

Exercise 6

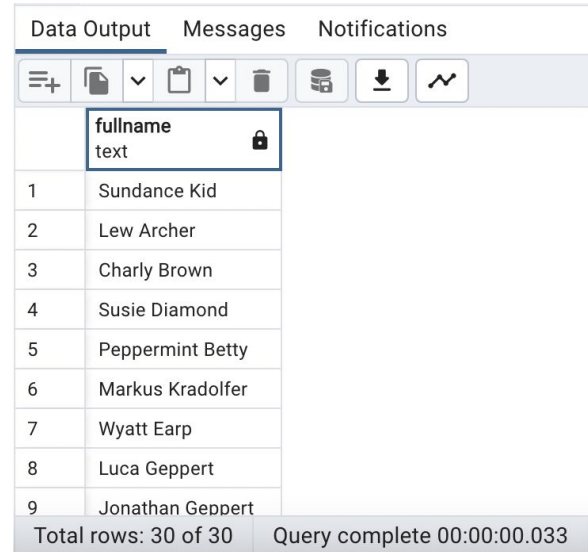
The full names of all persons (unless specified otherwise, from now on the full name, “firstname lastname” is required whenever “name” is mentioned)

With concatenation operator:

```
SELECT firstname || ' ' || lastname AS fullname
FROM cash.person;
```

With concatenation function:

```
SELECT CONCAT(firstname, ' ', lastname) AS
fullname
FROM cash.person;
```



The screenshot shows a database query result interface. At the top, there are tabs for "Data Output", "Messages", and "Notifications". Below the tabs is a toolbar with icons for expand, save, refresh, delete, and other actions. The main area displays a table with the following data:

	fullname
1	Sundance Kid
2	Lew Archer
3	Charly Brown
4	Susie Diamond
5	Peppermint Betty
6	Markus Kradolfer
7	Wyatt Earp
8	Luca Geppert
9	Jonathan Geppert

At the bottom of the interface, there is a status bar that reads "Total rows: 30 of 30" and "Query complete 00:00:00.033".

Exercise 13

Make, model, and name of the home location of the vehicles. The make and model of vehicles without home location as well as the locations without vehicles should be shown as well

```
SELECT v.make, v.model, l.name FROM vehicle v  
FULL JOIN location l ON v.home = l.id;
```

make	model	name
Smart	Pure	Uster
Smart	Pure	Zurich-Oerlikon
Smart	Pulse	Zurich
Smart	Pure	Zurich
Renault	Twingo	Schwerzenbach
Mini	Cooper	Greifensee
Peugeot	108	
Peugeot	108	Zurich-Seefeld

Exercise 14

Vehicles without a home location

```
SELECT * FROM cash.vehicle WHERE (home IS null);
```

	id integer 	type character varying (15) 	licenseplate character varying (10) 	make character varying (15) 	model character varying (15) 	home integer 
1	1045	CompactCar	ZH-4005	Peugeot	108	[null]
2	1047	CompactCar	ZH-4007	Peugeot	108	[null]

Exercise 21

All vehicles whose home location is in the city of Zurich

Address is composite data type

	name character varying (20)	nextlocation integer	secondnextlocation integer	leasecontract integer	address cash.addressst
1	Zurich-Leimbach	1008	1004	[null]	(Grossackerstrasse,32,8041,Zuerich)
2	Zurich-Oerlikon	1001	1007	1000	(Gubelstrasse,6,8011,Zuerich)
3	Zurich-Irchel	1007	1003	1001	(Winterthurerstrasse,197,8057,Irchel)
4	Zurich-Wipkingen	1008	1001	1002	(Weizenstrasse,6,8037,Zuerich)
5	Schwerzenbach	1004	1000	1003	("500 Harry Road",224,8001,Schwerzenbach)
6	Zurich-Seefeld	1008	1007	1004	(Dufourstrasse,175,8008,Zuerich)
7	Greifensee	1005	1006	1005	("The Woods Drive",34,8606,Greifensee)
8	Moenchaltorf	1006	1000	1006	("Im Winkel",4,69123,Moenchaltorf)
9	Zurich	1004	1007	1007	(Bahnhofstrasse,101,8000,Zuerich)
10	Uster	1000	1002	1008	(Centralstrasse,9,8610,Uster)

