

Санкт-Петербургский национальный исследовательский университет ИТМО

Факультет Инфокоммуникационных технологий

Лабораторная работа №2 по теме

**«Запросы на выборку и модификацию данных, представления и
индексы в PostgreSQL»**

по дисциплине «Проектирование и реализация баз данных»

Выполнил:

студент 2 курса К32421 группы

Гафаров Данил Альбертович

Преподаватель:

Говорова Марина Михайловна

Санкт-Петербург

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Цель работы

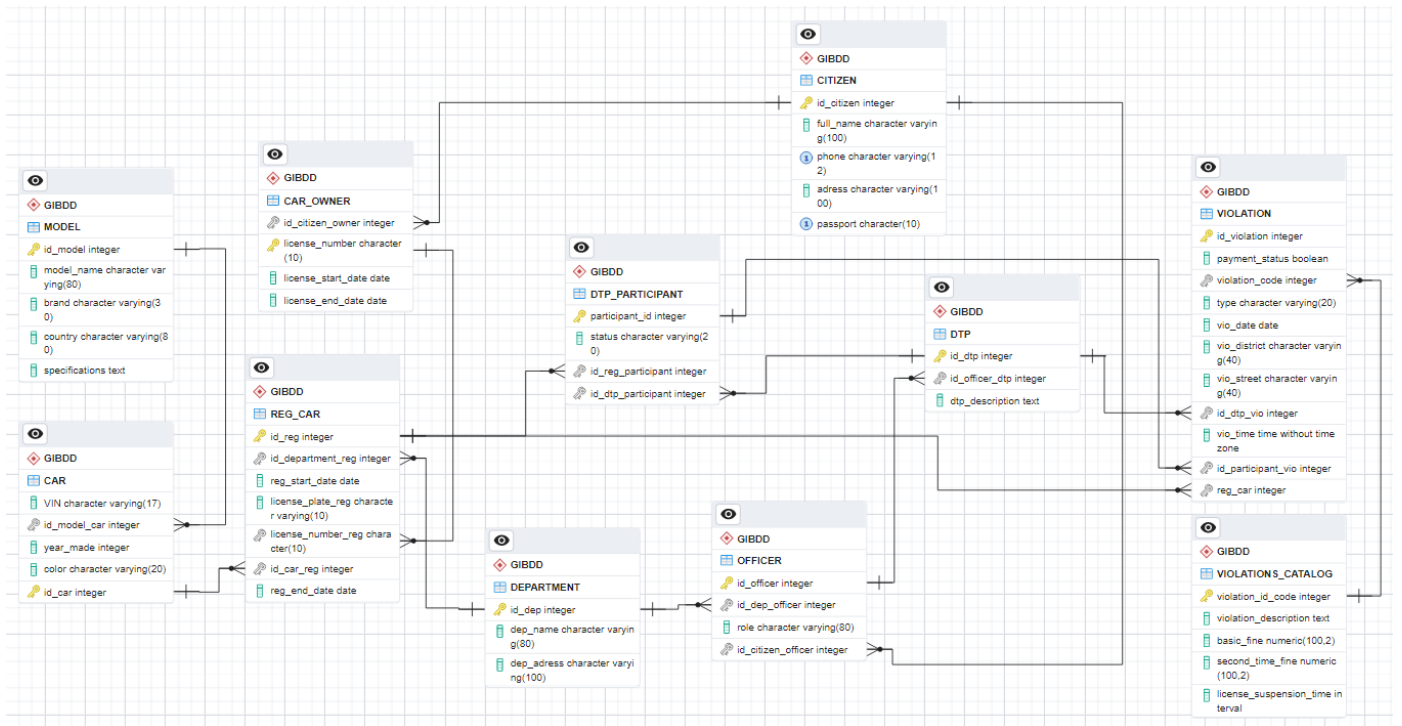
Цель работы: овладеть практическими навыками создания представлений и запросов на выборку данных к базе данных PostgreSQL, использования подзапросов при модификации данных и индексов.

Практическое задание

Практическое задание:

1. Создать запросы и представления на выборку данных к базе данных PostgreSQL (согласно индивидуальному заданию, часть 2 и 3).
2. Составить 3 запроса на модификацию данных (INSERT, UPDATE, DELETE) с использованием подзапросов.
3. Изучить графическое представление запросов и просмотреть историю запросов.
4. Создать простой и составной индексы для двух произвольных запросов и сравнить время выполнения запросов без индексов и с индексами. Для получения плана запроса использовать команду EXPLAIN.

