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Кафедра электронных вычислительных машин

Лабораторная работа №4
Реализация SQL-запросов на простую выборку данных

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1 SELECT FROM

Представляет собой простейшую выборку без ограничений. Например извлечем все данные из таблицы *Places*.

```
35  SELECT * FROM "Places";
36
```

Data Output | Messages | Notifications

	Place number [PK] integer	Length smallint	Width smallint	Auto number character varying	Floor number smallint
1	1	5500	2000	2493 PO-4	1
2	2	5500	2000	9064 KE-2	1
3	3	5500	2000	2192 XX-7	1
4	4	5500	2000	3096 BO-1	1
5	5	5500	2000	3178 OX-6	1
6	6	5500	2000	5971 TT-1	1
7	7	5500	2000	8949 EP-4	1
8	8	5500	2000	1029 PM-2	1
9	9	5500	2000	1089 HC-3	1
10	10	5500	2000	9481 AH-5	1
11	11	5500	2000	3333 CM-7	1
12	12	5500	2000	5664 MP-4	1
13	13	5500	2000	8178 XC-6	1
14	14	5500	2000	4138 AO-4	1
15	15	5500	2000	9328 MA-3	1
16	16	5500	2000	5598 TX-8	1
17	17	5500	2000	6277 TA-1	1
18	18	5500	2000	2419 XE-1	1
19	19	5500	2000	2622 HH-3	1
20	20	10000	3000	1027 HO-8	1
21	21	10000	3000	8305 MO-7	1
22	22	10000	3000	2956 KA-6	1
23	23	10000	3000	5103 BO-6	1
24	24	10000	3000	3274 TA-7	1
25	25	10000	3000	1342 KB-5	1
26	26	10000	3000	2287 EK-4	1
27	27	2500	1000	8331 MO-1	1
28	28	2500	1000	6362 BB-3	1
29	29	2500	1000	6137 PE-6	1
30	30	2500	1000	9516 OC-7	1

Рисунок 1.1 – Выборка из таблицы *Places*

2 SELECT FROM WHERE

С помощью оператора WHERE можно ограничить выборку по некому условию. Например напишем запрос чтоб получить все автомобили массой больше 5 тонн.

	Length smallint	Width smallint	Height smallint	Mass smallint	Auto number [PK] character varying	Client number character varying
1	2112	706	1095	225	8331 MO-1	MB1000041
2	2151	778	1032	219	6362 BB-3	AP1026500
3	2054	799	1031	187	6137 PE-6	HB1011478
4	2086	722	1057	169	9516 OC-7	AA1024464
5	5114	1843	1632	7096	2493 PO-4	OT1023281
6	5114	1843	1632	7096	9064 KE-2	KI1000491
7	4728	2340	1576	6234	2192 XX-7	EO1004827
8	5129	2131	2096	7272	3096 BO-1	IC1014604
9	4606	1871	1640	5436	3178 OX-6	BC1000292
10	5079	2258	2710	4091	5971 TT-1	IM1018716
11	4978	2379	1533	3282	8949 EP-4	HM1005447
12	6914	2073	1979	3416	1027 HO-8	CP1011538
13	5993	1928	2417	4365	3274 TA-7	KK1025667
14	4115	1707	2515	6287	1029 PM-2	MO1009894
15	4399	1503	2847	1127	1089 HC-3	CC1031322
16	5193	1701	2072	5716	9481 AH-5	CK1004664
17	4323	2320	2230	6581	3333 CM-7	PM1028253
18	4500	2002	2204	848	5664 MP-4	BC1027644
19	6439	2225	2158	3723	2956 KA-6	KM1020037
20	5649	1738	2692	3229	5103 BO-6	TB1009741
21	4667	1954	1806	6284	8178 XC-6	MI1012316
22	7963	2365	2151	3992	8305 MO-7	EB1001842
23	5390	2323	2576	6964	2622 HH-3	IP1009040
24	5533	2173	2118	6568	1342 KB-5	IC1022648
25	3824	1950	1889	7383	4138 AO-4	CB1015890
26	5496	2490	1847	7695	9328 MA-3	HC1015350
27	6597	2251	2029	1060	2287 EK-4	XC1024393
28	5426	1668	1953	6838	5598 TX-8	EB1012623
29	4442	1894	1889	6127	6277 TA-1	XB1018756
30	3907	1543	2504	4958	2419 XE-1	MP1007376

Рисунок 2.3 – Выборка из таблицы *Autos* без условия

```
31  SELECT * FROM "Autos" WHERE "Mass" > 5000;
```

Data Output | Messages | Notifications

	Length smallint	Width smallint	Height smallint	Mass smallint	Auto number [PK] character varying	Client number character varying
1	5114	1843	1632	7096	2493 PO-4	OT1023281
2	5114	1843	1632	7096	9064 KE-2	KI1000491
3	4728	2340	1576	6234	2192 XX-7	EO1004827
4	5129	2131	2096	7272	3096 BO-1	IC1014604
5	4606	1871	1640	5436	3178 OX-6	BC1000292
6	4115	1707	2515	6287	1029 PM-2	MO1009894
7	5193	1701	2072	5716	9481 AH-5	CK1004664
8	4323	2320	2230	6581	3333 CM-7	PM1028253
9	4667	1954	1806	6284	8178 XC-6	MI1012316
10	5390	2323	2576	6964	2622 HH-3	IP1009040
11	5533	2173	2118	6568	1342 KB-5	IC1022648
12	3824	1950	1889	7383	4138 AO-4	CB1015890
13	5496	2490	1847	7695	9328 MA-3	HC1015350
14	5426	1668	1953	6838	5598 TX-8	EB1012623
15	4442	1894	1889	6127	6277 TA-1	XB1018756

Рисунок 2.4 – Выборка из таблицы *Autos* с условием

3 SELECT FROM ORDER BY

Для упорядочивания результата по определенной колонке используется оператор ORDER BY. Напишем запрос который выведет нам всех клиентов со временм парковки больше 15 и отсортируем по возрастанию номера паспорта.

	Passport number [PK] character varying	Parktime double precision	Surname character varying	Name character varying	Otchestvo character varying
1	MB1000041	14.4	Romanov	Egor	Vladimirovich
2	AP1026500	14.6	Dyatlov	Dmitriy	Yanovich
3	HB1011478	15	Kirkorov	Vasiliy	Petrovich
4	AA1024464	8.2	Romanov	Egor	Vitalievich
5	OT1023281	5.6	Sinitsin	Vasiliy	Petrovich
6	KI1000491	19.3	Kirkorov	Vladislav	Alekseevich
7	EO1004827	3.1	Kirkorov	Vasiliy	Sergeevich
8	IC1014604	5.7	Kirkorov	Vasiliy	Vitalievich
9	BC1000292	22.4	Kirkorov	Ivan	Petrovich
10	IM1018716	4.2	Romanov	Aleksey	Alekseevich
11	HM1005447	18.3	Sinitsin	Vasiliy	Vitalievich
12	CP1011538	24.8	Dyatlov	Vladislav	Vladimirovich
13	KK1025667	3.4	Tkachev	Egor	Petrovich
14	MO1009894	20.8	Kirkorov	Vasiliy	Vitalievich
15	CC1031322	3.1	Petrov	Ivan	Sergeevich
16	CK1004664	8.1	Sinitsin	Egor	Vitalievich
17	PM1028253	17	Romanov	Vladislav	Sergeevich
18	BC1027644	16.5	Dyatlov	Ivan	Petrovich
19	KM1020037	21.6	Dyatlov	Ivan	Yanovich
20	TB1009741	12.4	Dyatlov	Vladislav	Vladimirovich
21	MI1012316	23.2	Petrov	Vasiliy	Vitalievich
22	EB1001842	21.4	Kirkorov	Vladislav	Yanovich
23	IP1009040	5.8	Petrov	Aleksey	Vitalievich
24	IC1022648	8.9	Sinitsin	Dmitriy	Vladimirovich
25	CB1015890	1.2	Dyatlov	Aleksey	Yanovich
26	HC1015350	5.9	Sinitsin	Dmitriy	Yanovich
27	XC1024393	6.9	Dyatlov	Egor	Sergeevich
28	EB1012623	2.2	Romanov	Vladislav	Alekseevich
29	XB1018756	21.3	Sinitsin	Ivan	Vitalievich
30	MP1007376	21.2	Kirkorov	Ivan	Petrovich

