

# Getting Started with SQL Server Maintenance

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## INTRODUCING SQL SERVER MAINTENANCE



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# Maintenance Intervals for a 2013 Toyota Tacoma



Item	Frequency
Change Oil	Every 5,000 miles
Rotate Tires	Every 10,000 miles
Replace Air Filter	Every 30,000 miles
Transmission Fluid	Every 90,000 miles
Inspect Safety Items	Daily/Periodically

# Overview



## Daily Maintenance

- SQL Server Backups
- System Checks

## Weekly Maintenance

- Indexes and Statistics
- Database Integrity

## Monthly/Periodic Maintenance

- Patching, Restore Tests

## On Demand

- Server Reviews, DB Inventory, Performance

## Automation with Free Tools



# SQL Server Backups

**What is a backup?**

**Data is your most important asset**

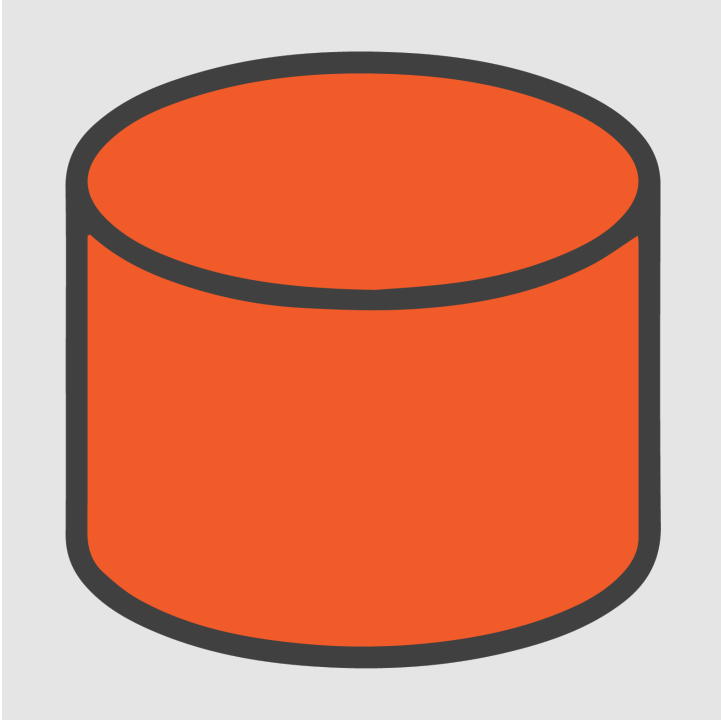
**Ability to recover from errors and disasters**