Схема базы данных



Выполнение

SELECT №1

```
SELECT    "id_citizen",    "full_name",    "phone",    "adress",    "passport",  
"license_number"
```

```
FROM "GIBDD"."CITIZEN", "GIBDD"."CAR_OWNER"
```

```
WHERE "id_citizen" = "id_citizen_owner" and "id_citizen" IN
```

```
(SELECT      id_citizen      FROM      "GIBDD"."DTP_PARTICIPANT",  
"GIBDD"."VIOLATION", "GIBDD"."REG_CAR",
```

```
"GIBDD"."CAR_OWNER", "GIBDD"."CITIZEN"
```

```
where id_dtp_vio = id_dtp_participant and id_reg = id_reg_participant and status =  
'Виновник'
```

```
and license_number = license_number_reg and id_citizen_owner = id_citizen and  
"vio_date"
```

```
BETWEEN '01.01.2023' and '08.11.2023'
```

```
group by id_citizen
```

```
having count(*) > 1)
```

Запрос

История запросов

1

SELECT "id_citizen", "full_name", "phone", "adress", "passport", "license_number"

2

FROM "GIBDD"."CITIZEN", "GIBDD"."CAR_OWNER"

3

WHERE "id_citizen" = "id_citizen_owner" and "id_citizen" IN

4

(SELECT id_citizen FROM "GIBDD"."DTP_PARTICIPANT", "GIBDD"."VIOLATION", "GIBDD"."REG_CAR",

5

"GIBDD"."CAR_OWNER", "GIBDD"."CITIZEN"

6

where id_dtp_vio = id_dtp_participant and id_reg = id_reg_participant and status = 'Виновник'

7

and license_number = license_number_reg and id_citizen_owner = id_citizen and "vio_date"

8

BETWEEN '01.01.2023' and '08.11.2023'

9

group by id_citizen

10

having count(*) > 1)

Data Output

Сообщения

Notifications

	id_citizen integer	full_name character varying (100)	phone character varying (12)	adress character varying (100)	passport character	license_number character
1	2	Маратов Марат Маратович	+79962369879	ул. Ломоносова 96, кв.1	9214948532	5008185092
2	6	Хосе Рауль Капабланка	+79092346523	ул. Гаванская 4, кв.8	9432455527	7771326912

SELECT №2

```

SELECT    "id_citizen",    "full_name",    "phone",    "adress",    "passport",
"license_number"

FROM "GIBDD"."CITIZEN", "GIBDD"."CAR_OWNER"

WHERE "id_citizen" = "id_citizen_owner" and "id_citizen" IN

(SELECT id_citizen

FROM          "GIBDD"."CAR_OWNER",          "GIBDD"."CITIZEN",
"GIBDD"."DTP_PARTICIPANT",

"GIBDD"."VIOLATION", "GIBDD"."REG_CAR"

WHERE id_reg = id_reg_participant and license_number = license_number_reg

and "id_citizen_owner" = "id_citizen" and "status" = 'Виновник'

and    "id_dtp_participant"    =    "id_dtp_vio"    and    "vio_date"    BETWEEN
CURRENT_DATE - 7 and CURRENT_DATE

and (vio_time > '22:00:00' OR vio_time < '06:00:00'))

```

Запрос История запросов

```

1  SELECT "id_citizen", "full_name", "phone", "adress", "passport", "license_number"
2  FROM "GIBDD"."CITIZEN", "GIBDD"."CAR_OWNER"
3  WHERE "id_citizen" = "id_citizen_owner" and "id_citizen" IN
4  (SELECT id_citizen
5   FROM "GIBDD"."CAR_OWNER", "GIBDD"."CITIZEN", "GIBDD"."DTP_PARTICIPANT",
6   "GIBDD"."VIOLATION", "GIBDD"."REG_CAR"
7   WHERE id_reg = id_reg_participant and license_number = license_number_reg
8   and "id_citizen_owner" = "id_citizen" and "status" = 'Виновник'
9   and "id_dtp_participant" = "id_dtp_vio" and "vio_date" BETWEEN CURRENT_DATE - 7 and CURRENT_DATE
10  and (vio_time > '22:00:00' OR vio_time < '06:00:00'))

