Report

Laboratory Work 10

Dmitry Ladutsko

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1. Prerequisites

1.1. Passwords Index

Password Group	Login Name	Password
Operation System	root	"rootadmin"
	oracle	"oracleadmin"
Oracle System	sys	"sysadmin"
	system	"sysadmin"
Oracle Users	All DB users	"%PWD%"

1.2. Folder Paths Index

Path Group	Path Description	Path
Operation System	Oracle RDBMS – BIN	/oracle/app/oracle
	Oracle Inventory	/oracle/app/oraInventory
	Oracle Database Storage	/oracle/oradata
	Oracle Install Directory	/oracle/install
Oracle	ORACLE_BASE	/oracle/app/oracle
	ORACLE_HOME	$ORACLE_BASE/product/11.2
FTP	ftp Incoming Folder	`/ftp/incoming`

2. Oracle Architecture - Parallel execution

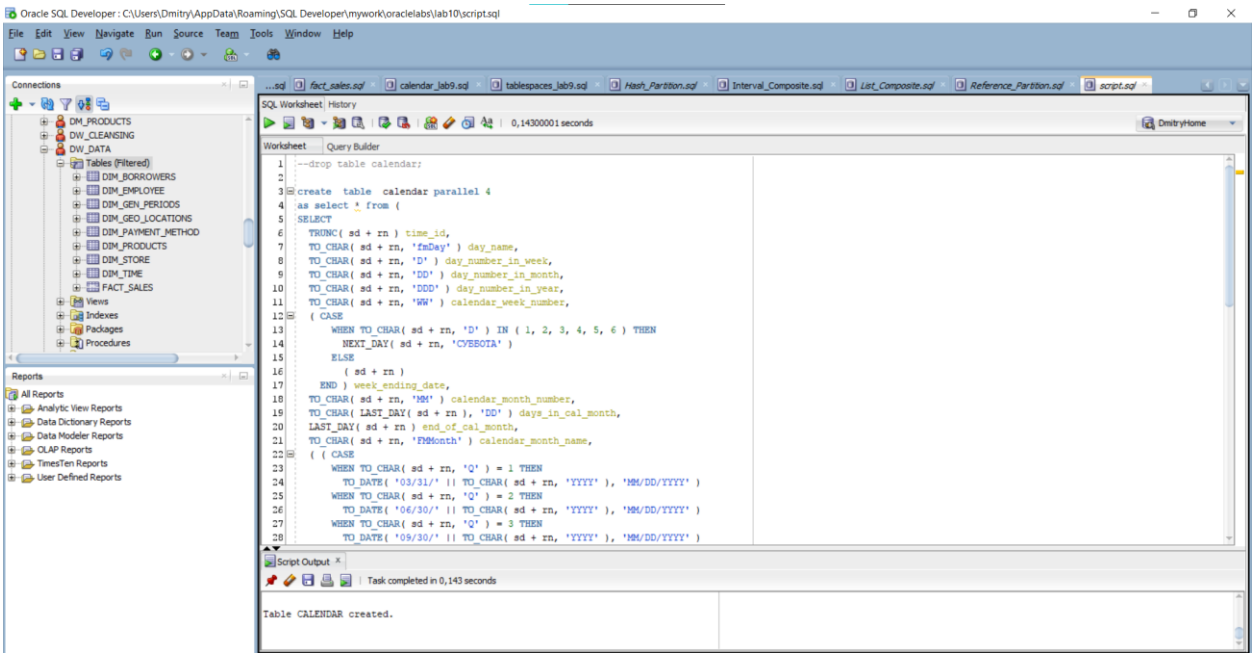
2.1. Task 01: CREATE Example of Select Parallel execution

The Main Task is to creating example of Select Parallel execution.

