Unlocking the Power of WhoIsActive

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Who in the world is Jeff Iannucci?

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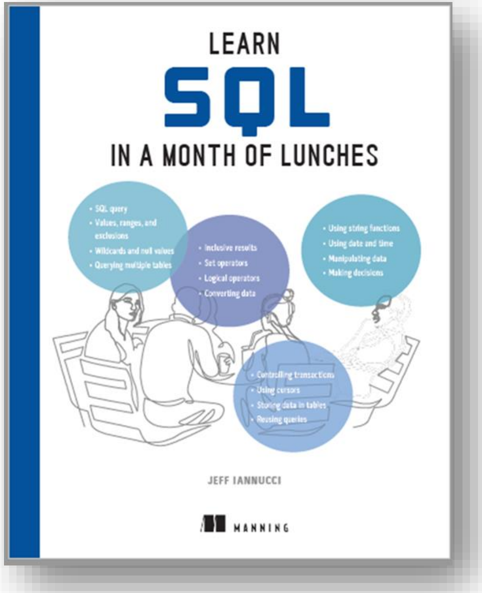


github.com/desertdba

In the “Presentations” folder:

- All the slides!
- One handy T-SQL script!
- Bonus material!!

Who wrote sp_WhoIsActive?

Adam Machanic

https://github.com/amachanic/sp_whoisactive/releases

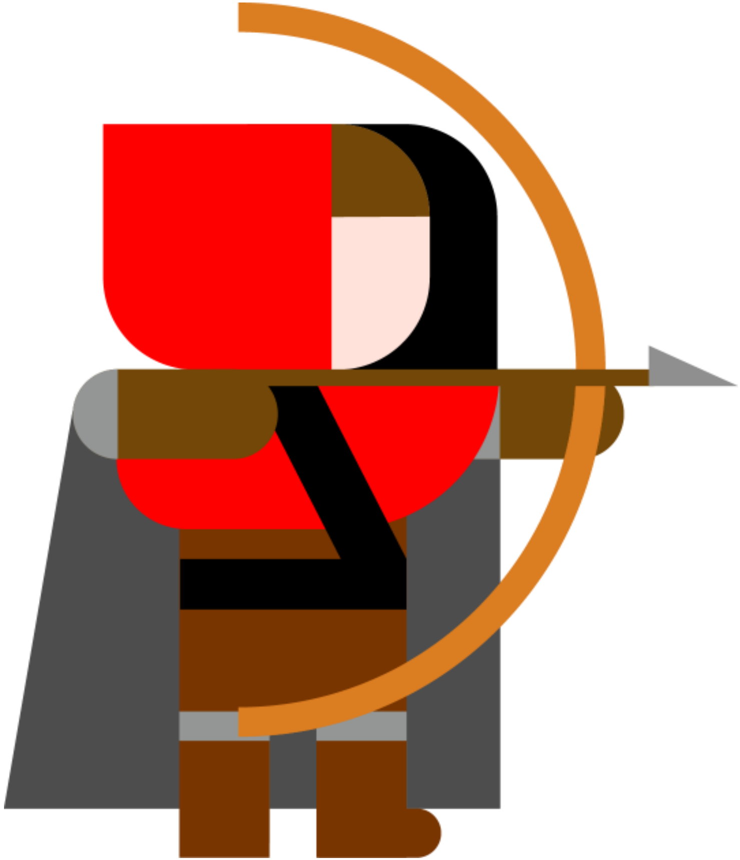
What is WhoIsActive?

sp_WhoIsActive stored procedure

Uses over a dozen Dynamic Management Views

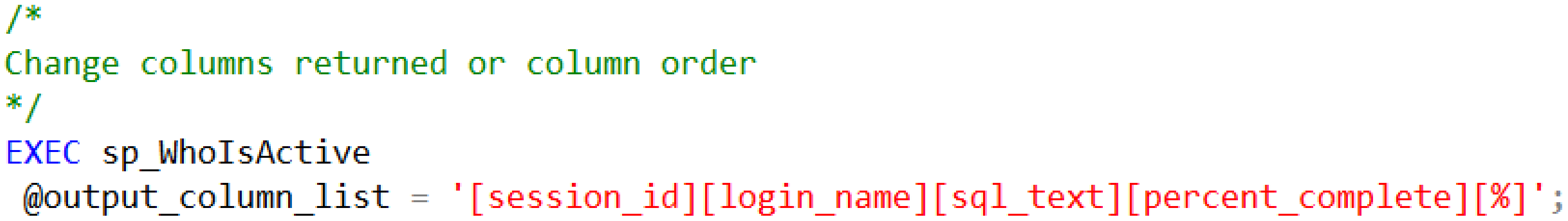
25 parameters that (almost) nobody uses

Using these parameters makes you feel like a wizard



The basics

@output_column_list



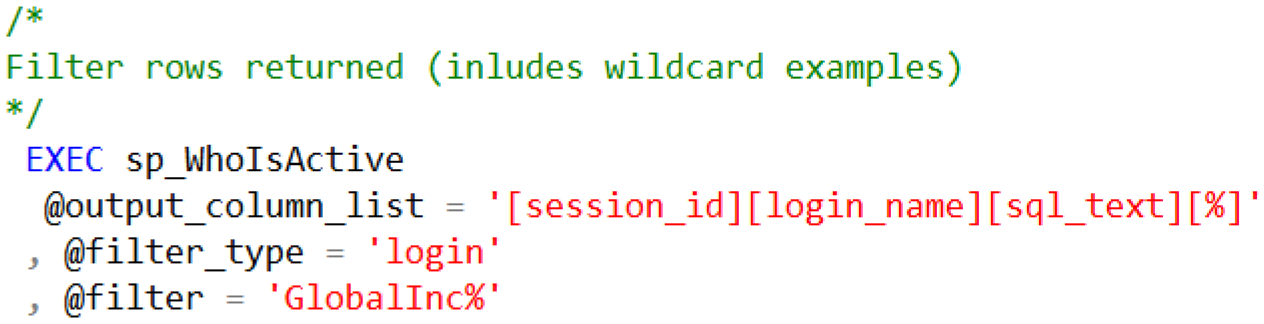
```
/*
Change columns returned or column order
*/
EXEC sp_WhoIsActive
 @output_column_list = '[session_id][login_name][sql_text][percent_complete][%]';
```

Use brackets, not commas

% wildcard works with column names

[%] returns all remaining columns

@filter_type & @filter



```
/*
Filter rows returned (inludes wildcard examples)
*/
 EXEC sp_WhoIsActive
  @output_column_list = '[session_id][login_name][sql_text][%]'
 , @filter_type = 'login'
 , @filter = 'GlobalInc%'
```

Filter on:

- **Login**
- **Session**
- **Host**
- **Program**
- **Database***

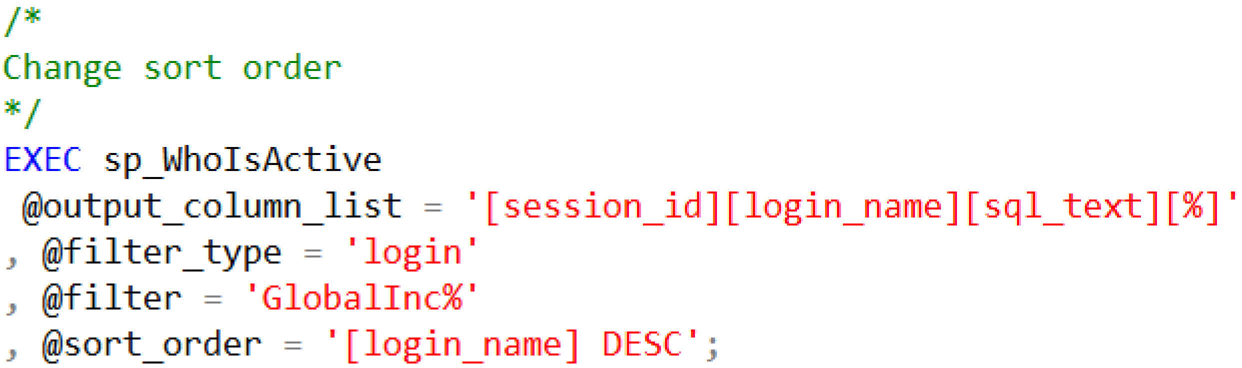
@not_filter_type & @not_filter

Exclusions!