```

Data Output Сообщения Notifications

id_citizen integer	full_name character varying (100)	phone character varying (12)	adress character varying (100)	passport character	license_number character
-----------------------	--------------------------------------	---------------------------------	-----------------------------------	-----------------------	-----------------------------

SELECT №3

```

SELECT "id_citizen", "full_name", "phone", "adress", "passport", "role"

FROM "GIBDD"."CITIZEN", "GIBDD"."OFFICER"

WHERE "id_citizen" = "id_citizen_officer" and "id_citizen" IN

```

(SELECT id_citizen_officer FROM (SELECT DISTINCT id_citizen_officer,
id_reg_participant

FROM "GIBDD"."DTP", "GIBDD"."OFFICER",
"GIBDD"."DTP_PARTICIPANT"

WHERE id_officer = id_officer_dtp AND id_dtp = id_dtp_participant AND status
= 'Виновник') AS prep

GROUP BY id_citizen_officer

HAVING count(*) =

(SELECT max(amount) from

(SELECT id_citizen_officer, count(*) as amount FROM (SELECT DISTINCT
id_citizen_officer,

id_reg_participant

FROM "GIBDD"."DTP", "GIBDD"."OFFICER",
"GIBDD"."DTP_PARTICIPANT"

WHERE id_officer = id_officer_dtp AND id_dtp = id_dtp_participant AND status
= 'Виновник') AS prep

GROUP BY id_citizen_officer

ORDER BY count(*) as prep))

Запрос История запросов

```
1 SELECT "id_citizen", "full_name", "phone", "adress", "passport", "role"
2 FROM "GIBDD"."CITIZEN", "GIBDD"."OFFICER"
3 WHERE "id_citizen" = "id_citizen_officer" and "id_citizen" IN
4 (SELECT id_citizen_officer FROM (SELECT DISTINCT id_citizen_officer, id_reg_participant
5 FROM "GIBDD"."DTP", "GIBDD"."OFFICER", "GIBDD"."DTP_PARTICIPANT"
6 WHERE id_officer = id_officer_dtp AND id_dtp = id_dtp_participant AND status = 'Виновник') AS prep
7 GROUP BY id_citizen_officer
8 HAVING count(*) =
9 (SELECT max(amount) from
10 (SELECT id_citizen_officer, count(*) as amount FROM (SELECT DISTINCT id_citizen_officer,
11 id_reg_participant
12 FROM "GIBDD"."DTP", "GIBDD"."OFFICER", "GIBDD"."DTP_PARTICIPANT"
13 WHERE id_officer = id_officer_dtp AND id_dtp = id_dtp_participant AND status = 'Виновник') AS prep
14 GROUP BY id_citizen_officer
15 ORDER BY count(*) as prep))
```

Data Output Сообщения Notifications

	id_citizen integer	full_name character varying (100)	phone character varying (12)	adress character varying (100)	passport character	role character varying (80)
1	7	Джон Гаджет	+79999364491	ул. Якорная 6, кв.13	8717287992	Старший инспектор
2	8	Степанов Степан Степанович	+79031698156	ул. Бассейная 37, кв.7	9810466213	Старший инспектор

SELECT №4

```

SELECT    "id_citizen",    "full_name",    "phone",    "adress",    "passport",
"license_number"

FROM          "GIBDD"."CITIZEN",          "GIBDD"."CAR_OWNER",
"GIBDD"."REG_CAR"

WHERE    "id_citizen"    =    "id_citizen_owner"    and    license_number_reg    =
license_number and "id_reg" IN

(SELECT id_reg_participant FROM

(SELECT id_reg_participant, id_officer, count(id_officer)

FROM    "GIBDD"."OFFICER",    "GIBDD"."DTP",    "GIBDD"."VIOLATION",
"GIBDD"."DTP_PARTICIPANT"

WHERE "id_officer" = "id_officer_dtp"

and "id_dtp" = "id_dtp_vio" and "id_dtp" = "id_dtp_participant" and "status" =
'Виновник'

GROUP BY id_reg_participant, id_officer

HAVING count(id_officer) > 1) as prep)

