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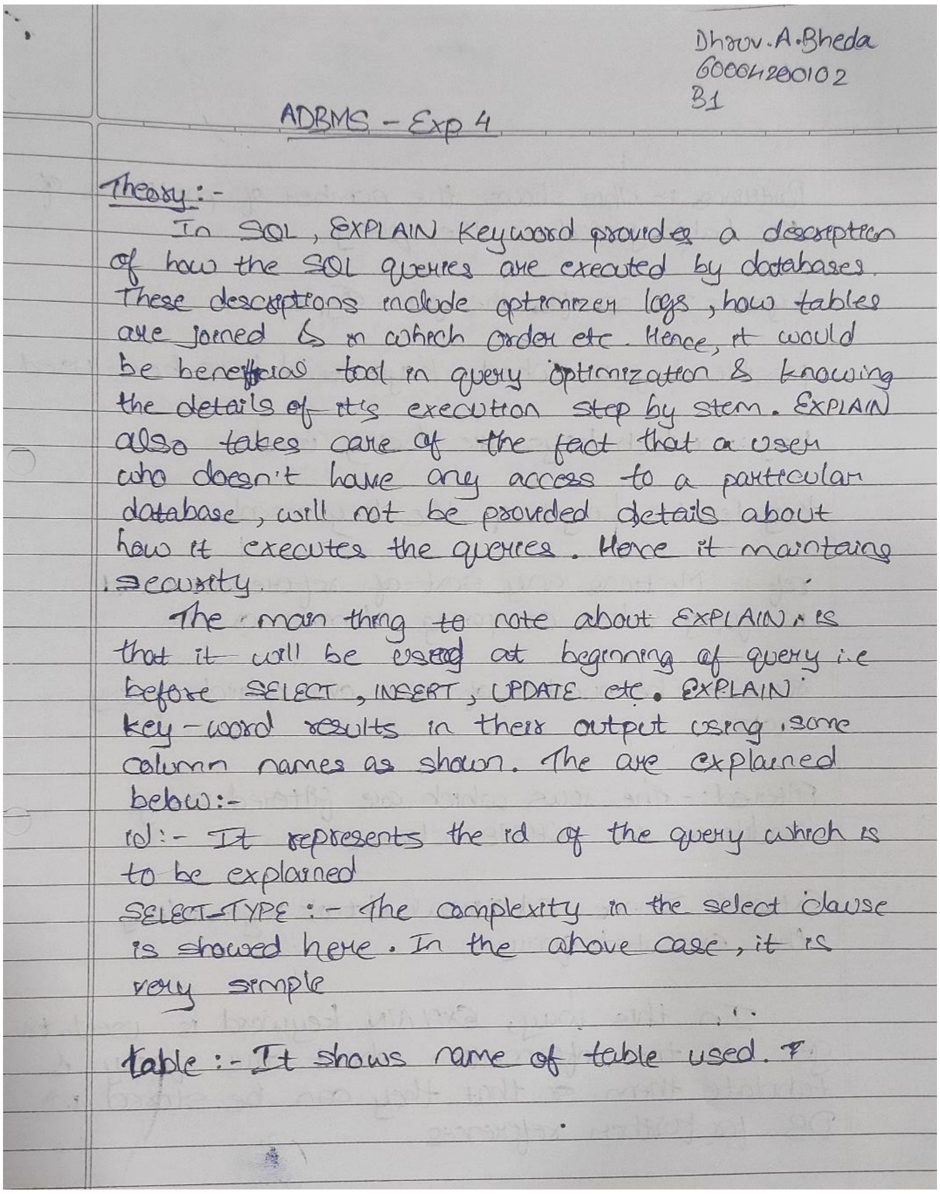
DIV: B/B1

ADBMS

Exp4

Aim: To implement Query Monitor

Theory:



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ADBMS - Exp 4

Theory:-

In SQL, EXPLAIN Keyword provides a description of how the SQL queries are executed by databases. These descriptions include optimizer logs, how tables are joined & in which order etc. Hence, it would be beneficial tool in query optimization & knowing the details of it's execution step by stem. EXPLAIN also takes care of the fact that a user who doesn't have any access to a particular database, will not be provided details about how it executes the queries. Hence it maintains security.

