PRACTICA

1.

- **Activity Monitor**: Muestra procesos activos, uso de CPU, bloqueos, consultas costosas, etc.

```
SELECT
    session_id,
    start_time,
    status,
    command,
    blocking_session_id,
    wait_type,
    wait_time,
    last_wait_type,
    cpu_time,
    reads,
    writes,
    logical_reads,
    row_count,
    granted_query_memory,
    sql_handle,
    statement_start_offset,
    statement_end_offset
FROM sys.dm_exec_requests
WHERE session_id <> @@SPID; -- Excluir la propia sesión
```

Results | Messages

session_id	start_time	status	command	blocking_session_id	wait_type	wait_time	last_wait_type	cpu_time	reads	writes	logical_reads	row_count	granted_query_memory	sql_handle	statement_st
1	2025-07-02 11:29:30.390	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	416	0	0	NULL	NULL
2	2025-07-02 11:29:30.390	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	327	0	0	NULL	NULL
3	2025-07-02 11:29:30.390	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	317	0	0	NULL	NULL
4	2025-07-02 11:24:34.867	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	280	0	0	NULL	NULL
5	2025-07-02 11:29:30.390	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	248	0	0	NULL	NULL
6	2025-07-02 11:29:30.390	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	137	0	0	NULL	NULL
7	2025-07-02 11:01:23.387	background	PARALLEL REDO TASK	0	DISPATCHER_QUEUE_SEMAPHORE	1879603	DISPATCHER_QUEUE_SEMAPHORE	0	0	0	0	0	0	NULL	NULL
8	2025-07-02 11:29:40.417	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	217	0	0	NULL	NULL
9	2025-07-02 11:19:39.347	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	1117	0	0	NULL	NULL
10	2025-07-02 11:29:40.417	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	178	0	0	NULL	NULL
11	2025-07-02 11:29:40.417	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	216	0	0	NULL	NULL
12	2025-07-02 11:24:39.880	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	478	0	0	NULL	NULL
13	2025-07-02 11:29:40.417	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	104	0	0	NULL	NULL
14	2025-07-02 11:29:55.443	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	31	12	0	1335	0	0	NULL	NULL
15	2025-07-02 11:29:55.443	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	267	0	0	NULL	NULL
16	2025-07-02 11:01:23.387	background	PARALLEL REDO TASK	0	DISPATCHER_QUEUE_SEMAPHORE	1879603	DISPATCHER_QUEUE_SEMAPHORE	0	0	0	0	0	0	NULL	NULL
17	2025-07-02 11:01:23.387	background	XIO_LEASE_RENEWAL_WORKER	0	SLEEP_TASK	410	SLEEP_TASK	0	0	0	0	0	0	NULL	NULL
18	2025-07-02 11:01:23.387	background	XIO_RETRY_WORKER	0	SLEEP_TASK	675	SLEEP_TASK	0	0	0	0	0	0	NULL	NULL
19	2025-07-02 11:01:23.387	background	XTP_CKPT_AGENT	0	WAIT_XTP_HOST_WAIT	1879584	WAIT_XTP_HOST_WAIT	0	0	0	0	0	0	NULL	NULL
20	2025-07-02 11:01:23.403	background	RECOVERY WRITER	0	DIRTY_PAGE_POLL	35	DIRTY_PAGE_POLL	31	0	0	0	0	0	NULL	NULL
21	2025-07-02 11:01:23.403	background	PVS_PREALLOCATOR	0	PVS_PREALLOCATE	1879581	PVS_PREALLOCATE	0	0	0	0	0	0	NULL	NULL
22	2025-07-02 11:01:23.403	background	POPULATE LOCK ORDINALS T...	0	POPULATE LOCK ORDINALS	1879581	POPULATE LOCK ORDINALS	0	0	0	0	0	0	NULL	NULL

2.