Filter on:

- Login
- Host
- Database*
- Session
- Program

@sort_order



```
/*
Change sort order
*/
EXEC sp_WhoIsActive
 @output_column_list = '[session_id][login_name][sql_text][%]'
, @filter_type = 'login'
, @filter = 'GlobalInc%'
, @sort_order = '[login_name] DESC';
```

Use brackets, not commas

ASC or DESC order

Wildcards are NOT supported

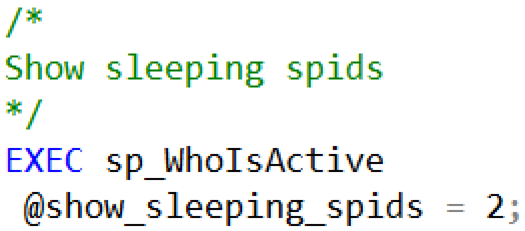
(just like SQL...)

SELECT Col1, Col2, Col3	@output_column_list
FROM SomeTable	
WHERE Col1 = 'Something'	@filter_type & @filter
AND Col2 <> 'SomethingElse'	@not_filter_type & @not_filter
ORDER BY Col3 DESC	@sort_order

The basics

Hidden gems

@show_sleeping_spids



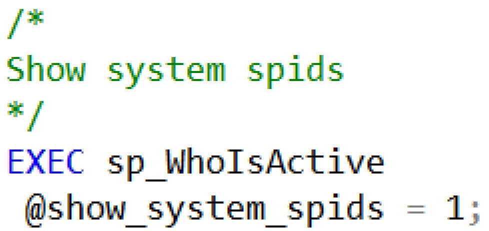
```
/*
Show sleeping spids
*/
EXEC sp_WhoIsActive
 @show_sleeping_spids = 2;
```

2 = show all sleeping SPIDs

1 = show only sleeping SPIDs with open transactions (default)

0 = show no sleeping SPIDs

@show_system_spids



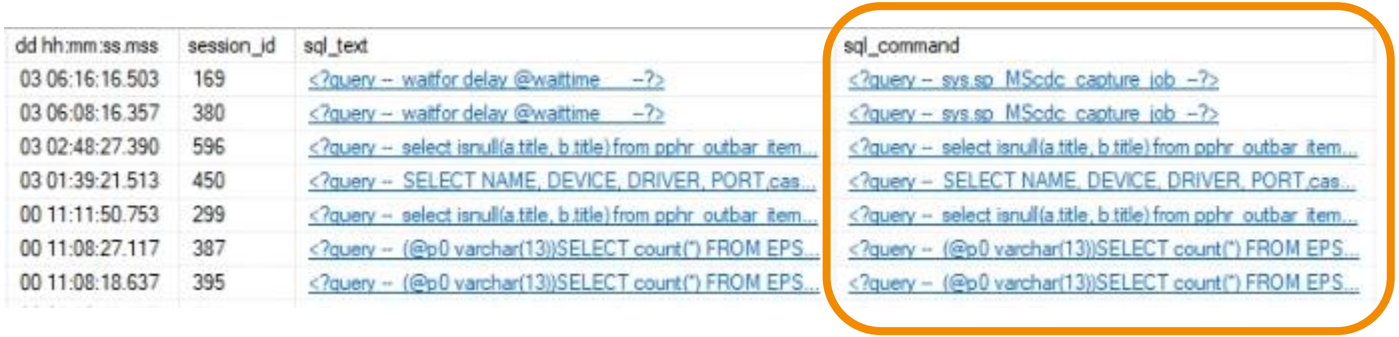
```
/*
Show system spids
*/
EXEC sp_WhoIsActive
 @show_system_spids = 1;
```

1 = show all system SPIDs

Use only if you’re totally confounded

@get_outer_command

```
/*
Show the origial command/stored procedure that called the SQL statement
*/
EXEC sp_WhoIsActive
 @get_outer_command = 1;
```

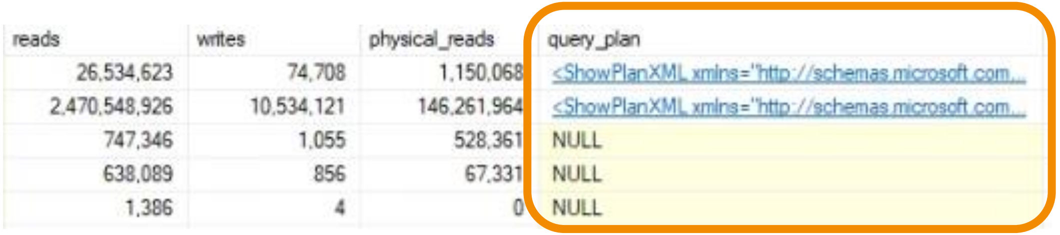


dd hh:mm:ss.mss	session_id	sql_text	sql_command
03 06:16:16.503	169	<?query -- waitfor delay @waittime --?>	<?query -- sys.sp_MScdc_capture_job --?>
03 06:08:16.357	380	<?query -- waitfor delay @waittime --?>	<?query -- sys.sp_MScdc_capture_job --?>
03 02:48:27.390	596	<?query -- select isnull(a.title, b.title) from pphr_outbar_item...	<?query -- select isnull(a.title, b.title) from pphr_outbar_item...
03 01:39:21.513	450	<?query -- SELECT NAME, DEVICE, DRIVER, PORT,cas...	<?query -- SELECT NAME, DEVICE, DRIVER, PORT,cas...
00 11:11:50.753	299	<?query -- select isnull(a.title, b.title) from pphr_outbar_item...	<?query -- select isnull(a.title, b.title) from pphr_outbar_item...
00 11:08:27.117	387	<?query -- (@p0 varchar(13))SELECT count(*) FROM EPS...	<?query -- (@p0 varchar(13))SELECT count(*) FROM EPS...
00 11:08:18.637	395	<?query -- (@p0 varchar(13))SELECT count(*) FROM EPS...	<?query -- (@p0 varchar(13))SELECT count(*) FROM EPS...