```

Запрос История запросов

```

1  SELECT "id_citizen", "full_name", "phone", "adress", "passport", "license_number"
2  FROM "GIBDD"."CITIZEN", "GIBDD"."CAR_OWNER", "GIBDD"."REG_CAR"
3  WHERE "id_citizen" = "id_citizen_owner" and license_number_reg = license_number and "id_reg" IN
4  (SELECT id_reg_participant FROM
5  (SELECT id_reg_participant, id_officer, count(id_officer)
6  FROM "GIBDD"."OFFICER", "GIBDD"."DTP", "GIBDD"."VIOLATION", "GIBDD"."DTP_PARTICIPANT"
7  WHERE "id_officer" = "id_officer_dtp"
8  and "id_dtp" = "id_dtp_vio" and "id_dtp" = "id_dtp_participant" and "status" = 'Виновник'
9  GROUP BY id_reg_participant, id_officer
10 HAVING count(id_officer) > '1') as prep)

```

Data Output Сообщения Notifications

	id_citizen integer	full_name character varying (100)	phone character varying (12)	adress character varying (100)	passport character	license_number character
1	6	Хосе Рауль Капабланка	+79092346523	ул. Гаванская 4, кв.8	9432455527	7771326912
2	2	Маратов Марат Маратович	+79962369879	ул. Ломоносова 96, кв.1	9214948532	5008185092

SELECT №5

```

SELECT brand FROM (SELECT brand, id_violation FROM "GIBDD"."MODEL"
INNER JOIN "GIBDD"."CAR" ON "id_model" = "id_model_car"

INNER JOIN "GIBDD"."REG_CAR" ON "id_car" = "id_car_reg" FULL OUTER
JOIN "GIBDD"."DTP_PARTICIPANT"

```

```

ON "id_reg" = "id_reg_participant" INNER JOIN "GIBDD"."VIOLATION"
ON "id_dtp_participant" = "id_dtp_vio"
WHERE "status" = 'Виновник') as prep GROUP BY brand HAVING count(*) =
(SELECT MIN(amount) FROM
(SELECT brand, COUNT(*) as amount FROM (SELECT brand, id_violation
FROM "GIBDD"."MODEL"
INNER JOIN "GIBDD"."CAR"
ON "id_model" = "id_model_car"
INNER JOIN "GIBDD"."REG_CAR"
ON "id_car" = "id_car_reg"
FULL OUTER JOIN "GIBDD"."DTP_PARTICIPANT"
ON "id_reg" = "id_reg_participant"
INNER JOIN "GIBDD"."VIOLATION"
ON "id_dtp_participant" = "id_dtp_vio"
WHERE "status" = 'Виновник') as prep GROUP BY brand) as prep)

```

Запрос
История запросов

```

1 SELECT brand FROM
2 (SELECT brand, id_violation FROM "GIBDD"."MODEL" INNER JOIN "GIBDD"."CAR" ON "id_model" = "id_model_car"
3 INNER JOIN "GIBDD"."REG_CAR" ON "id_car" = "id_car_reg" FULL OUTER JOIN "GIBDD"."DTP_PARTICIPANT"
4 ON "id_reg" = "id_reg_participant" INNER JOIN "GIBDD"."VIOLATION"
5 ON "id_dtp_participant" = "id_dtp_vio"
6 WHERE "status" = 'Виновник') as prep GROUP BY brand HAVING count(*) =
7 (SELECT MIN(amount) FROM
8 (SELECT brand, COUNT(*) as amount FROM (SELECT brand, id_violation FROM "GIBDD"."MODEL"
9 INNER JOIN "GIBDD"."CAR"
10 ON "id_model" = "id_model_car"
11 INNER JOIN "GIBDD"."REG_CAR"
12 ON "id_car" = "id_car_reg"
13 FULL OUTER JOIN "GIBDD"."DTP_PARTICIPANT"
14 ON "id_reg" = "id_reg_participant"
15 INNER JOIN "GIBDD"."VIOLATION"
16 ON "id_dtp_participant" = "id_dtp_vio"
17 WHERE "status" = 'Виновник') as prep GROUP BY brand) as prep)
18

