ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ

ЗАПОЛЯРНЫЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ ИМ. Н. М. ФЕДОРОВСКОГО

ОТЧЕТ

по лабораторной работе

по дисциплине “Базы данных”

Тема: Запросы

Группа: ИС-21

Студент: Игнатьев Данила

Цель работы: Получение практических навыков работы с СУБД и языком SQL (оператор SELECT).

Задание:

разработать запросы к базе данных, созданной и заполненной на предыдущих лабораторных работах, следующих видов:

a. запрос с условием на числовые данные (>,<,=, between);

b. запрос с условием на текстовые данные (LIKE, IN);

c. запрос с вычисляемым полем;

d. запрос к нескольким таблицам (без явного указания JOIN);

e. запрос с агрегирующей функцией (AVG, SUM, COUNT, MIN, MAX);

f. запрос с группировкой (GROUP BY);

g. запрос с сортировкой (ORDER BY);

h. запрос с вложенным подзапросом (не менее 3 видов);

i. запрос с оператором UNION;

j. запрос с оператором INTERSECT;

k. запрос с оператором EXCEPT;

l. запрос с выражением CASE;

m. запрос с оператором JOIN (пять видов);

n. иерархический запрос.

Для каждого запроса подписать, что именно он возвращает с учетом предметной области (запросы со смыслом, а не только синтаксически правильные операторы).

Код и скрины:

1. WHERE(SELECT salary FROM specialties WHERE specialty_id = doctors.specialty_id) > 30000
2. WHERE(SELECT salary FROM specialties WHERE specialty_id = doctors.specialty_id) = 30000
3. WHERE(SELECT salary FROM specialties WHERE specialty_id = doctors.specialty_id) BETWEEN 30000 AND 40000

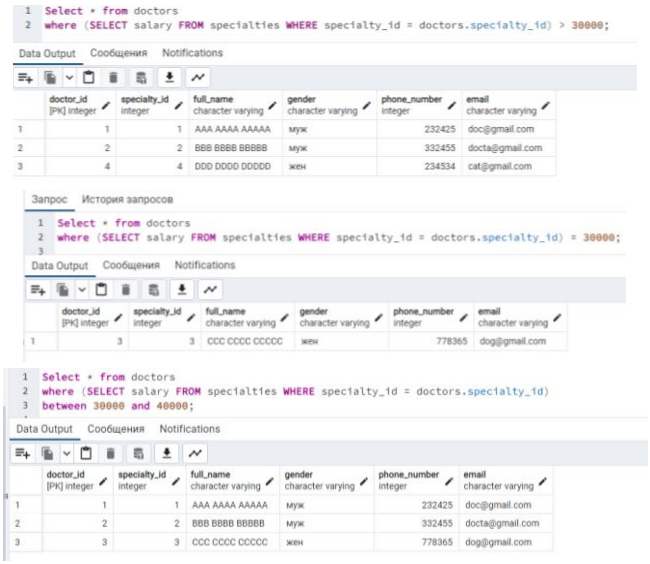


Рис.1 - запросы с условием на числовые данные (>,<,=, between)

1. SELECT * FROM medical_records WHERE report LIKE ‘A%’
2. SELECT * FROM medical_records WHERE report LIKE ‘%F%’
3. SELECT id, payment, offices_num FROM record WHERE offices_num IN (101, 102)

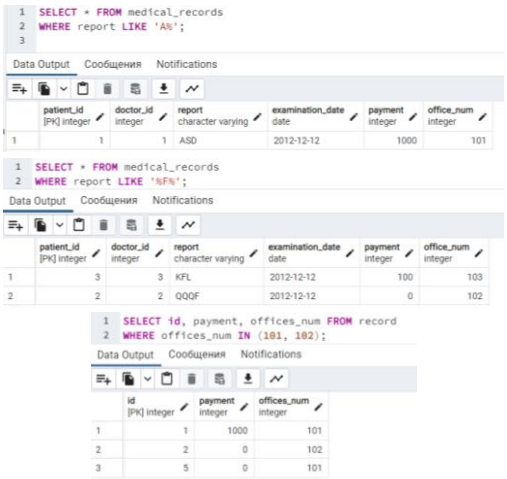


Рис.2 - запросы с условием на текстовые данные (LIKE, IN)

SELECT drug_name, quantity, price, quantity * price AS Summa from medicines

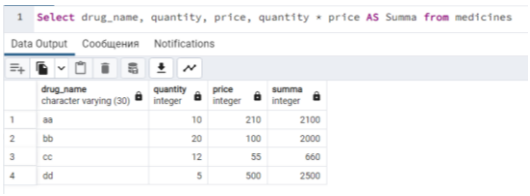


Рис.3 - запрос с вычисляемым полем

SELECT record.id, patients.full_name, doctors.full_name, record_payment, record.offices_num
FROM record, patients, doctors
WHERE record.patient_id = patients.patient_id AND record.doctor_id = doctors.doctor_id