The main thing to note about EXPLAIN is that it will be used at beginning of query i.e before SELECT, INSERT, UPDATE etc. EXPLAIN key-word results in their output using some column names as shown. The are explained below:-

id:- It represents the id of the query which is to be explained

SELECT-TYPE :- The complexity in the select clause is showed here. In the above case, it is very simple

table :- It shows name of table used.

Partitions :- This shows the number of partitions of the table joined in the query.

type :- It specifies the join Type

possible_keys :- Which keys could have been used

key :- which keys are being used

key_len :- Length of the key used

ref :- Mentions any sort of references used in query while comparing columns or not.

rows :- The number of rows over which query acts.

Filtered :- The rows which are filtered using conditions in WHERE clause

Extra :- Some additional details regarding the executed query.

In this way, EXPLAIN keyword is used to get all the information about the query & tabulate them so that they can be stored in DB for further references.

The following are most common limitation of EXPLAIN keyword in mysql:-

EXPLAIN doesn't provide any information about how the triggers, stored functions, or UDFs will affect our query.

The EXPLAIN keyword cannot work for stored procedures.

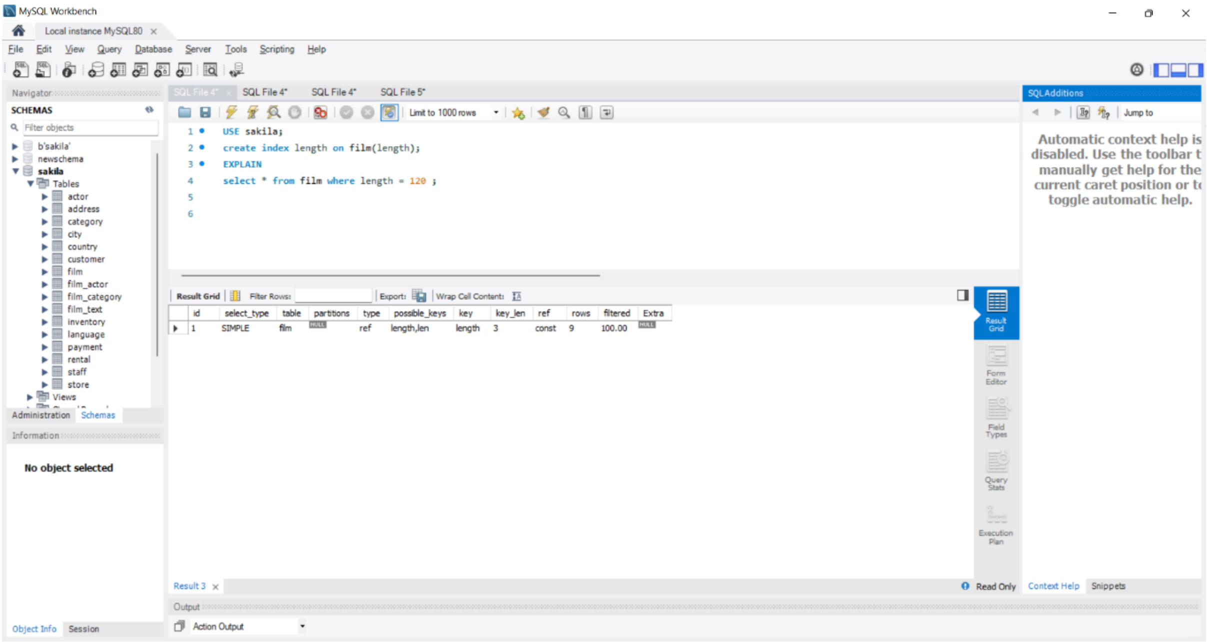
It doesn't tell you about optimization, MySQL does during query execution.

It produces the estimated statistics that can be very inacurate.

It doesn't produce every information regaurding a query's execution plan.