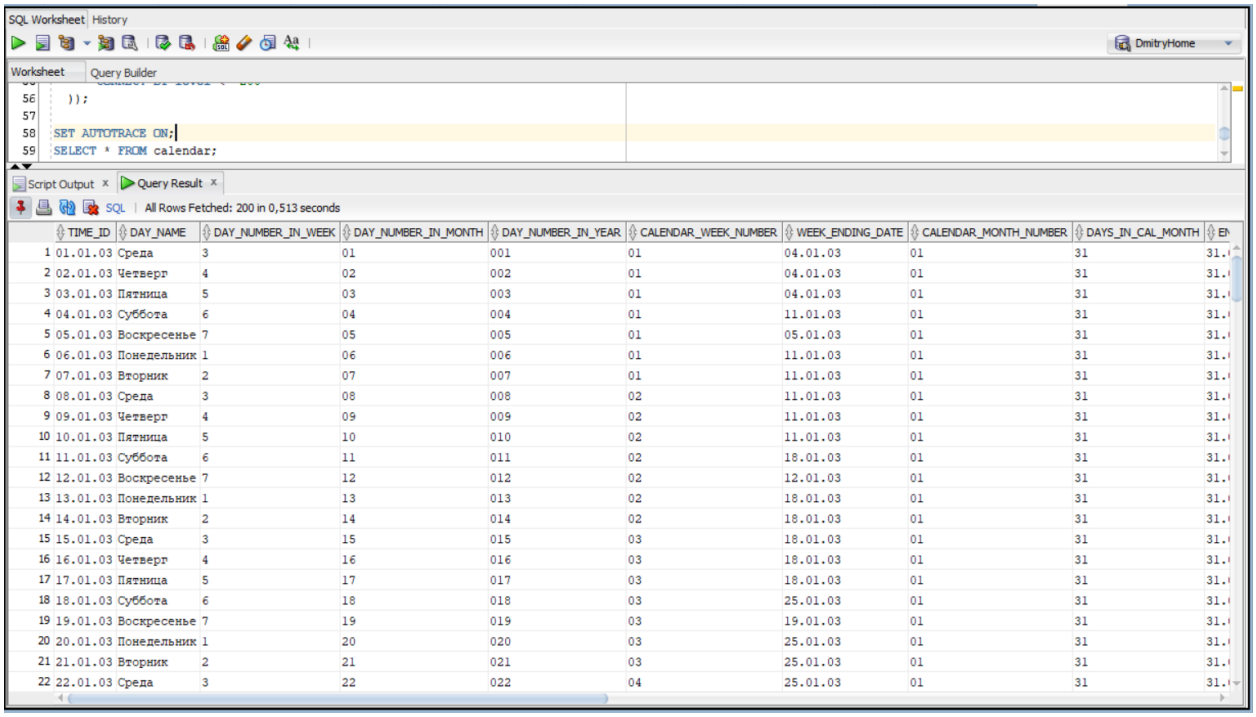
Task Results:

Create document that will store all screenshot about Select Parallel execution

- Scipts
- Execution Plan
- Summarize table – Compare time of the same operations