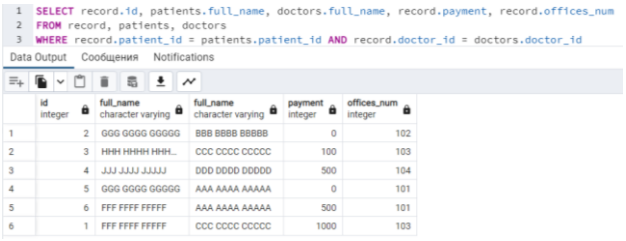


Рис.4 - запрос к нескольким таблицам (без явного указания JOIN)

SELECT SUM(payment) AS payment_id_1 FROM record WHERE patient_id = 1

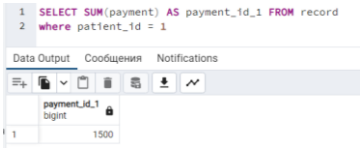


Рис.5 - запрос с агрегирующей функцией (AVG, SUM, COUNT, MIN, MAX)

SELECT patient_id, COUNT (patient_id) FROM record GROUP BY(patient_id)

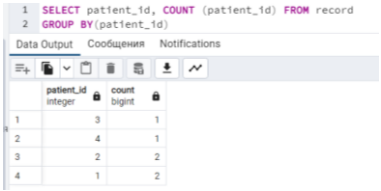


Рис.6 - запрос с группировкой (GROUP BY)

SELECT doctors.doctor_id, doctors.full_name, specialties.name, specialties.salary FROM doctors, specialties
WHERE doctors.specialty_id = specialties.specialty_id ORDER BY (specialties.salary)

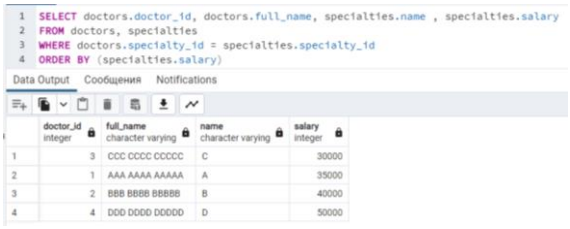


Рис.7 - запрос с сортировкой (ORDER BY)

1. SELECT doctors.doctor_id, doctors.full_name, specialties.name, specialties.salary FROM doctors, specialties
   WHERE doctors.specialty_id = (SELECT specialty_id FROM specialties WHERE name = ‘A’)
   AND specialties.salary = (SELECT salary FROM specialties WHERE name = ‘A’)

2. SELECT * FROM specialties WHERE specialties.specialty_id
   IN(SELECT specialties.specialty_id FROM specialties WHERE specialties.salary > 35000)

3. SELECT * FROM specialties
   WHERE EXISTS(SELECT * FROM offices WHERE offices.day_of_the_week_id = schedule.day_of_the_week_id)

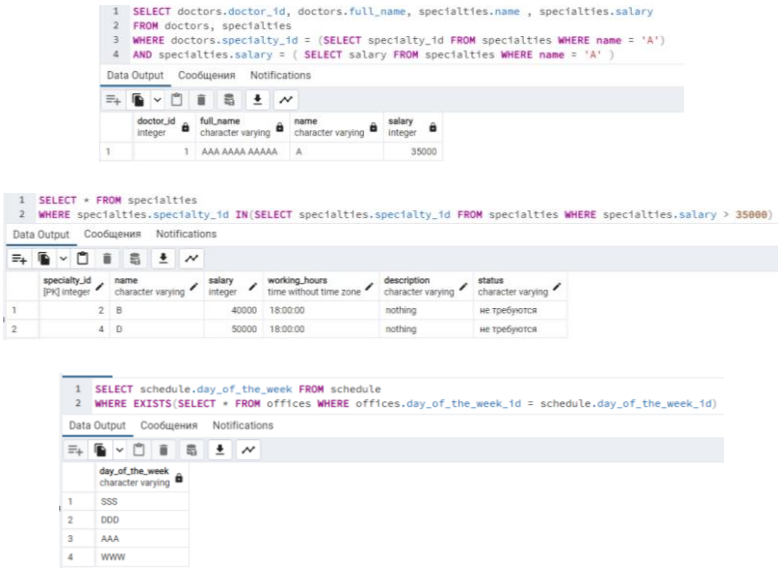


Рис.8 - запросы с вложенным подзапросом

SELECT full_name, gender FROM doctors
UNION
SELECT full_name, gender FROM patients

Рис.9 - запрос с оператором UNION

SELECT staff_name FROM staff
INTERSECT
SELECT full_name FROM doctors

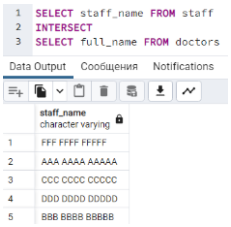
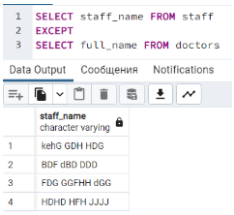