Output:

1) SELECT QUERY



```
USE sakila;
create index length on film(length);
EXPLAIN
select * from film where length = 120 ;
```

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	film	NULL	ref	length,len	length	3	const	9	100.00	NULL

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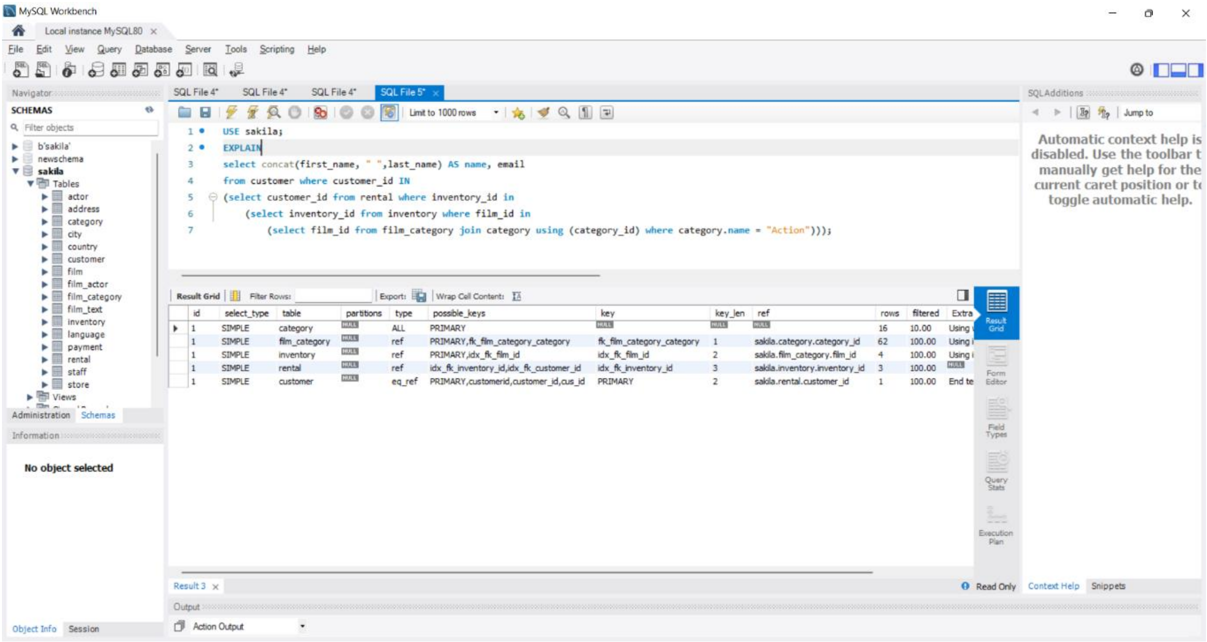
No object selected

2) NESTED



```
USE sakila;
EXPLAIN
select concat(first_name, " ",last_name) AS name, email
from customer where customer_id IN
(select customer_id from rental where inventory_id in
    (select inventory_id from inventory where film_id in
        (select film_id from film_category join category using (category_id) where category.name = "Action")));
```

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	category	NULL	ALL	PRIMARY	NULL	NULL	NULL	16	10.00	Using
1	SIMPLE	film_category	NULL	ref	PRIMARY,fk_film_category_category	fk_film_category_category	1	sakila.category.category_id	62	100.00	Using i
1	SIMPLE	inventory	NULL	ref	PRIMARY,idx_fk_film_id	idx_fk_film_id	2	sakila.film_category.film_id	4	100.00	Using i
1	SIMPLE	rental	NULL	ref	idx_fk_inventory_id,idx_fk_customer_id	idx_fk_inventory_id	3	sakila.inventory.inventory_id	3	100.00	NULL
1	SIMPLE	customer	NULL	eq_ref	PRIMARY,customerid,customer_id,cus_id	PRIMARY	2	sakila.rental.customer_id	1	100.00	End te

