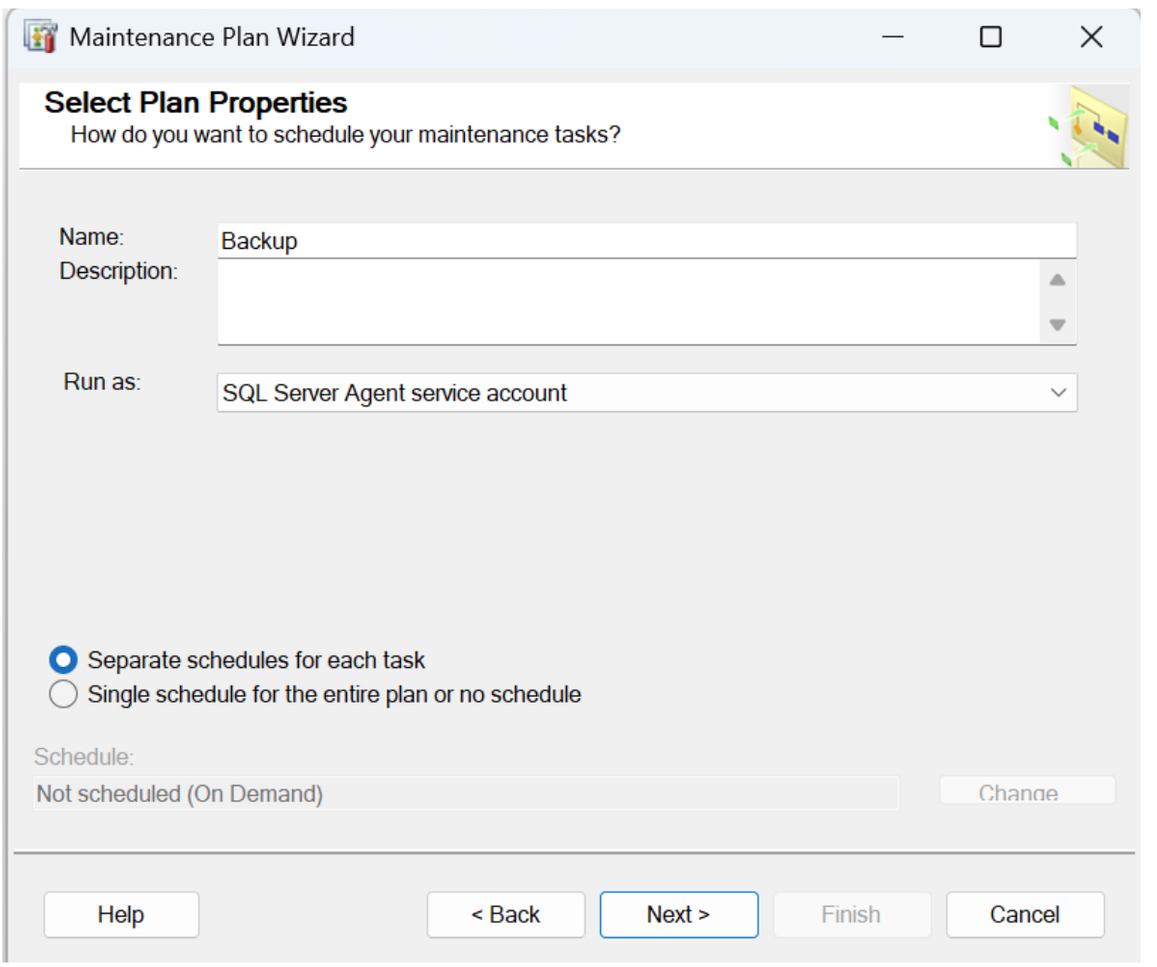
9. RESTORE WITH RECOVERY will bring the database to online from the recovering state.

