Jurusan Teknologi Informasi Politeknik Negeri Malang

Jobsheet Minggu-12: Querying SQL Server Metadata

Pengampu: Tim Ajar Basis Data Lanjut

Topik

1. Melakukan Query Terhadap Metadata Microsoft SQL Server

Tujuan

1. Mahasiswa memahami maksud dari Metadata
2. Mahasiswa mampu menampilkan informasi tentang database yang sedang aktif
3. Mahasiswa mampu menampilkan informasi tentang tabel-tabel yang berada pada suatu database
4. Mahasiswa mampu menampilkan informasi kolom yang terdapat pada suatu tabel
5. Mahasiswa mampu menampilkan informasi session yang sedang aktif
6. Mahasiswa mampu menampilkan informasi tentang CPU dan RAM yang ada pada server
7. Mahasiswa mampu menampilkan definisi dari objek-objek buatan seperti View, Stored Procedure, dlsb.

Petunjuk Umum

1. Ikuti langkah-langkah pada bagian-bagian praktikum sesuai dengan urutan yang diberikan.
2. Anda dapat menggunakan SQL Server 2012 Standard Edition maupun SQL Server 2016 Express Edition untuk mencoba praktikum pada jobsheet ini. Sesuaikan dengan kondisi komputer Anda.
3. Jawablah semua pertanyaan bertanda [Soal-X] yang terdapat pada langkah-langkah tertentu di setiap bagian praktikum.
4. Dalam setiap langkah pada praktikum terdapat penjelasan yang akan membantu Anda dalam menjawab pertanyaan-pertanyaan pada petunjuk nomor 3, maka baca dan kerjakanlah semua bagian praktikum dalam jobsheet ini.
5. Tulis jawaban dari soal-soal pada petunjuk nomor 3 pada sebuah laporan yang dikerjakan menggunakan aplikasi word processing (Word, OpenOffice, atau yang lain yang sejenis). Ekspor sebagai file **PDF** dengan format nama sebagai berikut:
   - **BDL_12_Kelas_NamaLengkapAnda**.pdf
   - Contoh:
     - **BDL_12_2E_Fulan**.pdf
   - Perhatikan baik-baik format penamaanya.
   - Kumpulkan file PDF tersebut sebagai laporan praktikum kepada dosen pengampu.
   - Selain pada nama file, tulislah identitas Anda pada halaman pertama laporan tersebut.

Praktikum – Bagian 1: View-view yang Berkaitan dengan System Catalog

Langkah	Keterangan
1	[Soal-1] Buatlah SQL yang menampilkan nama, id, dan tanggal pembuatan semua database yang ada di server SQL Server

Results | Messages

	name	database_id	create_date
1	master	1	2003-04-08 09:13:36.390
2	tempdb	2	2017-12-01 13:31:10.330
3	model	3	2003-04-08 09:13:36.390
4	msdb	4	2016-04-30 00:46:38.773
5	ReportServer$SQLEXPRESS	5	2017-05-17 08:32:30.007
6	ReportServer$SQLEXPRESSTempDB	6	2017-05-17 08:32:30.810
7	akademik	7	2017-06-04 00:12:56.963
8	akademik_mi1e	8	2017-06-05 11:09:00.717
9	akademik_ti1f	9	2017-06-06 09:47:32.610
10	akademik_ti1g	10	2017-06-06 11:52:52.633
11	TSQL2012	11	2017-11-09 20:08:18.197
12	MarketDev	12	2017-11-28 00:38:09.040
13	DbBaru	13	2017-11-28 01:11:58.457
14	NewDb	14	2017-11-28 10:13:30.700
15	Branch	15	2017-11-28 10:22:03.573
16	TestIE	17	2017-11-29 14:33:19.213

```
-- SOAL 1
SELECT name, database_id, create_date
FROM sys.databases;
```

Results | Messages

	DatabaseName	DatabaseID	CreationDate
1	master	1	2003-04-08 09:13:36.390
2	tempdb	2	2024-11-18 08:19:06.180
3	model	3	2003-04-08 09:13:36.390
4	msdb	4	2022-10-08 06:31:57.550
5	TSQL	5	2024-09-02 13:45:49.750
6	WebCihuy	6	2024-10-31 08:31:39.343
7	dbperpus	7	2024-11-15 15:04:12.520

2

[Soal-2] Buatlah SQL yang menampilkan data-data semua tabel yang dibuat oleh pengguna (users)!