```

Data Output
Сообщения
Notifications

	brand
	character varying (30)
1	BMW
2	Lamborghini

SELECT №6


```

SELECT COUNT(DISTINCT participant_id) FROM "GIBDD"."VIOLATION",
"GIBDD"."VIOLATIONS_CATALOG","GIBDD"."DTP_PARTICIPANT"

WHERE violation_code = violation_id_code and id_dtp_vio = id_dtp_participant
and

status = 'Виновник' and license_suspension_time is not null and vio_date >
(CURRENT_DATE - 7)

```

Запрос

История запросов

1

SELECT COUNT(DISTINCT participant_id) FROM "GIBDD"."VIOLATION",

2

"GIBDD"."VIOLATIONS_CATALOG","GIBDD"."DTP_PARTICIPANT"

3

WHERE violation_code = violation_id_code and id_dtp_vio = id_dtp_participant and

4

status = 'Виновник' and license_suspension_time is not null and vio_date > (CURRENT_DATE - 7)

Data Output

Сообщения

Notifications

</

SELECT №7

```

SELECT "violation_description", "violation_id_code"

FROM "GIBDD"."VIOLATION", "GIBDD"."VIOLATIONS_CATALOG"

WHERE violation_code = violation_id_code

GROUP BY "violation_description", "violation_id_code"

HAVING COUNT(*) =

(SELECT MAX(amount) FROM (SELECT "violation_description",
count(violation_id_code) as amount,

"violation_id_code"

FROM "GIBDD"."VIOLATION", "GIBDD"."VIOLATIONS_CATALOG"

WHERE violation_code = violation_id_code

GROUP BY "violation_description", "violation_id_code"

ORDER BY count(violation_id_code) DESC) as prep)

```


where "year_fine"."id_citizen" = "CAR_OWNER"."id_citizen_owner" and
license_number = license_number_reg

and id_reg = id_reg_participant and id_dtp_participant = id_dtp_vio

and status = 'Виновник' and violation_code = violation_id_code

Запрос

История запросов

1

CREATE VIEW "Нарушения" AS

2

SELECT "violation_description", "vio_time", "license_number", "payment" FROM (SELECT id_citizen,

3

SUM(CASE WHEN ("type" = 'Первое') THEN basic_fine

4

ELSE (second_time_fine)

5

END) as payment

6

FROM "GIBDD"."CAR_OWNER", "GIBDD"."CITIZEN", "GIBDD"."DTP", "GIBDD"."DTP_PARTICIPANT", "GIBDD"."VIOLATION",

7

"GIBDD"."VIOLATIONS_CATALOG", "GIBDD"."REG_CAR"

8

WHERE id_dtp = id_dtp_participant and license_number = license_number_reg and id_reg = id_reg_participant

9

and id_citizen_owner = id_citizen

10

and id_dtp = id_dtp_vio and violation_code = violation_id_code and status = 'Виновник'

11

and vio_date > CURRENT_DATE - INTERVAL '1 year'

12

GROUP BY id_citizen) AS year_fine, "GIBDD"."CAR_OWNER", "GIBDD"."REG_CAR", "GIBDD"."DTP_PARTICIPANT",

13

"GIBDD"."VIOLATION", "GIBDD"."VIOLATIONS_CATALOG"

14

where "year_fine"."id_citizen" = "CAR_OWNER"."id_citizen_owner" and license_number = license_number_reg

15

and id_reg = id_reg_participant and id_dtp_participant = id_dtp_vio

16

and status = 'Виновник' and violation_code = violation_id_code

Data Output

Сообщения

Notifications

CREATE VIEW

Запрос завершён успешно, время выполнения: 376 мсек.

Запрос

История запросов

1

SELECT * FROM "Нарушения"

Data Output

Сообщения

Notifications

	violation_description text	vio_time time without time zone	license_number character	payment numeric
1	Управление транспортным средством водителем, находящимся в состоянии опьянения	19:32:10	5008185092	35000.00
2	Нарушение пдд, повлекшее причинение легкого или средней тяжести вреда здоровью потерпевш...	19:32:10	5008185092	35000.00
3	Превышение скорости	18:39:22	7771326912	2500.00
4	Превышение скорости	13:27:54	7771326912	2500.00
5	Превышение скорости	10:54:02	7771326912	2500.00
6	Проезд на запрещающий сигнал светофора	03:47:48	9875634029	1000.00
7	Нарушение правил стоянки	23:55:14	6219270314	500.00

