# Partitions in SQL Server

Rifat Sabbir Mansur

# Basic concept

| | date_time | id | group_name |
|---|---|---|---|
| 921 | 2019-07-12 17:10:49 | 4061849 | PGroup5 |
| 922 | 2019-07-12 17:10:50 | 4061850 | PGroup5 |
| 923 | 2019-07-12 17:10:51 | 4061851 | PGroup5 |
| 924 | 2019-07-12 17:10:52 | 4061852 | PGroup5 |
| 925 | 2019-07-12 17:10:53 | 4061853 | PGroup5 |
| 926 | 2019-07-12 17:10:54 | 4061854 | PGroup5 |
| 927 | 2019-07-12 17:10:55 | 4061855 | PGroup5 |
| 928 | 2019-07-12 17:10:56 | 4061856 | PGroup5 |
| 929 | 2019-07-12 17:10:57 | 4061857 | PGroup5 |
| 930 | 2019-07-12 17:10:58 | 4061858 | PGroup5 |
| 931 | 2019-07-12 17:10:59 | 4061859 | PGroup5 |
| 932 | 2019-07-12 17:11:00 | 4061860 | PGroup5 |
| 933 | 2019-07-12 17:11:01 | 4061861 | PGroup5 |
| 934 | 2019-07-12 17:11:02 | 4061862 | PGroup5 |
| 935 | 2019-07-12 17:11:03 | 4061863 | PGroup5 |
| 936 | 2019-07-12 17:11:04 | 4061864 | PGroup5 |
| 937 | 2019-07-12 17:11:05 | 4061865 | PGroup5 |
| 938 | 2019-07-12 17:11:06 | 4061866 | PGroup5 |
| 939 | 2019-07-12 17:11:07 | 4061867 | PGroup5 |
| 940 | 2019-07-12 17:11:08 | 4061868 | PGroup5 |
| 941 | 2019-07-12 17:11:09 | 4061869 | PGroup5 |
| 942 | 2019-07-12 17:11:10 | 4061870 | PGroup5 |
| 943 | 2019-07-12 17:11:11 | 4061871 | PGroup5 |
| 944 | 2019-07-12 17:11:12 | 4061872 | PGroup5 |
| 945 | 2019-07-12 17:11:13 | 4061873 | PGroup5 |
| 946 | 2019-07-12 17:11:14 | 4061874 | PGroup5 |
| 947 | 2019-07-12 17:11:15 | 4061875 | PGroup5 |
| 948 | 2019-07-12 17:11:16 | 4061876 | PGroup5 |
| 949 | 2019-07-12 17:11:17 | 4061877 | PGroup5 |
| 950 | 2019-07-12 17:11:18 | 4061878 | PGroup5 |