Рисунок 3.1 – Выборка из таблицы *Clients* без сортировки

```
33  SELECT * FROM "Clients" WHERE "Parktime" > 15 ORDER BY "Passport number" ASC;
```

Data Output | Messages | Notifications

	Passport number [PK] character varying	Parktime double precision	Surname character varying	Name character varying	Otchestvo character varying
1	BC1000292	22.4	Kirkorov	Ivan	Petrovich
2	BC1027644	16.5	Dyatlov	Ivan	Petrovich
3	CP1011538	24.8	Dyatlov	Vladislav	Vladimirovich
4	EB1001842	21.4	Kirkorov	Vladislav	Yanovich
5	HM1005447	18.3	Sinitsin	Vasiliy	Vitalievich
6	KI1000491	19.3	Kirkorov	Vladislav	Alekseevich
7	KM1020037	21.6	Dyatlov	Ivan	Yanovich
8	MI1012316	23.2	Petrov	Vasiliy	Vitalievich
9	MO1009894	20.8	Kirkorov	Vasiliy	Vitalievich
10	MP1007376	21.2	Kirkorov	Ivan	Petrovich
11	PM1028253	17	Romanov	Vladislav	Sergeevich
12	XB1018756	21.3	Sinitsin	Ivan	Vitalievich

Рисунок 3.2 – Выборка из таблицы *Clients* с сортировкой по паспорту

Напишем второй запрос на выборку данных, в этот раз выведем всех клиентов и отсортируем по времени парковки.

	Passport number [PK] character varying	Parktime double precision	Surname character varying	Name character varying	Otchestvo character varying
1	MB1000041	14.4	Romanov	Egor	Vladimirovich
2	AP1026500	14.6	Dyatlov	Dmitriy	Yanovich
3	HB1011478	15	Kirkorov	Vasiliy	Petrovich
4	AA1024464	8.2	Romanov	Egor	Vitalievich
5	OT1023281	5.6	Sinitsin	Vasiliy	Petrovich
6	KI1000491	19.3	Kirkorov	Vladislav	Alekseevich
7	EO1004827	3.1	Kirkorov	Vasiliy	Sergeevich
8	IC1014604	5.7	Kirkorov	Vasiliy	Vitalievich
9	BC1000292	22.4	Kirkorov	Ivan	Petrovich
10	IM1018716	4.2	Romanov	Aleksey	Alekseevich
11	HM1005447	18.3	Sinitsin	Vasiliy	Vitalievich
12	CP1011538	24.8	Dyatlov	Vladislav	Vladimirovich
13	KK1025667	3.4	Tkachev	Egor	Petrovich
14	MO1009894	20.8	Kirkorov	Vasiliy	Vitalievich
15	CC1031322	3.1	Petrov	Ivan	Sergeevich
16	CK1004664	8.1	Sinitsin	Egor	Vitalievich
17	PM1028253	17	Romanov	Vladislav	Sergeevich
18	BC1027644	16.5	Dyatlov	Ivan	Petrovich
19	KM1020037	21.6	Dyatlov	Ivan	Yanovich
20	TB1009741	12.4	Dyatlov	Vladislav	Vladimirovich
21	MI1012316	23.2	Petrov	Vasiliy	Vitalievich
22	EB1001842	21.4	Kirkorov	Vladislav	Yanovich
23	IP1009040	5.8	Petrov	Aleksey	Vitalievich
24	IC1022648	8.9	Sinitsin	Dmitriy	Vladimirovich
25	CB1015890	1.2	Dyatlov	Aleksey	Yanovich
26	HC1015350	5.9	Sinitsin	Dmitriy	Yanovich
27	XC1024393	6.9	Dyatlov	Egor	Sergeevich
28	EB1012623	2.2	Romanov	Vladislav	Alekseevich
29	XB1018756	21.3	Sinitsin	Ivan	Vitalievich
30	MP1007376	21.2	Kirkorov	Ivan	Petrovich

Рисунок 3.3 – Выборка из таблицы *Clients* без сортировки

```
29  SELECT * FROM "Clients" ORDER BY "Parktime" DESC;
```

Data Output | Messages | Notifications

	Passport number [PK] character varying	Parktime double precision	Surname character varying	Name character varying	Otchestvo character varying
1	CP1011538	24.8	Dyatlov	Vladislav	Vladimirovich
2	MI1012316	23.2	Petrov	Vasiliy	Vitalievich
3	BC1000292	22.4	Kirkorov	Ivan	Petrovich
4	KM1020037	21.6	Dyatlov	Ivan	Yanovich
5	EB1001842	21.4	Kirkorov	Vladislav	Yanovich
6	XB1018756	21.3	Sinitsin	Ivan	Vitalievich
7	MP1007376	21.2	Kirkorov	Ivan	Petrovich
8	MO1009894	20.8	Kirkorov	Vasiliy	Vitalievich
9	KI1000491	19.3	Kirkorov	Vladislav	Alekseevich
10	HM1005447	18.3	Sinitsin	Vasiliy	Vitalievich
11	PM1028253	17	Romanov	Vladislav	Sergeevich
12	BC1027644	16.5	Dyatlov	Ivan	Petrovich
13	HB1011478	15	Kirkorov	Vasiliy	Petrovich
14	AP1026500	14.6	Dyatlov	Dmitriy	Yanovich
15	MB1000041	14.4	Romanov	Egor	Vladimirovich
16	TB1009741	12.4	Dyatlov	Vladislav	Vladimirovich
17	IC1022648	8.9	Sinitsin	Dmitriy	Vladimirovich
18	AA1024464	8.2	Romanov	Egor	Vitalievich
19	CK1004664	8.1	Sinitsin	Egor	Vitalievich
20	XC1024393	6.9	Dyatlov	Egor	Sergeevich
21	HC1015350	5.9	Sinitsin	Dmitriy	Yanovich
22	IP1009040	5.8	Petrov	Aleksey	Vitalievich
23	IC1014604	5.7	Kirkorov	Vasiliy	Vitalievich
24	OT1023281	5.6	Sinitsin	Vasiliy	Petrovich
25	IM1018716	4.2	Romanov	Aleksey	Alekseevich
26	KK1025667	3.4	Tkachev	Egor	Petrovich
27	CC1031322	3.1	Petrov	Ivan	Sergeevich
28	EO1004827	3.1	Kirkorov	Vasiliy	Sergeevich
29	EB1012623	2.2	Romanov	Vladislav	Alekseevich
30	CB1015890	1.2	Dyatlov	Aleksey	Yanovich

Рисунок 3.4 – Выборка из таблицы *Clients* с сортировкой по времени парковки

4 CROSS JOIN

Оператор JOIN объединяет таблицы по определенному условию, CROSS – это разновидность соединения, которое на выходе дает декартово произведение строк обеих таблиц, то есть “каждый с каждым”, обычно этот оператор нужно ограничивать условиями. Напишем запрос объединения клиентов со временем парковки больше 22 и фамиоией Киркоров и мест, на которые они могут поставить свои авто.