Petunjuk: Perhatikan tabel berikut untuk memfilter tabel yang sesuai!

Results | Messages

	type	type_desc
1	SQ	SERVICE_QUEUE
2	U	USER_TABLE
3	V	VIEW
4	S	SYSTEM_TABLE
5	IT	INTERNAL_TABLE
6	P	SQL_STORED_PROCEDURE

Pastikan hasil akhirnya seperti berikut:

Results | Messages

	object_id	name	schema_id	type	type_desc	create_date	modify_date
1	117575457	spt_fallback_db	1	U	USER_TABLE	2003-04-08 09:18:01.557	2016-04-30 00:48:23.147
2	133575514	spt_fallback_dev	1	U	USER_TABLE	2003-04-08 09:18:02.870	2016-04-30 00:48:23.167
3	149575571	spt_fallback_usg	1	U	USER_TABLE	2003-04-08 09:18:04.180	2016-04-30 00:48:23.187
4	279672044	Employees	5	U	USER_TABLE	2017-11-29 14:41:27.130	2017-11-29 14:41:27.130
5	599673184	test	1	U	USER_TABLE	2017-12-01 14:23:34.293	2017-12-01 14:23:34.293
6	615673241	TabelNyobaSaja	5	U	USER_TABLE	2017-12-01 14:24:45.213	2017-12-01 14:24:45.213

```
-- SOAL 2
SELECT object_id, name, schema_id, type, type_desc, create_date, modify_date
FROM sys.objects
WHERE type = 'U'
ORDER BY create_date;
------------------------------------------------------------
```

3

[Soal-3] Dengan maksud dan tujuan yang sama seperti task sebelumnya, buatlah SQL dengan memanfaatkan tabel sys.tables!

Results | Messages

	object_id	name	schema_name	type	type_desc	create_date	modify_date
1	117575457	spt_fallback_db	dbo	U	USER_TABLE	2003-04-08 09:18:01.557	2016-04-30 00:48:23.147
2	133575514	spt_fallback_dev	dbo	U	USER_TABLE	2003-04-08 09:18:02.870	2016-04-30 00:48:23.167
3	149575571	spt_fallback_usg	dbo	U	USER_TABLE	2003-04-08 09:18:04.180	2016-04-30 00:48:23.187
4	279672044	Employees	HR	U	USER_TABLE	2017-11-29 14:41:27.130	2017-11-29 14:41:27.130
5	599673184	test	dbo	U	USER_TABLE	2017-12-01 14:23:34.293	2017-12-01 14:23:34.293
6	615673241	TabelNyobaSaja	HR	U	USER_TABLE	2017-12-01 14:24:45.213	2017-12-01 14:24:45.213
7	1483152329	spt_monitor	dbo	U	USER_TABLE	2016-04-30 00:46:37.557	2016-04-30 00:48:23.213
8	1787153412	MSreplication_options	dbo	U	USER_TABLE	2016-04-30 00:47:59.690	2017-05-17 08:33:05.127

```
-- SOAL 3
SELECT t.object_id, t.name, s.name as schema_name, t.type, t.type_desc, t.create_date, t.modify_date
FROM sys.tables as t
JOIN sys.schemas as s ON t.schema_id = s.schema_id
WHERE t.type = 'U'
ORDER BY create_date;
------------------------------------------------------------
```