- SELECT
- INSERT
- DELETE

- Takes a long time
- Locks the table during the whole operation

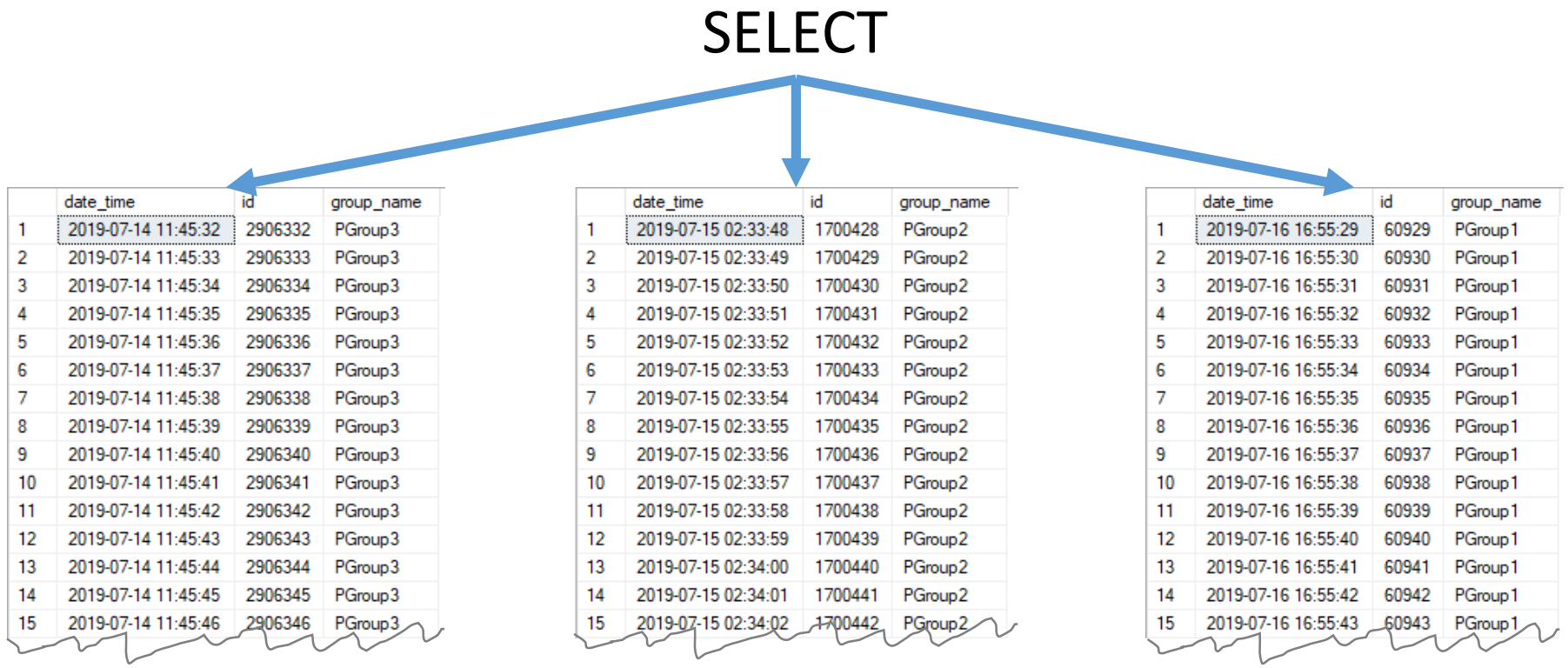
# Basic concept

| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-14 11:45:32 | 2906332 | PGroup3 |
| 2 | 2019-07-14 11:45:33 | 2906333 | PGroup3 |
| 3 | 2019-07-14 11:45:34 | 2906334 | PGroup3 |
| 4 | 2019-07-14 11:45:35 | 2906335 | PGroup3 |
| 5 | 2019-07-14 11:45:36 | 2906336 | PGroup3 |
| 6 | 2019-07-14 11:45:37 | 2906337 | PGroup3 |
| 7 | 2019-07-14 11:45:38 | 2906338 | PGroup3 |
| 8 | 2019-07-14 11:45:39 | 2906339 | PGroup3 |
| 9 | 2019-07-14 11:45:40 | 2906340 | PGroup3 |
| 10 | 2019-07-14 11:45:41 | 2906341 | PGroup3 |
| 11 | 2019-07-14 11:45:42 | 2906342 | PGroup3 |
| 12 | 2019-07-14 11:45:43 | 2906343 | PGroup3 |
| 13 | 2019-07-14 11:45:44 | 2906344 | PGroup3 |
| 14 | 2019-07-14 11:45:45 | 2906345 | PGroup3 |
| 15 | 2019-07-14 11:45:46 | 2906346 | PGroup3 |

| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-15 02:33:48 | 1700428 | PGroup2 |
| 2 | 2019-07-15 02:33:49 | 1700429 | PGroup2 |
| 3 | 2019-07-15 02:33:50 | 1700430 | PGroup2 |
| 4 | 2019-07-15 02:33:51 | 1700431 | PGroup2 |
| 5 | 2019-07-15 02:33:52 | 1700432 | PGroup2 |
| 6 | 2019-07-15 02:33:53 | 1700433 | PGroup2 |
| 7 | 2019-07-15 02:33:54 | 1700434 | PGroup2 |
| 8 | 2019-07-15 02:33:55 | 1700435 | PGroup2 |
| 9 | 2019-07-15 02:33:56 | 1700436 | PGroup2 |
| 10 | 2019-07-15 02:33:57 | 1700437 | PGroup2 |
| 11 | 2019-07-15 02:33:58 | 1700438 | PGroup2 |
| 12 | 2019-07-15 02:33:59 | 1700439 | PGroup2 |
| 13 | 2019-07-15 02:34:00 | 1700440 | PGroup2 |
| 14 | 2019-07-15 02:34:01 | 1700441 | PGroup2 |
| 15 | 2019-07-15 02:34:02 | 1700442 | PGroup2 |

| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-16 16:55:29 | 60929 | PGroup1 |
| 2 | 2019-07-16 16:55:30 | 60930 | PGroup1 |
| 3 | 2019-07-16 16:55:31 | 60931 | PGroup1 |
| 4 | 2019-07-16 16:55:32 | 60932 | PGroup1 |
| 5 | 2019-07-16 16:55:33 | 60933 | PGroup1 |
| 6 | 2019-07-16 16:55:34 | 60934 | PGroup1 |
| 7 | 2019-07-16 16:55:35 | 60935 | PGroup1 |
| 8 | 2019-07-16 16:55:36 | 60936 | PGroup1 |
| 9 | 2019-07-16 16:55:37 | 60937 | PGroup1 |
| 10 | 2019-07-16 16:55:38 | 60938 | PGroup1 |
| 11 | 2019-07-16 16:55:39 | 60939 | PGroup1 |
| 12 | 2019-07-16 16:55:40 | 60940 | PGroup1 |
| 13 | 2019-07-16 16:55:41 | 60941 | PGroup1 |
| 14 | 2019-07-16 16:55:42 | 60942 | PGroup1 |
| 15 | 2019-07-16 16:55:43 | 60943 | PGroup1 |