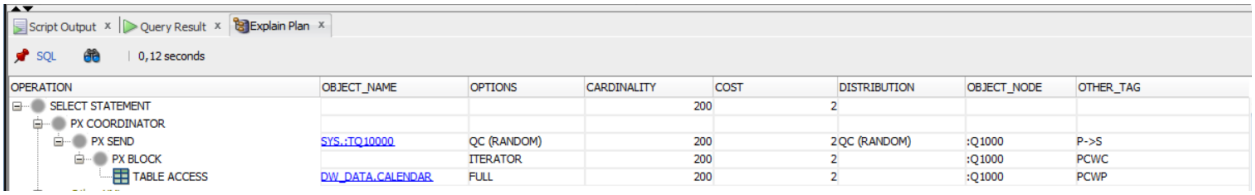


Picture 1 - Creating calendar table



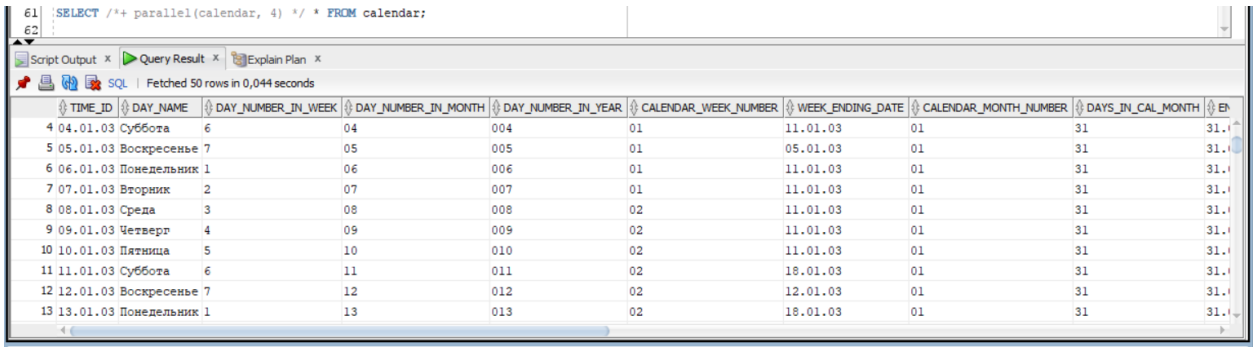
	TIME_ID	DAY_NAME	DAY_NUMBER_IN_WEEK	DAY_NUMBER_IN_MONTH	DAY_NUMBER_IN_YEAR	CALENDAR_WEEK_NUMBER	WEEK_ENDING_DATE	CALENDAR_MONTH_NUMBER	DAYS_IN_CAL_MONTH
1	01.01.03	Среда	3	01	001	01	04.01.03	01	31
2	02.01.03	Четверг	4	02	002	01	04.01.03	01	31
3	03.01.03	Пятница	5	03	003	01	04.01.03	01	31
4	04.01.03	Суббота	6	04	004	01	11.01.03	01	31
5	05.01.03	Воскресенье	7	05	005	01	05.01.03	01	31
6	06.01.03	Понедельник	1	06	006	01	11.01.03	01	31
7	07.01.03	Вторник	2	07	007	01	11.01.03	01	31
8	08.01.03	Среда	3	08	008	02	11.01.03	01	31
9	09.01.03	Четверг	4	09	009	02	11.01.03	01	31
10	10.01.03	Пятница	5	10	010	02	11.01.03	01	31
11	11.01.03	Суббота	6	11	011	02	18.01.03	01	31
12	12.01.03	Воскресенье	7	12	012	02	12.01.03	01	31
13	13.01.03	Понедельник	1	13	013	02	18.01.03	01	31
14	14.01.03	Вторник	2	14	014	02	18.01.03	01	31
15	15.01.03	Среда	3	15	015	03	18.01.03	01	31
16	16.01.03	Четверг	4	16	016	03	18.01.03	01	31
17	17.01.03	Пятница	5	17	017	03	18.01.03	01	31
18	18.01.03	Суббота	6	18	018	03	25.01.03	01	31
19	19.01.03	Воскресенье	7	19	019	03	19.01.03	01	31
20	20.01.03	Понедельник	1	20	020	03	25.01.03	01	31
21	21.01.03	Вторник	2	21	021	03	25.01.03	01	31
22	22.01.03	Среда	3	22	022	04	25.01.03	01	31

Picture 2 - Select from calendar



OPERATION	OBJECT_NAME	OPTIONS	CARDINALITY	COST	DISTRIBUTION	OBJECT_NODE	OTHER_TAG
SELECT STATEMENT			200	2			
PX COORDINATOR							
PX SEND	SYS.:TQ10000	QC (RANDOM)	200	2	QC (RANDOM)	:Q1000	P->S
PX BLOCK		ITERATOR	200	2		:Q1000	PCWC
TABLE ACCESS	DW_DATA.CALENDAR	FULL	200	2		:Q1000	PCWP

Picture 3 - Explain plan of select



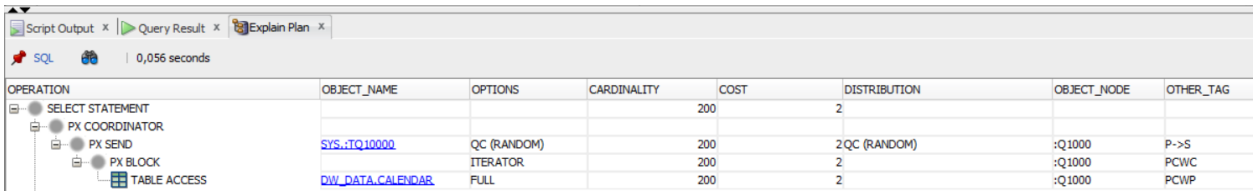
```
61 SELECT /*+ parallel(calendar, 4) */ * FROM calendar;
62
```