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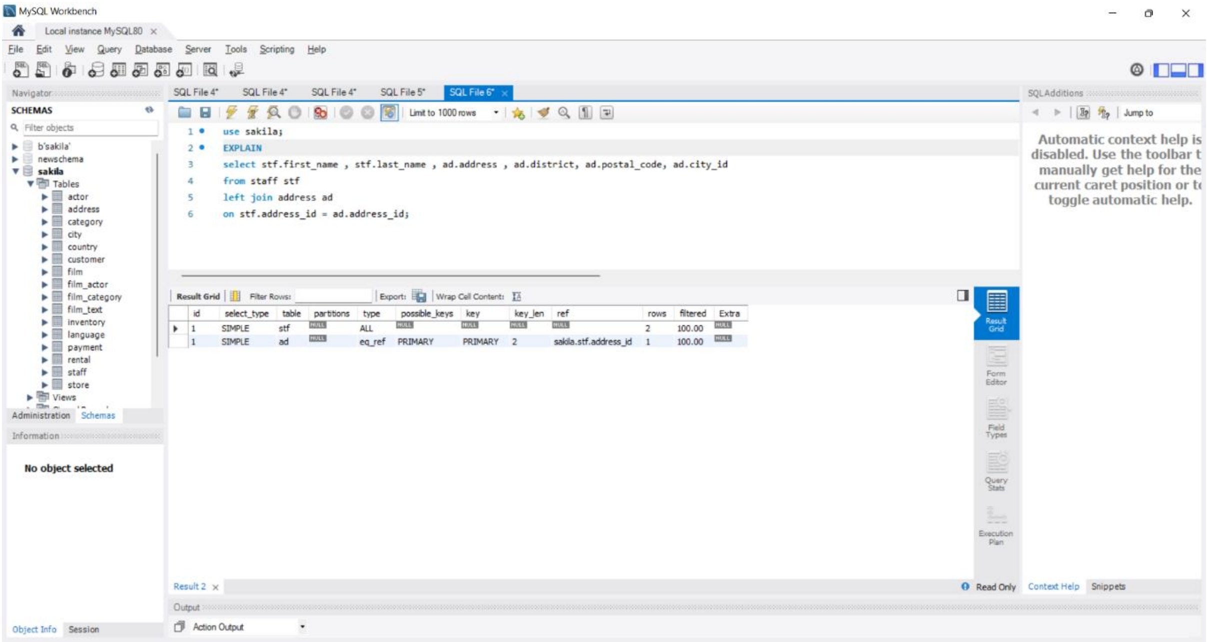
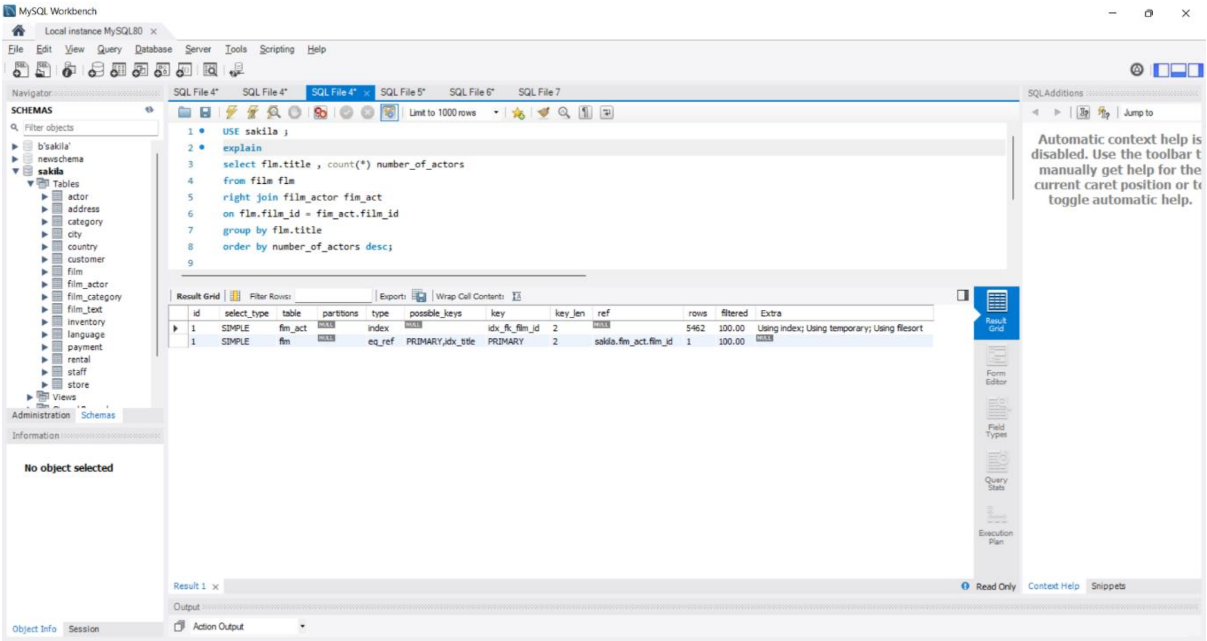
3) LEFT JOIN



```sql
use sakila;
EXPLAIN
select stf.first_name , stf.last_name , ad.address , ad.district, ad.postal_code, ad.city_id
from staff stf
left join address ad
on stf.address_id = ad.address_id;
```