Рис.10 - запрос с оператором INTERSECT

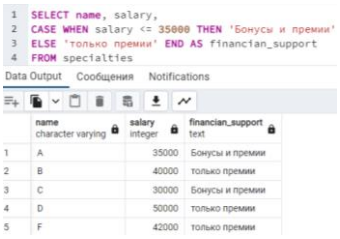
```
SELECT staff_name FROM staff
EXCEPT
SELECT full_name FROM doctors
```



	staff_name character varying
1	kehG GDH HDG
2	BDF dBD DDD
3	FDG GGFHH dGG
4	HDHD HFH JJJJ

Рис.11 - запрос с оператором EXCEPT

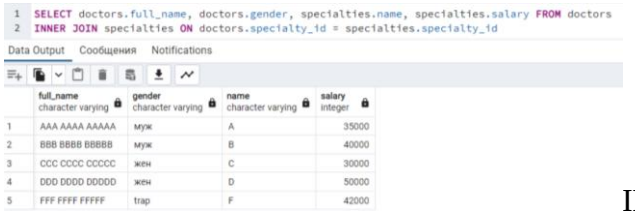
```
SELECT name, salary,
CASE WHEN salary <= 35000 THEN ‘Бонусы и премии’
ELSE ‘Только премии’ END AS financian_support FROM specialties
```



	name character varying	salary integer	financian_support text
1	A	35000	Бонусы и премии
2	B	40000	только премии
3	C	30000	Бонусы и премии
4	D	50000	только премии
5	F	42000	только премии

Рис.12 - запрос с выражением CASE

1. SELECT doctors.full_name, doctors.gender, specialties.name, specialties.salary FROM doctors
   INNER JOIN specialties ON doctors.specialty_id = specialty_id
2. SELECT staff1.staff_name, staff2.job FROM staff staff1
   INNER JOIN staff staff2 ON staff2.job AND staff1.staff_name = staff2.staff_name ORDER BY job
3. SELECT doctors.full_name, staff.staff_name FROM doctors CROSS JOIN staff
4. SELECT doctors.full_name, staff.job FROM doctors
   LEFT JOIN staff ON doctors.full_name = staff.staff_name
5. SELECT doctors.full_name, staff.job FROM doctors
   RIGHT JOIN staff ON doctors.full_name = staff.staff_name



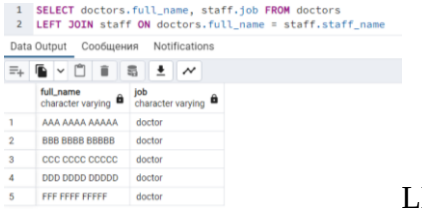
	full_name character varying	gender character varying	name character varying	salary integer
1	AAA AAAA AAAAA	муж	A	35000
2	BBB BBBB BBBBB	муж	B	40000
3	CCC CCCC CCCCC	жен	C	30000
4	DDD DDDD DDDDD	жен	D	50000
5	FFF FFFF FFFFF	trap	F	42000

INNER JOIN

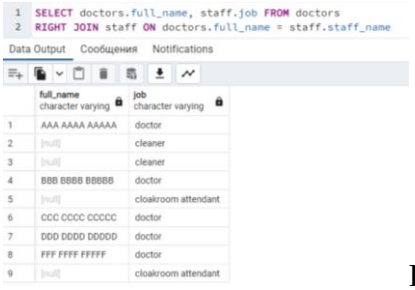
	staff_name character varying	job character varying
1	BDF dBD DDD	cleaner
2	HDHD HFH JJJJ	cleaner
3	FDG GGFHH dGG	cloakroom attendant
4	kehG GDH HDG	cloakroom attendant
5	AAA AAAA AAAAA	doctor
6	BBB BBBB BBBBB	doctor
7	CCC CCCC CCCCC	doctor
8	DDD DDDD DDDDD	doctor
9	FFF FFFF FFFFF	doctor

SELF JOIN

CROSS JOIN



LEFT JOIN



RIGHT JOIN

Рис.13 - запрос с оператором JOIN (пять видов)

```
WITH RECURSIVE staff_query AS
(
	SELECT staff_id, staff_name, job, boss_id FROM staff s
	WHERE boss_id is null
	UNION ALL
	SELECT s.staff_id, s.staff_name, s.job, s.boss_id FROM staff s
	INNER JOIN staff_query ss ON ss.staff_id = s.boss_id
)
SELECT * FROM staff_query
```

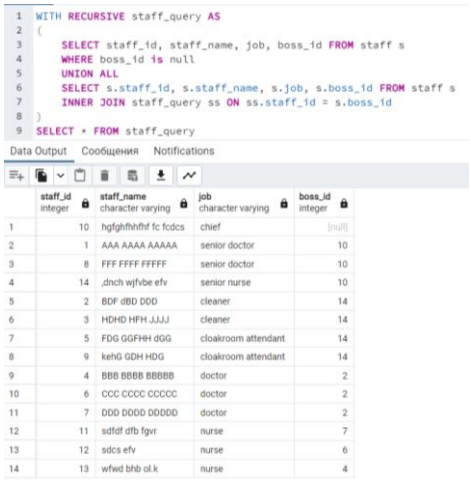


Рис.14 - иерархический запрос