Script Output | Query Result | Explain Plan

SQL | Fetched 50 rows in 0,044 seconds

	TIME_ID	DAY_NAME	DAY_NUMBER_IN_WEEK	DAY_NUMBER_IN_MONTH	DAY_NUMBER_IN_YEAR	CALENDAR_WEEK_NUMBER	WEEK_ENDING_DATE	CALENDAR_MONTH_NUMBER	DAYS_IN_CAL_MONTH	EN
4	04.01.03	Суббота	6	04	004	01	11.01.03	01	31	31.(
5	05.01.03	Воскресенье	7	05	005	01	05.01.03	01	31	31.(
6	06.01.03	Понедельник	1	06	006	01	11.01.03	01	31	31.(
7	07.01.03	Вторник	2	07	007	01	11.01.03	01	31	31.(
8	08.01.03	Среда	3	08	008	02	11.01.03	01	31	31.(
9	09.01.03	Четверг	4	09	009	02	11.01.03	01	31	31.(
10	10.01.03	Пятница	5	10	010	02	11.01.03	01	31	31.(
11	11.01.03	Суббота	6	11	011	02	18.01.03	01	31	31.(
12	12.01.03	Воскресенье	7	12	012	02	12.01.03	01	31	31.(
13	13.01.03	Понедельник	1	13	013	02	18.01.03	01	31	31.(

Picture 4 - Select with hint of parallel execution

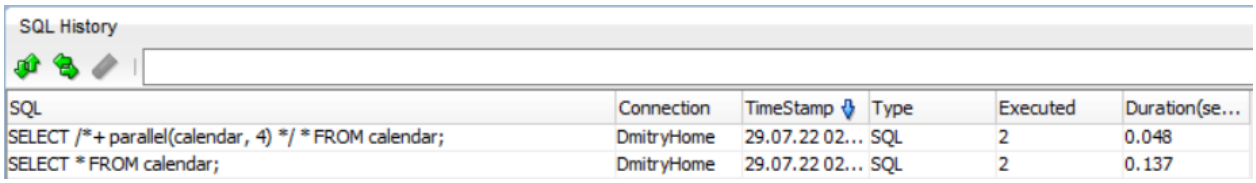


Script Output | Query Result | Explain Plan

SQL | 0,056 seconds

OPERATION	OBJECT_NAME	OPTIONS	CARDINALITY	COST	DISTRIBUTION	OBJECT_NODE	OTHER_TAG
SELECT STATEMENT			200	2			
PX COORDINATOR							
PX SEND	SYS.:TQ10000	QC (RANDOM)	200	2	QC (RANDOM)	:Q1000	P->S
PX BLOCK		ITERATOR	200	2		:Q1000	PCWC
TABLE ACCESS	DW_DATA.CALENDAR	FULL	200	2		:Q1000	PCWP

Picture 5 - Explain plan of select with hint of parallel execution



SQL History

SQL	Connection	TimeStamp	Type	Executed	Duration(se...
SELECT /*+ parallel(calendar, 4) */ * FROM calendar;	DmitryHome	29.07.22 02...	SQL	2	0.048
SELECT * FROM calendar;	DmitryHome	29.07.22 02...	SQL	2	0.137

Picture 6 - Comparing selects

If we compare two variants of selects, we can see the principal difference.