Maintenance Plans

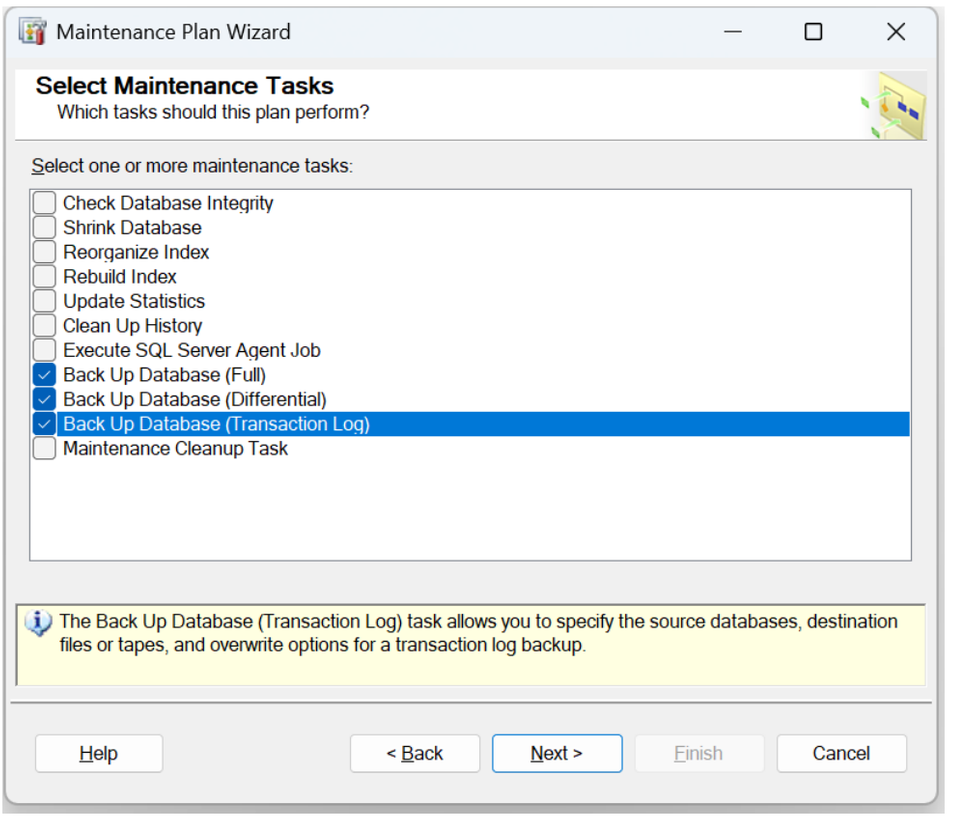
1.Choose maintenance plans under Extended Events



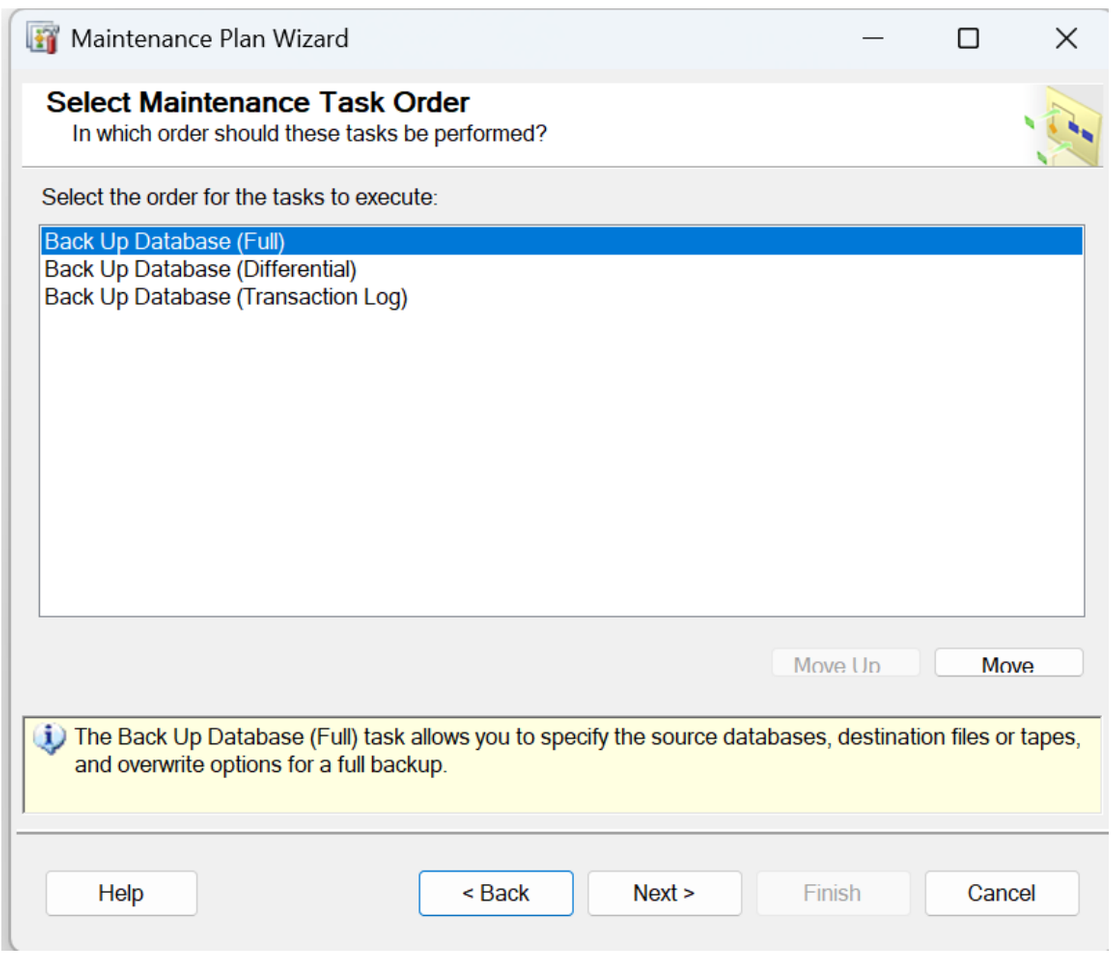
2.Create a name for the Maintenance plan and select separate schdules for each task