**Industry regulations**

**Service Level Agreements**



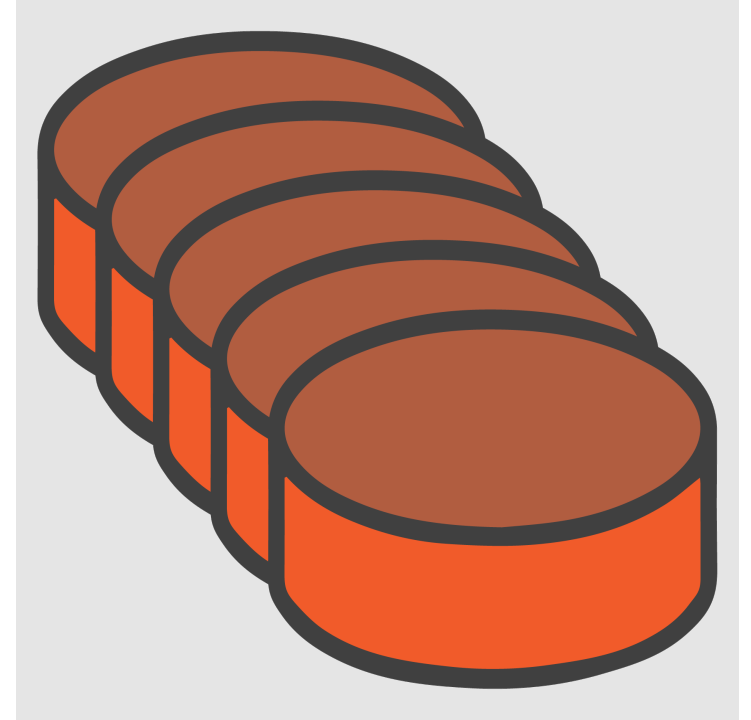
# SQL Server Database Backups



**Full Backup**



**Differential  
Backup**



**Log Backups**



## Other Backup Types

### **We will not be covering:**

- VM Snapshots
- SAN-based
- 3<sup>rd</sup> party tools



# SQL Server Indexes and Statistics

**What is an Index?**

**Clustered / Non-Clustered**

**Statistics**

**Performance impact**

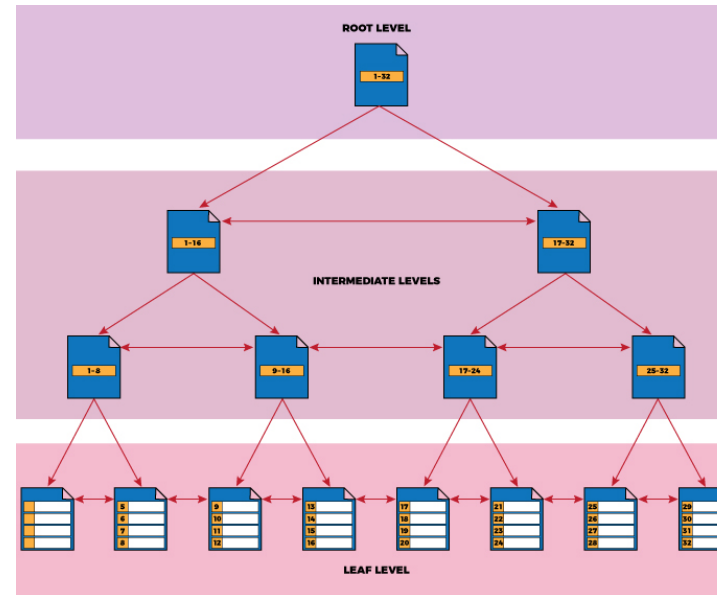
**Maintenance**



# Indexes and Statistics

Id	DisplayName	Location
7093725	A A	
1389124	A A	New York, United States
7128380	A Andreyev	Adelaide, SA, Australia
7067946	A Arihant	Chennai, Tamil Nadu, India
6583697	A B	Earth
727079	A B	India
167362	A B	San Francisco, CA
726185	A Backstrom	Midwest, USA
1488992	A Bogus	Columbus, OH
1238950	A boy	Vigra, Norway

Clustered



Non-Clustered

Histogram Steps	RANGE_HI_KEY	RANGE_ROWS
	0x38	0
	A.T	6409.891
	Abu	8679.086
	Adam	5170.021
	Aditya Kumar	7064.916
	Ahmad	6386.497
	AJJ	5918.622
	alan	7369.035
	Alex	8936.417
	Alexis	5988.803
	Aman Gupta	7813.516
	amir	5123.234
	Amr	4819.115
	Andrew	4959.478
	AndyM	3743.002
	Anon	8515.329
	Antonio	4842.509

Statistics





# Database Integrity

**What is Database Integrity?**

**How do I find it?**

**How do I respond?**

**How often does this happen?**

**What causes it?**



# Database Integrity

DBCC results for 'sys.syscommittab'.  
There are 0 rows in 0 pages for object "sys.syscommittab".  
DBCC results for 'sys.filetable\_updates\_2105058535'.  
There are 0 rows in 0 pages for object "sys.filetable\_updates\_2105058535".  
CHECKDB found 0 allocation errors and 2 consistency errors in database 'XE\_demo'.  
repair\_allow\_data\_loss is the minimum repair level for the errors found by DBCC CHECKDB (XE\_demo).  
DBCC execution completed. If DBCC printed error messages, contact your system administrator.

Log file summary: No filter applied		
Date ▾	Source	Message
5/23/2020 3:09:21 PM	spid52	External dump process return code 0x20000001. External dump process returned no errors.
5/23/2020 3:09:20 PM	spid52	Stack Signature for the dump is 0x0000000000000116
5/23/2020 3:09:20 PM	spid52	* Short Stack Dump
5/23/2020 3:09:20 PM	spid52	* -----
5/23/2020 3:09:20 PM	spid52	* .....
5/23/2020 3:09:20 PM	spid52	*
5/23/2020 3:09:20 PM	spid52	* dbcc checkdb
5/23/2020 3:09:20 PM	spid52	* Input Buffer 46 bytes -
5/23/2020 3:09:20 PM	spid52	*
5/23/2020 3:09:20 PM	spid52	* DBCC database corruption
5/23/2020 3:09:20 PM	spid52	*
5/23/2020 3:09:20 PM	spid52	* 05/23/20 15:09:20 spid 52
5/23/2020 3:09:20 PM	spid52	* BEGIN STACK DUMP:
5/23/2020 3:09:20 PM	spid52	*
5/23/2020 3:09:20 PM	spid52	* .....
5/23/2020 3:09:20 PM	spid52	***Stack Dump being sent to D:\Data\MSSQL14.SQL2017\MSSQL14.SQL2017\MSSQL\LOG\SQLDump0002.txt
5/23/2020 3:09:20 PM	spid52	**Dump thread - spid = 0, EC = 0x000001E57D033610
5/23/2020 3:09:20 PM	spid52	Using 'dbghelp.dll' version '4.0.5'
5/23/2020 3:09:20 PM	spid52	DBCC CHECKDB (XE_demo) executed by KBH-PRECISION\Kevin found 2 errors and repaired 0 errors. Elapsed time: 0



## Monthly Maintenance

**Monthly might be weekly or quarterly**

**Patching SQL Server**

**Test restore your databases**



“If you don’t test your backups,  
you don’t have a DR plan. . .you  
have a DR *hope*”

Paraphrased from a very smart DBA 20 years ago



On Demand  
Maintenance

**Server reviews**

**Database inventory**

**Performance reviews**



# Automation With Free Tools

**Sp\_WholsActive – Adam  
Machanic**

**Ola Hallengren – Maintenance  
Solution**

**Sp\_blitz – Brent Ozar Unlimited**

**All of these are open source on GitHub**

