Министерство образования Республики Беларусь

Учреждение образования
БЕЛОРУССКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ
ИНФОРМАТИКИ И РАДИОЭЛЕКТРОНИКИ

Факультет компьютерных систем и сетей

Кафедра электронных вычислительных машин

Отчёт по лабораторной работе №4-5
Тема: «Реализация SQL-запросов на простую выборку данных с группированием результатов»
Вариант №7

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1. Постановка задачи

В ходе выполнения лабораторной работы необходимо реализовать схему базы данных по ранее построенной реляционной схеме данных.

2. Выполнение

Выполнение оператора UNION предоставлено на рисунке 2.1

```
SELECT full_name FROM public.patient

UNION ALL SELECT full_name FROM public.doctor
```

25	Kharitonova T.A.
26	Alekseev A.P.
27	Petrov I.V.
28	Sidorov K.A.
29	Kozlova O.N.
30	Smirnov N.V.
31	Ivanov Ivan Ivanovich
32	Petrov Petr Petrovich
33	Sidorova Anna Alekseevna
34	Kozlov Konstantin Nikolaevich
35	Smirnova Ekaterina Aleksandrovna
36	Ivanov Aleksey Vladimirovich
37	Petrova Mariya Igorevna
38	Kozlova Alena Alekseevna

Рисунок 2.1-UNION

Выполнение оператора INTERSECT представлено на рисунке 2.2

```
SELECT full_name FROM public.patient

INTERSECT SELECT full_name FROM public.doctor
```

	full_name character varying (128)
1	Bylinskiy N.S.

Рисунок2.2-INTERSECT

Выполнение оператора EXCEPT представлено на рисунке 2.3

SELECT full_name FROM public.patient

EXCEPT SELECT full_name FROM public.doctor

	full_name character varying (128)
1	Alexandrov I.V.
2	Kharitonova T.A.
3	Kozlov K.N.
4	Trofimov Y.V.
5	Smirnova E.A.
6	Timofeev A.S.
7	Mackevich L.S.
8	Petrov I.V.
9	Kuznetsova A.I.
10	Sergeev A.V.

Рисунок 2.3 - EXCEPT

Выполнение оператора SUM представлено на рисунке 2.4

Таблица до операции представлена ниже

	pk_name [PK] character varying (128)	producer character varying (128)	amoun_of integer
1	Aspirin	Bayer	1000
2	Acetaminophen	Johnson & Johnson	800
3	Ibuprofen	Pfizer	1200
4	Amoxicillin	GlaxoSmithKline	500
5	Lisinopril	AstraZeneca	300
6	Metformin	Merck	600
7	Simvastatin	Novartis	400
8	Levothyroxine	AbbVie	700
9	Albuterol	Boehringer Ingelheim	200
10	Insulin	Sanofi	150
11	Warfarin	Eli Lilly	250
12	Omeprazole	Teva Pharmaceuticals	300
13	Losartan	Roche	350
14	Atorvastatin	Bristol Myers Squibb	400
15	Gabapentin	Pfizer	450
16	Amlodipine	Novartis	500
17	Hydrochlorothiazide	AstraZeneca	550
18	Metoprolol	Johnson & Johnson	600
19	Diazepam	Teva Pharmaceuticals	650
20	Prednisone	Pfizer	700
21	Ciprofloxacin	Bayer	750
22	Amitriptyline	AbbVie	800
23	Clonazepam	Roche	850
24	Cetirizine	Sanofi	900
25	Escitalopram	Teva Pharmaceuticals	950
26	Tamsulosin	Boehringer Ingelheim	1000
27	Furosemide	Pfizer	1050
28	Methotrexate	Eli Lilly	1100
29	Dexamethasone	Novartis	1150
30	Hydroxychloroquine	AbbVie	1200