Results | Messages

	object_id	name	schema_name	type	type_desc	create_date	modify_date
1	901578250	Employees	HR	U	USER_TABLE	2024-09-02 13:45:52.687	2024-11-03 21:57:19.983
2	965578478	Suppliers	Production	U	USER_TABLE	2024-09-02 13:45:52.700	2024-09-02 13:45:52.723
3	997578592	Categories	Production	U	USER_TABLE	2024-09-02 13:45:52.710	2024-09-02 13:45:52.723
4	1029578706	Products	Production	U	USER_TABLE	2024-09-02 13:45:52.717	2024-11-03 21:26:27.300
5	1141579105	Customers	Sales	U	USER_TABLE	2024-09-02 13:45:52.730	2024-09-02 13:45:52.750
6	1173579219	Shippers	Sales	U	USER_TABLE	2024-09-02 13:45:52.743	2024-09-02 13:45:52.753
7	1205579333	Orders	Sales	U	USER_TABLE	2024-09-02 13:45:52.747	2024-11-03 21:40:35.123
8	1301579675	OrderDetails	Sales	U	USER_TABLE	2024-09-02 13:45:52.763	2024-11-03 21:37:49.690
9	1461580245	Tests	Stats	U	USER_TABLE	2024-09-02 13:45:52.780	2024-09-02 13:45:52.783
10	1493580359	Scores	Stats	U	USER_TABLE	2024-09-02 13:45:52.780	2024-09-02 13:45:52.787
11	1557580587	Nums	dbo	U	USER_TABLE	2024-09-02 13:45:56.663	2024-09-02 13:45:56.663
12	1797581442	sysdiagrams	dbo	U	USER_TABLE	2024-09-02 13:55:23.730	2024-09-02 13:55:23.730
13	338100245	Somedates	Sales	U	USER_TABLE	2024-09-12 20:08:04.940	2024-09-12 20:08:04.940
14	574625090	EmployeesBackup	HR	U	USER_TABLE	2024-11-03 21:53:00.240	2024-11-03 21:53:00.240

4

[Soal-4] Tampilkan semua kolom yang dimiliki tabel Sales.Customers berikut tipe data yang digunakan pada masing-masing kolom.

Results | Messages

	column_name	column_id	data_type	max_length	precision	scale	collation_name
1	custid	1	int	4	10	0	NULL
2	companyname	2	nvarchar	80	0	0	SQL_Latin1_General_CP1_CI_AS
3	contactname	3	nvarchar	60	0	0	SQL_Latin1_General_CP1_CI_AS
4	contacttitle	4	nvarchar	60	0	0	SQL_Latin1_General_CP1_CI_AS
5	address	5	nvarchar	120	0	0	SQL_Latin1_General_CP1_CI_AS
6	city	6	nvarchar	30	0	0	SQL_Latin1_General_CP1_CI_AS
7	region	7	nvarchar	30	0	0	SQL_Latin1_General_CP1_CI_AS
8	postalcode	8	nvarchar	20	0	0	SQL_Latin1_General_CP1_CI_AS
9	country	9	nvarchar	30	0	0	SQL_Latin1_General_CP1_CI_AS
10	phone	10	nvarchar	48	0	0	SQL_Latin1_General_CP1_CI_AS
11	fax	11	nvarchar	48	0	0	SQL_Latin1_General_CP1_CI_AS

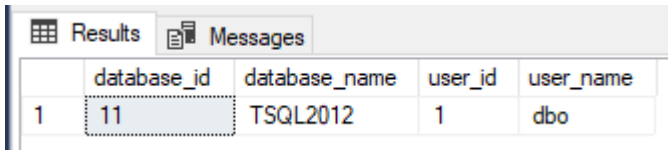
```
-- SOAL 4
SELECT c.name as column_name, c.column_id,
TYPE_NAME(c.system_type_id)as data_type, c.max_length, c.precision, c.scale, c.collation_name
FROM sys.columns as c
WHERE OBJECT_ID = object_id('Sales.Customers')
ORDER BY c.column_id;
-------------------------------------------------------------
```