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	stf	NULL	ALL	NULL	NULL	NULL	NULL	2	100.00	NULL
1	SIMPLE	ad	NULL	eq_ref	PRIMARY	PRIMARY	2	sakila.stf.address_id	1	100.00	NULL

4) RIGHT JOIN

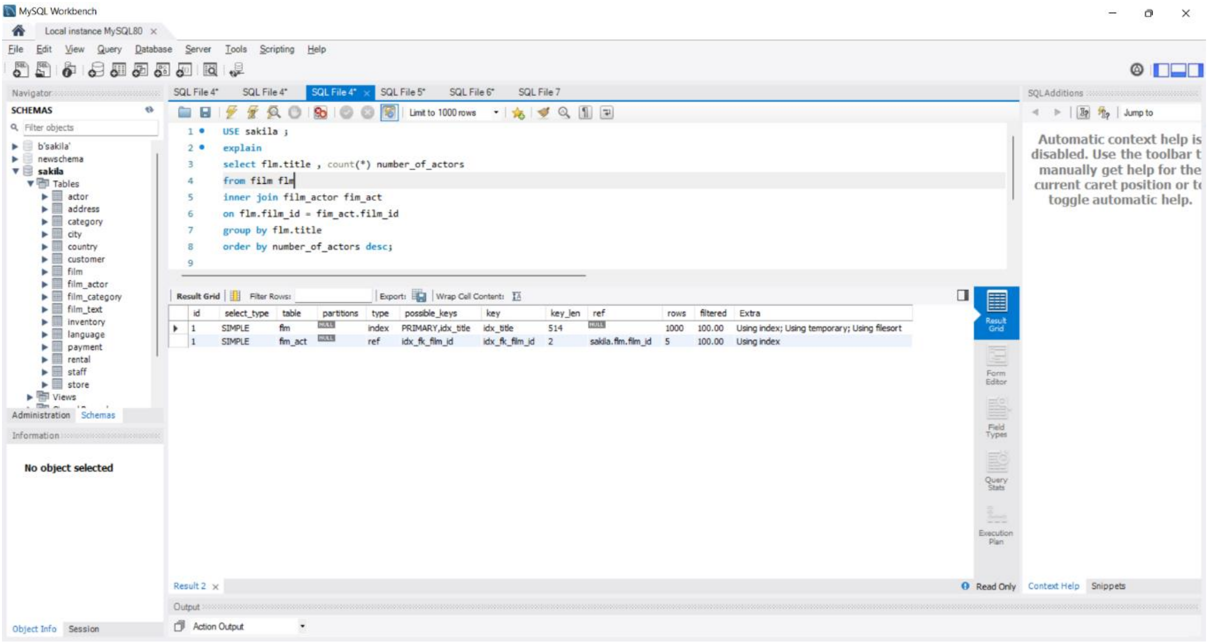


```sql
USE sakila ;
explain
select flm.title , count(*) number_of_actors
from film flm
right join film_actor fim_act
on flm.film_id = fim_act.film_id
group by flm.title
order by number_of_actors desc;

```

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	fim_act	NULL	index	NULL	idx_fk_film_id	2	NULL	5462	100.00	Using index; Using temporary; Using filesort
1	SIMPLE	flm	NULL	eq_ref	PRIMARY,idx_title	PRIMARY	2	sakila.fim_act.film_id	1	100.00	NULL