VIEW №2

CREATE VIEW "Нарушали в этом месяце" AS

SELECT DISTINCT license_number, full_name, phone, adress, passport FROM
"GIBDD"."CITIZEN", "GIBDD"."DTP_PARTICIPANT",
"GIBDD"."VIOLATION", "GIBDD"."CAR_OWNER"

WHERE id_citizen = id_citizen_participant and id_citizen_owner = id_citizen
and id_dtp_participant = id_dtp_vio and status = 'Виновник' and vio_date > CURRENT_DATE - INTERVAL '1 month'

Запрос История запросов

```

1 CREATE VIEW "Нарушали в этом месяце" AS
2
3 SELECT DISTINCT license_number, full_name, phone, adress, passport FROM
4 "GIBDD"."CITIZEN", "GIBDD"."DTP_PARTICIPANT",
5 "GIBDD"."VIOLATION", "GIBDD"."CAR_OWNER", "GIBDD"."REG_CAR"
6 WHERE id_citizen = id_citizen_owner and license_number = license_number_reg
7 and id_reg = id_reg_participant and id_dtp_participant = id_dtp_vio and status = 'Виновник'
8 and vio_date > CURRENT_DATE - INTERVAL '1 month'

```

Data Output Сообщения Notifications

CREATE VIEW

Запрос завершён успешно, время выполнения: 44 мсек.

Запрос История запросов

```

1 SELECT * FROM "Нарушали в этом месяце"

```

Data Output Сообщения Notifications

license_number	full_name	phone	adress	passport
character	character varying (100)	character varying (12)	character varying (100)	character

UPDATE №1

Выдать повышение или оставить звание.

UPDATE "GIBDD"."OFFICER"

SET "role" =

CASE

WHEN "id_officer" IN (SELECT "id_officer_dtp" FROM "GIBDD"."DTP"

GROUP BY id_officer_dtp HAVING count(*) > '2') THEN 'Старший инспектор'

WHEN "role" = 'Старший инспектор' THEN 'Старший инспектор'

ELSE 'Инспектор'

END

До:

Запрос

История запросов

1

SELECT * FROM "GIBDD"."OFFICER"

2

ORDER BY id_officer ASC

Data Output

Сообщения

Notifications

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	id_officer [PK] integer	id_dep_officer integer	role character varying (80)	id_citizen_officer integer
1	1	4	Инспектор	7
2	2	5	Старший инспектор	8

После:

<

INSERT №1

Выдать одному водителю, имеющему только 1 штраф или меньше в этом году
Фольксваген поло 2023 года.

WITH new_car AS (

INSERT INTO "GIBDD"."CAR"("VIN", "id_model_car", "year_made", "color")
VALUES ('JTDBF32K920050115', '4', '2023', 'orange') RETURNING "id_car")

INSERT INTO "GIBDD"."REG_CAR" ("id_department_reg", "reg_start_date",
"license_plate_reg", "license_number_reg", "id_car_reg")

```

VALUES('5', CURRENT_DATE, 'A101XC77', (SELECT "license_number"
FROM "GIBDD"."CITIZEN", "GIBDD"."CAR_OWNER"

WHERE "id_citizen" = "id_citizen_owner" and "id_citizen" IN

(SELECT id_citizen FROM "GIBDD"."CAR_OWNER", "GIBDD"."CITIZEN",
"GIBDD"."DTP_PARTICIPANT",

"GIBDD"."VIOLATION", "GIBDD"."REG_CAR" WHERE "license_number" =
"license_number_reg"

and "id_citizen_owner" = "id_citizen" and "status" = 'Виновник' and id_reg =
id_reg_participant

and "id_dtp_participant" = "id_dtp_vio" and "vio_date" BETWEEN '01.01.2023'
and '08.11.2023'

GROUP BY id_citizen

HAVING COUNT(*) <= 1

LIMIT 1)), (select "id_car" from new_car))