Results | Messages

	column_name	column_id	data_type	max_length	precision	scale	collation_name
1	custid	1	int	4	10	0	NULL
2	companyname	2	nvarchar	80	0	0	SQL_Latin1_General_CP1_CI_AS
3	contactname	3	nvarchar	60	0	0	SQL_Latin1_General_CP1_CI_AS
4	contacttitle	4	nvarchar	60	0	0	SQL_Latin1_General_CP1_CI_AS
5	address	5	nvarchar	120	0	0	SQL_Latin1_General_CP1_CI_AS
6	city	6	nvarchar	30	0	0	SQL_Latin1_General_CP1_CI_AS
7	region	7	nvarchar	30	0	0	SQL_Latin1_General_CP1_CI_AS
8	postalcode	8	nvarchar	20	0	0	SQL_Latin1_General_CP1_CI_AS
9	country	9	nvarchar	30	0	0	SQL_Latin1_General_CP1_CI_AS
10	phone	10	nvarchar	48	0	0	SQL_Latin1_General_CP1_CI_AS
11	fax	11	nvarchar	48	0	0	SQL_Latin1_General_CP1_CI_AS

Praktikum – Bagian 2: Melakukan Kueri Terhadap System Functions

Langkah	Keterangan

1	[Soal-5] Buatlah SELECT query untuk menampilkan database yang dipakai, dan pengguna saat ini!  Results Messages database_id database_name user_id user_name 1 11 TSQL2012 1 dbo -- SOAL 5 SELECT DB_ID() AS database_id, DB_NAME() AS database_name, USER_ID() AS user_id, USER_NAME() AS user_name; ---------- Results Messages database_id database_name user_id user_name 1 5 TSQL 1 dbo
2	[Soal-6] Tulis SQL untuk menampilkan nama objek dan nama schema.

Results | Messages

	name	type_desc	object_id	schema_name
1	sysrscols	SYSTEM_TABLE	sysrscols	sys
2	sysrowsets	SYSTEM_TABLE	sysrowsets	sys
3	sysclones	SYSTEM_TABLE	sysclones	sys
4	sysallocunits	SYSTEM_TABLE	sysallocunits	sys
5	sysfiles1	SYSTEM_TABLE	sysfiles1	sys
6	sysseobjvalues	SYSTEM_TABLE	sysseobjvalues	sys
7	syspriorities	SYSTEM_TABLE	syspriorities	sys
8	sysdbfrag	SYSTEM_TABLE	sysdbfrag	sys
9	sysfgfrag	SYSTEM_TABLE	sysfgfrag	sys
10	sysdbfiles	SYSTEM_TABLE	sysdbfiles	sys
11	[illegible]	SYSTEM_TABLE	[illegible]	sys

```
-- SOAL 6
SELECT
    name,
    type_desc,
    OBJECT_NAME(object_id) as object_id ,
    SCHEMA_NAME(schema_id) as schema_name
FROM sys.objects;
```

Results | Messages

	name	type_desc	object_id	schema_name
1	sysrscols	SYSTEM_TABLE	sysrscols	sys
2	sysrowsets	SYSTEM_TABLE	sysrowsets	sys
3	sysclones	SYSTEM_TABLE	sysclones	sys
4	sysallocunits	SYSTEM_TABLE	sysallocunits	sys
5	sysfiles1	SYSTEM_TABLE	sysfiles1	sys
6	sysseobjvalues	SYSTEM_TABLE	sysseobjvalues	sys
7	syspriorities	SYSTEM_TABLE	syspriorities	sys
8	sysdbfrag	SYSTEM_TABLE	sysdbfrag	sys
9	sysfgfrag	SYSTEM_TABLE	sysfgfrag	sys
10	sysdbfiles	SYSTEM_TABLE	sysdbfiles	sys
11	syspru	SYSTEM_TABLE	syspru	sys
12	sysbrickfiles	SYSTEM_TABLE	sysbrickfiles	sys
13	sysphfg	SYSTEM_TABLE	sysphfg	sys
14	sysprufiles	SYSTEM_TABLE	sysprufiles	sys
15	sysftinds	SYSTEM_TABLE	sysftinds	sys
16	sysowners	SYSTEM_TABLE	sysowners	sys
17	[illegible]	SYSTEM_TABLE	[illegible]	sys

Query executed successfully.