Shows outer batch/stored procedure

@get_plans

```
/*
Show the plan for the current statement
*/
EXEC sp_WhoIsActive
 @get_plans = 1;
```



reads	writes	physical_reads	query_plan
26,534,623	74,708	1,150,068	<ShowPlanXML xmlns="http://schemas.microsoft.com...
2,470,548,926	10,534,121	146,261,964	<ShowPlanXML xmlns="http://schemas.microsoft.com...
747,346	1,055	528,361	NULL
638,089	856	67,331	NULL
1,386	4	0	NULL

1 = show plan for current statement

2 = show plan for all queries in the batch

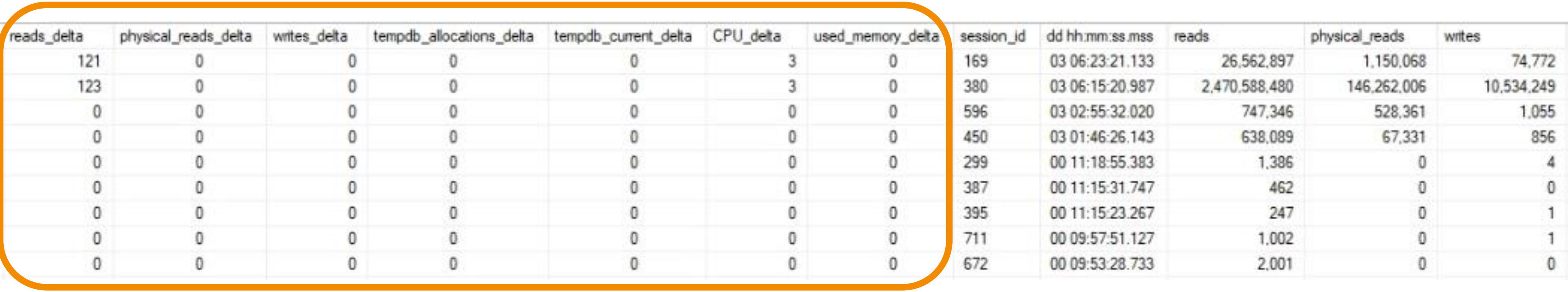
The basics

Hidden gems

Situational sorcery

What is REALLY going on now?

```
/*
Sample activity (delta interval in seconds)
*/
EXEC sp_WhoIsActive
 @output_column_list = '[%delta][%]'
 , @delta_interval = 5;
```

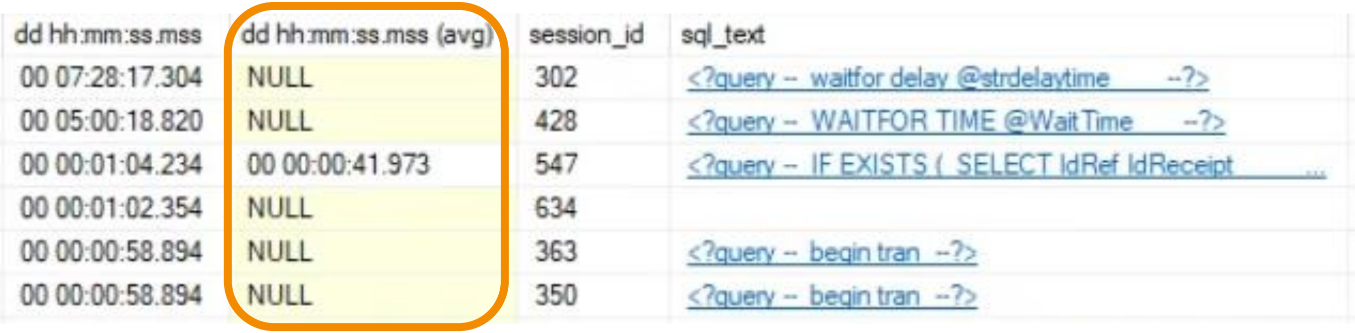


reads_delta	physical_reads_delta	writes_delta	tempdb_allocations_delta	tempdb_current_delta	CPU_delta	used_memory_delta	session_id	dd hh:mm:ss.mss	reads	physical_reads	writes
121	0	0	0	0	3	0	169	03 06:23:21.133	26,562,897	1,150,068	74,772
123	0	0	0	0	3	0	380	03 06:15:20.987	2,470,588,480	146,262,006	10,534,249
0	0	0	0	0	0	0	596	03 02:55:32.020	747,346	528,361	1,055
0	0	0	0	0	0	0	450	03 01:46:26.143	638,089	67,331	856
0	0	0	0	0	0	0	299	00 11:18:55.383	1,386	0	4
0	0	0	0	0	0	0	387	00 11:15:31.747	462	0	0
0	0	0	0	0	0	0	395	00 11:15:23.267	247	0	1
0	0	0	0	0	0	0	711	00 09:57:51.127	1,002	0	1
0	0	0	0	0	0	0	672	00 09:53:28.733	2,001	0	0

Most values indicate number of 8K data pages

Is this abnormal?

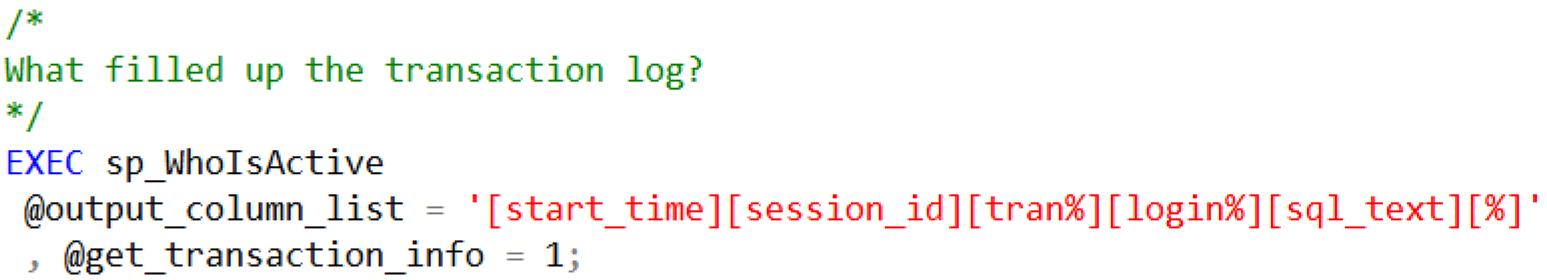
```
/*
Are these executions slower than usual?
*/
EXEC sp_WhoIsActive
 @get_avg_time = 1;
```



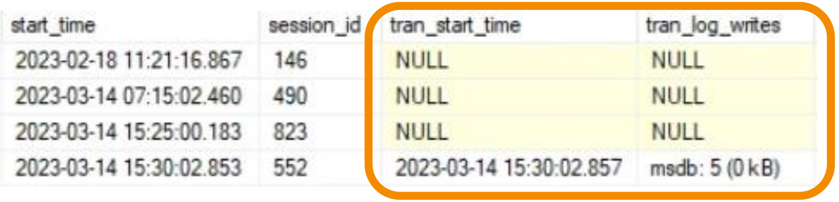
dd hh:mm:ss.mss	dd hh:mm:ss.mss (avg)	session_id	sql_text
00 07:28:17.304	NULL	302	<?query -- waitfor delay @strdelaytime --?>
00 05:00:18.820	NULL	428	<?query -- WAITFOR TIME @WaitTime --?>
00 00:01:04.234	00 00:00:41.973	547	<?query -- IF EXISTS (SELECT IdRef IdReceipt ...
00 00:01:02.354	NULL	634	
00 00:00:58.894	NULL	363	<?query -- begin tran --?>
00 00:00:58.894	NULL	350	<?query -- begin tran --?>