```

```

1 WITH new_car AS (
2   INSERT INTO "GIBDD"."CAR"("VIN", "id_model_car", "year_made", "color")
3   VALUES ('JTD8F32K920050115', '4', '2023', 'Orange') RETURNING "id_car")
4 INSERT INTO "GIBDD"."REG_CAR" ("id_department_reg", "reg_start_date",
5 "license_plate_reg", "license_number_reg", "id_car_reg")
6 VALUES('5', CURRENT_DATE, 'A101XC77', (SELECT "license_number" FROM "GIBDD"."CITIZEN", "GIBDD"."CAR_OWNER"
7 WHERE "id_citizen" = "id_citizen_owner" and "id_citizen" IN
8 (SELECT id_citizen FROM "GIBDD"."CAR_OWNER", "GIBDD"."CITIZEN", "GIBDD"."DTP_PARTICIPANT",
9 "GIBDD"."VIOLATION", "GIBDD"."REG_CAR" WHERE "license_number" = "license_number_reg"
10 and "id_citizen_owner" = "id_citizen" and "status" = 'Виновник' and id_reg = id_reg_participant
11 and "id_dtp_participant" = "id_dtp_vio" and "vio_date" BETWEEN '01.01.2023' and '08.11.2023'
12 GROUP BY id_citizen
13 HAVING COUNT(*) <= 1
14 LIMIT 1)), (select "id_car" from new_car))

```

Data Output Сообщения Notifications

INSERT 0 1

Запрос завершён успешно, время выполнения: 140 msec.

До:

Запрос История запросов

```
1 SELECT * FROM "GIBDD"."CAR"
2 ORDER BY id_car ASC
```

Data Output Сообщения Notifications

	VIN character varying (17)	id_model_car integer	year_made integer	color character varying (20)	id_car [PK] integer
1	5N3ZA0NE6AN906847	1	2010	Black	1
2	1ZVFT80N475211367	2	2015	Gray	2
3	5UXFE4C53AL800509	5	2022	White	3
4	1FABP64R2KH157796	6	2019	Red	4
5	ZHWGC6AU8BLA10474	7	2023	Green	5

Запрос История запросов

↗ Scr

```
1 SELECT * FROM "GIBDD"."REG_CAR"
2 ORDER BY id_reg ASC
```

Data Output Сообщения Notifications

	id_reg [PK] integer	id_department_reg integer	reg_start_date date	license_plate_reg character varying (10)	license_number_reg character	id_car_reg integer	reg_end_date date
1	1	4	2021-09-22	E592TC78	5008185092	4	[null]
2	4	4	2016-02-14	E324TP78	6219270314	2	[null]
3	5	4	2011-07-03	B814CE78	7771326912	1	[null]
4	7	5	2022-11-18	Y498MH78	9875634029	3	[null]
5	11	5	2023-08-12	O7770077	6219270314	5	[null]

После:

```
1 SELECT * FROM "GIBDD"."CAR"
2 ORDER BY id_car ASC
```

Data Output Сообщения Notifications

	VIN character varying (17)	id_model_car integer	year_made integer	color character varying (20)	id_car [PK] integer
1	5N3ZA0NE6AN906847	1	2010	Black	1
2	1ZVFT80N475211367	2	2015	Gray	2
3	5UXFE4C53AL800509	5	2022	White	3
4	1FABP64R2KH157796	6	2019	Red	4
5	ZHWGC6AU8BLA10474	7	2023	Green	5
6	JTDBF32K920050115	4	2023	Orange	7

1

SELECT * FROM "GIBDD"."REG_CAR"

2

ORDER BY id_reg ASC

Data Output

Сообщения

Notifications

	id_reg [PK] integer	id_department_reg integer	reg_start_date date	license_plate_reg character varying (10)	license_number_reg character	id_car_reg integer	reg_end_date date
1	1	4	2021-09-22	E592TC78	5008185092	4	[null]
2	4	4	2016-02-14	E324TP78	6219270314	2	[null]
3	5	4	2011-07-03	B814CE78	7771326912	1	[null]
4	7	5	2022-11-18	Y498MH78	9875634029	3	[null]
5	11	5	2023-08-12	O777O077	6219270314	5	[null]
6	13	5	2023-10-02	A101XC77	6219270314	7	[null]

DELETE №1

Удалить неоформленные автомобили

DELETE FROM "GIBDD"."CAR" WHERE "id_car" NOT IN
(SELECT "id_car_reg" FROM "GIBDD"."REG_CAR")

Запрос

История запросов

1

DELETE FROM "GIBDD"."CAR" WHERE "id_car" NOT IN

2

(SELECT "id_car_reg" FROM "GIBDD"."REG_CAR")

3

|

Data Output

Сообщения

Notifications

DELETE 0

Запрос завершён успешно, время выполнения: 35 мсек.