SELECT SUM(amoun_of) FROM medicaments

	sum bigint
1	21600

Рисунок 2.4 – SUM

Выполнение оператора AVG представлено на рисунке 2.5

Таблица до операции представлена ниже

	pk_name [PK] character varying (128)	producer character varying (128)	amoun_of integer
1	Aspirin	Bayer	1000
2	Acetaminophen	Johnson & Johnson	800
3	Ibuprofen	Pfizer	1200
4	Amoxicillin	GlaxoSmithKline	500
5	Lisinopril	AstraZeneca	300
6	Metformin	Merck	600
7	Simvastatin	Novartis	400
8	Levothyroxine	AbbVie	700
9	Albuterol	Boehringer Ingelheim	200
10	Insulin	Sanofi	150
11	Warfarin	Eli Lilly	250
12	Omeprazole	Teva Pharmaceuticals	300
13	Losartan	Roche	350
14	Atorvastatin	Bristol Myers Squibb	400
15	Gabapentin	Pfizer	450
16	Amlodipine	Novartis	500
17	Hydrochlorothiazide	AstraZeneca	550
18	Metoprolol	Johnson & Johnson	600
19	Diazepam	Teva Pharmaceuticals	650
20	Prednisone	Pfizer	700
21	Ciprofloxacin	Bayer	750
22	Amitriptyline	AbbVie	800
23	Clonazepam	Roche	850
24	Cetirizine	Sanofi	900
25	Escitalopram	Teva Pharmaceuticals	950
26	Tamsulosin	Boehringer Ingelheim	1000
27	Furosemide	Pfizer	1050
28	Methotrexate	Eli Lilly	1100
29	Dexamethasone	Novartis	1150
30	Hydroxychloroquine	AbbVie	1200

SELECT AVG(amoun_of) AS avg_of_medicaments FROM medicaments

	avg_of_medicaments numeric
1	696.7741935483870968

Рисунок 2.5 – AVG

Выполнение оператора COUNT представлено на рисунке 2.6

Таблица до операции представлена ниже

	pk_name [PK] character varying (128)	producer character varying (128)	amoun_of integer
1	Aspirin	Bayer	1000
2	Acetaminophen	Johnson & Johnson	800
3	Ibuprofen	Pfizer	1200
4	Amoxicillin	GlaxoSmithKline	500
5	Lisinopril	AstraZeneca	300
6	Metformin	Merck	600
7	Simvastatin	Novartis	400
8	Levothyroxine	AbbVie	700
9	Albuterol	Boehringer Ingelheim	200
10	Insulin	Sanofi	150
11	Warfarin	Eli Lilly	250
12	Omeprazole	Teva Pharmaceuticals	300
13	Losartan	Roche	350
14	Atorvastatin	Bristol Myers Squibb	400
15	Gabapentin	Pfizer	450
16	Amlodipine	Novartis	500
17	Hydrochlorothiazide	AstraZeneca	550
18	Metoprolol	Johnson & Johnson	600
19	Diazepam	Teva Pharmaceuticals	650
20	Prednisone	Pfizer	700
21	Ciprofloxacin	Bayer	750
22	Amitriptyline	AbbVie	800
23	Clonazepam	Roche	850
24	Cetirizine	Sanofi	900
25	Escitalopram	Teva Pharmaceuticals	950
26	Tamsulosin	Boehringer Ingelheim	1000
27	Furosemide	Pfizer	1050
28	Methotrexate	Eli Lilly	1100
29	Dexamethasone	Novartis	1150
30	Hydroxychloroquine	AbbVie	1200