Average time of execution...if available

What filled up the log?



```
/*
What filled up the transaction log?
*/
EXEC sp_WhoIsActive
 @output_column_list = '[start_time][session_id][tran%][login%][sql_text][%]'
 , @get_transaction_info = 1;
```



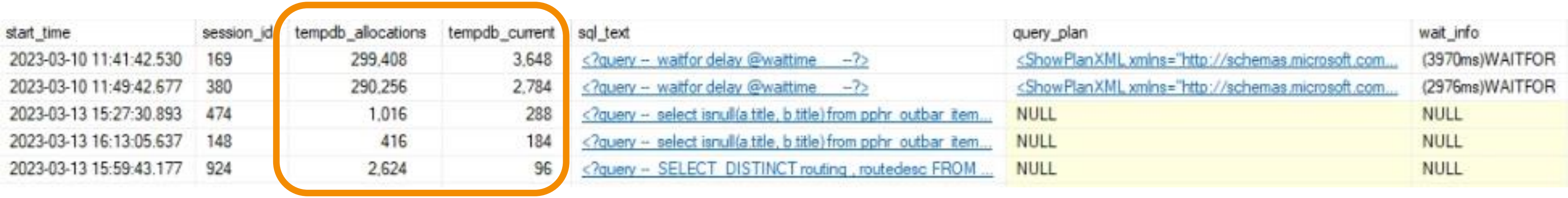
start_time	session_id	tran_start_time	tran_log_writes
2023-02-18 11:21:16.867	146	NULL	NULL
2023-03-14 07:15:02.460	490	NULL	NULL
2023-03-14 15:25:00.183	823	NULL	NULL
2023-03-14 15:30:02.853	552	2023-03-14 15:30:02.857	msdb: 5 (0 kB)

Tran_start_time: date and time the first database was written to

Tran_log writes: number of log records (size of log records)

What filled up tempdb?

```
/*
What filled up tempdb?
*/
EXEC sp_WhoIsActive
 @output_column_list = '[start_time][session_id][temp%][sql_text][query_plan][wait_info][%]'
 , @get_plans = 1
 , @sort_order = '[tempdb_current] DESC';
```



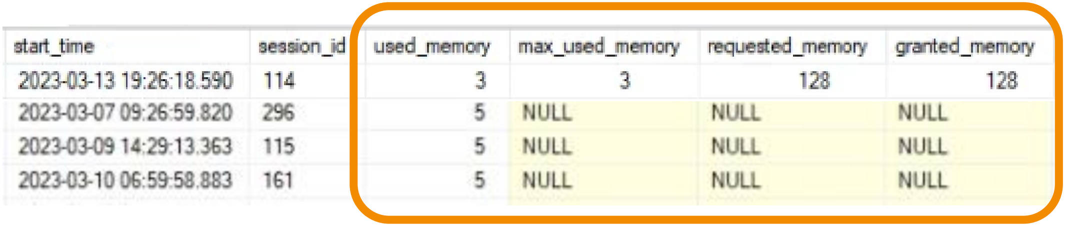
start_time	session_id	tempdb_allocations	tempdb_current	sql_text	query_plan	wait_info
2023-03-10 11:41:42.530	169	299,408	3,648	<?query -- waitfor delay @waittime --?>	<ShowPlanXML xmlns="http://schemas.microsoft.com...	(3970ms)WAITFOR
2023-03-10 11:49:42.677	380	290,256	2,784	<?query -- waitfor delay @waittime --?>	<ShowPlanXML xmlns="http://schemas.microsoft.com...	(2976ms)WAITFOR
2023-03-13 15:27:30.893	474	1,016	288	<?query -- select isnull(a.title, b.title) from pphr_outbar_item...	NULL	NULL
2023-03-13 16:13:05.637	148	416	184	<?query -- select isnull(a.title, b.title) from pphr_outbar_item...	NULL	NULL
2023-03-13 15:59:43.177	924	2,624	96	<?query -- SELECT DISTINCT routing , routedesc FROM ...	NULL	NULL

High tempdb_allocations indicates high usage

High tempdb_current indicates growth

What filled up memory?

```
/*
What filled up the memory? (v12 only)
*/
EXEC sp_WhoIsActive
 @output_column_list = '[start_time][session_id][%memory][login%][sql_text][%]'
 , @get_memory_info = 1;
```



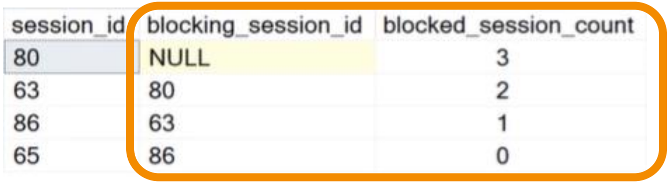
start_time	session_id	used_memory	max_used_memory	requested_memory	granted_memory
2023-03-13 19:26:18.590	114	3	3	128	128
2023-03-07 09:26:59.820	296	5	NULL	NULL	NULL
2023-03-09 14:29:13.363	115	5	NULL	NULL	NULL
2023-03-10 06:59:58.883	161	5	NULL	NULL	NULL

Watch for large grants with low used_memory

What is causing the blocking?

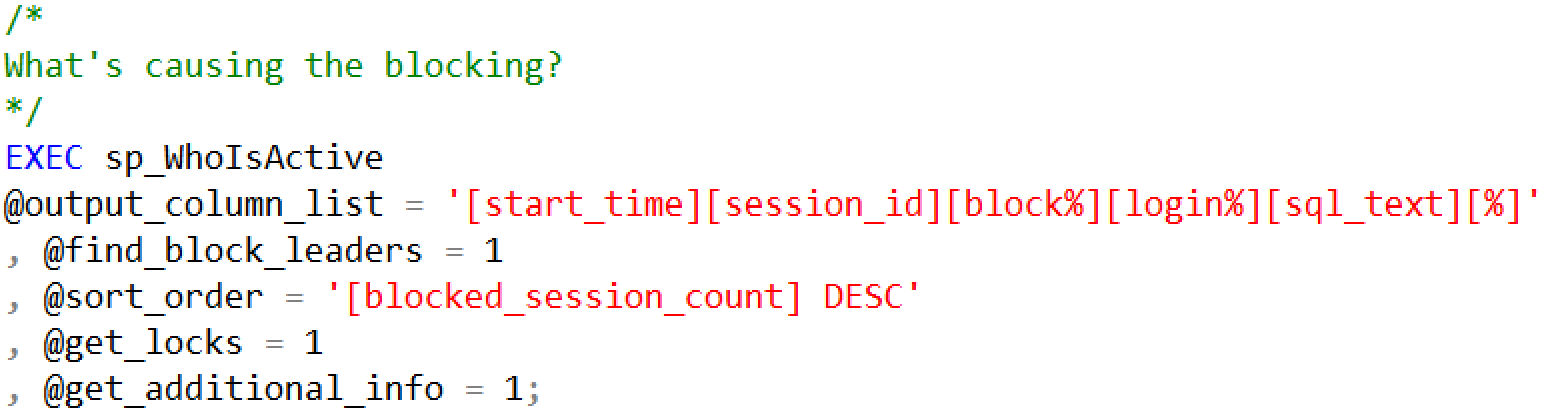
```
/*
What's causing the blocking?
*/
EXEC sp_WhoIsActive
@output_column_list = '[start_time][session_id][block%][login%][sql_text][%]'
, @find_block_leaders = 1
, @sort_order = '[blocked_session_count] DESC'
, @get_locks = 1
, @get_additional_info = 1;
```

@find_block_leaders adds blocked_session_count



session_id	blocking_session_id	blocked_session_count
80	NULL	3
63	80	2
86	63	1
65	86	0

What is causing the blocking?