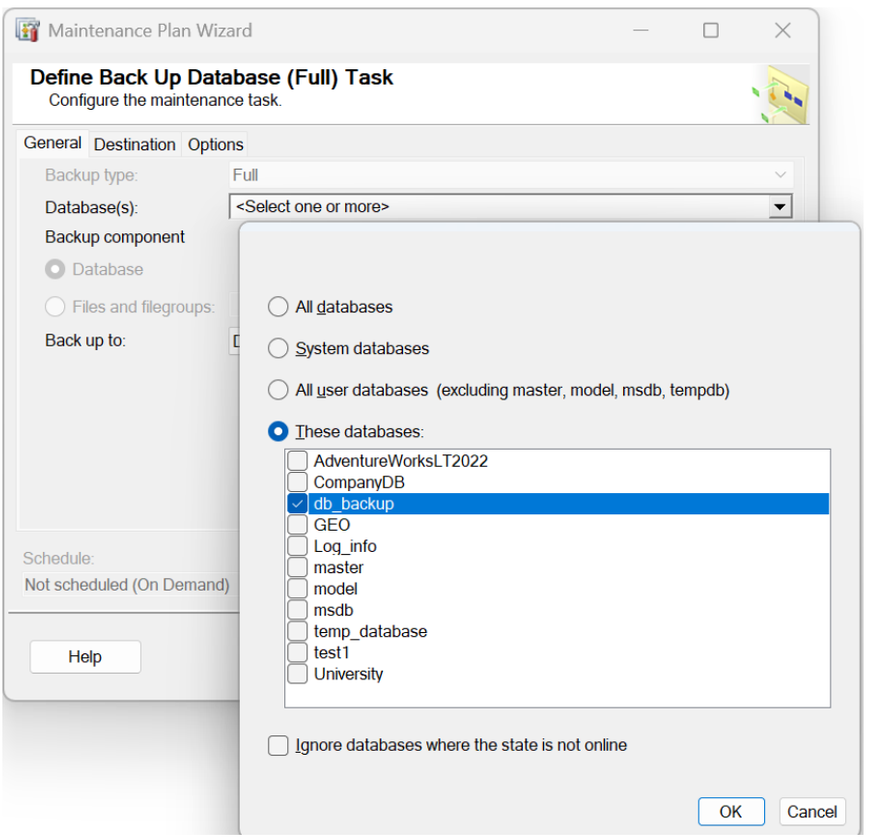
3.Select Full, Differential and Transaction Log