# Basic concept



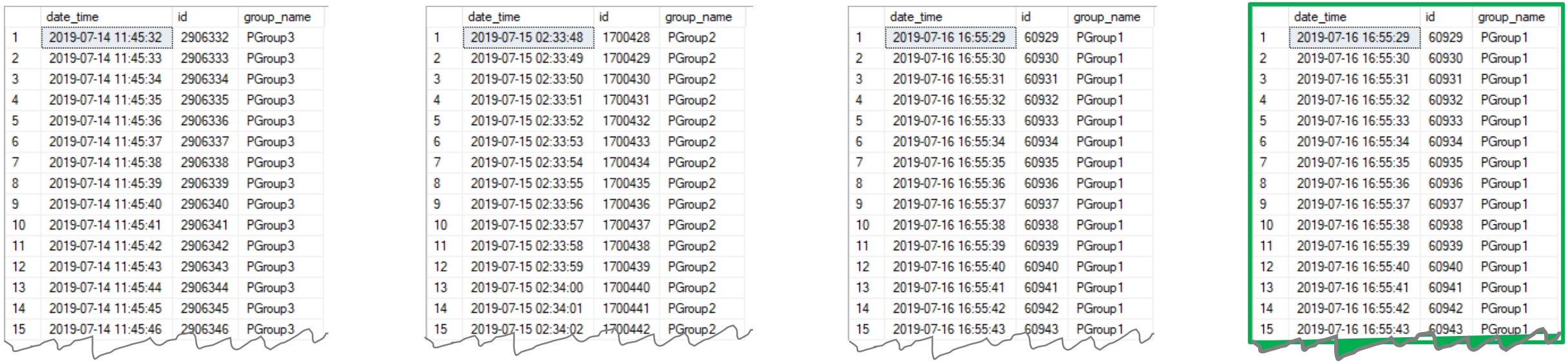

| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-14 11:45:32 | 2906332 | PGroup3 |
| 2 | 2019-07-14 11:45:33 | 2906333 | PGroup3 |
| 3 | 2019-07-14 11:45:34 | 2906334 | PGroup3 |
| 4 | 2019-07-14 11:45:35 | 2906335 | PGroup3 |
| 5 | 2019-07-14 11:45:36 | 2906336 | PGroup3 |
| 6 | 2019-07-14 11:45:37 | 2906337 | PGroup3 |
| 7 | 2019-07-14 11:45:38 | 2906338 | PGroup3 |
| 8 | 2019-07-14 11:45:39 | 2906339 | PGroup3 |
| 9 | 2019-07-14 11:45:40 | 2906340 | PGroup3 |
| 10 | 2019-07-14 11:45:41 | 2906341 | PGroup3 |
| 11 | 2019-07-14 11:45:42 | 2906342 | PGroup3 |
| 12 | 2019-07-14 11:45:43 | 2906343 | PGroup3 |
| 13 | 2019-07-14 11:45:44 | 2906344 | PGroup3 |
| 14 | 2019-07-14 11:45:45 | 2906345 | PGroup3 |
| 15 | 2019-07-14 11:45:46 | 2906346 | PGroup3 |

| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-15 02:33:48 | 1700428 | PGroup2 |
| 2 | 2019-07-15 02:33:49 | 1700429 | PGroup2 |
| 3 | 2019-07-15 02:33:50 | 1700430 | PGroup2 |
| 4 | 2019-07-15 02:33:51 | 1700431 | PGroup2 |
| 5 | 2019-07-15 02:33:52 | 1700432 | PGroup2 |
| 6 | 2019-07-15 02:33:53 | 1700433 | PGroup2 |
| 7 | 2019-07-15 02:33:54 | 1700434 | PGroup2 |
| 8 | 2019-07-15 02:33:55 | 1700435 | PGroup2 |
| 9 | 2019-07-15 02:33:56 | 1700436 | PGroup2 |
| 10 | 2019-07-15 02:33:57 | 1700437 | PGroup2 |
| 11 | 2019-07-15 02:33:58 | 1700438 | PGroup2 |
| 12 | 2019-07-15 02:33:59 | 1700439 | PGroup2 |
| 13 | 2019-07-15 02:34:00 | 1700440 | PGroup2 |
| 14 | 2019-07-15 02:34:01 | 1700441 | PGroup2 |
| 15 | 2019-07-15 02:34:02 | 1700442 | PGroup2 |

| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-16 16:55:29 | 60929 | PGroup1 |
| 2 | 2019-07-16 16:55:30 | 60930 | PGroup1 |
| 3 | 2019-07-16 16:55:31 | 60931 | PGroup1 |
| 4 | 2019-07-16 16:55:32 | 60932 | PGroup1 |
| 5 | 2019-07-16 16:55:33 | 60933 | PGroup1 |
| 6 | 2019-07-16 16:55:34 | 60934 | PGroup1 |
| 7 | 2019-07-16 16:55:35 | 60935 | PGroup1 |
| 8 | 2019-07-16 16:55:36 | 60936 | PGroup1 |
| 9 | 2019-07-16 16:55:37 | 60937 | PGroup1 |
| 10 | 2019-07-16 16:55:38 | 60938 | PGroup1 |
| 11 | 2019-07-16 16:55:39 | 60939 | PGroup1 |
| 12 | 2019-07-16 16:55:40 | 60940 | PGroup1 |
| 13 | 2019-07-16 16:55:41 | 60941 | PGroup1 |
| 14 | 2019-07-16 16:55:42 | 60942 | PGroup1 |
| 15 | 2019-07-16 16:55:43 | 60943 | PGroup1 |

# Basic concept

INSERT



| | date_time | id | group_name |
|---|---|---|---|
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| 2 | 2019-07-14 11:45:33 | 2906333 | PGroup3 |
| 3 | 2019-07-14 11:45:34 | 2906334 | PGroup3 |
| 4 | 2019-07-14 11:45:35 | 2906335 | PGroup3 |
| 5 | 2019-07-14 11:45:36 | 2906336 | PGroup3 |
| 6 | 2019-07-14 11:45:37 | 2906337 | PGroup3 |
| 7 | 2019-07-14 11:45:38 | 2906338 | PGroup3 |
| 8 | 2019-07-14 11:45:39 | 2906339 | PGroup3 |
| 9 | 2019-07-14 11:45:40 | 2906340 | PGroup3 |
| 10 | 2019-07-14 11:45:41 | 2906341 | PGroup3 |
| 11 | 2019-07-14 11:45:42 | 2906342 | PGroup3 |
| 12 | 2019-07-14 11:45:43 | 2906343 | PGroup3 |
| 13 | 2019-07-14 11:45:44 | 2906344 | PGroup3 |
| 14 | 2019-07-14 11:45:45 | 2906345 | PGroup3 |
| 15 | 2019-07-14 11:45:46 | 2906346 | PGroup3 |