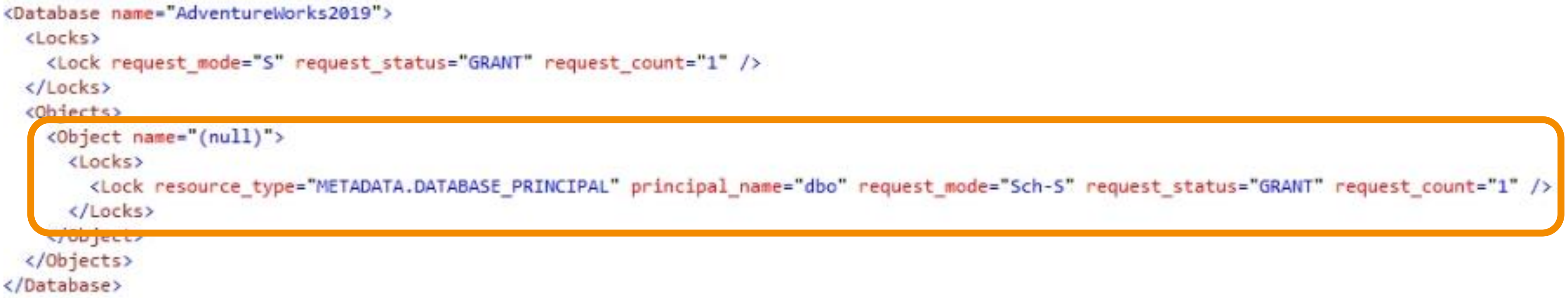


```
/*
What's causing the blocking?
*/
EXEC sp_WhoIsActive
@output_column_list = '[start_time][session_id][block%][login%][sql_text][%]'
, @find_block_leaders = 1
, @sort_order = '[blocked_session_count] DESC'
, @get_locks = 1
, @get_additional_info = 1;
```

@find_block_leaders adds blocked_session_count

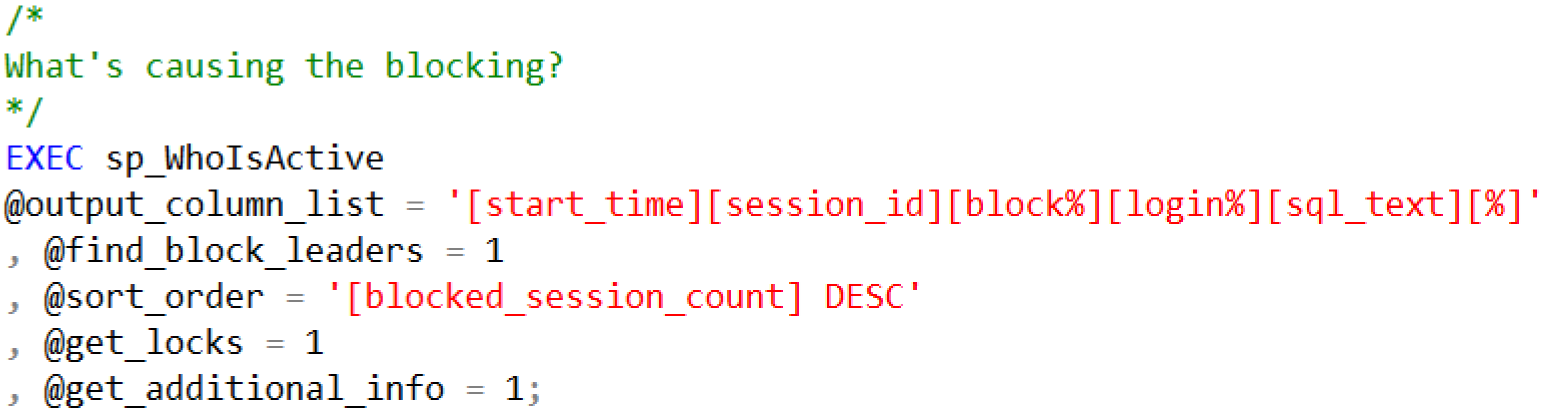
@get_locks adds locks column (XML)

@get_locks



```
<Database name="AdventureWorks2019">
  <Locks>
    <Lock request_mode="S" request_status="GRANT" request_count="1" />
  </Locks>
  <Objects>
    <Object name="(null)">
      <Locks>
        <Lock resource_type="METADATA.DATABASE_PRINCIPAL" principal_name="dbo" request_mode="Sch-S" request_status="GRANT" request_count="1" />
      </Locks>
    </Object>
  </Objects>
</Database>
```

What is causing the blocking?



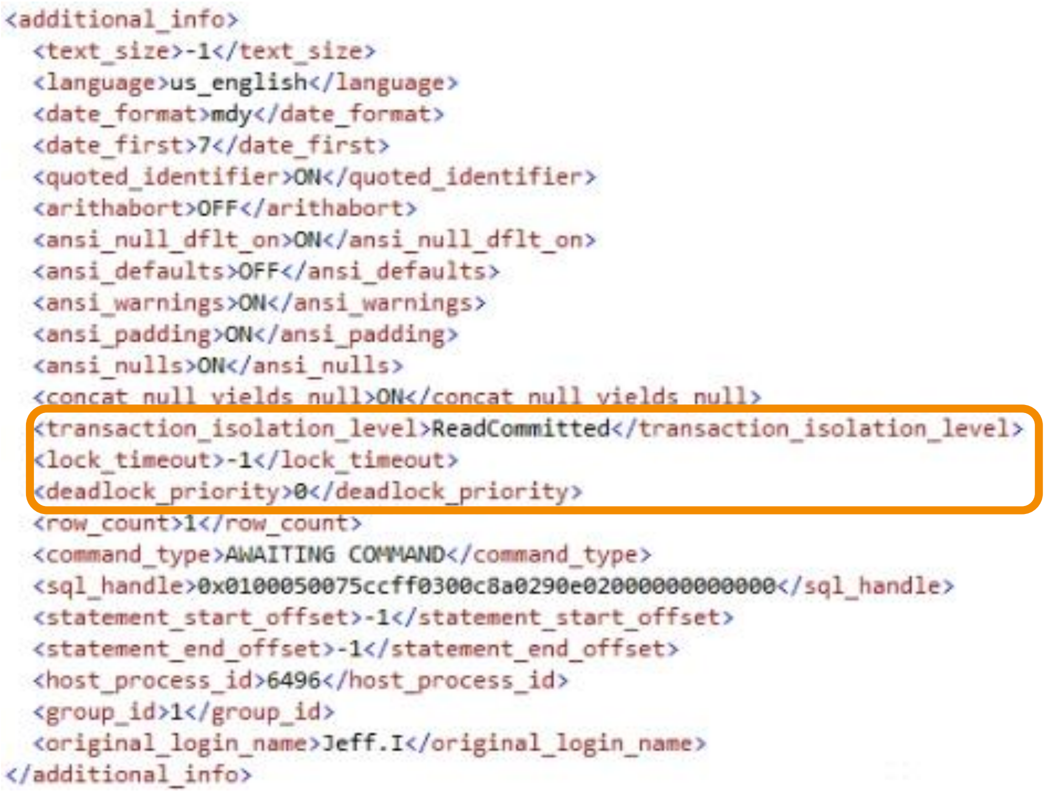
```
/*
What's causing the blocking?
*/
EXEC sp_WhoIsActive
@output_column_list = '[start_time][session_id][block%][login%][sql_text][%]'
, @find_block_leaders = 1
, @sort_order = '[blocked_session_count] DESC'
, @get_locks = 1
, @get_additional_info = 1;
```