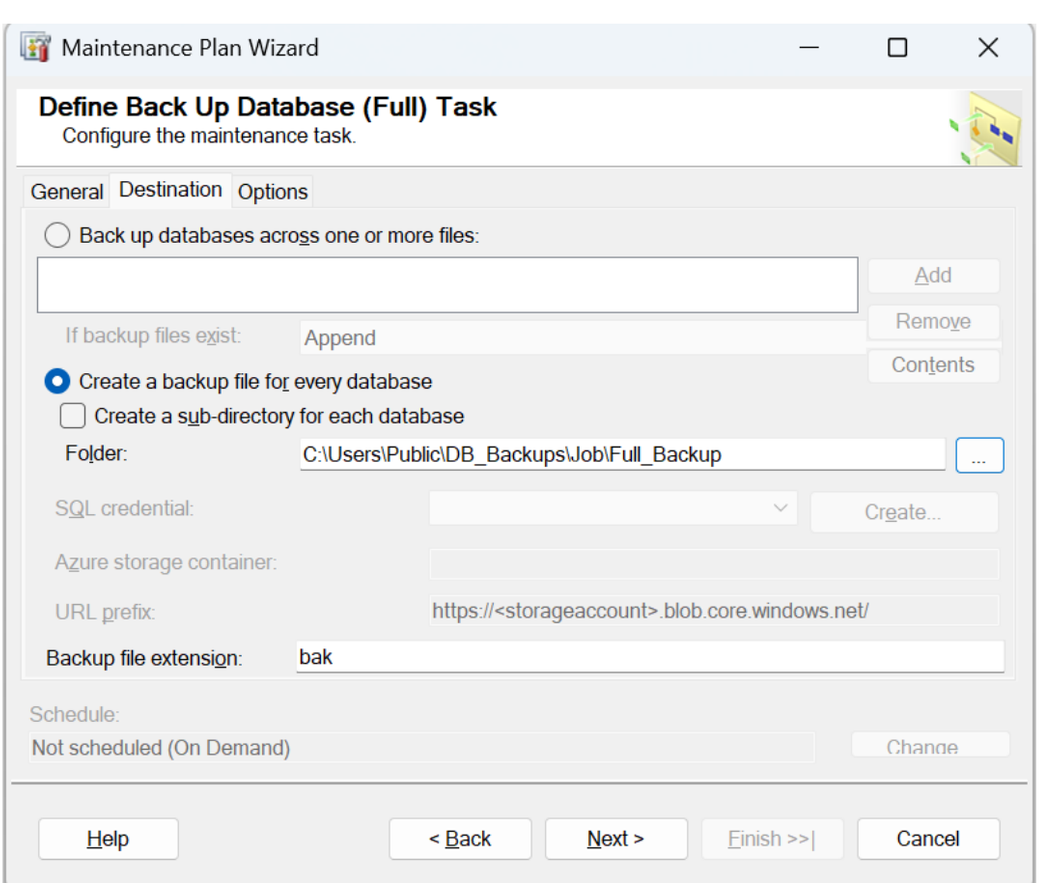
4.Arrange the order of the workflow



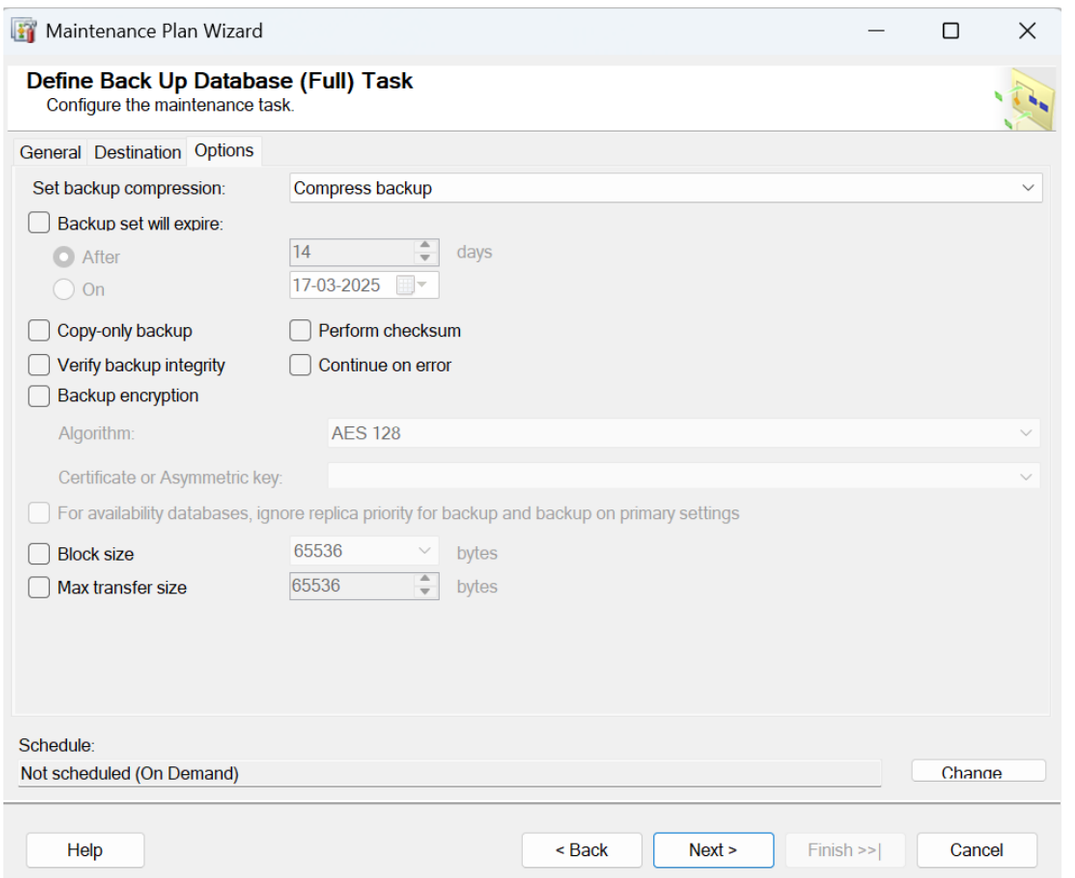
5.Choose the Database also we can choose multiple databases at the same time.