	Passport number [PK] character varying	Parktime double precision	Surname character varying	Name character varying	Otchestvo character varying
1	MB1000041	14.4	Romanov	Egor	Vladimirovich
2	AP1026500	14.6	Dyatlov	Dmitriy	Yanovich
3	HB1011478	15	Kirkorov	Vasiliy	Petrovich
4	AA1024464	8.2	Romanov	Egor	Vitalievich
5	OT1023281	5.6	Sinitsin	Vasiliy	Petrovich
6	KI1000491	19.3	Kirkorov	Vladislav	Alekseevich
7	EO1004827	3.1	Kirkorov	Vasiliy	Sergeevich
8	IC1014604	5.7	Kirkorov	Vasiliy	Vitalievich
9	BC1000292	22.4	Kirkorov	Ivan	Petrovich
10	IM1018716	4.2	Romanov	Aleksey	Alekseevich
11	HM1005447	18.3	Sinitsin	Vasiliy	Vitalievich
12	CP1011538	24.8	Dyatlov	Vladislav	Vladimirovich
13	KK1025667	3.4	Tkachev	Egor	Petrovich
14	MO1009894	20.8	Kirkorov	Vasiliy	Vitalievich
15	CC1031322	3.1	Petrov	Ivan	Sergeevich
16	CK1004664	8.1	Sinitsin	Egor	Vitalievich
17	PM1028253	17	Romanov	Vladislav	Sergeevich
18	BC1027644	16.5	Dyatlov	Ivan	Petrovich
19	KM1020037	21.6	Dyatlov	Ivan	Yanovich
20	TB1009741	12.4	Dyatlov	Vladislav	Vladimirovich
21	MI1012316	23.2	Petrov	Vasiliy	Vitalievich
22	EB1001842	21.4	Kirkorov	Vladislav	Yanovich
23	IP1009040	5.8	Petrov	Aleksey	Vitalievich
24	IC1022648	8.9	Sinitsin	Dmitriy	Vladimirovich
25	CB1015890	1.2	Dyatlov	Aleksey	Yanovich
26	HC1015350	5.9	Sinitsin	Dmitriy	Yanovich
27	XC1024393	6.9	Dyatlov	Egor	Sergeevich
28	EB1012623	2.2	Romanov	Vladislav	Alekseevich
29	XB1018756	21.3	Sinitsin	Ivan	Vitalievich
30	MP1007376	21.2	Kirkorov	Ivan	Petrovich

Рисунок 4.1 – Выборка из таблицы *Clients*

```
19 select * from "Clients" cross join "Places" where "Parktime" > 22 and "Surname" = 'Kirkorov';
```

Data Output | Messages | Notifications

	Passport number character varying	Parktime double precision	Surname character varying	Name character varying	Otchestvo character varying	Place number integer	Length smallint	Width smallint	Auto number character varying	Floor number smallint
1	BC1000292	22.4	Kirkorov	Ivan	Petrovich	1	5500	2000	2493 PO-4	1
2	BC1000292	22.4	Kirkorov	Ivan	Petrovich	2	5500	2000	9064 KE-2	1
3	BC1000292	22.4	Kirkorov	Ivan	Petrovich	3	5500	2000	2192 XX-7	1
4	BC1000292	22.4	Kirkorov	Ivan	Petrovich	4	5500	2000	3096 BO-1	1
5	BC1000292	22.4	Kirkorov	Ivan	Petrovich	5	5500	2000	3178 OX-6	1
6	BC1000292	22.4	Kirkorov	Ivan	Petrovich	6	5500	2000	5971 TT-1	1
7	BC1000292	22.4	Kirkorov	Ivan	Petrovich	7	5500	2000	8949 EP-4	1
8	BC1000292	22.4	Kirkorov	Ivan	Petrovich	8	5500	2000	1029 PM-2	1
9	BC1000292	22.4	Kirkorov	Ivan	Petrovich	9	5500	2000	1089 HC-3	1
10	BC1000292	22.4	Kirkorov	Ivan	Petrovich	10	5500	2000	9481 AH-5	1
11	BC1000292	22.4	Kirkorov	Ivan	Petrovich	11	5500	2000	3333 CM-7	1
12	BC1000292	22.4	Kirkorov	Ivan	Petrovich	12	5500	2000	5664 MP-4	1
13	BC1000292	22.4	Kirkorov	Ivan	Petrovich	13	5500	2000	8178 XC-6	1
14	BC1000292	22.4	Kirkorov	Ivan	Petrovich	14	5500	2000	4138 AO-4	1
15	BC1000292	22.4	Kirkorov	Ivan	Petrovich	15	5500	2000	9328 MA-3	1
16	BC1000292	22.4	Kirkorov	Ivan	Petrovich	16	5500	2000	5598 TX-8	1
17	BC1000292	22.4	Kirkorov	Ivan	Petrovich	17	5500	2000	6277 TA-1	1
18	BC1000292	22.4	Kirkorov	Ivan	Petrovich	18	5500	2000	2419 XE-1	1
19	BC1000292	22.4	Kirkorov	Ivan	Petrovich	19	5500	2000	2622 HH-3	1
20	BC1000292	22.4	Kirkorov	Ivan	Petrovich	20	10000	3000	1027 HO-8	1
21	BC1000292	22.4	Kirkorov	Ivan	Petrovich	21	10000	3000	8305 MO-7	1
22	BC1000292	22.4	Kirkorov	Ivan	Petrovich	22	10000	3000	2956 KA-6	1
23	BC1000292	22.4	Kirkorov	Ivan	Petrovich	23	10000	3000	5103 BO-6	1
24	BC1000292	22.4	Kirkorov	Ivan	Petrovich	24	10000	3000	3274 TA-7	1
25	BC1000292	22.4	Kirkorov	Ivan	Petrovich	25	10000	3000	1342 KB-5	1
26	BC1000292	22.4	Kirkorov	Ivan	Petrovich	26	10000	3000	2287 EK-4	1
27	BC1000292	22.4	Kirkorov	Ivan	Petrovich	27	2500	1000	8331 MO-1	1
28	BC1000292	22.4	Kirkorov	Ivan	Petrovich	28	2500	1000	6362 BB-3	1
29	BC1000292	22.4	Kirkorov	Ivan	Petrovich	29	2500	1000	6137 PE-6	1
30	BC1000292	22.4	Kirkorov	Ivan	Petrovich	30	2500	1000	9516 OC-7	1

Total rows: 30 of 30 | Query complete 00:00:00.063

Рисунок 4.2 – Объединение таблиц *Clients* и *Places*

Также напишем запрос, который покажет, к какому табло могут обращаться клиенты со временем парковки больше 10 на втором этаже.

	Table number [PK] integer	Place numbers character varying	Place type character varying	Floor number smallint
1	1	1-30	Small/Basic/Large	1
2	2	31-90	Basic	2
3	3	91-110	Basic/Large	3
4	4	111-140	Small/Basic/Large	4
5	5	141-180	Small/Basic	5
6	6	181-210	Small/Basic/Large	6
7	7	211-240	Small/Basic/Large	7
8	8	241-270	Small/Basic/Large	8
9	9	271-300	Small/Basic/Large	9
10	10	301-330	Small/Basic/Large	10
11	11	331-360	Small/Basic/Large	11
12	12	361-390	Small/Basic/Large	12
13	13	391-420	Small/Basic/Large	13
14	14	421-450	Small/Basic/Large	14
15	15	451-480	Small/Basic/Large	15
16	16	481-510	Small/Basic/Large	16
17	17	511-540	Small/Basic/Large	17
18	18	541-570	Small/Basic/Large	18
19	19	571-600	Small/Basic/Large	19
20	20	601-630	Small/Basic/Large	20
21	21	631-660	Small/Basic/Large	21
22	22	661-690	Small/Basic/Large	22
23	23	691-720	Small/Basic/Large	23
24	24	721-750	Small/Basic/Large	24
25	25	751-780	Small/Basic/Large	25
26	26	781-810	Small/Basic/Large	26
27	27	811-840	Small/Basic/Large	27
28	28	841-870	Small/Basic/Large	28
29	29	871-900	Small/Basic/Large	29
30	30	901-930	Small/Basic/Large	30