SELECT COUNT(*) FROM medicaments

	count bigint
1	31

Рисунок 2.6 – COUNT

Выполнение оператора MAX представлено на рисунке 2.7

Таблица до операции представлена ниже

	pk_name [PK] character varying (128)	producer character varying (128)	amoun_of integer
1	Aspirin	Bayer	1000
2	Acetaminophen	Johnson & Johnson	800
3	Ibuprofen	Pfizer	1200
4	Amoxicillin	GlaxoSmithKline	500
5	Lisinopril	AstraZeneca	300
6	Metformin	Merck	600
7	Simvastatin	Novartis	400
8	Levothyroxine	AbbVie	700
9	Albuterol	Boehringer Ingelheim	200
10	Insulin	Sanofi	150
11	Warfarin	Eli Lilly	250
12	Omeprazole	Teva Pharmaceuticals	300
13	Losartan	Roche	350
14	Atorvastatin	Bristol Myers Squibb	400
15	Gabapentin	Pfizer	450
16	Amlodipine	Novartis	500
17	Hydrochlorothiazide	AstraZeneca	550
18	Metoprolol	Johnson & Johnson	600
19	Diazepam	Teva Pharmaceuticals	650
20	Prednisone	Pfizer	700
21	Ciprofloxacin	Bayer	750
22	Amitriptyline	AbbVie	800
23	Clonazepam	Roche	850
24	Cetirizine	Sanofi	900
25	Escitalopram	Teva Pharmaceuticals	950
26	Tamsulosin	Boehringer Ingelheim	1000
27	Furosemide	Pfizer	1050
28	Methotrexate	Eli Lilly	1100
29	Dexamethasone	Novartis	1150
30	Hydroxychloroquine	AbbVie	1200

SELECT MAX(amoun_of) max_amount_of FROM medicaments

	max_amount_of integer
1	1250

Рисунок 2.7 – MAX

Выполнение операции MEDIAN представлено на рисунке 2.8

Таблица до операции представлена ниже

	pk_name [PK] character varying (128)	producer character varying (128)	amoun_of integer
1	Aspirin	Bayer	1000
2	Acetaminophen	Johnson & Johnson	800
3	Ibuprofen	Pfizer	1200
4	Amoxicillin	GlaxoSmithKline	500
5	Lisinopril	AstraZeneca	300
6	Metformin	Merck	600
7	Simvastatin	Novartis	400
8	Levothyroxine	AbbVie	700
9	Albuterol	Boehringer Ingelheim	200
10	Insulin	Sanofi	150
11	Warfarin	Eli Lilly	250
12	Omeprazole	Teva Pharmaceuticals	300
13	Losartan	Roche	350
14	Atorvastatin	Bristol Myers Squibb	400
15	Gabapentin	Pfizer	450
16	Amlodipine	Novartis	500
17	Hydrochlorothiazide	AstraZeneca	550
18	Metoprolol	Johnson & Johnson	600
19	Diazepam	Teva Pharmaceuticals	650
20	Prednisone	Pfizer	700
21	Ciprofloxacin	Bayer	750
22	Amitriptyline	AbbVie	800
23	Clonazepam	Roche	850
24	Cetirizine	Sanofi	900
25	Escitalopram	Teva Pharmaceuticals	950
26	Tamsulosin	Boehringer Ingelheim	1000
27	Furosemide	Pfizer	1050
28	Methotrexate	Eli Lilly	1100
29	Dexamethasone	Novartis	1150
30	Hydroxychloroquine	AbbVie	1200

SELECT PERCENTILE_CONT(0.5) WITHIN GROUP(ORDER BY amoun_of) FROM public.medicaments

	percentile_cont double precision
1	700

Рисунок 2.8 – MEDIUM

Выполнение оператора MIN представлено на рисунке 2.9

Таблица до операции представлена ниже

	pk_name [PK] character varying (128)	producer character varying (128)	amoun_of integer
1	Aspirin	Bayer	1000
2	Acetaminophen	Johnson & Johnson	800
3	Ibuprofen	Pfizer	1200
4	Amoxicillin	GlaxoSmithKline	500
5	Lisinopril	AstraZeneca	300
6	Metformin	Merck	600
7	Simvastatin	Novartis	400
8	Levothyroxine	AbbVie	700
9	Albuterol	Boehringer Ingelheim	200
10	Insulin	Sanofi	150
11	Warfarin	Eli Lilly	250
12	Omeprazole	Teva Pharmaceuticals	300
13	Losartan	Roche	350
14	Atorvastatin	Bristol Myers Squibb	400
15	Gabapentin	Pfizer	450
16	Amlodipine	Novartis	500
17	Hydrochlorothiazide	AstraZeneca	550
18	Metoprolol	Johnson & Johnson	600
19	Diazepam	Teva Pharmaceuticals	650
20	Prednisone	Pfizer	700
21	Ciprofloxacin	Bayer	750
22	Amitriptyline	AbbVie	800
23	Clonazepam	Roche	850
24	Cetirizine	Sanofi	900
25	Escitalopram	Teva Pharmaceuticals	950
26	Tamsulosin	Boehringer Ingelheim	1000
27	Furosemide	Pfizer	1050
28	Methotrexate	Eli Lilly	1100
29	Dexamethasone	Novartis	1150
30	Hydroxychloroquine	AbbVie	1200