@find_block_leaders adds blocked_session_count

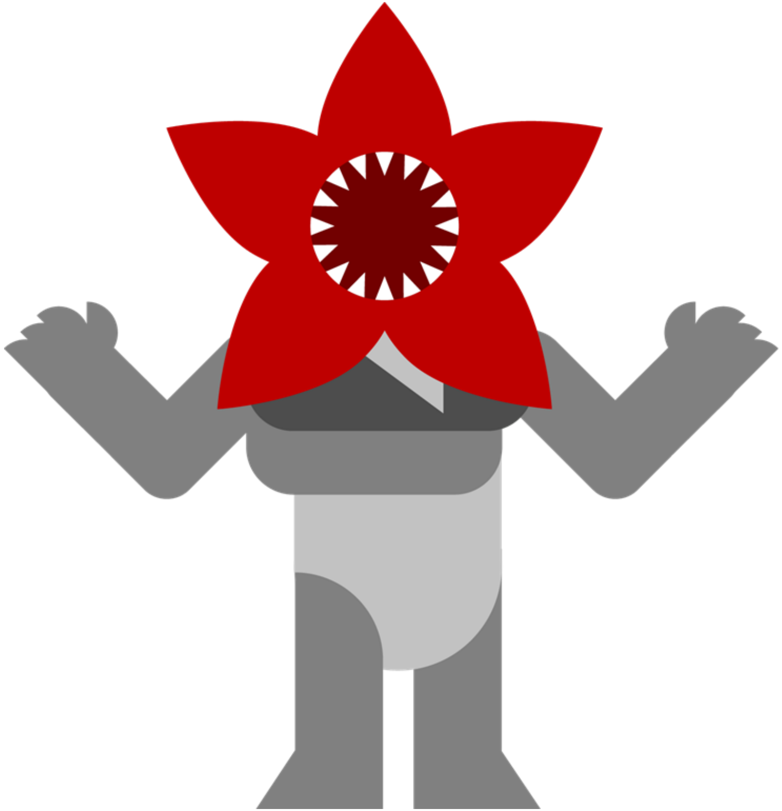
@get_locks adds locks column (XML)

@get_additional_info adds additional_info column (XML)

@get_additional_info



```
<additional_info>
  <text_size>-1</text_size>
  <language>us_english</language>
  <date_format>mdy</date_format>
  <date_first>7</date_first>
  <quoted_identifier>ON</quoted_identifier>
  <arithabort>OFF</arithabort>
  <ansi_null_dflt_on>ON</ansi_null_dflt_on>
  <ansi_defaults>OFF</ansi_defaults>
  <ansi_warnings>ON</ansi_warnings>
  <ansi_padding>ON</ansi_padding>
  <ansi_nulls>ON</ansi_nulls>
  <concat_null_yields_null>ON</concat_null_yields_null>
  <transaction_isolation_level>ReadCommitted</transaction_isolation_level>
  <lock_timeout>-1</lock_timeout>
  <deadlock_priority>0</deadlock_priority>
  <row_count>1</row_count>
  <command_type>AWAITING COMMAND</command_type>
  <sql_handle>0x0100050075ccff0300c8a0290e02000000000000</sql_handle>
  <statement_start_offset>-1</statement_start_offset>
  <statement_end_offset>-1</statement_end_offset>
  <host_process_id>6496</host_process_id>
  <group_id>1</group_id>
  <original_login_name>Jeff.I</original_login_name>
</additional_info>
```