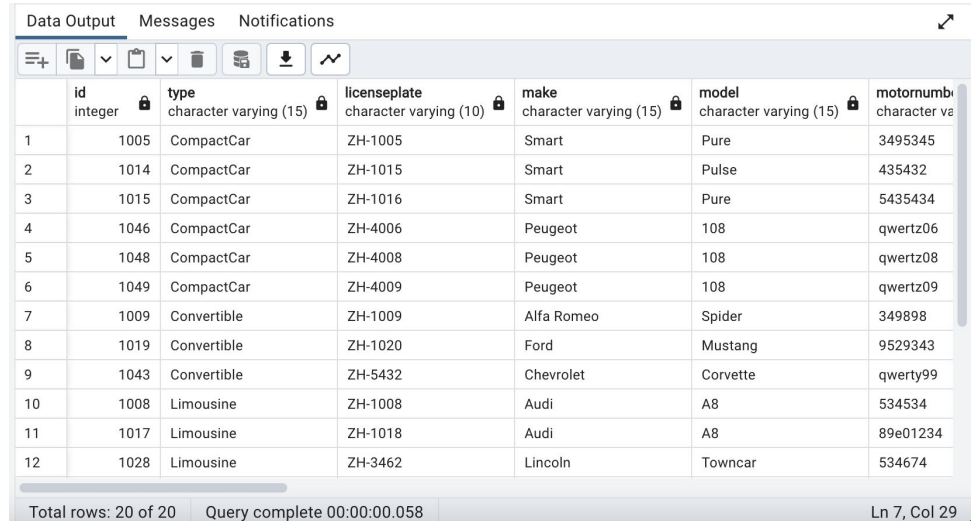
To access a field

	streetname character varying (25)	housenumber integer	zipcode character varying (5)	city character varying (25)
1	Grossackerstrasse	32	8041	Zuerich
2	Gubelstrasse	6	8011	Zuerich
3	Winterthurerstrasse	197	8057	Irchel
4	Weizenstrasse	6	8037	Zuerich
5	500 Harry Road	224	8001	Schwerzenbach
6	Dufourstrasse	175	8008	Zuerich
7	The Woods Drive	34	8606	Greifensee
8	Im Winkel	4	69123	Moenchaltorf
9	Bahnhofstrasse	101	8000	Zuerich
10	Centralstrasse	9	8610	Uster

Exercise 21

All vehicles whose home location is in the city of Zurich

```
SELECT *  
FROM cash.vehicle AS m  
LEFT JOIN cash.location AS l  
ON m.home = l.id  
WHERE (l.address).city = 'Zuerich';
```



	id integer	type character varying (15)	licenseplate character varying (10)	make character varying (15)	model character varying (15)	motornumb character va
1	1005	CompactCar	ZH-1005	Smart	Pure	3495345
2	1014	CompactCar	ZH-1015	Smart	Pulse	435432
3	1015	CompactCar	ZH-1016	Smart	Pure	5435434
4	1046	CompactCar	ZH-4006	Peugeot	108	qwertz06
5	1048	CompactCar	ZH-4008	Peugeot	108	qwertz08
6	1049	CompactCar	ZH-4009	Peugeot	108	qwertz09
7	1009	Convertible	ZH-1009	Alfa Romeo	Spider	349898
8	1019	Convertible	ZH-1020	Ford	Mustang	9529343
9	1043	Convertible	ZH-5432	Chevrolet	Corvette	qwerty99
10	1008	Limousine	ZH-1008	Audi	A8	534534
11	1017	Limousine	ZH-1018	Audi	A8	89e01234
12	1028	Limousine	ZH-3462	Lincoln	Towncar	534674

Total rows: 20 of 20 Query complete 00:00:00.058 Ln 7, Col 29

Exercise 23

All open invoices (unpaid)

```
SELECT * FROM cash.invoice WHERE ispaid = false;
```

	id	invoicedate	duedate	invoicenumber	ispaid	member	total
1	1,329	2023-07-01	2023-07-31	1,329	[]	1,009	40.34
2	1,330	2023-07-01	2023-07-31	1,330	[]	1,019	97.11
3	1,329	2023-07-01	2023-07-31	1,329	[]	1,009	40.34
4	1,330	2023-07-01	2023-07-31	1,330	[]	1,019	97.11
5	1,331	2023-08-01	2023-08-31	1,331	[]	1,008	903.52
6	1,332	2023-08-01	2023-08-31	1,332	[]	1,009	1,612.77
7	1,333	2023-08-01	2023-08-31	1,333	[]	1,011	913.61
8	1,334	2023-08-01	2023-08-31	1,334	[]	1,012	1,648.23
9	1,335	2023-08-01	2023-08-31	1,335	[]	1,013	1,185.59
10	1,336	2023-08-01	2023-08-31	1,336	[]	1,014	177.37
11	1,337	2023-08-01	2023-08-31	1,337	[]	1,015	732.75
12	1,338	2023-08-01	2023-08-31	1,338	[]	1,016	340.5
13	1,339	2023-08-01	2023-08-31	1,339	[]	1,018	176.58
14	1,340	2023-08-01	2023-08-31	1,340	[]	1,019	156.77
15	1,341	2023-08-01	2023-08-31	1,341	[]	1,020	146.11
16	1,342	2023-08-01	2023-08-31	1,342	[]	1,021	529.46
17	1,343	2023-08-01	2023-08-31	1,343	[]	1,023	451.94
18	1,344	2023-08-01	2023-08-31	1,344	[]	1,024	185.34
19	1,345	2023-08-01	2023-08-31	1,345	[]	1,025	338.22
20	1,346	2023-08-01	2023-08-31	1,346	[]	1,027	354.29
21	1,347	2023-08-01	2023-08-31	1,347	[]	1,029	960.3
22	1,348	2023-08-01	2023-08-31	1,348	[]	1,030	459.02
23	1,349	2023-08-01	2023-08-31	1,349	[]	1,031	227.14
24	1,350	2023-08-01	2023-08-31	1,350	[]	1,034	903.96
25	1,351	2023-08-01	2023-08-31	1,351	[]	1,037	1,109.22
26	1,352	2023-08-01	2023-08-31	1,352	[]	1,038	119.3
27	1,331	2023-08-01	2023-08-31	1,331	[]	1,008	903.52
28	1,332	2023-08-01	2023-08-31	1,332	[]	1,009	1,612.77
29	1,333	2023-08-01	2023-08-31	1,333	[]	1,011	913.61
30	1,334	2023-08-01	2023-08-31	1,334	[]	1,012	1,648.23
31	1,335	2023-08-01	2023-08-31	1,335	[]	1,013	1,185.59
32	1,336	2023-08-01	2023-08-31	1,336	[]	1,014	177.37
33	1,337	2023-08-01	2023-08-31	1,337	[]	1,015	732.75
34	1,338	2023-08-01	2023-08-31	1,338	[]	1,016	340.5
35	1,339	2023-08-01	2023-08-31	1,339	[]	1,018	176.58
36	1,340	2023-08-01	2023-08-31	1,340	[]	1,019	156.77