SELECT MIN(amoun_of) FROM medicaments

	min integer
1	150

Рисунок 2.9 – MIN

Выполнение оператора IN() представлено на рисунке 2.10

SELECT * FROM public.doctor

WHERE experience IN('4 years')

	pk_phone_number [PK] character varying (128)	full_name character varying (128)	experience character varying (128)
1	+375291233567	Smirnova Ekaterina Aleksandrovna	4 years
2	+375444444444	Orlova Viktoriya Sergeevna	4 years
3	+375258765432	Grigoryeva Anna Mikhaylovna	4 years
4	+375252345678	Yakovlev Maksim Ivanovich	4 years
5	+375331234511	Karpov Kirill Sergeevich	4 years
6	+375447969930	Bylinskiy N.S.	4 years

Рисунок 2.10 – IN()

Выполнение оператора EXISTS представлено на рисунке 2.11

SELECT * FROM public.doctor

WHERE EXISTS(SELECT * FROM public.patient WHERE patient.full_name=doctor.full_name)

	pk_phone_number [PK] character varying (128)	full_name character varying (128)	experience character varying (128)
1	+375447969930	Bylinskiy N.S.	4 years

Рисунок 2.11 – EXISTS

Выполнение оператора AS представлено на рисунке 2.12 и на рисунке 2.13

SELECT AVG(amoun_of) AS avg_of_medicaments FROM medicaments

	avg_of_medicaments numeric
1	696.7741935483870968

Рисунок 2.12 – AS

```
SELECT pk_name AS name_medicaments
    FROM public.medicaments
```

	name_medicaments character varying (128)
1	Aspirin
2	Acetaminophen
3	Ibuprofen
4	Amoxicillin
5	Lisinopril
6	Metformin
7	Simvastatin
8	Levothyroxine
9	Albuterol
10	Insulin
11	Warfarin
12	Omeprazole
13	Losartan
14	Atorvastatin
15	Gabapentin
16	Amlodipine
17	Hydrochlorothiazide
18	Metoprolol
19	Diazepam

Рисунок 2.13 – AS

Выполнение оператора WITH представлено на рисунке 2.14 и на рисунке 2.15

```
WITH cte AS (
  SELECT producer, amoun_of
  FROM public.medicaments
)
SELECT *
```

```
FROM cte

WHERE amoun_of> 700;
```

	producer character varying (128)	amoun_of integer
1	Bayer	1000
2	Johnson & Johnson	800
3	Pfizer	1200
4	Bayer	750
5	AbbVie	800
6	Roche	850
7	Sanofi	900
8	Teva Pharmaceuticals	950
9	Boehringer Ingelheim	1000
10	Pfizer	1050
11	Eli Lilly	1100
12	Novartis	1150
13	AbbVie	1200
14	Bayer	1250

Рисунок 2.14 – WITH

```
WITH cte AS (
  SELECT full_name, experience
  FROM public.doctor
)
SELECT *
FROM cte
WHERE experience = '5 years';
```

	full_name character varying (128)	experience character varying (128)
1	Ivanov Ivan Ivanovich	5 years
2	Sergeev Artem Valentinovich	5 years
3	Morozova Olga Aleksandrovna	5 years
4	Kharitonova Tatyana Aleksandrovna	5 years
5	Ignatev Ivan Stepanovich	5 years

Рисунок 2.15 – WITH

Выполнение оператора LIKE представлено на рисунке 2.16 и на рисунке 2.17

SELECT full_name FROM public.patient

WHERE full_name LIKE 'Bylinskiy%'

	full_name character varying (128)
1	Bylinskiy N.S.
2	Bylinskiy S.A.