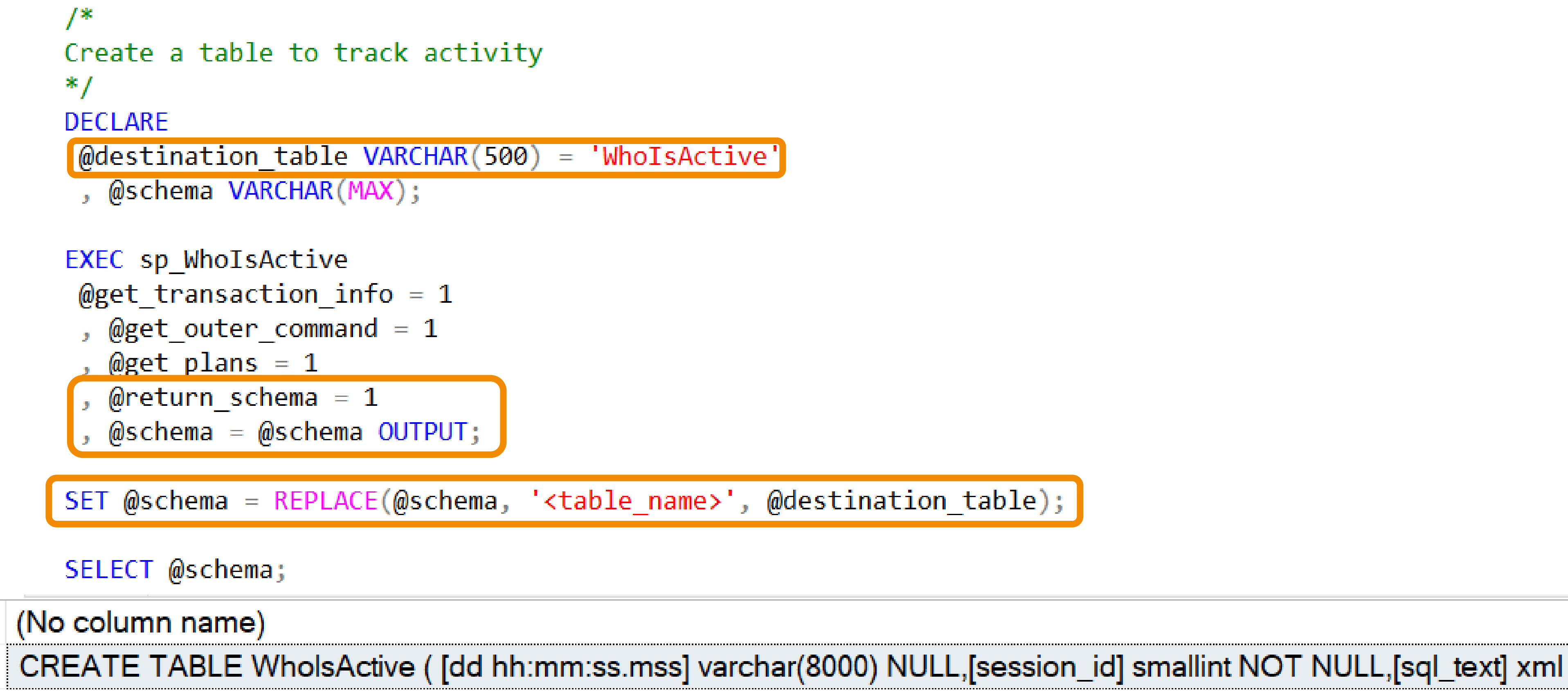
The basics

Hidden gems

Situational sorcery

Time travelling

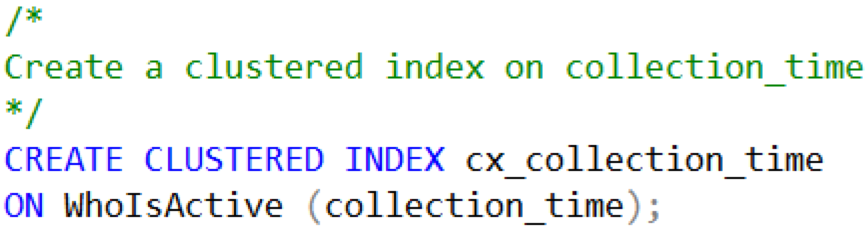
Create a table



```
/*
Create a table to track activity
*/
DECLARE
 @destination_table VARCHAR(500) = 'WhoIsActive'
  , @schema VARCHAR(MAX);

EXEC sp_WhoIsActive
 @get_transaction_info = 1
  , @get_outer_command = 1
  , @get_plans = 1
  , @return_schema = 1
  , @schema = @schema OUTPUT;

SET @schema = REPLACE(@schema, '<table_name>', @destination_table);

SELECT @schema;
```

```
(No column name)
CREATE TABLE WhoIsActive ( [dd hh:mm:ss.mss] varchar(8000) NULL,[session_id] smallint NOT NULL,[sql_text] xml
```

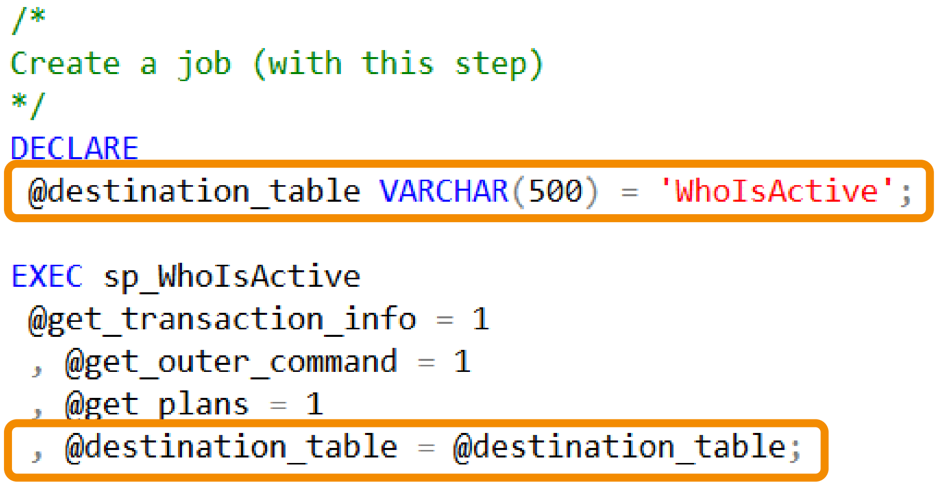
Create an index



```sql
/*
Create a clustered index on collection_time
*/
CREATE CLUSTERED INDEX cx_collection_time
ON WhoIsActive (collection_time);
```

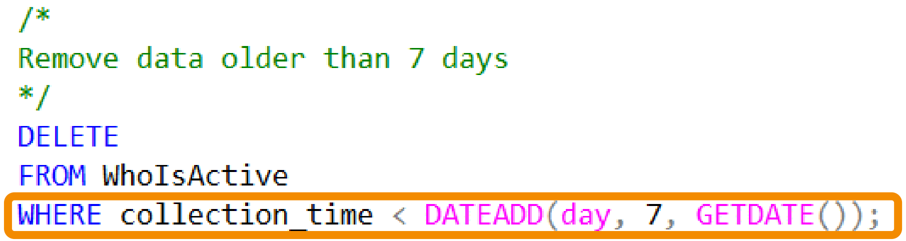
Optional…but highly recommended

Create a job



```
/*
Create a job (with this step)
*/
DECLARE
 @destination_table VARCHAR(500) = 'WhoIsActive';

EXEC sp_WhoIsActive
 @get_transaction_info = 1
 , @get_outer_command = 1
 , @get_plans = 1
 , @destination_table = @destination_table;
```

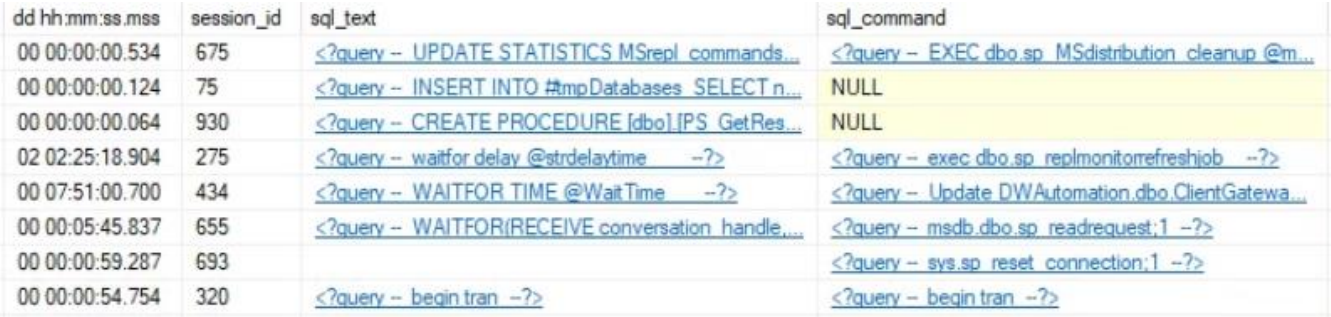
Add a cleanup step



```
/*
Remove data older than 7 days
*/
DELETE
FROM WhoIsActive
WHERE collection_time < DATEADD(day, 7, GETDATE());
```

