:Q1

	MIN	MAX
Inner join	100	100
Left outer join	100	199
Right outer join	100	100
Full outer join	100	199

Q2

۲.۱ مقدار NID گره‌هایی که هیچ یالی از آن ها خارج نشده است.

۲.۲ این کوئری NID گره‌هایی که تعداد یال‌های ورودی آن‌ها بیش‌تر از تعداد یال‌های خروجی آن است را برمیگرداند.

سلکت درونی اول تعداد یال های خروجی هر گره را محاسبه میکند.
سلکت درونی دوم تعداد یال‌های ورودی هر گره را محاسبه میکند.

Q3

```sql
CREATE VIEW people AS
(select id, name,
                CASE
                WHEN dept_name like '%Eng%' THEN 'Engineer'
                ELSE 'Scientist'
                END as dept_type,
                    CASE
                    WHEN tp = 1 THEN 'INS'
                    ELSE 'STU'
                    END as person_type
FROM (SELECT id, name, dept_name, 1 as tp
    FROM instructor
    UNION
    SELECT id, name, dept_name, 2 as tp
    FROM student) AS foo)

select * from people where person_type = 'INS'
select * from instructor
```

Data Output | Messages | Notifications

	id character varying (5)	name character varying (20)	dept_type text	person_type text
1	80976	Mozayani	Engineer	STU
2	84432	Schrefl	Scientist	STU
3	23992	Thornton	Scientist	STU
4	74473	Ledermann	Scientist	STU
5	75040	Kruglyak	Scientist	STU
6	5414	Aiken	Scientist	STU
7	38288	Matsuda	Engineer	STU
8	55531	Apostolov	Scientist	STU
9	66495	Michel	Scientist	STU
10	37219	Poize	Scientist	STU
11	5336	Peltz	Scientist	STU
12	71768	Stephenn	Scientist	STU
13	95574	Pampal	Scientist	STU
14	86529	Leister	Scientist	STU

Total rows: 1000 of 2050 | Query complete 00:00:00.071

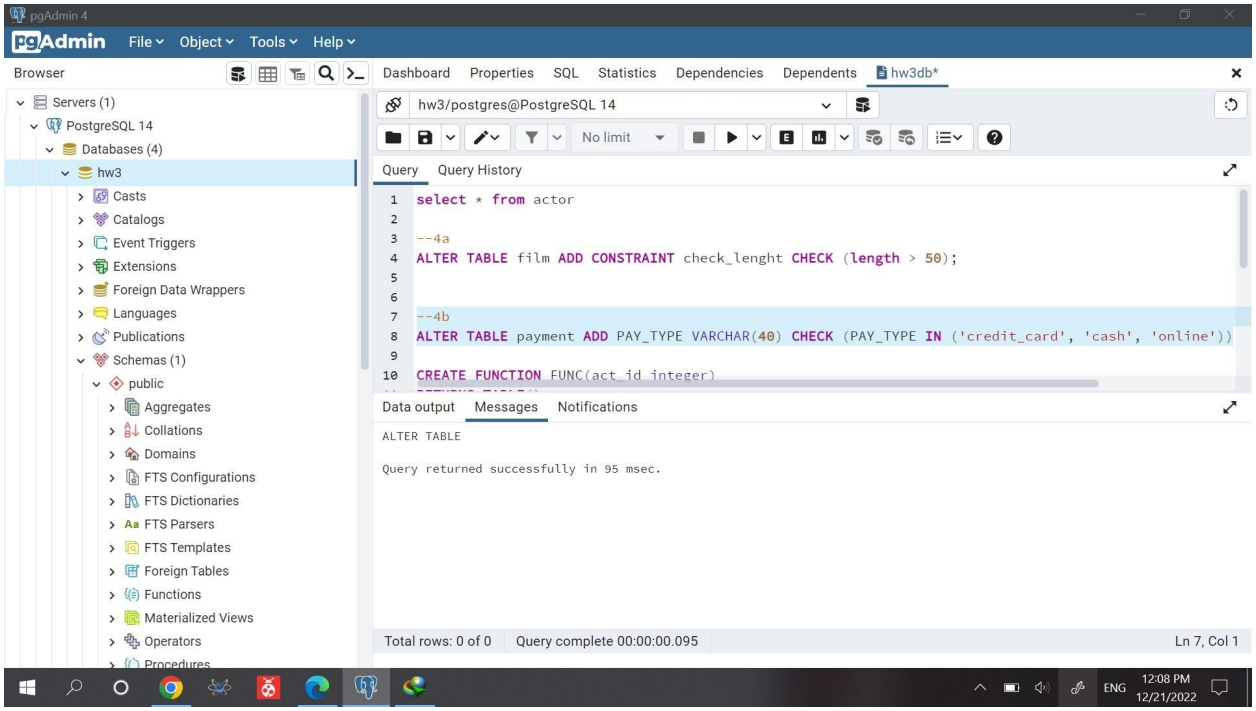
```sql
--3B
SELECT people.id ,name, person_type,
                                    CASE
                                    WHEN person_type = 'INS'
                                    THEN (SELECT (salary/budget) * 100
                                          FROM instructor, department
                                          WHERE instructor.dept_name = department.dept_name
                                          AND instructor.id = people.id)
                                    ELSE (SELECT part
                                          FROM (SELECT department.dept_name, budget/COUNT(*) as part
                                                FROM student
                                                INNER JOIN department
                                                ON student.dept_name = department.dept_name
                                                GROUP BY department.dept_name, budget) AS FOO
                                          INNER JOIN student
                                          ON student.dept_name = FOO.dept_name
                                          WHERE student.id = people.id)
                                    END
FROM people
```