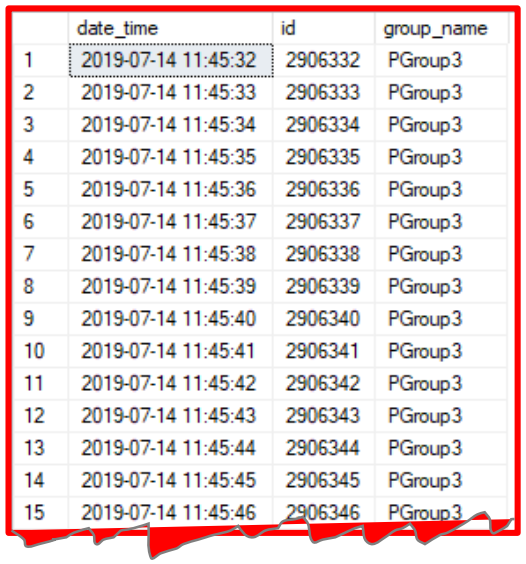
| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-15 02:33:48 | 1700428 | PGroup2 |
| 2 | 2019-07-15 02:33:49 | 1700429 | PGroup2 |
| 3 | 2019-07-15 02:33:50 | 1700430 | PGroup2 |
| 4 | 2019-07-15 02:33:51 | 1700431 | PGroup2 |
| 5 | 2019-07-15 02:33:52 | 1700432 | PGroup2 |
| 6 | 2019-07-15 02:33:53 | 1700433 | PGroup2 |
| 7 | 2019-07-15 02:33:54 | 1700434 | PGroup2 |
| 8 | 2019-07-15 02:33:55 | 1700435 | PGroup2 |
| 9 | 2019-07-15 02:33:56 | 1700436 | PGroup2 |
| 10 | 2019-07-15 02:33:57 | 1700437 | PGroup2 |
| 11 | 2019-07-15 02:33:58 | 1700438 | PGroup2 |
| 12 | 2019-07-15 02:33:59 | 1700439 | PGroup2 |
| 13 | 2019-07-15 02:34:00 | 1700440 | PGroup2 |
| 14 | 2019-07-15 02:34:01 | 1700441 | PGroup2 |
| 15 | 2019-07-15 02:34:02 | 1700442 | PGroup2 |

| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-16 16:55:29 | 60929 | PGroup1 |
| 2 | 2019-07-16 16:55:30 | 60930 | PGroup1 |
| 3 | 2019-07-16 16:55:31 | 60931 | PGroup1 |
| 4 | 2019-07-16 16:55:32 | 60932 | PGroup1 |
| 5 | 2019-07-16 16:55:33 | 60933 | PGroup1 |
| 6 | 2019-07-16 16:55:34 | 60934 | PGroup1 |
| 7 | 2019-07-16 16:55:35 | 60935 | PGroup1 |
| 8 | 2019-07-16 16:55:36 | 60936 | PGroup1 |
| 9 | 2019-07-16 16:55:37 | 60937 | PGroup1 |
| 10 | 2019-07-16 16:55:38 | 60938 | PGroup1 |
| 11 | 2019-07-16 16:55:39 | 60939 | PGroup1 |
| 12 | 2019-07-16 16:55:40 | 60940 | PGroup1 |
| 13 | 2019-07-16 16:55:41 | 60941 | PGroup1 |
| 14 | 2019-07-16 16:55:42 | 60942 | PGroup1 |
| 15 | 2019-07-16 16:55:43 | 60943 | PGroup1 |

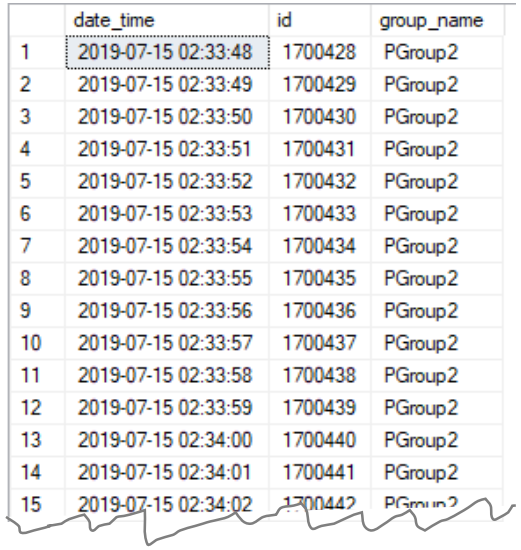
| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-16 16:55:29 | 60929 | PGroup1 |
| 2 | 2019-07-16 16:55:30 | 60930 | PGroup1 |
| 3 | 2019-07-16 16:55:31 | 60931 | PGroup1 |
| 4 | 2019-07-16 16:55:32 | 60932 | PGroup1 |
| 5 | 2019-07-16 16:55:33 | 60933 | PGroup1 |
| 6 | 2019-07-16 16:55:34 | 60934 | PGroup1 |
| 7 | 2019-07-16 16:55:35 | 60935 | PGroup1 |
| 8 | 2019-07-16 16:55:36 | 60936 | PGroup1 |
| 9 | 2019-07-16 16:55:37 | 60937 | PGroup1 |
| 10 | 2019-07-16 16:55:38 | 60938 | PGroup1 |
| 11 | 2019-07-16 16:55:39 | 60939 | PGroup1 |
| 12 | 2019-07-16 16:55:40 | 60940 | PGroup1 |
| 13 | 2019-07-16 16:55:41 | 60941 | PGroup1 |
| 14 | 2019-07-16 16:55:42 | 60942 | PGroup1 |
| 15 | 2019-07-16 16:55:43 | 60943 | PGroup1 |