- **Query Store**: Guarda el historial de ejecución de consultas, planes de ejecución y estadísticas de rendimiento.

```
USE tiendaInformatica;
GO

SELECT P.NombreProducto, P.Precio, F.Nombre AS NombreFabricante FROM Productos AS P JOIN Fabricante AS F ON P.FabricanteID = F.FabricanteID;
GO

SELECT * FROM Productos WHERE Precio > 150;
GO

SELECT AVG(Precio) FROM Productos;
GO
```

Results | Messages

NombreProducto	Precio	NombreFabricante
Disco duro SATA3 1TB	86.99	Seagate
Memoria RAM DDR4 8GB	120.00	Crucial
Disco SSD 1 TB	150.99	Samsung
GeForce GTX 1050Ti	185.00	Gigabyte
GeForce GTX 1080 Xtreme	755.00	Crucial
Monitor 24 LED Full HD	202.00	Asus
Monitor 27 LED Full HD	245.99	Asus
Portátil Yoga 520	559.00	Lenovo
Portátil Ideapd 320	444.00	Lenovo

ProductoID	NombreProducto	Precio	FabricanteID
3	Disco SSD 1 TB	150.99	4
4	GeForce GTX 1050Ti	185.00	7
5	GeForce GTX 1080 Xtreme	755.00	6
6	Monitor 24 LED Full HD	202.00	1
7	Monitor 27 LED Full HD	245.99	1
8	Portátil Yoga 520	559.00	2
9	Portátil Ideapd 320	444.00	2
11	Impresora HP Laserjet Pro M26nw	180.00	3

(No column name)
271.723636

3.

2. Dynamic Management Views (DMVs)

- Vistas del sistema que permiten consultar información en tiempo real.
- Ejemplos:
  - sys.dm_exec_requests: consultas en ejecución.
  - sys.dm_exec_query_stats: estadísticas de ejecución.
  - sys.dm_os_wait_stats: tipos de espera del sistema.

```sql
SELECT
    session_id,
    start_time,
    status,
    command,
    blocking_session_id, -- Si está bloqueada, muestra la sesión que la bloquea
    wait_type,           -- Tipo de espera (ej. PAGEIOLATCH_SH para esperar E/S de página)
    wait_time,           -- Tiempo de espera en milisegundos
    last_wait_type,
    cpu_time,            -- Tiempo de CPU consumido en milisegundos
    reads,               -- Lecturas lógicas realizadas
    writes,              -- Escrituras lógicas realizadas
    logical_reads,
    row_count,
    granted_query_memory,
    DB_NAME(database_id) AS DatabaseName, -- Nombre de la base de datos
    (SELECT text FROM sys.dm_exec_sql_text(sql_handle)) AS QueryText -- El texto real de la consulta
FROM
    sys.dm_exec_requests
WHERE
    session_id <> @@SPID; -- Excluir la propia sesión que ejecuta esta consulta
GO
```

Results | Messages

session_id	start_time	status	command	blocking_session_id	wait_type	wait_time	last_wait_type	cpu_time	reads	writes	logical_reads	row_count	granted_query_memory	DatabaseName
1	2025-07-02 11:54:38.043	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	100	0	0	master
2	2025-07-02 11:54:38.043	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	118	0	0	master
3	2025-07-02 11:54:38.043	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	57	0	0	master
4	2025-07-02 11:44:36.970	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	932	0	0	master
5	2025-07-02 11:54:43.057	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	70	0	0	master
6	2025-07-02 11:54:43.057	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	0	0	0	master
7	2025-07-02 11:54:43.057	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	0	0	0	master
8	2025-07-02 11:54:43.057	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	0	0	0	master
9	2025-07-02 11:54:43.057	sleeping	TASK MANAGER	0	NULL	0	MISCELLANEOUS	0	0	0	0	0	0	master
17	2025-07-02 11:01:23.387	background	XIO_LEASE_RENEWAL_WORKER	0	SLEEP_TASK	329	SLEEP_TASK	15	0	0	0	0	0	tiendaInformatica
18	2025-07-02 11:01:23.387	background	XIO_RETRY_WORKER	0	SLEEP_TASK	345	SLEEP_TASK	0	0	0	0	0	0	tiendaInformatica
19	2025-07-02 11:01:23.387	background	XTP_CKPT_AGENT	0	WAIT_XTP_HOST_WAIT	3211556	WAIT_XTP_HOST_WAIT	0	0	0	0	0	0	tiendaInformatica
20	2025-07-02 11:01:23.403	background	RECOVERY WRITER	0	DIRTY_PAGE_POLL	113	DIRTY_PAGE_POLL	93	0	0	0	0	0	tiendaInformatica
21	2025-07-02 11:01:23.403	background	PVS_PREALLOCATOR	0	PVS_PREALLOCATE	3211553	PVS_PREALLOCATE	0	0	0	0	0	0	tiendaInformatica
22	2025-07-02 11:01:23.403	background	POPULATE_LOCK_ORDINALS_TASK	0	POPULATE_LOCK_ORDINALS	3211553	POPULATE_LOCK_ORDINALS	0	0	0	0	0	0	tiendaInformatica
23	2025-07-02 11:01:23.403	background	LAZY WRITER	0	LAZYWRITER_SLEEP	516	LAZYWRITER_SLEEP	218	0	0	0	0	0	tiendaInformatica
24	2025-07-02 11:01:23.403	background	LOG WRITER	0	LOGMGR_QUEUE	129	LOGMGR_QUEUE	46	0	0	0	0	0	tiendaInformatica
25	2025-07-02 11:01:23.403	background	LOG WRITER	0	LOGMGR_QUEUE	129	LOGMGR_QUEUE	46	0	0	0	0	0	tiendaInformatica
26	2025-07-02 11:01:23.403	background	LOCK MONITOR	0	REQUEST_FOR_DEADLOCK_SEARCH	2216	REQUEST_FOR_DEADLOCK_SEARCH	0	0	0	0	0	0	tiendaInformatica
27	2025-07-02 11:01:24.037	background	SIGNAL HANDLER	0	KSOURCE_WAKEUP	3210915	KSOURCE_WAKEUP	0	0	0	0	0	0	master
28	2025-07-02 11:01:23.403	background	RESOURCE MONITOR	0	NULL	0	MEMORY_ALLOCATION_EXT	0	0	0	0	0	0	tiendaInformatica