Рисунок 4.3 - Выборка из таблицы *Tables*

```
21  select * from "Tables" cross join "Clients" where "Floor number" = 2 and "Parktime" > 10;
```

Data Output | Messages | Notifications

	Table number integer	Place numbers character varying	Place type character varying	Floor number smallint	Passport number character varying	Parktime double precision	Surname character varying	Name character varying	Otchestvo character varying
1	2	31-90	Basic	2	MB1000041	14.4	Romanov	Egor	Vladimirovich
2	2	31-90	Basic	2	AP1026500	14.6	Dyatlov	Dmitriy	Yanovich
3	2	31-90	Basic	2	HB1011478	15	Kirkorov	Vasiliy	Petrovich
4	2	31-90	Basic	2	KI1000491	19.3	Kirkorov	Vladislav	Alekseevich
5	2	31-90	Basic	2	BC1000292	22.4	Kirkorov	Ivan	Petrovich
6	2	31-90	Basic	2	HM1005447	18.3	Sinitsin	Vasiliy	Vitalievich
7	2	31-90	Basic	2	CP1011538	24.8	Dyatlov	Vladislav	Vladimirovich
8	2	31-90	Basic	2	MO1009894	20.8	Kirkorov	Vasiliy	Vitalievich
9	2	31-90	Basic	2	PM1028253	17	Romanov	Vladislav	Sergeevich
10	2	31-90	Basic	2	BC1027644	16.5	Dyatlov	Ivan	Petrovich
11	2	31-90	Basic	2	KM1020037	21.6	Dyatlov	Ivan	Yanovich
12	2	31-90	Basic	2	TB1009741	12.4	Dyatlov	Vladislav	Vladimirovich
13	2	31-90	Basic	2	MI1012316	23.2	Petrov	Vasiliy	Vitalievich
14	2	31-90	Basic	2	EB1001842	21.4	Kirkorov	Vladislav	Yanovich
15	2	31-90	Basic	2	XB1018756	21.3	Sinitsin	Ivan	Vitalievich
16	2	31-90	Basic	2	MP1007376	21.2	Kirkorov	Ivan	Petrovich

Рисунок 4.4 – Объединение таблиц *Tables* и *Clients*

5 INNER JOIN

INNER JOIN находит пересечение таблиц по определенному условию. Например напишем запрос, который вернет номер авто каждого пользователя.

	Passport number [PK] character varying	Parktime double precision	Surname character varying	Name character varying	Otchestvo character varying
1	MB1000041	14.4	Romanov	Egor	Vladimirovich
2	AP1026500	14.6	Dyatlov	Dmitriy	Yanovich
3	HB1011478	15	Kirkorov	Vasiliy	Petrovich
4	AA1024464	8.2	Romanov	Egor	Vitalievich
5	OT1023281	5.6	Sinitsin	Vasiliy	Petrovich
6	KI1000491	19.3	Kirkorov	Vladislav	Alekseevich
7	EO1004827	3.1	Kirkorov	Vasiliy	Sergeevich
8	IC1014604	5.7	Kirkorov	Vasiliy	Vitalievich
9	BC1000292	22.4	Kirkorov	Ivan	Petrovich
10	IM1018716	4.2	Romanov	Aleksey	Alekseevich
11	HM1005447	18.3	Sinitsin	Vasiliy	Vitalievich
12	CP1011538	24.8	Dyatlov	Vladislav	Vladimirovich
13	KK1025667	3.4	Tkachev	Egor	Petrovich
14	MO1009894	20.8	Kirkorov	Vasiliy	Vitalievich
15	CC1031322	3.1	Petrov	Ivan	Sergeevich
16	CK1004664	8.1	Sinitsin	Egor	Vitalievich
17	PM1028253	17	Romanov	Vladislav	Sergeevich
18	BC1027644	16.5	Dyatlov	Ivan	Petrovich
19	KM1020037	21.6	Dyatlov	Ivan	Yanovich
20	TB1009741	12.4	Dyatlov	Vladislav	Vladimirovich
21	MI1012316	23.2	Petrov	Vasiliy	Vitalievich
22	EB1001842	21.4	Kirkorov	Vladislav	Yanovich
23	IP1009040	5.8	Petrov	Aleksey	Vitalievich
24	IC1022648	8.9	Sinitsin	Dmitriy	Vladimirovich
25	CB1015890	1.2	Dyatlov	Aleksey	Yanovich
26	HC1015350	5.9	Sinitsin	Dmitriy	Yanovich
27	XC1024393	6.9	Dyatlov	Egor	Sergeevich
28	EB1012623	2.2	Romanov	Vladislav	Alekseevich
29	XB1018756	21.3	Sinitsin	Ivan	Vitalievich
30	MP1007376	21.2	Kirkorov	Ivan	Petrovich

Рисунок 5.1 – Выборка из таблицы *Clients*

```
1  select "Surname", "Name", "Otchestvo", "Parktime", "Auto number" from "Clients"
2  inner join "Autos" on "Autos"."Client number" = "Clients"."Passport number";
```

Data Output | Messages | Notifications

	Surname character varying	Name character varying	Otchestvo character varying	Parktime double precision	Auto number character varying
1	Romanov	Egor	Vladimirovich	14.4	8331 MO-1
2	Dyatlov	Dmitriy	Yanovich	14.6	6362 BB-3
3	Kirkorov	Vasiliy	Petrovich	15	6137 PE-6
4	Romanov	Egor	Vitalievich	8.2	9516 OC-7
5	Sinitsin	Vasiliy	Petrovich	5.6	2493 PO-4
6	Kirkorov	Vladislav	Alekseevich	19.3	9064 KE-2
7	Kirkorov	Vasiliy	Sergeevich	3.1	2192 XX-7
8	Kirkorov	Vasiliy	Vitalievich	5.7	3096 BO-1
9	Kirkorov	Ivan	Petrovich	22.4	3178 OX-6
10	Romanov	Aleksey	Alekseevich	4.2	5971 TT-1
11	Sinitsin	Vasiliy	Vitalievich	18.3	8949 EP-4
12	Dyatlov	Vladislav	Vladimirovich	24.8	1027 HO-8
13	Tkachev	Egor	Petrovich	3.4	3274 TA-7
14	Kirkorov	Vasiliy	Vitalievich	20.8	1029 PM-2
15	Petrov	Ivan	Sergeevich	3.1	1089 HC-3
16	Sinitsin	Egor	Vitalievich	8.1	9481 AH-5
17	Romanov	Vladislav	Sergeevich	17	3333 CM-7
18	Dyatlov	Ivan	Petrovich	16.5	5664 MP-4
19	Dyatlov	Ivan	Yanovich	21.6	2956 KA-6
20	Dyatlov	Vladislav	Vladimirovich	12.4	5103 BO-6
21	Petrov	Vasiliy	Vitalievich	23.2	8178 XC-6
22	Kirkorov	Vladislav	Yanovich	21.4	8305 MO-7
23	Petrov	Aleksey	Vitalievich	5.8	2622 HH-3
24	Sinitsin	Dmitriy	Vladimirovich	8.9	1342 KB-5
25	Dyatlov	Aleksey	Yanovich	1.2	4138 AO-4
26	Sinitsin	Dmitriy	Yanovich	5.9	9328 MA-3
27	Dyatlov	Egor	Sergeevich	6.9	2287 EK-4
28	Romanov	Vladislav	Alekseevich	2.2	5598 TX-8
29	Sinitsin	Ivan	Vitalievich	21.3	6277 TA-1
30	Kirkorov	Ivan	Petrovich	21.2	2419 XE-1