# Basic concept

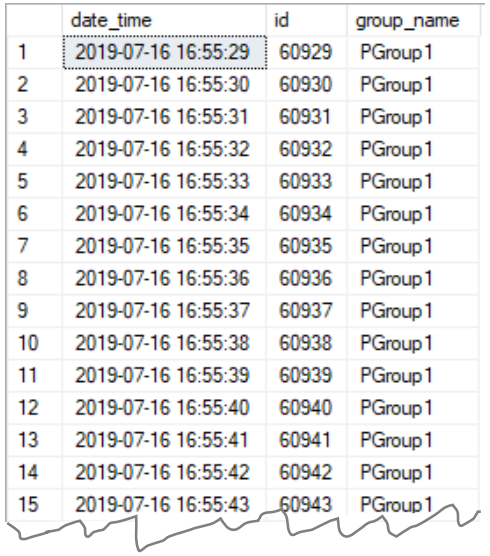
DELETE



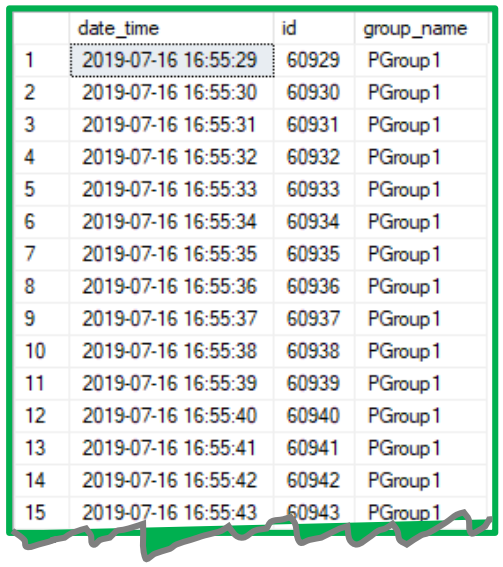
| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-14 11:45:32 | 2906332 | PGroup3 |
| 2 | 2019-07-14 11:45:33 | 2906333 | PGroup3 |
| 3 | 2019-07-14 11:45:34 | 2906334 | PGroup3 |
| 4 | 2019-07-14 11:45:35 | 2906335 | PGroup3 |
| 5 | 2019-07-14 11:45:36 | 2906336 | PGroup3 |
| 6 | 2019-07-14 11:45:37 | 2906337 | PGroup3 |
| 7 | 2019-07-14 11:45:38 | 2906338 | PGroup3 |
| 8 | 2019-07-14 11:45:39 | 2906339 | PGroup3 |
| 9 | 2019-07-14 11:45:40 | 2906340 | PGroup3 |
| 10 | 2019-07-14 11:45:41 | 2906341 | PGroup3 |
| 11 | 2019-07-14 11:45:42 | 2906342 | PGroup3 |
| 12 | 2019-07-14 11:45:43 | 2906343 | PGroup3 |
| 13 | 2019-07-14 11:45:44 | 2906344 | PGroup3 |
| 14 | 2019-07-14 11:45:45 | 2906345 | PGroup3 |
| 15 | 2019-07-14 11:45:46 | 2906346 | PGroup3 |



| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-15 02:33:48 | 1700428 | PGroup2 |
| 2 | 2019-07-15 02:33:49 | 1700429 | PGroup2 |
| 3 | 2019-07-15 02:33:50 | 1700430 | PGroup2 |
| 4 | 2019-07-15 02:33:51 | 1700431 | PGroup2 |
| 5 | 2019-07-15 02:33:52 | 1700432 | PGroup2 |
| 6 | 2019-07-15 02:33:53 | 1700433 | PGroup2 |
| 7 | 2019-07-15 02:33:54 | 1700434 | PGroup2 |
| 8 | 2019-07-15 02:33:55 | 1700435 | PGroup2 |
| 9 | 2019-07-15 02:33:56 | 1700436 | PGroup2 |
| 10 | 2019-07-15 02:33:57 | 1700437 | PGroup2 |
| 11 | 2019-07-15 02:33:58 | 1700438 | PGroup2 |
| 12 | 2019-07-15 02:33:59 | 1700439 | PGroup2 |
| 13 | 2019-07-15 02:34:00 | 1700440 | PGroup2 |
| 14 | 2019-07-15 02:34:01 | 1700441 | PGroup2 |
| 15 | 2019-07-15 02:34:02 | 1700442 | PGroup2 |



| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-16 16:55:29 | 60929 | PGroup1 |
| 2 | 2019-07-16 16:55:30 | 60930 | PGroup1 |
| 3 | 2019-07-16 16:55:31 | 60931 | PGroup1 |
| 4 | 2019-07-16 16:55:32 | 60932 | PGroup1 |
| 5 | 2019-07-16 16:55:33 | 60933 | PGroup1 |
| 6 | 2019-07-16 16:55:34 | 60934 | PGroup1 |
| 7 | 2019-07-16 16:55:35 | 60935 | PGroup1 |
| 8 | 2019-07-16 16:55:36 | 60936 | PGroup1 |
| 9 | 2019-07-16 16:55:37 | 60937 | PGroup1 |
| 10 | 2019-07-16 16:55:38 | 60938 | PGroup1 |
| 11 | 2019-07-16 16:55:39 | 60939 | PGroup1 |
| 12 | 2019-07-16 16:55:40 | 60940 | PGroup1 |
| 13 | 2019-07-16 16:55:41 | 60941 | PGroup1 |
| 14 | 2019-07-16 16:55:42 | 60942 | PGroup1 |
| 15 | 2019-07-16 16:55:43 | 60943 | PGroup1 |



| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-16 16:55:29 | 60929 | PGroup1 |
| 2 | 2019-07-16 16:55:30 | 60930 | PGroup1 |
| 3 | 2019-07-16 16:55:31 | 60931 | PGroup1 |
| 4 | 2019-07-16 16:55:32 | 60932 | PGroup1 |
| 5 | 2019-07-16 16:55:33 | 60933 | PGroup1 |
| 6 | 2019-07-16 16:55:34 | 60934 | PGroup1 |
| 7 | 2019-07-16 16:55:35 | 60935 | PGroup1 |
| 8 | 2019-07-16 16:55:36 | 60936 | PGroup1 |
| 9 | 2019-07-16 16:55:37 | 60937 | PGroup1 |
| 10 | 2019-07-16 16:55:38 | 60938 | PGroup1 |
| 11 | 2019-07-16 16:55:39 | 60939 | PGroup1 |
| 12 | 2019-07-16 16:55:40 | 60940 | PGroup1 |
| 13 | 2019-07-16 16:55:41 | 60941 | PGroup1 |
| 14 | 2019-07-16 16:55:42 | 60942 | PGroup1 |
| 15 | 2019-07-16 16:55:43 | 60943 | PGroup1 |