6.Select Destination and change the backup location

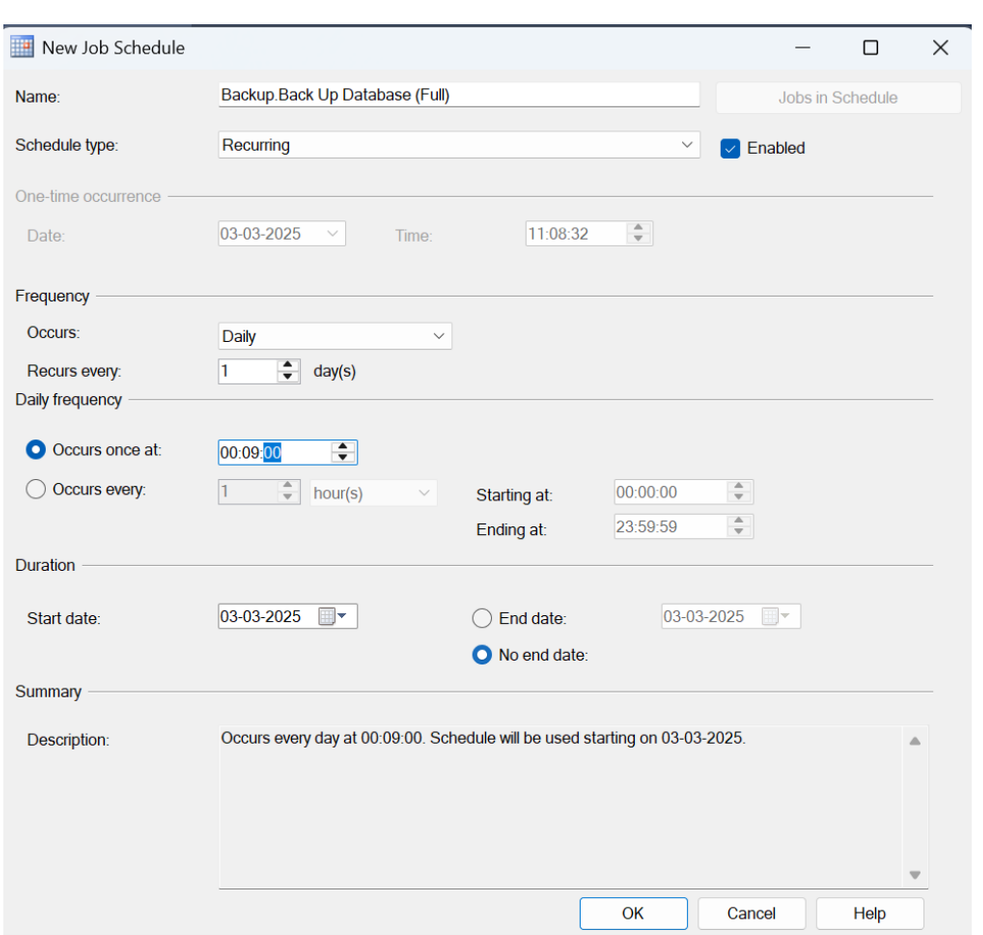


7.Select Compress Backup for reducing the storage size



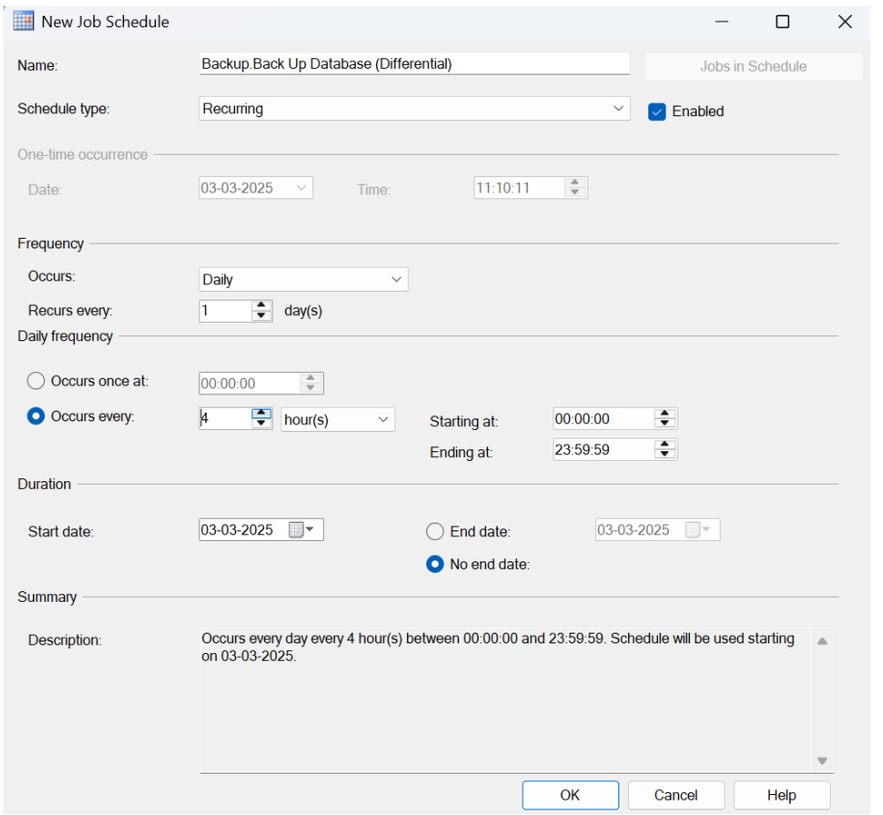
8.Schedule the Job so that repeats every day.

Full back up scheduled every day at 9.00.