До:

1

SELECT * FROM "GIBDD"."CAR"

2

ORDER BY id_car ASC

Data Output

Сообщения

Notifications

	VIN character varying (17)	id_model_car integer	year_made integer	color character varying (20)	id_car [PK] integer
1	5N3ZA0NE6AN906847	1	2010	Black	1
2	1ZVFT80N475211367	2	2015	Gray	2
3	5UXFE4C53AL800509	5	2022	White	3
4	1FABP64R2KH157796	6	2019	Red	4
5	ZHWGC6AU8BLA10474	7	2023	Green	5
6	JTDBF32K920050115	4	2023	Orange	7

После:

1

2

SELECT * FROM "GIBDD"."CAR"

ORDER BY id_car ASC

Data Output

Сообщения

Notifications

	VIN character varying (17)	id_model_car integer	year_made integer	color character varying (20)	id_car [PK] integer
1	5N3ZA0NE6AN906847	1	2010	Black	1
2	1ZVFT80N475211367	2	2015	Gray	2
3	5UXFE4C53AL800509	5	2022	White	3
4	1FABP64R2KH157796	6	2019	Red	4
5	ZHWGC6AU8BLA10474	7	2023	Green	5
6	JTDBF32K920050115	4	2023	Orange	7

INDEX №1

Простой для SELECT 5

CREATE INDEX "index_модель_марка" ON "GIBDD"."MODEL"("brand")

Запрос

История запросов

1

2

3

4

5

6

7

8

9

10

SELECT brand, COUNT(*) FROM (SELECT brand, id_violation FROM "GIBDD"."MODEL"

INNER JOIN "GIBDD"."CAR"

ON "id_model" = "id_model_car"

INNER JOIN "GIBDD"."REG_CAR"

ON "id_car" = "id_car_reg"

FULL OUTER JOIN "GIBDD"."DTP_PARTICIPANT"

ON "id_reg" = "id_reg_participant"

INNER JOIN "GIBDD"."VIOLATION"

ON "id_dtp_participant" = "id_dtp_vio"

WHERE "status" = 'Виновник') as prep GROUP BY brand ORDER BY COUNT(*) LIMIT 1

Data Output

Сообщения

Notifications

	brand character varying (30)	count bigint
1	BMW	1

INDEX №2

Составной для SELECT 4

```
CREATE INDEX "index_phone_adress_passport" ON  
"GIBDD"."CITIZEN"("phone", "adress", "passport")
```

Запрос История запросов

```
1 SELECT "id_citizen", "full_name", "phone", "adress", "passport", "license_number"  
2 FROM "GIBDD"."CITIZEN", "GIBDD"."CAR_OWNER", "GIBDD"."REG_CAR"  
3 WHERE "id_citizen" = "id_citizen_owner" and license_number_reg = license_number and "id_reg" IN  
4 (SELECT id_reg_participant FROM  
5 (SELECT id_reg_participant, id_officer, count(id_officer)  
6 FROM "GIBDD"."OFFICER", "GIBDD"."DTP", "GIBDD"."VIOLATION", "GIBDD"."DTP_PARTICIPANT"  
7 WHERE "id_officer" = "id_officer_dtp"  
8 and "id_dtp" = "id_dtp_vio" and "id_dtp" = "id_dtp_participant" and "status" = 'Виновник'  
9 GROUP BY id_reg_participant, id_officer  
10 HAVING count(id_officer) > '1') as prep)
```

Data Output Сообщения Notifications

	id_citizen integer	full_name character varying (100)	phone character varying (12)	adress character varying (100)	passport character	license_number character
1	6	Хосе Рауль Капабланка	+79092346523	ул. Гаванская 4, кв.8	9432455527	7771326912
2	2	Маратов Марат Маратович	+79962369879	ул. Ломоносова 9б, кв.1	9214948532	5008185092

Выводы по проделанной работе

В ходе проделанной лабораторной работы мы овладели практическими навыками создания представлений и запросов на выборку данных к базе данных PostgreSQL, научились использовать подзапросы для модификации данных и индексов, использовали полученные навыки на практике.