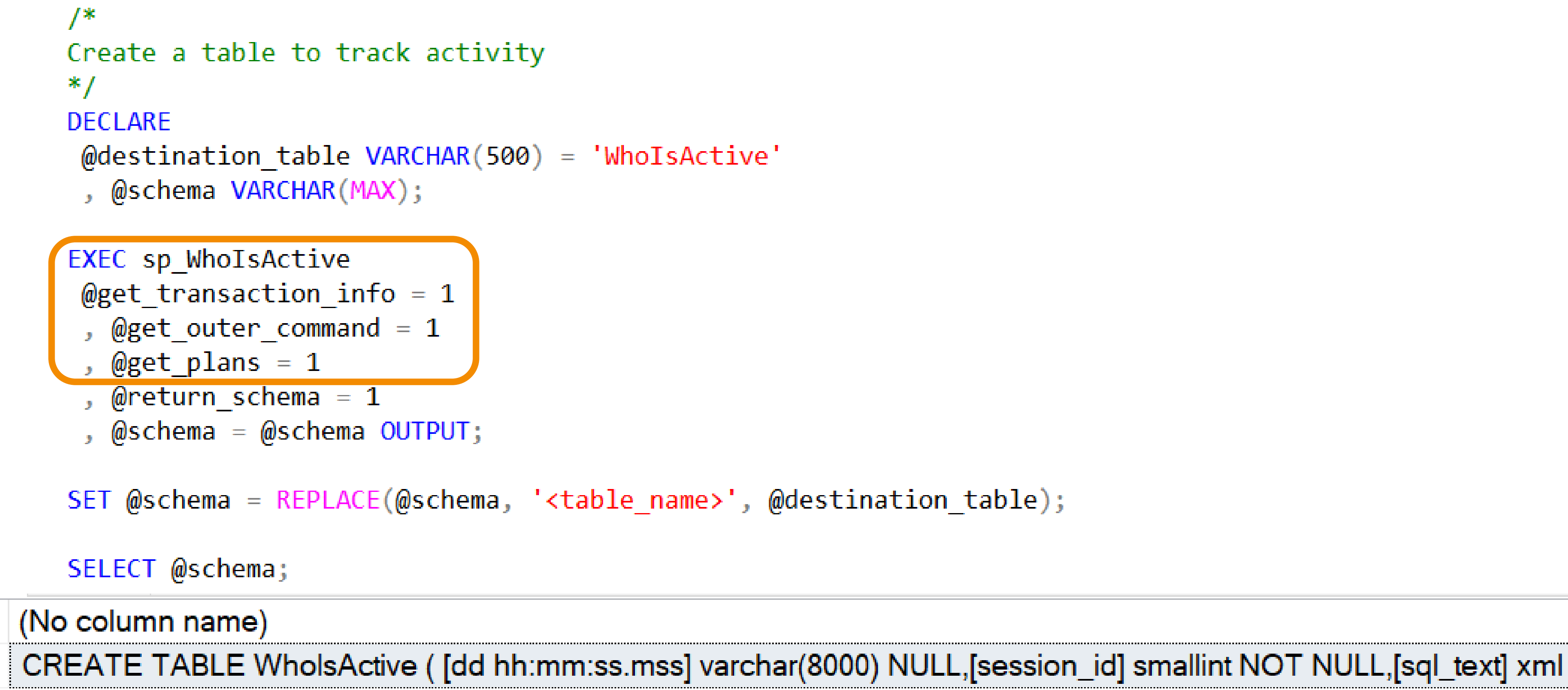
Query the table

```
SELECT *
FROM WhoIsActive
WHERE collection_time BETWEEN '2023-03-12 00:00:00' AND '2023-03-12 01:00:00'
```



dd hh:mm:ss.mss	session_id	sql_text	sql_command
00 00:00:00.534	675	<?query -- UPDATE STATISTICS MSrepl_commands...	<?query -- EXEC dbo.sp_MSdistribution_cleanup @m...
00 00:00:00.124	75	<?query -- INSERT INTO #tmpDatabases SELECT n...	NULL
00 00:00:00.064	930	<?query -- CREATE PROCEDURE [dbo].[PS_GetRes...	NULL
02 02:25:18.904	275	<?query -- waitfor delay @strdelaytime --?>	<?query -- exec dbo.sp_replmonitorrefreshjob --?>
00 07:51:00.700	434	<?query -- WAITFOR TIME @WaitTime --?>	<?query -- Update DWAutomation.dbo.ClientGatewa...
00 00:05:45.837	655	<?query -- WAITFOR(RECEIVE conversation_handle,...	<?query -- msdb.dbo.sp_readrequest;1 --?>
00 00:00:59.287	693		<?query -- sys.sp_reset_connection;1 --?>
00 00:00:54.754	320	<?query -- begin tran --?>	<?query -- begin tran --?>

Customize your output



```sql
/*
Create a table to track activity
*/
DECLARE
 @destination_table VARCHAR(500) = 'WhoIsActive'
 , @schema VARCHAR(MAX);

EXEC sp_WhoIsActive
 @get_transaction_info = 1
 , @get_outer_command = 1
 , @get_plans = 1
 , @return_schema = 1
 , @schema = @schema OUTPUT;

SET @schema = REPLACE(@schema, '<table_name>', @destination_table);

SELECT @schema;
```

```
(No column name)
CREATE TABLE WhoIsActive ( [dd hh:mm:ss.mss] varchar(8000) NULL,[session_id] smallint NOT NULL,[sql_text] xml
```

Send yourself alerts

Long-running queries

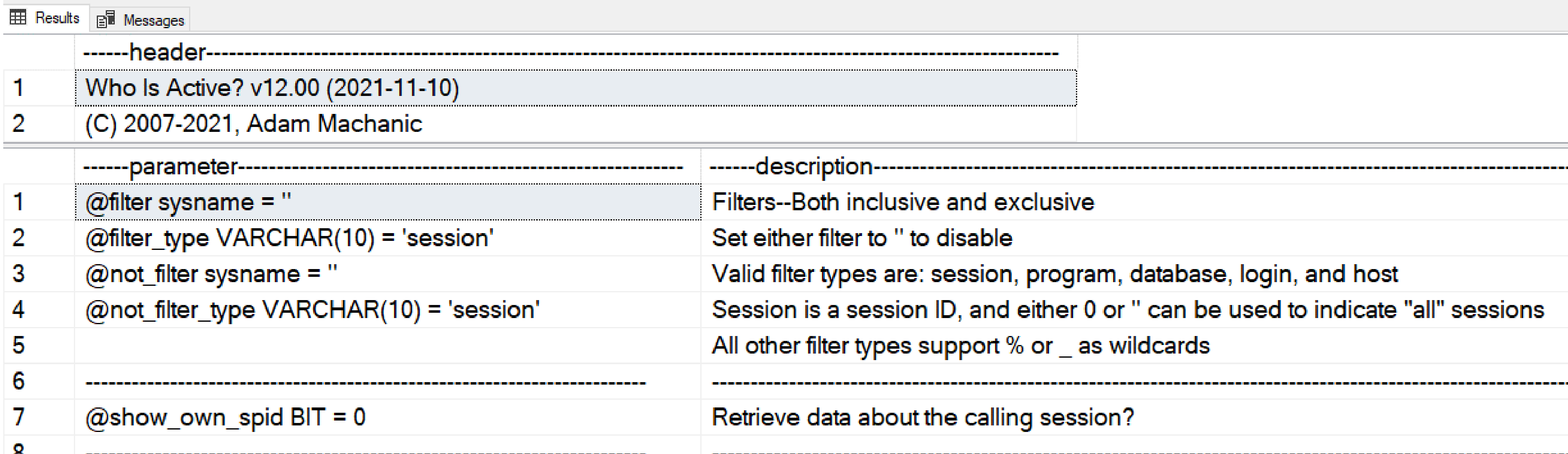
Blocking

Large memory grants

We’re all Wizards now!
(…but in case we’re not…)

@help

```
/*
Get the documentation
*/
EXEC sp_WhoIsActive
 @help = 1
```



	------header---
1	Who Is Active? v12.00 (2021-11-10)
2	(C) 2007-2021, Adam Machanic

	------parameter--	------description---
1	@filter sysname = ''	Filters--Both inclusive and exclusive
2	@filter_type VARCHAR(10) = 'session'	Set either filter to '' to disable
3	@not_filter sysname = ''	Valid filter types are: session, program, database, login, and host
4	@not_filter_type VARCHAR(10) = 'session'	Session is a session ID, and either 0 or '' can be used to indicate "all" sessions
5		All other filter types support % or _ as wildcards
6	---	---
7	@show_own_spid BIT = 0	Retrieve data about the calling session?
8	---	---

That’s the end. Thank you!

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