5) INNER JOIN



```
USE sakila ;
explain
select flm.title , count(*) number_of_actors
from film flm
inner join film_actor fim_act
on flm.film_id = fim_act.film_id
group by flm.title
order by number_of_actors desc;
```

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	flm	NULL	index	PRIMARY,idx_title	idx_title	514	NULL	1000	100.00	Using index; Using temporary; Using filesort
1	SIMPLE	fim_act	NULL	ref	idx_fk_film_id	idx_fk_film_id	2	sakila.flm.film_id	5	100.00	Using index

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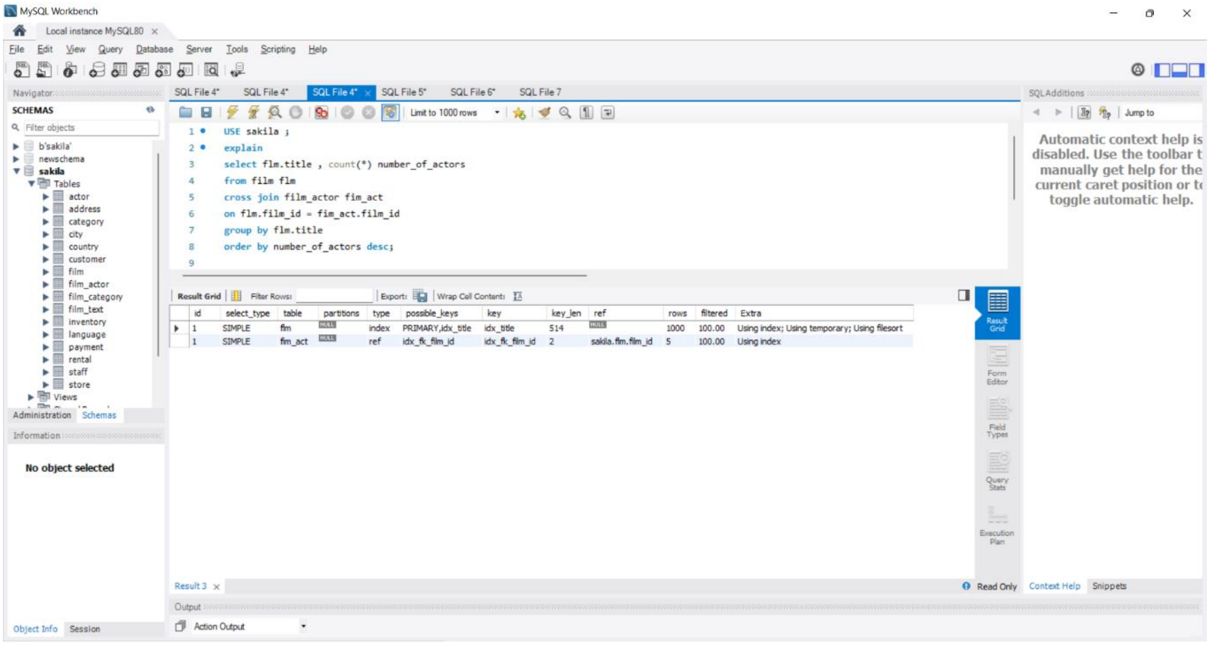
No object selected

6) CROSS JOIN



```
USE sakila ;
explain
select flm.title , count(*) number_of_actors
from film flm
cross join film_actor fim_act
on flm.film_id = fim_act.film_id
group by flm.title
order by number_of_actors desc;
```

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	flm	NULL	index	PRIMARY,idx_title	idx_title	514	NULL	1000	100.00	Using index; Using temporary; Using filesort
1	SIMPLE	fim_act	NULL	ref	idx_fk_film_id	idx_fk_film_id	2	sakila.flm.film_id	5	100.00	Using index

Automatic context help is disabled. Use the toolbar t manually get help for the current caret position or t toggle automatic help.

No object selected

<u>Conclusion:</u>

Thus, we implemented and studied query monitor