Рисунок 2.16 – LIKE

SELECT pk_job_title FROM job_title

WHERE pk_job_title LIKE 'P%'

	pk_job_title [PK] character varying (128)
1	Pediatrician
2	Psychiatrist
3	Pathologist
4	Pulmonologist
5	Podiatrist

Рисунок 2.17 – LIKE

Выполнение оператора ORDER_BY представлено на рисунке 2.18 и на рисунке 2.19

SELECT * FROM job_title

ORDER BY employee_rate

	pk_job_title [PK] character varying (128)	salary integer	employee_rate integer
1	Family Medicine Physician	100000	70
2	Pediatrician	100000	70
3	General Practitioner	100000	70
4	Podiatrist	110000	75
5	ENT Specialist	110000	75
6	Psychiatrist	110000	75
7	Dermatologist	110000	75
8	Allergist	120000	80
9	Gynecologist	120000	80
10	Ophthalmologist	120000	80
11	Infectious Disease Specialist	120000	80
12	Dental Surgeon	120000	80
13	Cardiologist	120000	80
14	Urologist	130000	90
15	Emergency Medicine Physici...	130000	90
16	Pathologist	130000	90
17	Rheumatologist	130000	90
18	Pulmonologist	130000	90
19	Nephrologist	130000	90

Рисунок 2.18 – ORDER BY

```
SELECT * FROM job_title

ORDER BY employee_rate DESC
```

	pk_job_title [PK] character varying (128)	salary integer	employee_rate integer
1	Oncologist	160000	110
2	Surgeon	150000	100
3	Orthopedic Surgeon	150000	100
4	Maxillofacial Surgeon	150000	100
5	Endocrinologist	140000	95
6	Radiologist	140000	95
7	Neurologist	140000	95
8	Hematologist	140000	95
9	Gastroenterologist	140000	95
10	Orthodontist	140000	95
11	Urologist	130000	90
12	Anesthesiologist	130000	90
13	Rheumatologist	130000	90
14	Pathologist	130000	90
15	Nephrologist	130000	90
16	Emergency Medicine Physici...	130000	90
17	Pulmonologist	130000	90
18	Cardiologist	120000	80
19	Gynecologist	120000	80
20	Ophthalmologist	120000	80

Рисунок 2.19 – OREDER BY

Выполнение оператора CROSS JOIN представлено на рисунке 2.20

```
SELECT * FROM public.patient
CROSS JOIN public.doctor
```

	pk_id integer	full_name character varying (128)	address character varying (128)	phone_number character varying (128)	fk_hospital_ward_id integer	pk_phone_number character varying (128)	full_name character varying (128)	experience character varying (128)
1	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375291234567	Ivanov Ivan Ivanovich	5 years
2	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375449876543	Petrov Petr Petrovich	3 years
3	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375251112233	Sidorova Anna Alekseevna	2 years
4	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375335556677	Kozlov Konstantin Nikolaevich	1 year
5	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375291233567	Smirnova Ekaterina Aleksandrovna	4 years
6	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375449876533	Ivanov Aleksey Vladimirovich	2 years
7	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375251122334	Petrova Mariya Igorevna	6 years
8	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375335556777	Kozlova Alena Alekseevna	3 years
9	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+37525566778	Mikhaylov Ivan Nikolaevich	1 year
10	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375298899000	Sergeev Artem Valentinovich	5 years
11	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375259876543	Fedorova Yelizaveta Andreevna	3 years
12	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375333333333	Alexandrov Igor Vladimirovich	2 years
13	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375444444444	Orlova Viktoriya Sergeevna	4 years
14	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375255555555	Novikov Dmitriy Petrovich	1 year
15	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375298765432	Morozova Olga Aleksandrovna	5 years

Рисунок 2.20 – CROSS JOIN

Выполнение оператора INNER JOIN представлено на рисунке 2.21

SELECT * FROM public.patient

INNER JOIN public.doctor ON patient.full_name = doctor.full_name

	pk_id integer	full_name character varying (128)	address character varying (128)	phone_number character varying (128)	fk_hospital_ward_id integer	pk_phone_number character varying (128)	full_name character varying
1	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375447969930	Bylinskiy N.S.