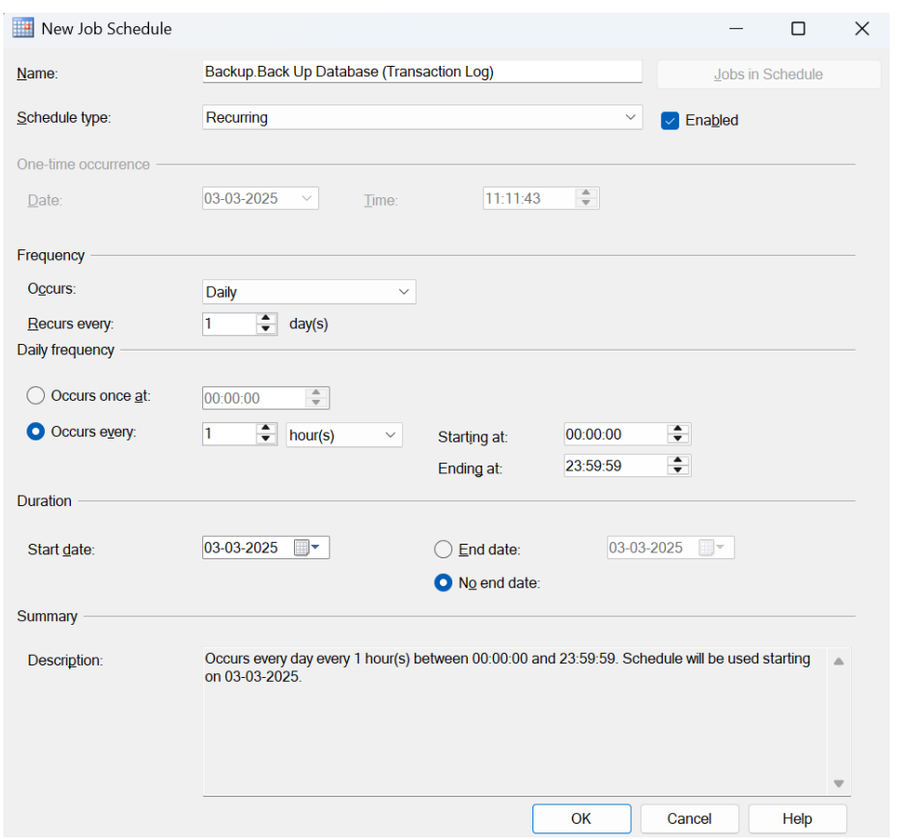
9.Repeat the Same steps from 4 to 6 for the Differential Back up.

Differential backup schedule every 4 hours a day.