# Basic concept

FILEGROUPS

| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-14 11:45:32 | 2906332 | PGroup3 |
| 2 | 2019-07-14 11:45:33 | 2906333 | PGroup3 |
| 3 | 2019-07-14 11:45:34 | 2906334 | PGroup3 |
| 4 | 2019-07-14 11:45:35 | 2906335 | PGroup3 |
| 5 | 2019-07-14 11:45:36 | 2906336 | PGroup3 |
| 6 | 2019-07-14 11:45:37 | 2906337 | PGroup3 |
| 7 | 2019-07-14 11:45:38 | 2906338 | PGroup3 |
| 8 | 2019-07-14 11:45:39 | 2906339 | PGroup3 |
| 9 | 2019-07-14 11:45:40 | 2906340 | PGroup3 |
| 10 | 2019-07-14 11:45:41 | 2906341 | PGroup3 |
| 11 | 2019-07-14 11:45:42 | 2906342 | PGroup3 |
| 12 | 2019-07-14 11:45:43 | 2906343 | PGroup3 |
| 13 | 2019-07-14 11:45:44 | 2906344 | PGroup3 |
| 14 | 2019-07-14 11:45:45 | 2906345 | PGroup3 |
| 15 | 2019-07-14 11:45:46 | 2906346 | PGroup3 |

FILEGROUP1

| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-15 02:33:48 | 1700428 | PGroup2 |
| 2 | 2019-07-15 02:33:49 | 1700429 | PGroup2 |
| 3 | 2019-07-15 02:33:50 | 1700430 | PGroup2 |
| 4 | 2019-07-15 02:33:51 | 1700431 | PGroup2 |
| 5 | 2019-07-15 02:33:52 | 1700432 | PGroup2 |
| 6 | 2019-07-15 02:33:53 | 1700433 | PGroup2 |
| 7 | 2019-07-15 02:33:54 | 1700434 | PGroup2 |
| 8 | 2019-07-15 02:33:55 | 1700435 | PGroup2 |
| 9 | 2019-07-15 02:33:56 | 1700436 | PGroup2 |
| 10 | 2019-07-15 02:33:57 | 1700437 | PGroup2 |
| 11 | 2019-07-15 02:33:58 | 1700438 | PGroup2 |
| 12 | 2019-07-15 02:33:59 | 1700439 | PGroup2 |
| 13 | 2019-07-15 02:34:00 | 1700440 | PGroup2 |
| 14 | 2019-07-15 02:34:01 | 1700441 | PGroup2 |
| 15 | 2019-07-15 02:34:02 | 1700442 | PGroup2 |

FILEGROUP2

| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-16 16:55:29 | 60929 | PGroup1 |
| 2 | 2019-07-16 16:55:30 | 60930 | PGroup1 |
| 3 | 2019-07-16 16:55:31 | 60931 | PGroup1 |
| 4 | 2019-07-16 16:55:32 | 60932 | PGroup1 |
| 5 | 2019-07-16 16:55:33 | 60933 | PGroup1 |
| 6 | 2019-07-16 16:55:34 | 60934 | PGroup1 |
| 7 | 2019-07-16 16:55:35 | 60935 | PGroup1 |
| 8 | 2019-07-16 16:55:36 | 60936 | PGroup1 |
| 9 | 2019-07-16 16:55:37 | 60937 | PGroup1 |
| 10 | 2019-07-16 16:55:38 | 60938 | PGroup1 |
| 11 | 2019-07-16 16:55:39 | 60939 | PGroup1 |
| 12 | 2019-07-16 16:55:40 | 60940 | PGroup1 |
| 13 | 2019-07-16 16:55:41 | 60941 | PGroup1 |
| 14 | 2019-07-16 16:55:42 | 60942 | PGroup1 |
| 15 | 2019-07-16 16:55:43 | 60943 | PGroup1 |

FILEGROUP3

| | date_time | id | group_name |
|---|---|---|---|
| 1 | 2019-07-16 16:55:29 | 60929 | PGroup1 |
| 2 | 2019-07-16 16:55:30 | 60930 | PGroup1 |
| 3 | 2019-07-16 16:55:31 | 60931 | PGroup1 |
| 4 | 2019-07-16 16:55:32 | 60932 | PGroup1 |
| 5 | 2019-07-16 16:55:33 | 60933 | PGroup1 |
| 6 | 2019-07-16 16:55:34 | 60934 | PGroup1 |
| 7 | 2019-07-16 16:55:35 | 60935 | PGroup1 |
| 8 | 2019-07-16 16:55:36 | 60936 | PGroup1 |
| 9 | 2019-07-16 16:55:37 | 60937 | PGroup1 |
| 10 | 2019-07-16 16:55:38 | 60938 | PGroup1 |
| 11 | 2019-07-16 16:55:39 | 60939 | PGroup1 |
| 12 | 2019-07-16 16:55:40 | 60940 | PGroup1 |
| 13 | 2019-07-16 16:55:41 | 60941 | PGroup1 |
| 14 | 2019-07-16 16:55:42 | 60942 | PGroup1 |
| 15 | 2019-07-16 16:55:43 | 60943 | PGroup1 |

FILEGROUP4

# Different Types of Filegroups

- **Primary file:** It is created when SQL server is being installed, and it contains the database metadata and information.
- **Secondary File:** User data, Objects created by a user.
- **Transaction Log Files:** log all the transaction performed to recover the database

**.mdf** **.ndf** **.ldf**

# When to use Partition:

- To Divide a very large table into smaller chunks
- To Easily maintain a window of historical data
- To Divide the data into equal parts on a certain criteria
  - To allow the SQL Query Optimizer decide and select the best plan for query execution
- To Improve data loading and reporting
- To Solve concurrency issue (getting locked or blocked)
- To Improve performance on maintenance operations
- To Improve user experience by metadata-only operation on latest/oldest data
- To Keep the size of the indexes to small

- For more check out: [Link]