Рисунок 5.2 – Пересечение таблиц *Clients* и *Autos*

Далее напишем запрос который номер места для каждого авто

	Length smallint	Width smallint	Height smallint	Mass smallint	Auto number [PK] character varying	Client number character varying
1	6914	2073	1979	3416	1027 HO-8	CP1011538
2	4115	1707	2515	6287	1029 PM-2	MO1009894
3	4399	1503	2847	1127	1089 HC-3	CC1031322
4	5533	2173	2118	6568	1342 KB-5	IC1022648
5	4728	2340	1576	6234	2192 XX-7	EO1004827
6	6597	2251	2029	1060	2287 EK-4	XC1024393
7	3907	1543	2504	4958	2419 XE-1	MP1007376
8	5114	1843	1632	7096	2493 PO-4	OT1023281
9	5390	2323	2576	6964	2622 HH-3	IP1009040
10	6439	2225	2158	3723	2956 KA-6	KM1020037
11	5129	2131	2096	7272	3096 BO-1	IC1014604
12	4606	1871	1640	5436	3178 OX-6	BC1000292
13	5993	1928	2417	4365	3274 TA-7	KK1025667
14	4323	2320	2230	6581	3333 CM-7	PM1028253
15	3824	1950	1889	7383	4138 AO-4	CB1015890
16	5649	1738	2692	3229	5103 BO-6	TB1009741
17	5426	1668	1953	6838	5598 TX-8	EB1012623
18	4500	2002	2204	848	5664 MP-4	BC1027644
19	5079	2258	2710	4091	5971 TT-1	IM1018716
20	2054	799	1031	187	6137 PE-6	HB1011478
21	4442	1894	1889	6127	6277 TA-1	XB1018756
22	2151	778	1032	219	6362 BB-3	AP1026500
23	4667	1954	1806	6284	8178 XC-6	MI1012316
24	7963	2365	2151	3992	8305 MO-7	EB1001842
25	2112	706	1095	225	8331 MO-1	MB1000041
26	4978	2379	1533	3282	8949 EP-4	HM1005447
27	5114	1843	1632	7096	9064 KE-2	KI1000491
28	5496	2490	1847	7695	9328 MA-3	HC1015350
29	5193	1701	2072	5716	9481 AH-5	CK1004664
30	2086	722	1057	169	9516 OC-7	AA1024464

Рисунок 5.3 – Выборка таблицы *Autos*

```
4  select "Client number", "Autos"."Auto number", "Place number" from "Autos"
5  inner join "Places" on "Places"."Auto number" = "Autos"."Auto number";
```

Data Output | Messages | Notifications

	Client number character varying	Auto number character varying	Place number integer
1	OT1023281	2493 PO-4	1
2	KI1000491	9064 KE-2	2
3	EO1004827	2192 XX-7	3
4	IC1014604	3096 BO-1	4
5	BC1000292	3178 OX-6	5
6	IM1018716	5971 TT-1	6
7	HM1005447	8949 EP-4	7
8	MO1009894	1029 PM-2	8
9	CC1031322	1089 HC-3	9
10	CK1004664	9481 AH-5	10
11	PM1028253	3333 CM-7	11
12	BC1027644	5664 MP-4	12
13	MI1012316	8178 XC-6	13
14	CB1015890	4138 AO-4	14
15	HC1015350	9328 MA-3	15
16	EB1012623	5598 TX-8	16
17	XB1018756	6277 TA-1	17
18	MP1007376	2419 XE-1	18
19	IP1009040	2622 HH-3	19
20	CP1011538	1027 HO-8	20
21	EB1001842	8305 MO-7	21
22	KM1020037	2956 KA-6	22
23	TB1009741	5103 BO-6	23
24	KK1025667	3274 TA-7	24
25	IC1022648	1342 KB-5	25
26	XC1024393	2287 EK-4	26
27	MB1000041	8331 MO-1	27
28	AP1026500	6362 BB-3	28
29	HB1011478	6137 PE-6	29
30	AA1024464	9516 OC-7	30

Рисунок 5.4 – Пересечение таблиц *Autos* и *Places*

6 LEFT OUTER JOIN

OUTER JOIN объединяет одну таблицу (LEFT/RIGHT) с другой таблицей по условию, если условие не выполняется в записи будет NULL. Напишем запрос, который покажет, в какие лифты вмещаются авто больше 7.2 тонны.

	Elevator number [PK] integer	Length smallint	Width smallint	Height smallint	lift capacity smallint
1	1	5500	2000	2500	2500
2	2	10000	3000	3000	8500
3	3	2000	2000	2500	1000
4	4	5500	2000	2500	2500
5	5	10000	3000	3000	8500
6	6	2000	2000	2500	1000
7	7	5500	2000	2500	2500
8	8	10000	3000	3000	8500
9	9	2000	2000	2500	1000
10	10	5500	2000	2500	2500
11	11	10000	3000	3000	8500
12	12	2000	2000	2500	1000
13	13	5500	2000	2500	2500
14	14	10000	3000	3000	8500
15	15	2000	2000	2500	1000
16	16	5500	2000	2500	2500
17	17	10000	3000	3000	8500
18	18	2000	2000	2500	1000
19	19	5500	2000	2500	2500
20	20	10000	3000	3000	8500
21	21	2000	2000	2500	1000
22	22	5500	2000	2500	2500
23	23	10000	3000	3000	8500
24	24	2000	2000	2500	1000
25	25	5500	2000	2500	2500
26	26	10000	3000	3000	8500
27	27	2000	2000	2500	1000
28	28	5500	2000	2500	2500
29	29	10000	3000	3000	8500
30	30	2000	2000	2500	1000

Рисунок 6.1 – Выборка из таблицы Elevators

```
7  select "Elevator number", "lift capacity", "Auto number", "Mass" from "Elevators"
8  left outer join "Autos" on "Autos"."Mass" <= "Elevators"."lift capacity" where "Mass" > 7200;
```

Data Output | Messages | Notifications

	Elevator number integer	lift capacity smallint	Auto number character varying	Mass smallint
1	2	8500	3096 BO-1	7272
2	2	8500	4138 AO-4	7383
3	2	8500	9328 MA-3	7695
4	5	8500	3096 BO-1	7272
5	5	8500	4138 AO-4	7383
6	5	8500	9328 MA-3	7695
7	8	8500	3096 BO-1	7272
8	8	8500	4138 AO-4	7383
9	8	8500	9328 MA-3	7695
10	11	8500	3096 BO-1	7272
11	11	8500	4138 AO-4	7383
12	11	8500	9328 MA-3	7695
13	14	8500	3096 BO-1	7272
14	14	8500	4138 AO-4	7383
15	14	8500	9328 MA-3	7695
16	17	8500	3096 BO-1	7272
17	17	8500	4138 AO-4	7383
18	17	8500	9328 MA-3	7695
19	20	8500	3096 BO-1	7272
20	20	8500	4138 AO-4	7383
21	20	8500	9328 MA-3	7695
22	23	8500	3096 BO-1	7272
23	23	8500	4138 AO-4	7383
24	23	8500	9328 MA-3	7695
25	26	8500	3096 BO-1	7272
26	26	8500	4138 AO-4	7383
27	26	8500	9328 MA-3	7695
28	29	8500	3096 BO-1	7272
29	29	8500	4138 AO-4	7383
30	29	8500	9328 MA-3	7695

Рисунок 6.2 – Объединение таблицы *Elevators* и *Autos*

Также напишем запрос, который объединит таблицы user и tariff.