4.

3. SQL Server Profiler

- Herramienta para capturar eventos en tiempo real.
- Útil para auditoría, análisis de rendimiento y depuración.

```sql
USE tiendaInformatica;
GO

-- Ejemplo de una consulta que Activity Monitor/Profiler podrían capturar
SELECT P.NombreProducto, P.Precio, F.Nombre AS NombreFabricante
FROM Productos AS P
JOIN Fabricante AS F ON P.FabricanteID = F.FabricanteID
WHERE P.Precio > 100 AND F.Nombre = 'Asus';
GO

-- Otro ejemplo
INSERT INTO Clientes (NombreCliente, Email) VALUES ('Nuevo Cliente', 'nuevo@ejemplo.com');
GO
```

Results | Messages

NombreProducto	Precio	NombreFabricante
Monitor 24 LED Full HD	202.00	Asus
Monitor 27 LED Full HD	245.99	Asus

5.

4. Performance Monitor (PerfMon)

- Herramienta de Windows que permite monitorear contadores del sistema operativo y SQL Server (uso de CPU, memoria, disco, etc.).

```
USE tiendaInformatica;
GO
SELECT COUNT(*) FROM Productos;
SELECT * FROM Productos WHERE Precio < 100;
```

100 %

Results | Messages

	(No column name)
1	11

	ProductoID	NombreProducto	Precio	FabricanteID
1	1	Disco duro SATA3 1TB	86.99	5
2	10	Impresora HP Deskjet 3720	59.99	3

6.

5. Extended Events

- Reemplazo moderno del Profiler.
- Más eficiente y flexible para capturar eventos personalizados.

```
USE tiendaInformatica;
GO

SELECT P.NombreProducto, P.Precio FROM Productos AS P WHERE P.Precio > 200;
GO

INSERT INTO Clientes (NombreCliente, Email) VALUES ('Ana Garcia', 'ana.garcia@example.com');
GO
```

%

Results | Messages

	NombreProducto	Precio
	GeForce GTX 1080 Xtreme	755.00
	Monitor 24 LED Full HD	202.00
	Monitor 27 LED Full HD	245.99
	Portátil Yoga 520	559.00
	Portátil Ideapd 320	444.00

7.

b) Métricas clave de rendimiento

Estas métricas ayudan a identificar el estado y eficiencia del servidor:

Métrica	Descripción
CPU Usage	Alta CPU puede indicar consultas ineficientes o falta de recursos.
Memory Usage	SQL Server usa memoria para caché de datos y planes de ejecución.
Disk I/O	Lecturas/escrituras lentas afectan el rendimiento general.
Wait Statistics	Indican en qué está esperando SQL Server (bloqueos, recursos, etc.).
Query Execution Time	Tiempo que tarda una consulta en ejecutarse.
Blocking Sessions	Consultas que bloquean a otras.
Deadlocks	Dos procesos que se bloquean mutuamente.


```sql
SELECT
    session_id,
    login_name,
    host_name,
    program_name,
    cpu_time AS cpu_time_ms, -- Tiempo de CPU en milisegundos
    logical_reads,
    reads,
    writes,
    last_request_start_time,
    status
FROM sys.dm_exec_sessions
WHERE is_user_process = 1 AND session_id <> @@SPID
ORDER BY cpu_time DESC;
```