2.2. Task 02: CREATE Example of Parallel DML

The Main Task is to creating example of Parallel DML

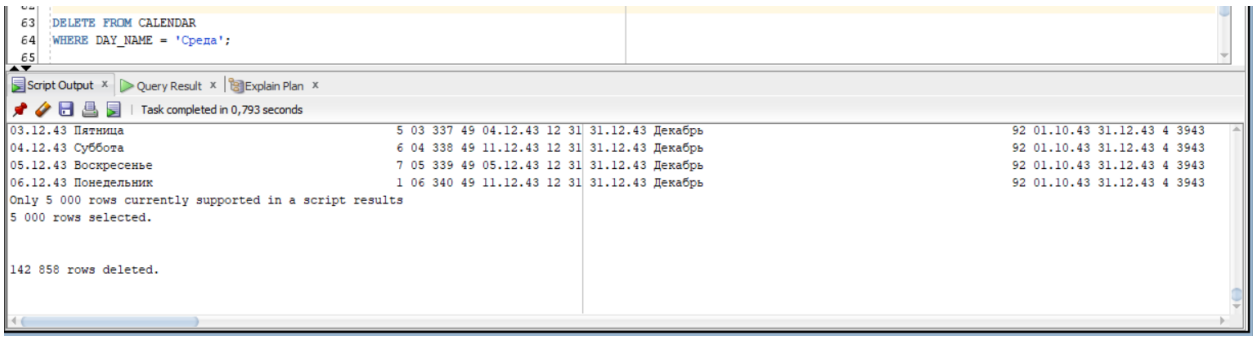
Task Results:

Create document that will store all screenshot about Parallel DML

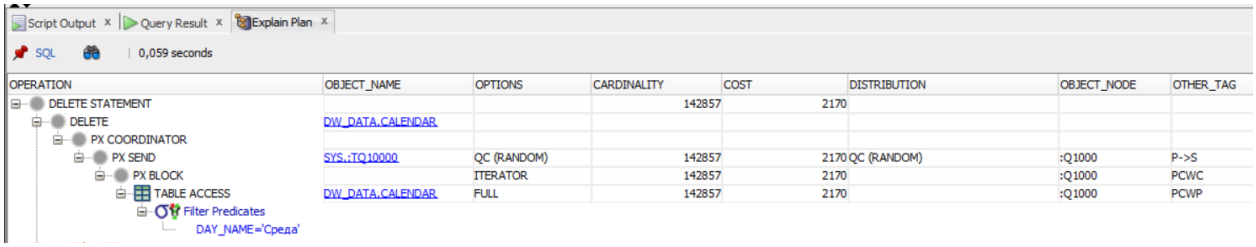
- Scipts
- Execution Plan
- Summarize table – Compare time of the same operations

Let us now delete data w\o parallelization:

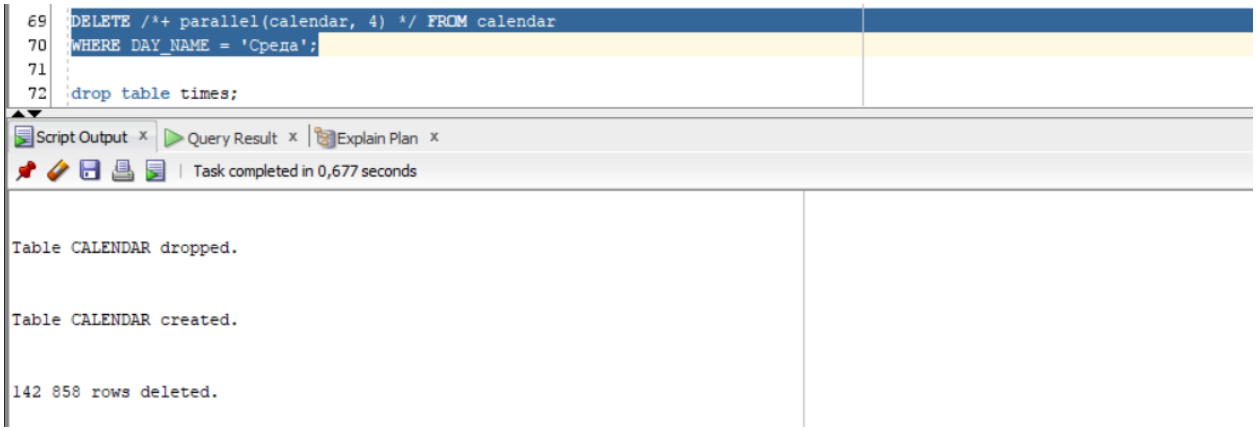
P.S. I added 1000000 rows to better see differences