	Table number [PK] integer	Place numbers character varying	Place type character varying	Floor number smallint
1	1	1-30	Small/Basic/Large	1
2	2	31-90	Basic	2
3	3	91-110	Basic/Large	3
4	4	111-140	Small/Basic/Large	4
5	5	141-180	Small/Basic	5
6	6	181-210	Small/Basic/Large	6
7	7	211-240	Small/Basic/Large	7
8	8	241-270	Small/Basic/Large	8
9	9	271-300	Small/Basic/Large	9
10	10	301-330	Small/Basic/Large	10
11	11	331-360	Small/Basic/Large	11
12	12	361-390	Small/Basic/Large	12
13	13	391-420	Small/Basic/Large	13
14	14	421-450	Small/Basic/Large	14
15	15	451-480	Small/Basic/Large	15
16	16	481-510	Small/Basic/Large	16
17	17	511-540	Small/Basic/Large	17
18	18	541-570	Small/Basic/Large	18
19	19	571-600	Small/Basic/Large	19
20	20	601-630	Small/Basic/Large	20
21	21	631-660	Small/Basic/Large	21
22	22	661-690	Small/Basic/Large	22
23	23	691-720	Small/Basic/Large	23
24	24	721-750	Small/Basic/Large	24
25	25	751-780	Small/Basic/Large	25
26	26	781-810	Small/Basic/Large	26
27	27	811-840	Small/Basic/Large	27
28	28	841-870	Small/Basic/Large	28
29	29	871-900	Small/Basic/Large	29
30	30	901-930	Small/Basic/Large	30

Рисунок 6.3 – Выборка из таблицы *Tables*

```
16  select "Tables"."Floor number", "Floors"."Height", "Place type", "Place numbers" from "Floors"
17  left outer join "Tables" on "Floors"."Floor number" = "Tables"."Floor number";
```

Data Output | Messages | Notifications

	Floor number smallint	Height double precision	Place type character varying	Place numbers character varying
1	1	3000	Small/Basic/Large	1-30
2	2	3000	Basic	31-90
3	3	4000	Basic/Large	91-110
4	4	3000	Small/Basic/Large	111-140
5	5	2500	Small/Basic	141-180
6	6	3000	Small/Basic/Large	181-210
7	7	3000	Small/Basic/Large	211-240
8	8	3000	Small/Basic/Large	241-270
9	9	3000	Small/Basic/Large	271-300
10	10	3000	Small/Basic/Large	301-330
11	11	3000	Small/Basic/Large	331-360
12	12	3000	Small/Basic/Large	361-390
13	13	3000	Small/Basic/Large	391-420
14	14	3000	Small/Basic/Large	421-450
15	15	3000	Small/Basic/Large	451-480
16	16	3000	Small/Basic/Large	481-510
17	17	3000	Small/Basic/Large	511-540
18	18	3000	Small/Basic/Large	541-570
19	19	3000	Small/Basic/Large	571-600
20	20	3000	Small/Basic/Large	601-630
21	21	3000	Small/Basic/Large	631-660
22	22	3000	Small/Basic/Large	661-690
23	23	3000	Small/Basic/Large	691-720
24	24	3000	Small/Basic/Large	721-750
25	25	3000	Small/Basic/Large	751-780
26	26	3000	Small/Basic/Large	781-810
27	27	3000	Small/Basic/Large	811-840
28	28	3000	Small/Basic/Large	841-870
29	29	3000	Small/Basic/Large	871-900
30	30	3000	Small/Basic/Large	901-930

Рисунок 6.4 – Объединение таблицы *Floors* и *Tables*

7 RIGHT OUTER JOIN

RIGHT JOIN к строкам таблицы пытается присоединить строки второй таблицы, если это не выходит в таблице будет NULL.

Напишем запрос который присоединит *Elevators* к таблице *Autos*

	Length smallint	Width smallint	Height smallint	Mass smallint	Auto number [PK] character varying	Client number character varying
1	6914	2073	1979	3416	1027 HO-8	CP1011538
2	4115	1707	2515	6287	1029 PM-2	MO1009894
3	4399	1503	2847	1127	1089 HC-3	CC1031322
4	5533	2173	2118	6568	1342 KB-5	IC1022648
5	4728	2340	1576	6234	2192 XX-7	EO1004827
6	6597	2251	2029	1060	2287 EK-4	XC1024393
7	3907	1543	2504	4958	2419 XE-1	MP1007376
8	5114	1843	1632	7096	2493 PO-4	OT1023281
9	5390	2323	2576	6964	2622 HH-3	IP1009040
10	6439	2225	2158	3723	2956 KA-6	KM1020037
11	5129	2131	2096	7272	3096 BO-1	IC1014604
12	4606	1871	1640	5436	3178 OX-6	BC1000292
13	5993	1928	2417	4365	3274 TA-7	KK1025667
14	4323	2320	2230	6581	3333 CM-7	PM1028253
15	3824	1950	1889	7383	4138 AO-4	CB1015890
16	5649	1738	2692	3229	5103 BO-6	TB1009741
17	5426	1668	1953	6838	5598 TX-8	EB1012623
18	4500	2002	2204	848	5664 MP-4	BC1027644
19	5079	2258	2710	4091	5971 TT-1	IM1018716
20	2054	799	1031	187	6137 PE-6	HB1011478
21	4442	1894	1889	6127	6277 TA-1	XB1018756
22	2151	778	1032	219	6362 BB-3	AP1026500
23	4667	1954	1806	6284	8178 XC-6	MI1012316
24	7963	2365	2151	3992	8305 MO-7	EB1001842
25	2112	706	1095	225	8331 MO-1	MB1000041
26	4978	2379	1533	3282	8949 EP-4	HM1005447
27	5114	1843	1632	7096	9064 KE-2	KI1000491
28	5496	2490	1847	7695	9328 MA-3	HC1015350
29	5193	1701	2072	5716	9481 AH-5	CK1004664
30	2086	722	1057	169	9516 OC-7	AA1024464

Рисунок 7.1 – Выборка из таблицы *Autos*

```
10  select "Elevator number", "lift capacity", "Auto number", "Mass" from "Elevators"
11  right outer join "Autos" on "Autos"."Mass" <= "Elevators"."lift capacity" where "Mass" > 7200;
12
```

Data Output | Messages | Notifications

	Elevator number integer	lift capacity smallint	Auto number character varying	Mass smallint
1	2	8500	3096 BO-1	7272
2	5	8500	3096 BO-1	7272
3	8	8500	3096 BO-1	7272
4	11	8500	3096 BO-1	7272
5	14	8500	3096 BO-1	7272
6	17	8500	3096 BO-1	7272
7	20	8500	3096 BO-1	7272
8	23	8500	3096 BO-1	7272
9	26	8500	3096 BO-1	7272
10	29	8500	3096 BO-1	7272
11	2	8500	4138 AO-4	7383
12	5	8500	4138 AO-4	7383
13	8	8500	4138 AO-4	7383
14	11	8500	4138 AO-4	7383
15	14	8500	4138 AO-4	7383
16	17	8500	4138 AO-4	7383
17	20	8500	4138 AO-4	7383
18	23	8500	4138 AO-4	7383
19	26	8500	4138 AO-4	7383
20	29	8500	4138 AO-4	7383
21	2	8500	9328 MA-3	7695
22	5	8500	9328 MA-3	7695
23	8	8500	9328 MA-3	7695
24	11	8500	9328 MA-3	7695
25	14	8500	9328 MA-3	7695
26	17	8500	9328 MA-3	7695
27	20	8500	9328 MA-3	7695
28	23	8500	9328 MA-3	7695
29	26	8500	9328 MA-3	7695
30	29	8500	9328 MA-3	7695

Рисунок 7.2 – Объединение таблицы *Elevators* и *Autos*

Также напишем запрос, который присоединит *Floors* к таблице *Tables.*

	Table number [PK] integer	Place numbers character varying	Place type character varying	Floor number smallint
1	1	1-30	Small/Basic/Large	1
2	2	31-90	Basic	2
3	3	91-110	Basic/Large	3
4	4	111-140	Small/Basic/Large	4
5	5	141-180	Small/Basic	5
6	6	181-210	Small/Basic/Large	6
7	7	211-240	Small/Basic/Large	7
8	8	241-270	Small/Basic/Large	8
9	9	271-300	Small/Basic/Large	9
10	10	301-330	Small/Basic/Large	10
11	11	331-360	Small/Basic/Large	11
12	12	361-390	Small/Basic/Large	12
13	13	391-420	Small/Basic/Large	13
14	14	421-450	Small/Basic/Large	14
15	15	451-480	Small/Basic/Large	15
16	16	481-510	Small/Basic/Large	16
17	17	511-540	Small/Basic/Large	17
18	18	541-570	Small/Basic/Large	18
19	19	571-600	Small/Basic/Large	19
20	20	601-630	Small/Basic/Large	20
21	21	631-660	Small/Basic/Large	21
22	22	661-690	Small/Basic/Large	22
23	23	691-720	Small/Basic/Large	23
24	24	721-750	Small/Basic/Large	24
25	25	751-780	Small/Basic/Large	25
26	26	781-810	Small/Basic/Large	26
27	27	811-840	Small/Basic/Large	27
28	28	841-870	Small/Basic/Large	28
29	29	871-900	Small/Basic/Large	29
30	30	901-930	Small/Basic/Large	30