Exercise 24

All overdue invoices

```
SELECT *  
FROM cash.invoice  
WHERE duedate < CURRENT_DATE  
AND ispaid = false;
```

	id integer	invoicedate date	duedate date	invoicenumber integer	ispaid boolean	member integer	total numeric (8,2)
1	1329	2023-07-01	2023-07-31	1329	false	1009	40.34
2	1330	2023-07-01	2023-07-31	1330	false	1019	97.11
3	1331	2023-08-01	2023-08-31	1331	false	1008	903.52
4	1332	2023-08-01	2023-08-31	1332	false	1009	1612.77
5	1333	2023-08-01	2023-08-31	1333	false	1011	913.61
6	1334	2023-08-01	2023-08-31	1334	false	1012	1648.23
7	1335	2023-08-01	2023-08-31	1335	false	1013	1185.59
8	1336	2023-08-01	2023-08-31	1336	false	1014	177.37
9	1337	2023-08-01	2023-08-31	1337	false	1015	732.75
10	1338	2023-08-01	2023-08-31	1338	false	1016	340.50
11	1339	2023-08-01	2023-08-31	1339	false	1018	176.58
12	1340	2023-08-01	2023-08-31	1340	false	1019	156.77
13	1341	2023-08-01	2023-08-31	1341	false	1020	146.11

Exercise 30

which person members have had an accident?

```
SELECT * FROM cash.personmember p WHERE  
hadaccident = true;
```

id	type	membernr	password	homelocation	address	bankaccount	firstname	lastname	dateofbirth	hadaccident
1010	PersonMember	1002	just4now	1000	[Hirzerenstrasse, 396, 8606, Greifensee]	[UBS, 458677892, 3328]	Freddie	Freeloader	1994-09-09	TRUE
1037	PersonMember	1029	just4now	1008	[Djurgarden, 26, 8042, Zuerich]	[UBS, 40074892, 3228]	Martin	Beck	1940-09-09	TRUE
1015	PersonMember	1007	linux	1003	[Capitol Expressway, 11, 8011, Zuerich]	[Money Launderers Inc., 23-056-900, 1024]	Pig	Ben	1974-09-05	TRUE

Exercise 33

The sum (of hours) of vehicle uses per day

```
SELECT ((r.interval).begints)::DATE AS date, SUM(u.hours) AS total_hours
FROM cash.useofvehicle u JOIN cash.reservation r ON u.reservation = r.id
GROUP BY date;
```

Converting TIMESTAMP to DATE:

- (timestamp_val)::DATE
- DATE(timestamp_val)
- CAST(timestamp_val AS DATE)

Accessing a field of a structured type:

- ✘ structured_type.field
- ✔ (structured_type).field

Exercise 34

The average duration of vehicle use

```
SELECT AVG(hours) AS average_usage FROM cash.useofvehicle;
```

	average_usage	
1	13.1929026387625114	

Exercise 34

The average duration of vehicle use

```
SELECT vehicle, COUNT(hours) AS num_usage, AVG(hours) AS average_usage  
FROM cash.useofvehicle u JOIN cash.reservation r ON u.reservation = r.id  
GROUP BY vehicle;
```

	vehicle integer	num_usage bigint	average_usage numeric
1	1030	12	4.0000000000000000
2	1018	37	9.1351351351351351
3	1037	18	21.3333333333333333
4	1028	36	9.0000000000000000
5	1000	89	12.1685393258426966
6	1035	25	29.1200000000000000
7	1019	23	15.1304347826086957
8	1002	24	11.3750000000000000
9	1009	24	13.0000000000000000
10	1022	12	10.0000000000000000

Total rows: 41 of 41 Query complete 00:00:00.061

Exercise 34

The average duration of vehicle use

```
SELECT AVG(total_usage)
(SELECT SUM(hours) AS total_usage
FROM cash.useofvehicle u JOIN cash.reservation r ON u.reservation = r.id
GROUP BY vehicle);
```

	avg	
	numeric	
1	353.6341463414634146	