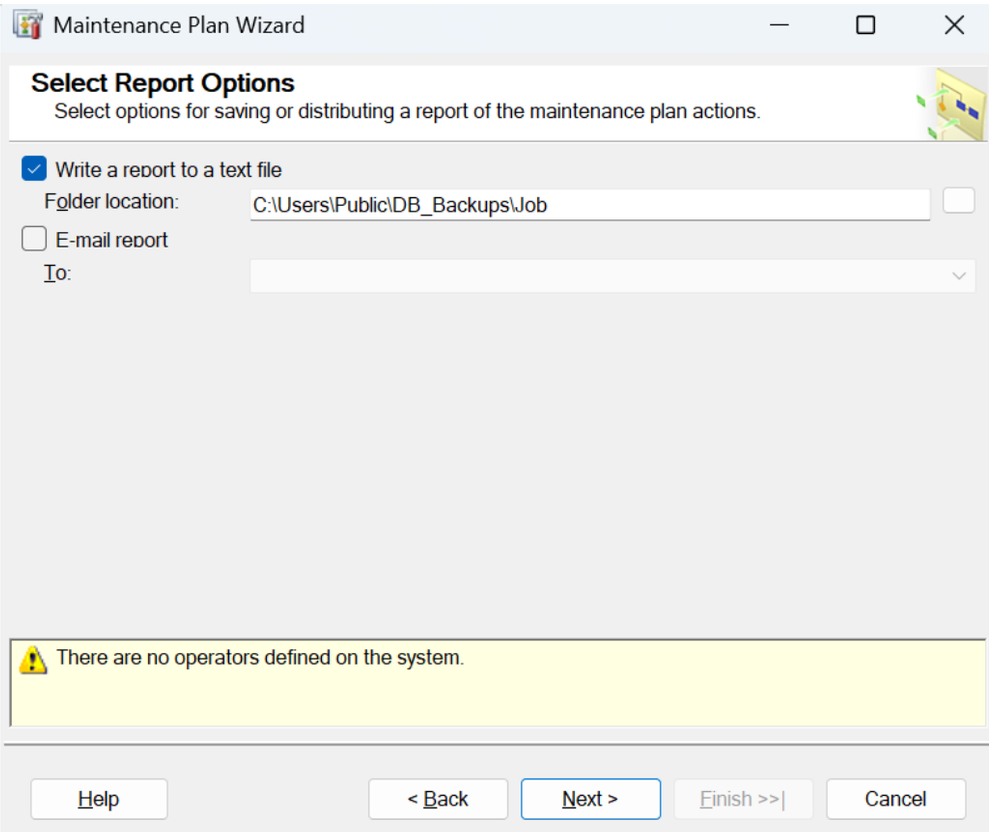


10.Similarly repeat the steps 4 to 6 for T-Log back up

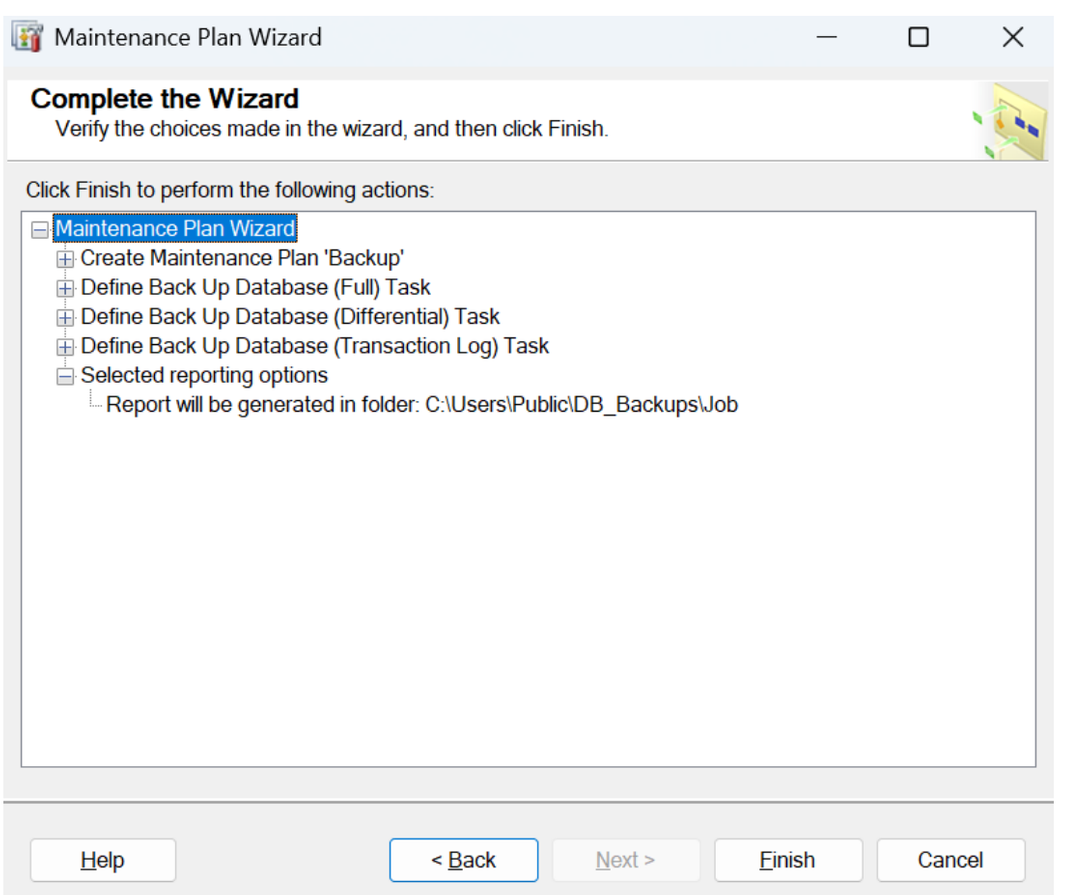
T-Log backup occurs every hour of a day



11.Choose the location for the report file about the backup inforamtion



12.Overall workflow of the plan will shown, used for cross verify the schedule



13.Successfull Execution will show or else Failed