Рисунок 2.21- INNER JOIN

Выполнение оператора LEFT OUTER JOIN представлено на рисунке 2.22

SELECT * FROM public.patient

LEFT OUTER JOIN public.doctor ON patient.full_name = doctor.full_name

	pk_id integer	full_name character varying (128)	address character varying (128)	phone_number character varying (128)	fk_hospital_ward_id integer	pk_phone_number character varying (128)	full_name character varying (128)	experience character varying (128)
1	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375447969930	Bylinskiy N.S.	4 years
2	2	Bylinskiy S.A.	Landesheva 14	+375447779930	4	[null]	[null]	[null]
3	3	Maksimchik E.D.	Gikalo 12	+375447969931	3	[null]	[null]	[null]
4	4	Mackevich L.S.	Kamenka 12	+375447169930	2	[null]	[null]	[null]
5	5	Ivanov A.P.	Petrova 8	+375447969932	5	[null]	[null]	[null]
6	6	Petrov K.V.	Sidorova 23	+375447779933	8	[null]	[null]	[null]
7	7	Sidorova A.A.	Kozlova 12	+375447969934	7	[null]	[null]	[null]
8	8	Kozlov K.N.	Gikalo 12	+375447169935	6	[null]	[null]	[null]
9	9	Smirnova E.A.	Landesheva 14	+375447969936	9	[null]	[null]	[null]

Рисунок 2.21 – LEFT OUTER JOIN

Выполнение оператора RIGHT OUTER JOIN представлено на рисунке 2.23

SELECT * FROM public.patient

RIGHT OUTER JOIN public.doctor ON patient.full_name = doctor.full_name

	pk_id integer	full_name character varying (128)	address character varying (128)	phone_number character varying (128)	fk_hospital_ward_id integer	pk_phone_number character varying (128)	full_name character varying (128)	experience character varying (128)
1	[null]	[null]	[null]	[null]	[null]	+375291234567	Ivanov Ivan Ivanovich	5 years
2	[null]	[null]	[null]	[null]	[null]	+375449876543	Petrov Petr Petrovich	3 years
3	[null]	[null]	[null]	[null]	[null]	+375251112233	Sidorova Anna Alekseevna	2 years
4	[null]	[null]	[null]	[null]	[null]	+375335556677	Kozlov Konstantin Nikolaevich	1 year
5	[null]	[null]	[null]	[null]	[null]	+375291233567	Smirnova Ekaterina Aleksandrovna	4 years
6	[null]	[null]	[null]	[null]	[null]	+375449876533	Ivanov Aleksey Vladimirovich	2 years
7	[null]	[null]	[null]	[null]	[null]	+375251122334	Petrova Mariya Igorevna	6 years
8	[null]	[null]	[null]	[null]	[null]	+375335556777	Kozlova Alena Alekseevna	3 years
9	[null]	[null]	[null]	[null]	[null]	+37525566778	Mikhaylov Ivan Nikolaevich	1 year
10	[null]	[null]	[null]	[null]	[null]	+375298899000	Sergeev Artem Valentinovich	5 years
11	[null]	[null]	[null]	[null]	[null]	+375259876543	Fedorova Yelizaveta Andreevna	3 years
12	[null]	[null]	[null]	[null]	[null]	+375333333333	Alexandrov Igor Vladimirovich	2 years
13	[null]	[null]	[null]	[null]	[null]	+375444444444	Orlova Viktoriya Sergeevna	4 years