Рисунок 7.3 – Выборка из таблицы *Tables*

```
13  select "Tables"."Floor number", "Floors"."Height", "Place type", "Place numbers" from "Floors"
14  right outer join "Tables" on "Floors"."Floor number" = "Tables"."Floor number";
```

Data Output | Messages | Notifications

	Floor number smallint	Height double precision	Place type character varying	Place numbers character varying
1	1	3000	Small/Basic/Large	1-30
2	2	3000	Basic	31-90
3	3	4000	Basic/Large	91-110
4	4	3000	Small/Basic/Large	111-140
5	5	2500	Small/Basic	141-180
6	6	3000	Small/Basic/Large	181-210
7	7	3000	Small/Basic/Large	211-240
8	8	3000	Small/Basic/Large	241-270
9	9	3000	Small/Basic/Large	271-300
10	10	3000	Small/Basic/Large	301-330
11	11	3000	Small/Basic/Large	331-360
12	12	3000	Small/Basic/Large	361-390
13	13	3000	Small/Basic/Large	391-420
14	14	3000	Small/Basic/Large	421-450
15	15	3000	Small/Basic/Large	451-480
16	16	3000	Small/Basic/Large	481-510
17	17	3000	Small/Basic/Large	511-540
18	18	3000	Small/Basic/Large	541-570
19	19	3000	Small/Basic/Large	571-600
20	20	3000	Small/Basic/Large	601-630
21	21	3000	Small/Basic/Large	631-660
22	22	3000	Small/Basic/Large	661-690
23	23	3000	Small/Basic/Large	691-720
24	24	3000	Small/Basic/Large	721-750
25	25	3000	Small/Basic/Large	751-780
26	26	3000	Small/Basic/Large	781-810
27	27	3000	Small/Basic/Large	811-840
28	28	3000	Small/Basic/Large	841-870
29	29	3000	Small/Basic/Large	871-900
30	30	3000	Small/Basic/Large	901-930

Рисунок 7.4 – Объединение таблицы *Tables* и *Floors*

8 FULL OUTER JOIN

FULL OUTER JOIN – это сочетание LEFT и RIGHT, по факту это CROSS JOIN с условием ON, который может дать NULL как в исходной таблице, так и в присоединяемой.

Напишем запрос, который соединит таблицы *Places* и *Autos*

	Place number [PK] integer	Length smallint	Width smallint	Auto number character varying	Floor number smallint
1	1	5500	2000	2493 PO-4	1
2	2	5500	2000	9064 KE-2	1
3	3	5500	2000	2192 XX-7	1
4	4	5500	2000	3096 BO-1	1
5	5	5500	2000	3178 OX-6	1
6	6	5500	2000	5971 TT-1	1
7	7	5500	2000	8949 EP-4	1
8	8	5500	2000	1029 PM-2	1
9	9	5500	2000	1089 HC-3	1
10	10	5500	2000	9481 AH-5	1
11	11	5500	2000	3333 CM-7	1
12	12	5500	2000	5664 MP-4	1
13	13	5500	2000	8178 XC-6	1
14	14	5500	2000	4138 AO-4	1
15	15	5500	2000	9328 MA-3	1
16	16	5500	2000	5598 TX-8	1
17	17	5500	2000	6277 TA-1	1
18	18	5500	2000	2419 XE-1	1
19	19	5500	2000	2622 HH-3	1
20	20	10000	3000	1027 HO-8	1
21	21	10000	3000	8305 MO-7	1
22	22	10000	3000	2956 KA-6	1
23	23	10000	3000	5103 BO-6	1
24	24	10000	3000	3274 TA-7	1
25	25	10000	3000	1342 KB-5	1
26	26	10000	3000	2287 EK-4	1
27	27	2500	1000	8331 MO-1	1
28	28	2500	1000	6362 BB-3	1
29	29	2500	1000	6137 PE-6	1
30	30	2500	1000	9516 OC-7	1

Рисунок 8.1 – Выборка из таблицы *Places*

```
23  select * from "Autos" full outer join "Places"
24  on "Autos"."Auto number" = "Places"."Auto number" order by "Autos"."Auto number" desc;
```

Data Output | Messages | Notifications

	Length smallint	Width smallint	Height smallint	Mass smallint	Auto number character varying	Client number character varying	Place number integer	Length smallint	Width smallint	Auto number character varying	Floor number smallint
1	2086	722	1057	169	9516 OC-7	AA1024464	30	2500	1000	9516 OC-7	1
2	5193	1701	2072	5716	9481 AH-5	CK1004664	10	5500	2000	9481 AH-5	1
3	5496	2490	1847	7695	9328 MA-3	HC1015350	15	5500	2000	9328 MA-3	1
4	5114	1843	1632	7096	9064 KE-2	KI1000491	2	5500	2000	9064 KE-2	1
5	4978	2379	1533	3282	8949 EP-4	HM1005447	7	5500	2000	8949 EP-4	1
6	2112	706	1095	225	8331 MO-1	MB1000041	27	2500	1000	8331 MO-1	1
7	7963	2365	2151	3992	8305 MO-7	EB1001842	21	10000	3000	8305 MO-7	1
8	4667	1954	1806	6284	8178 XC-6	MI1012316	13	5500	2000	8178 XC-6	1
9	2151	778	1032	219	6362 BB-3	AP1026500	28	2500	1000	6362 BB-3	1
10	4442	1894	1889	6127	6277 TA-1	XB1018756	17	5500	2000	6277 TA-1	1
11	2054	799	1031	187	6137 PE-6	HB1011478	29	2500	1000	6137 PE-6	1
12	5079	2258	2710	4091	5971 TT-1	IM1018716	6	5500	2000	5971 TT-1	1
13	4500	2002	2204	848	5664 MP-4	BC1027644	12	5500	2000	5664 MP-4	1
14	5426	1668	1953	6838	5598 TX-8	EB1012623	16	5500	2000	5598 TX-8	1
15	5649	1738	2692	3229	5103 BO-6	TB1009741	23	10000	3000	5103 BO-6	1
16	3824	1950	1889	7383	4138 AO-4	CB1015890	14	5500	2000	4138 AO-4	1
17	4323	2320	2230	6581	3333 CM-7	PM1028253	11	5500	2000	3333 CM-7	1
18	5993	1928	2417	4365	3274 TA-7	KK1025667	24	10000	3000	3274 TA-7	1
19	4606	1871	1640	5436	3178 OX-6	BC1000292	5	5500	2000	3178 OX-6	1
20	5129	2131	2096	7272	3096 BO-1	IC1014604	4	5500	2000	3096 BO-1	1
21	6439	2225	2158	3723	2956 KA-6	KM1020037	22	10000	3000	2956 KA-6	1
22	5390	2323	2576	6964	2622 HH-3	IP1009040	19	5500	2000	2622 HH-3	1
23	5114	1843	1632	7096	2493 PO-4	OT1023281	1	5500	2000	2493 PO-4	1
24	3907	1543	2504	4958	2419 XE-1	MP1007376	18	5500	2000	2419 XE-1	1
25	6597	2251	2029	1060	2287 EK-4	XC1024393	26	10000	3000	2287 EK-4	1
26	4728	2340	1576	6234	2192 XX-7	EO1004827	3	5500	2000	2192 XX-7	1
27	5533	2173	2118	6568	1342 KB-5	IC1022648	25	10000	3000	1342 KB-5	1
28	4399	1503	2847	1127	1089 HC-3	CC1031322	9	5500	2000	1089 HC-3	1
29	4115	1707	2515	6287	1029 PM-2	MO1009894	8	5500	2000	1029 PM-2	1
30	6914	2073	1979	3416	1027 HO-8	CP1011538	20	10000	3000	1027 HO-8	1