# Things to keep in mind before partitioning

- Check the explain plan of the query (if there is a particular access pattern) and tune it to make sure right indexes are used and disk operations are limited.
- Check the size of the table and index in question and how it relates to the configured database memory (buffer pool).
- Check if the table can be defragmented. All databases offer commands to do this (MySQL calls it OPTIMIZE, PostgreSQL calls it VACUUM)
- Check if you can add memory to server, RAM is cheap

- For more check out: [Link]

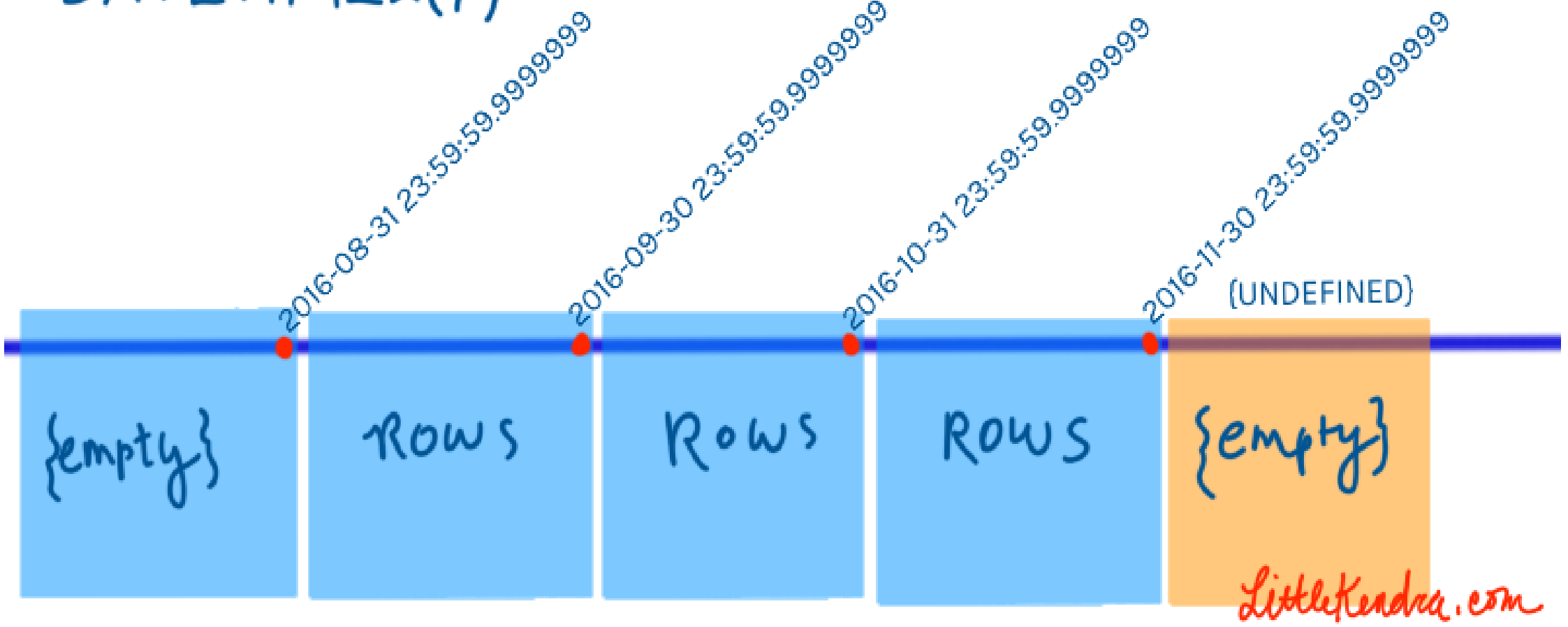
# Partition Pros vs Cons:

| Pros | Cons |
| --- | --- |
| Insert/Delete a bunch of data extremely fast by metadata-only operation (Switching) | Negatively affect Query Performance |
| Historic data can be archived by Sliding Window Technique | Maintenance |
| Can be automated by SP and Jobs | SQL Server does not automatically handle switching |