3	[Soal-7] Buatlah SQL untuk menampilkan data semua kolom dari tabel yang dibuat oleh user, yang di nama kolomnya ada kata "name"

Results | Messages

	column_name	table_name	schema_name
1	firstname	Employees	HR
2	lastname	Employees	HR
3	companyname	Suppliers	Production
4	contactname	Suppliers	Production
5	categoryname	Categories	Production
6	productname	Products	Production
7	companyname	Customers	Sales
8	contactname	Customers	Sales
9	companyname	Shippers	Sales
10	shipname	Orders	Sales

```
-- SOAL 7
SELECT c.name AS column_name, OBJECT_NAME(c.object_id)
AS table_name, OBJECT_SCHEMA_NAME(c.object_id) AS schema_name
FROM sys.columns as c WHERE c.name LIKE '%name%' AND OBJECTPROPERTY(c.object_id, 'IsUserTable')=1;
------------------------------------------------------------
```

Results | Messages

	column_name	table_name	schema_name
1	firstname	EmployeesBackup	HR
2	lastname	EmployeesBackup	HR
3	firstname	Employees	HR
4	lastname	Employees	HR
5	companyname	Suppliers	Production
6	contactname	Suppliers	Production
7	categoryname	Categories	Production
8	productname	Products	Production
9	companyname	Customers	Sales
10	contactname	Customers	Sales
11	companyname	Shippers	Sales
12	shipname	Orders	Sales
13	name	sysdiagrams	dbo

4	[Soal-8] Tampilkan 'definisi' dari sebuah view yang bernama 'Sales.CustOrders'!

Messages

```
CREATE VIEW Sales.CustOrders
  WITH SCHEMABINDING
AS

SELECT
  O.custid,
  DATEADD(month, DATEDIFF(month, 0, O.orderdate), 0) AS ordermonth,
  SUM(OD.qty) AS qty
FROM Sales.Orders AS O
  JOIN Sales.OrderDetails AS OD
    ON OD.orderid = O.orderid
GROUP BY custid, DATEADD(month, DATEDIFF(month, 0, O.orderdate), 0);
```

150 %

```
-- SOAL 8
PRINT object_definition (object_id('Sales.CustOrders'));
```

Messages

```
CREATE VIEW Sales.CustOrders
  WITH SCHEMABINDING
AS

SELECT
  O.custid,
  DATEADD(month, DATEDIFF(month, 0, O.orderdate), 0) AS ordermonth,
  SUM(OD.qty) AS qty
FROM Sales.Orders AS O
  JOIN Sales.OrderDetails AS OD
    ON OD.orderid = O.orderid
GROUP BY custid, DATEADD(month, DATEDIFF(month, 0, O.orderdate), 0);

Completion time: 2024-11-18T10:59:27.9407534+07:00
```

Praktikum – Bagian 3: System Dynamic Management View

Langkah	Keterangan
1	[Soal-9] Tampilkan semua session yang sedang aktif saat ini!