Рисунок 2.23 – RIGHT OUTER JOIN

Выполнение оператора FULL OUTER JOIN представлено на рисиунке 2.24

```
SELECT * FROM public.patient

FULL OUTER JOIN public.doctor ON patient.full_name = doctor.full_name
```

	pk_id integer	full_name character varying (128)	address character varying (128)	phone_number character varying (128)	fk_hospital_ward_id integer	pk_phone_number character varying (128)	full_name character varying (128)	experience character varying (128)
1	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1	+375447969930	Bylinskiy N.S.	4 years
2	2	Bylinskiy S.A.	Landesheva 14	+375447779930	4	[null]	[null]	[null]
3	3	Maksimchik E.D.	Gikalo 12	+375447969931	3	[null]	[null]	[null]
4	4	Mackevich L.S.	Kamenka 12	+375447169930	2	[null]	[null]	[null]
5	5	Ivanov A.P.	Petrova 8	+375447969932	5	[null]	[null]	[null]
6	6	Petrov K.V.	Sidorova 23	+375447779933	8	[null]	[null]	[null]

Рисунок 2.24 – FULL OUTER JOIN

Выполнение оператора DISTINCT представлено на рисунке 2.25

```
SELECT DISTINCT experience

FROM public.doctor
```

	experience character varying (128)
1	2 years
2	3 years
3	6 years
4	4 years
5	1 year
6	5 years

Рисунок 2.25 - DISTINCT

Выполнение оператора UNIQUE представлено на рисунке 2.26

```
47  ALTER TABLE public.patient
48  ADD CONSTRAINT phone_number UNIQUE (phone_number)
```

Data Output | Messages | Notifications

```
ALTER TABLE

Query returned successfully in 102 msec.
```

Рисунок 2.26 – UNIQUE

Выполнение оператора ALL представлено на рисунке 2.27

```
SELECT * FROM public.patient

WHERE full_name < ALL (SELECT full_name FROM public.doctor);
```

	pk_id [PK] integer	full_name character varying (128)	address character varying (128)	phone_number character varying (128)	fk_hospital_ward_id integer
1	26	Alekseev A.P.	Petrova 8	+375447779953	26

Рисунок 2.27 – ALL

Выполнение оператора NULL и NOT NULL представлено на рисунке 2.28 и на рисунке 2.29

```
SELECT *

FROM public.patient

WHERE full_name IS NOT NULL;
```

	pk_id [PK] integer	full_name character varying (128)	address character varying (128)	phone_number character varying (128)	fk_hospital_ward_id integer
1	1	Bylinskiy N.S.	Gikalo 12	+375447969930	1
2	2	Bylinskiy S.A.	Landesheva 14	+375447779930	4
3	3	Maksimchik E.D.	Gikalo 12	+375447969931	3
4	4	Mackevich L.S.	Kamenka 12	+375447169930	2
5	5	Ivanov A.P.	Petrova 8	+375447969932	5
6	6	Petrov K.V.	Sidorova 23	+375447779933	8
7	7	Sidorova A.A.	Kozlova 12	+375447969934	7
8	8	Kozlov K.N.	Gikalo 12	+375447169935	6

Рисунок 2.28 – NOT NULL

```
SELECT *

FROM public.patient

WHERE full_name IS  NULL;
```

pk_id [PK] integer	full_name character varying (128)	address character varying (128)	phone_number character varying (128)	fk_hospital_ward_id integer

Рисунок 2.29 – NULL

Выполнение оператора LIKE представлено на рисунке 2.30

```
SELECT *

FROM public.doctor

WHERE experience LIKE '4%';
```

	pk_phone_number [PK] character varying (128)	full_name character varying (128)	experience character varying (128)
1	+375291233567	Smirnova Ekaterina Aleksandrovna	4 years
2	+375444444444	Orlova Viktoriya Sergeevna	4 years
3	+375258765432	Grigoryeva Anna Mikhaylovna	4 years
4	+375252345678	Yakovlev Maksim Ivanovich	4 years
5	+375331234511	Karpov Kirill Sergeevich	4 years
6	+375447969930	Bylinskiy N.S.	4 years

Рисунок 2.30 – LIKE