Рисунок 8.2 – Объединение таблицы *Places и Autos*

Также напишем запрос на объединение *Clients* и *Autos*

	Passport number [PK] character varying	Parktime double precision	Surname character varying	Name character varying	Otchestvo character varying
1	MB1000041	14.4	Romanov	Egor	Vladimirovich
2	AP1026500	14.6	Dyatlov	Dmitriy	Yanovich
3	HB1011478	15	Kirkorov	Vasiliy	Petrovich
4	AA1024464	8.2	Romanov	Egor	Vitalievich
5	OT1023281	5.6	Sinitsin	Vasiliy	Petrovich
6	KI1000491	19.3	Kirkorov	Vladislav	Alekseevich
7	EO1004827	3.1	Kirkorov	Vasiliy	Sergeevich
8	IC1014604	5.7	Kirkorov	Vasiliy	Vitalievich
9	BC1000292	22.4	Kirkorov	Ivan	Petrovich
10	IM1018716	4.2	Romanov	Aleksey	Alekseevich
11	HM1005447	18.3	Sinitsin	Vasiliy	Vitalievich
12	CP1011538	24.8	Dyatlov	Vladislav	Vladimirovich
13	KK1025667	3.4	Tkachev	Egor	Petrovich
14	MO1009894	20.8	Kirkorov	Vasiliy	Vitalievich
15	CC1031322	3.1	Petrov	Ivan	Sergeevich
16	CK1004664	8.1	Sinitsin	Egor	Vitalievich
17	PM1028253	17	Romanov	Vladislav	Sergeevich
18	BC1027644	16.5	Dyatlov	Ivan	Petrovich
19	KM1020037	21.6	Dyatlov	Ivan	Yanovich
20	TB1009741	12.4	Dyatlov	Vladislav	Vladimirovich
21	MI1012316	23.2	Petrov	Vasiliy	Vitalievich
22	EB1001842	21.4	Kirkorov	Vladislav	Yanovich
23	IP1009040	5.8	Petrov	Aleksey	Vitalievich
24	IC1022648	8.9	Sinitsin	Dmitriy	Vladimirovich
25	CB1015890	1.2	Dyatlov	Aleksey	Yanovich
26	HC1015350	5.9	Sinitsin	Dmitriy	Yanovich
27	XC1024393	6.9	Dyatlov	Egor	Sergeevich
28	EB1012623	2.2	Romanov	Vladislav	Alekseevich
29	XB1018756	21.3	Sinitsin	Ivan	Vitalievich
30	MP1007376	21.2	Kirkorov	Ivan	Petrovich

Рисунок 8.3 – Выборка из таблицы *Clients*

```
26 select * from "Clients" full outer join "Autos"
27 on "Passport number" = "Client number";
```

Data Output | Messages | Notifications

	Passport number character varying	Parktime double precision	Surname character varying	Name character varying	Otchestvo character varying	Length smallint	Width smallint	Height smallint	Mass smallint	Auto number character varying	Client number character varying
1	MB1000041	14.4	Romanov	Egor	Vladimirovich	2112	706	1095	225	8331 MO-1	MB1000041
2	AP1026500	14.6	Dyatlov	Dmitriy	Yanovich	2151	778	1032	219	6362 BB-3	AP1026500
3	HB1011478	15	Kirkorov	Vasiliy	Petrovich	2054	799	1031	187	6137 PE-6	HB1011478
4	AA1024464	8.2	Romanov	Egor	Vitalievich	2086	722	1057	169	9516 OC-7	AA1024464
5	OT1023281	5.6	Sinitsin	Vasiliy	Petrovich	5114	1843	1632	7096	2493 PO-4	OT1023281
6	KI1000491	19.3	Kirkorov	Vladislav	Alekseevich	5114	1843	1632	7096	9064 KE-2	KI1000491
7	EO1004827	3.1	Kirkorov	Vasiliy	Sergeevich	4728	2340	1576	6234	2192 XX-7	EO1004827
8	IC1014604	5.7	Kirkorov	Vasiliy	Vitalievich	5129	2131	2096	7272	3096 BO-1	IC1014604
9	BC1000292	22.4	Kirkorov	Ivan	Petrovich	4606	1871	1640	5436	3178 OX-6	BC1000292
10	IM1018716	4.2	Romanov	Aleksey	Alekseevich	5079	2258	2710	4091	5971 TT-1	IM1018716
11	HM1005447	18.3	Sinitsin	Vasiliy	Vitalievich	4978	2379	1533	3282	8949 EP-4	HM1005447
12	CP1011538	24.8	Dyatlov	Vladislav	Vladimirovich	6914	2073	1979	3416	1027 HO-8	CP1011538
13	KK1025667	3.4	Tkachev	Egor	Petrovich	5993	1928	2417	4365	3274 TA-7	KK1025667
14	MO1009894	20.8	Kirkorov	Vasiliy	Vitalievich	4115	1707	2515	6287	1029 PM-2	MO1009894
15	CC1031322	3.1	Petrov	Ivan	Sergeevich	4399	1503	2847	1127	1089 HC-3	CC1031322
16	CK1004664	8.1	Sinitsin	Egor	Vitalievich	5193	1701	2072	5716	9481 AH-5	CK1004664
17	PM1028253	17	Romanov	Vladislav	Sergeevich	4323	2320	2230	6581	3333 CM-7	PM1028253
18	BC1027644	16.5	Dyatlov	Ivan	Petrovich	4500	2002	2204	848	5664 MP-4	BC1027644
19	KM1020037	21.6	Dyatlov	Ivan	Yanovich	6439	2225	2158	3723	2956 KA-6	KM1020037
20	TB1009741	12.4	Dyatlov	Vladislav	Vladimirovich	5649	1738	2692	3229	5103 BO-6	TB1009741
21	MI1012316	23.2	Petrov	Vasiliy	Vitalievich	4667	1954	1806	6284	8178 XC-6	MI1012316
22	EB1001842	21.4	Kirkorov	Vladislav	Yanovich	7963	2365	2151	3992	8305 MO-7	EB1001842
23	IP1009040	5.8	Petrov	Aleksey	Vitalievich	5390	2323	2576	6964	2622 HH-3	IP1009040
24	IC1022648	8.9	Sinitsin	Dmitriy	Vladimirovich	5533	2173	2118	6568	1342 KB-5	IC1022648
25	CB1015890	1.2	Dyatlov	Aleksey	Yanovich	3824	1950	1889	7383	4138 AO-4	CB1015890
26	HC1015350	5.9	Sinitsin	Dmitriy	Yanovich	5496	2490	1847	7695	9328 MA-3	HC1015350
27	XC1024393	6.9	Dyatlov	Egor	Sergeevich	6597	2251	2029	1060	2287 EK-4	XC1024393
28	EB1012623	2.2	Romanov	Vladislav	Alekseevich	5426	1668	1953	6838	5598 TX-8	EB1012623
29	XB1018756	21.3	Sinitsin	Ivan	Vitalievich	4442	1894	1889	6127	6277 TA-1	XB1018756
30	MP1007376	21.2	Kirkorov	Ivan	Petrovich	3907	1543	2504	4958	2419 XE-1	MP1007376

Рисунок 8.4 – Объединение таблицы *Clients* и *Autos*