Results Messages

	session_id	login_time	host_name	language	login_name	date_format
27	27	2017-12-03 11:45:41.940	NULL	us_english	sa	mdy
28	28	2017-12-03 11:45:41.940	NULL	us_english	sa	mdy
29	34	2017-12-03 11:41:11.457	NULL	us_english	sa	mdy
30	39	2017-12-03 11:37:11.013	NULL	us_english	sa	mdy
31	51	2017-12-01 13:34:39.057	YUNHASNAWA-MBP	us_english	MicrosoftAccount\yunhasnawa@live.com	mdy
32	52	2017-12-03 11:44:14.303	YUNHASNAWA-MBP	us_english	NT SERVICE\SQLTELEMETRY$SQLEXPRESS	mdy
33	56	2017-12-03 08:08:06.937	YUNHASNAWA-MBP	us_english	MicrosoftAccount\yunhasnawa@live.com	mdy

```
-- SOAL 9
SELECT session_id, login_time, host_name, language, login_name, date_format
FROM sys.dm_exec_sessions;
-----------------------------------------------------------
```

Results Messages

	session_id	login_time	host_name	language	login_name	date_format
1	1	2024-11-18 10:47:18.580	NULL	us_english	sa	mdy
2	2	2024-11-18 10:47:18.580	NULL	us_english	sa	mdy
3	3	2024-11-18 10:42:23.130	NULL	us_english	sa	mdy
4	4	2024-11-18 10:47:18.580	NULL	us_english	sa	mdy
5	5	2024-11-18 08:18:58.890	NULL	us_english	sa	mdy
6	6	2024-11-18 10:47:18.580	NULL	us_english	sa	mdy
7	7	2024-11-18 10:47:18.580	NULL	us_english	sa	mdy
8	8	2024-11-18 10:47:28.597	NULL	us_english	sa	mdy
9	9	2024-11-18 10:47:18.580	NULL	us_english	sa	mdy
10	10	2024-11-18 10:47:18.580	NULL	us_english	sa	mdy
11	11	2024-11-18 10:47:18.580	NULL	us_english	sa	mdy
12	12	2024-11-18 10:47:43.623	NULL	us_english	sa	mdy
13	15	2024-11-18 08:18:58.893	NULL	us_english	sa	mdy
14	16	2024-11-18 10:38:12.777	NULL	us_english	sa	mdy
15	17	2024-11-18 08:18:58.907	NULL	us_english	sa	mdy
16	18	2024-11-18 08:18:58.907	NULL	us_english	sa	mdy
17	19	2024-11-18 08:18:58.957	NULL	us_english	sa	mdy

Query executed successfully.

2

[Soal-10] Eksekusilah SQL berikut dan screenshot-lah hasilnya!

```
SELECT
    cpu_count AS [Logical CPU Count],
    hyperthread_ratio AS [Hyperthread Ratio],
    cpu_count / hyperthread_ratio AS [Physical CPU Count],
    physical_memory_kb / 1024 AS [RAM (MB)],
    sqlserver_start_time AS [Last SQL Server Start]
FROM
    sys.dm_os_sys_info;
```

Results | Messages

	Logical CPU Count	Hyperthread Ratio	Physical CPU Count	RAM (MB)	Last SQL Server Start
1	8	8	1	7877	2024-11-18 08:18:57.657

3

[Soal-11] Tulislah SQL untuk menampilkan info memory (RAM) dari PC Anda!

Results | Messages

	Total RAM (GB)	Available RAM (GB)	Total Page File (GB)	Available Page File (GB)	RAM Availability Status
1	15	11	18	13	Available physical memory is high

```
-- SOAL 11
SELECT
    total_physical_memory_kb/1048576 AS [Total RAM (GB)],
    available_physical_memory_kb/1048576 AS [Available RAM (GB)],
    total_page_file_kb/1048576 AS [Total Page File (GB)],
    available_page_file_kb/1048576 AS [Available Page File (GB)],
    system_memory_state_desc AS [RAM Availability Status]
FROM sys.dm_os_sys_memory;
```

Results | Messages

	Total RAM (GB)	Available RAM (GB)	Total Page File (GB)	Available Page File (GB)	RAM Availability Status
1	7	1	17	6	Available physical memory is high

--- Selamat Mengerjakan ----