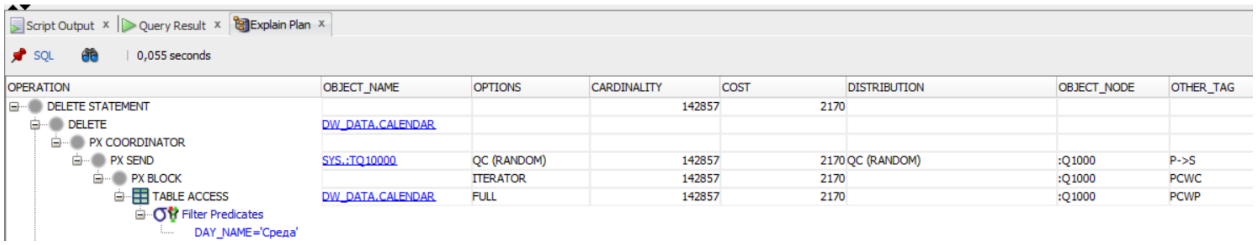
Picture 7 - Deleting Data



Picture 8 - Explain plan



Picture 9 - Deleting with parallelization



Picture 10 - Explain plan

	Simple DELETE	DELETE with PARALLEL execution
Duration	0.219	0.268

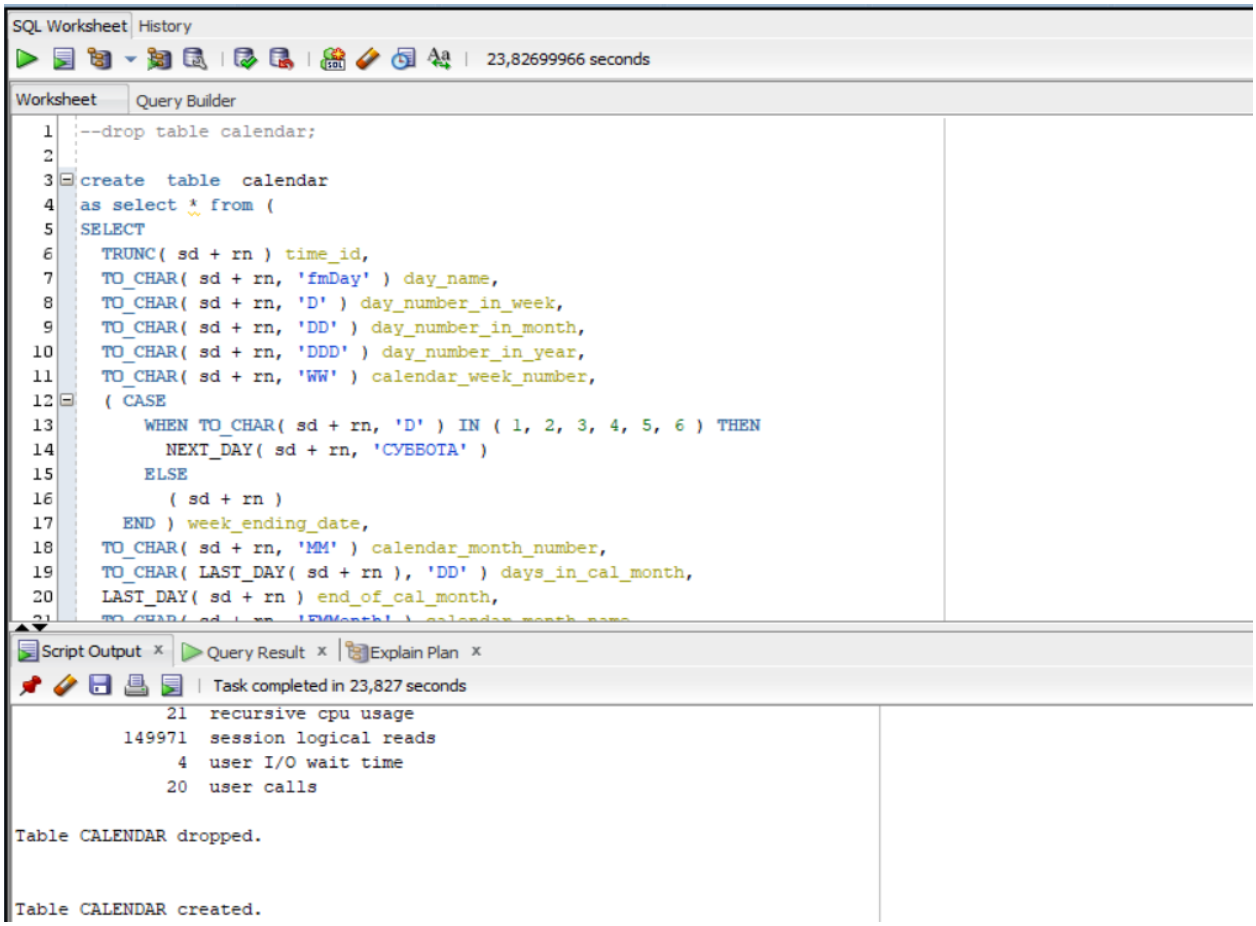
2.3. Task 03: CREATE Example of Parallel DDL