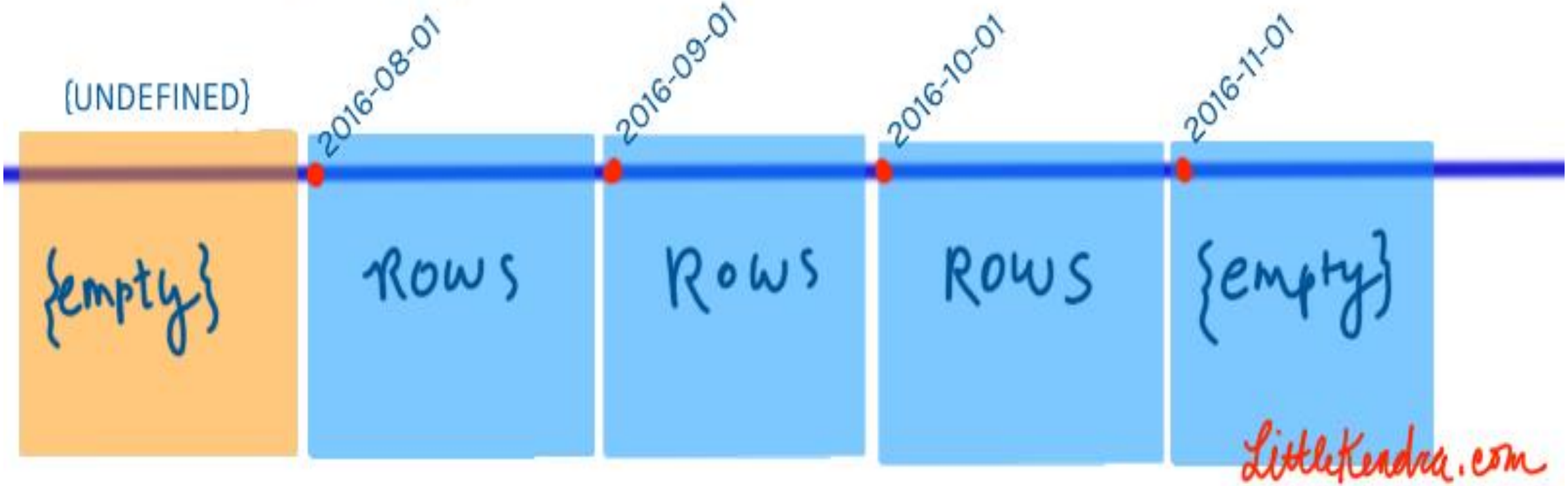
# Partition Terms

- FILEGROUP
- FILE
- PARTITION FUNCTION
- PARTITION SCHEME
- PARTITION RANGE
- SWITCH IN
- SWITCH OUT

# Left Based Partition Function Upper Boundaries (Inclusive) DATETIME2(7)



# Right Based Partition Function Lower Boundaries (Inclusive) DATETIME2(7)



# Performance

- Partitioning can NEGATIVELY affect Query Performance.
  - For more check out: [Link]
- Query Performance can be improved using
  - Clustered
  - Non-Clustered Indexing.

# Let’s implement Partition!

# Steps on creating a **Partitioned Table**

1. Create a  Partition Function
2. Create necessary FileGroups
3. Assign Files to the FileGroups
4. Create a Partition Scheme
5. Create a Table on the Partition Scheme

# Steps on Partition **Switch In**

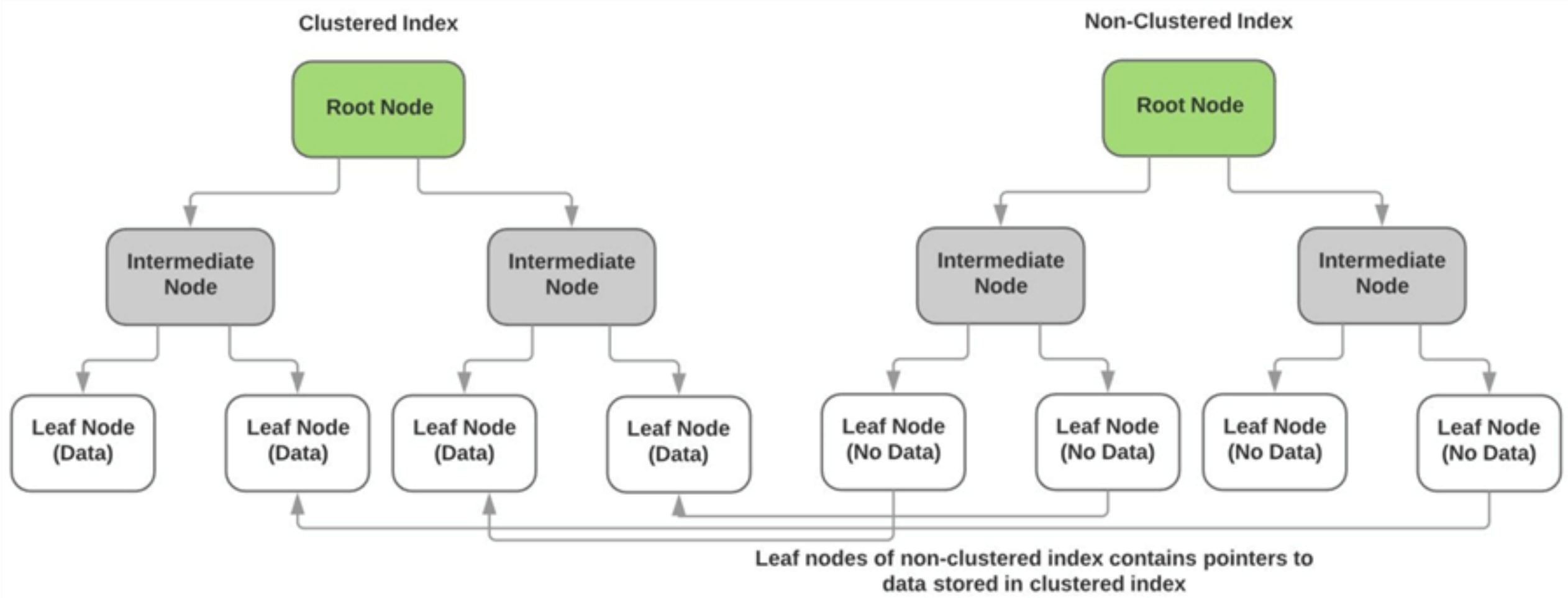
1. Create a new Staging Table
    1. Create a new FileGroup
    2. Create File for the FileGroup
    3. Finally create the table on the FileGroup
2. Add some data to the Staging Table
3. Apply necessary Constraints to the Staging Table
4. SWITCH-IN
    1. Add the new FileGroup to the Partition Scheme
    2. Add boundary point to the Partition Function
    3. Apply SWITCH IN command

# Steps on Partition **Switch Out**

1. Create a new Staging Table
    1. Create the table on the oldest FileGroup
2. Apply necessary Constraints to the Staging Table
3. SWITCH-OUT
    1. Apply SWITCH OUT command
4. Merge Boundary Point
5. DROP unused Table, File, FileGroup

# Indexes in SQL Server

# Clustered and Non-Clustered Index



| | CLUSTERED | NON-CLUSTERED |
|---|---|---|
| PROS | •Fast to return large range of data<br>•Fast for presorted results | •Wide keys do not reflect on other indexes<br>•Frequently updated key columns do not reflect on other indexes<br>•Can be assigned on different FileGroup<br>•Many non-clustered indexes per table<br>•Smaller size than clustered indexes due to column subsets |
| CONS | •Frequently updated key columns reflect on non-clustered indexes<br>•Wide keys increase the size of the non-clustered indexes<br>•Only one clustered index per table | •Generally slower than clustered indexes due to bookmark lookup (except for covering indexes).<br>•Not recommended for returning large data sets (except for covering indexes). |