Results | Messages

session_id	login_name	host_name	program_name	cpu_time_ms	logical_reads	reads	writes	last_request_start_time	status
51	LAB01-PC22\USER 17	LAB01-PC22	Microsoft SQL Server Management Studio	0	93	0	0	2025-07-02 11:47:24.007	sleeping
53	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	DWDiagnostics	0	130	0	2	2025-07-02 11:01:26.820	sleeping
55	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	.Net SqlClient Data Provider	0	2263	74	0	2025-07-02 11:01:27.867	sleeping
56	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	.Net SqlClient Data Provider	0	0	0	0	2025-07-02 11:01:27.907	sleeping
57	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	.Net SqlClient Data Provider	0	549	10	0	2025-07-02 11:01:27.917	sleeping
58	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	761	12	0	2025-07-02 11:01:28.293	sleeping
59	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.180	sleeping
60	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.180	sleeping
61	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.180	sleeping
62	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.180	sleeping
63	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.180	sleeping
64	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.180	sleeping
65	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.180	sleeping
66	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.180	sleeping
67	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.197	sleeping
68	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.197	sleeping
69	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.197	sleeping
70	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.197	sleeping
71	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.197	sleeping
72	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.197	sleeping
73	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.197	sleeping
74	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.197	sleeping
75	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.197	sleeping
76	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.197	sleeping
77	NT AUTHORITY\NETWORK SERVICE	LAB01-PC22	LAB01-PC22\mpdwsvc (17460) - {E5D19981-6630-4cef...	0	0	0	0	2025-07-02 11:01:28.197	sleeping

8.

c) Identificación de cuellos de botella

Un **cuello de botella** es cualquier recurso que limita el rendimiento general del sistema.

A. Analizar estadísticas de espera

```
SELECT TOP 10 wait_type, wait_time_ms, waiting_tasks_count
FROM sys.dm_os_wait_stats
ORDER BY wait_time_ms DESC;
```

B. Detectar consultas lentas

```
SELECT TOP 5
  qs.total_elapsed_time / qs.execution_count AS AvgTime,
  qt.text
FROM sys.dm_exec_query_stats qs
CROSS APPLY sys.dm_exec_sql_text(qs.sql_handle) qt
```



```
ORDER BY AvgTime DESC;
```

C. Revisar uso de CPU y memoria

- En Activity Monitor o con DMVs como:

```
SELECT * FROM sys.dm_exec_requests WHERE status = 'running';
```

D. Buscar bloqueos y deadlocks


```
SELECT
  blocking_session_id, session_id, wait_type, wait_time, wait_resource
FROM sys.dm_exec_requests
WHERE blocking_session_id <> 0;
```

```sql
USE tiendaInformatica; -- Aunque la DMV es a nivel de instancia, es buena práctica especificar la DB
GO

SELECT TOP 10
    wait_type,
    wait_time_ms,      -- Tiempo total de espera en milisegundos
    waiting_tasks_count -- Número de veces que se ha esperado por este tipo
FROM
    sys.dm_os_wait_stats
WHERE
    wait_type NOT LIKE '%SLEEP%' -- Excluir esperas de inactividad
    AND wait_type NOT LIKE '%IDLE%'
    AND wait_type NOT IN ('BROKER_RECEIVE_WAITFOR', 'BROKER_TASK_STOP', 'CLR_AUTO_EVENT', 'CLR_MANUAL_
ORDER BY
    wait_time_ms DESC; -- Ordenar por el tiempo total de espera
GO
```

Results | Messages

wait_type	wait_time_ms	waiting_tasks_count
SOS_WORK_DISPATCHER	184311765	21768
DISPATCHER_QUEUE_SEMAPHORE	12319130	130
LOGMGR_QUEUE	8369913	61054
DIRTY_PAGE_POLL	4184886	38661
HADR_FILESTREAM_IOMGR_IOCOMPLETION	4184255	8258
PWAIT_EXTENSIBILITY_CLEANUP_TASK	3960087	15
CHECKPOINT_QUEUE	3794491	8
QDS_ASYNC_QUEUE	3202349	2
BROKER_EVENTHANDLER	2749862	8
BROKER_TO_FLUSH	2092821	2027