The Main Task is to creating example of Parallel DDL

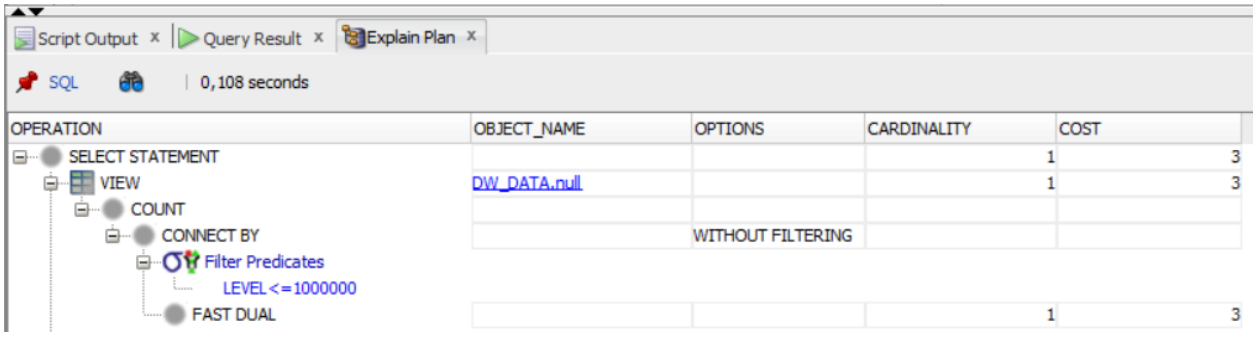
Task Results:

Create document that will store all screenshot about Parallel DDL

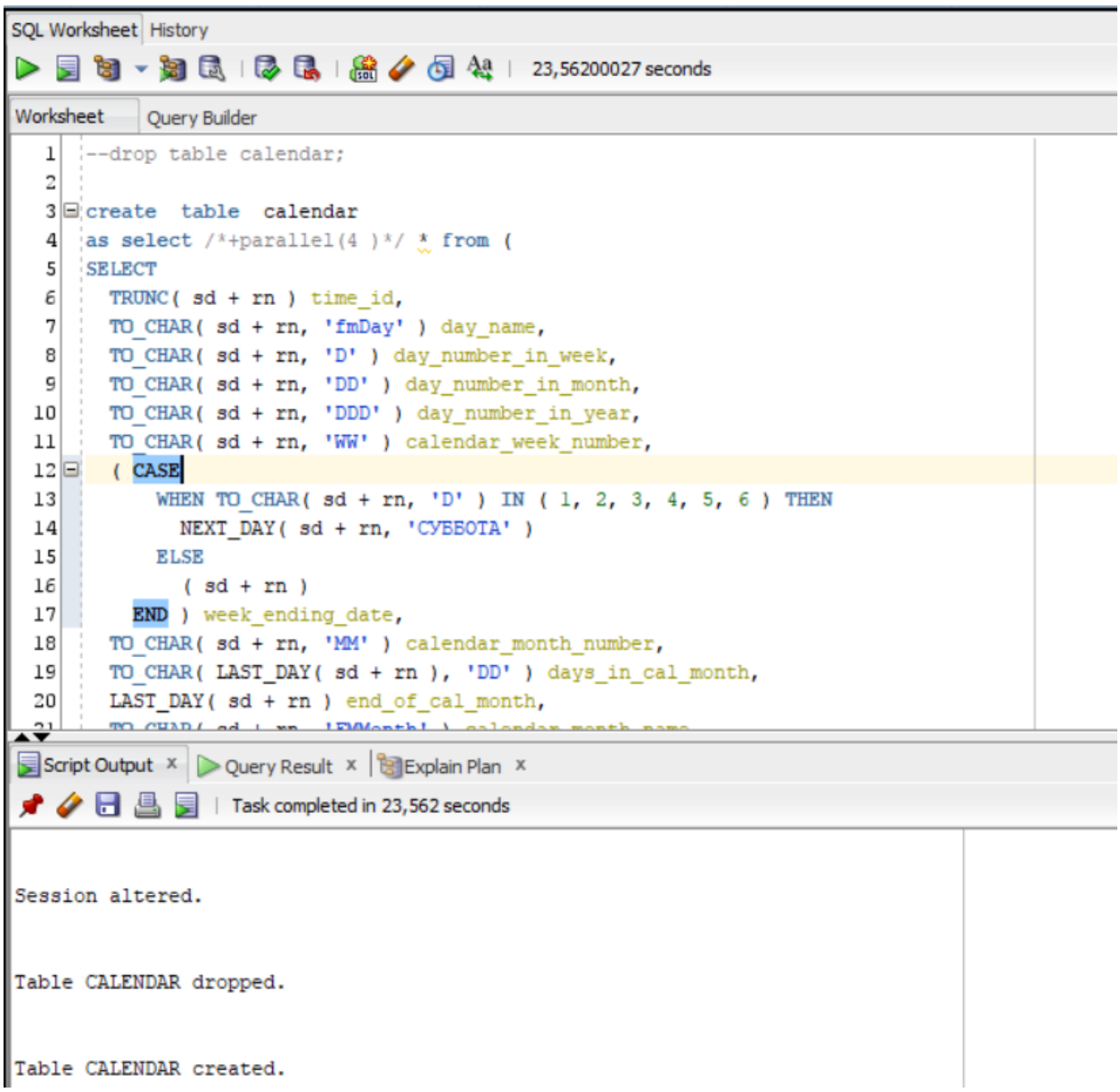
- Scipts
- Execution Plan
- Summarize table – Compare time of the same operations



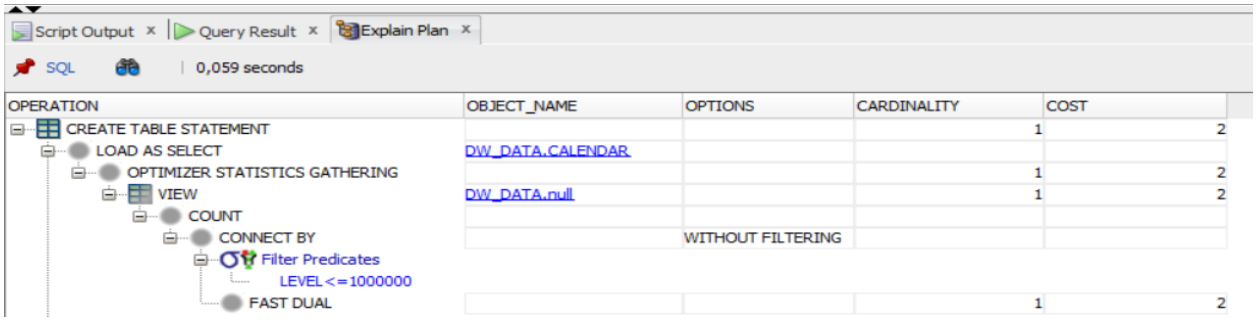
Picture 11 - Creating table w\o parallelization



Picture 12 - Explain plan



Picture 13 - Creating table with hint of parallelization



Picture 14 - Explain plan

	Simple CREATE	CREATE with PARALLEL execution
Duration	23.826	23.562

Laboratory work summary:

Despite we use 100000 rows this amount is not that big to show such principal difference, so, the parallelization does not improve the results. To benefit from parallel query execution, we need to work with tremendous amount of data.

All diagrams and scripts are stored in GitHub (link in README file in Labs folder)