Data Output | Messages | Notifications

	id character varying (5)	name character varying (20)	person_type text	part numeric
1	80976	Mozayani	STU	2821.7103061224489796
2	84432	Schrefl	STU	7984.2467391304347826
3	23992	Thornton	STU	8481.7504000000000000
4	74473	Ledermann	STU	4647.6675294117647059
5	75040	Kruglyak	STU	5263.7164220183486239
6	5414	Aiken	STU	5263.7164220183486239
7	38288	Matsuda	STU	4955.7204761904761905
8	55531	Apostolov	STU	9814.1954166666666667
9	66495	Michel	STU	4647.6675294117647059
10	37219	Poize	STU	984.9878703703703704
11	5336	Peltz	STU	8545.1110989010989011
12	71768	Stephenn	STU	4419.1079347826086957
13	95574	Pampal	STU	984.9878703703703704
14	86529	Leister	STU	4463.0395959595959596

Total rows: 1000 of 2050 | Query complete 00:00:00.073

:Q4


pgAdmin 4
File
Object
Tools
Help
Browser
Dashboard
Properties
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Statistics
Dependencies
Dependents
hw3db*
Servers (1)
PostgreSQL 14
Databases (4)
hw3
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Schemas (1)
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Collations
Domains
FTS Configurations
FTS Dictionaries
FTS Parsers
FTS Templates
Foreign Tables
Functions
Materialized Views
Operators
hw3/postgres@PostgreSQL 14
No limit
Query
Query History
1 select * from actor
2
3 --4a
4 ALTER TABLE film ADD CONSTRAINT check_lenght CHECK (length > 50);
5
6
7 --4b
8 ALTER TABLE payment ADD PAY_TYPE VARCHAR(40) CHECK (PAY_TYPE IN ('credit_card', 'cash', 'online'))
9
10 CREATE FUNCTION FUNC(act_id integer)
Data output
Messages
Notifications
ALTER TABLE
Query returned successfully in 95 msec.
Total rows: 0 of 0
Query complete 00:00:00.095
Ln 7, Col 1
ENG
12:08 PM
12/21/2022

Q5

```
39
40
41  --5.a
42  BEGIN TRANSACTION;
43
44  INSERT INTO department
45  VALUES('medical', 'Pasteur', 700000);
46
47  INSERT INTO department
48  VALUES('dental', 'Pasteur', 800000);
49
50  COMMIT TRANSACTION;
51
```

Data Output | Messages | Notifications

	dept_name [PK] character varying (20)	building character varying (15)	budget numeric (12,2)
9	Comp. Sci.	Lamberton	106378.69
10	Languages	Linderman	601283.60
11	Finance	Candlestick	866831.75
12	Geology	Palmer	406557.93
13	Cybernetics	Mercer	794541.46
14	Astronomy	Taylor	617253.94
15	Athletics	Bronfman	734550.70
16	Statistics	Taylor	395051.74
17	Psychology	Thompson	848175.04
18	Math	Brodhead	777605.11
19	Elec. Eng.	Main	276527.61
20	Mech. Eng.	Rauch	520350.65
21	medical	Pasteur	700000.00
22	dental	Pasteur	800000.00

Total rows: 22 of 22 | Query complete 00:00:00.162

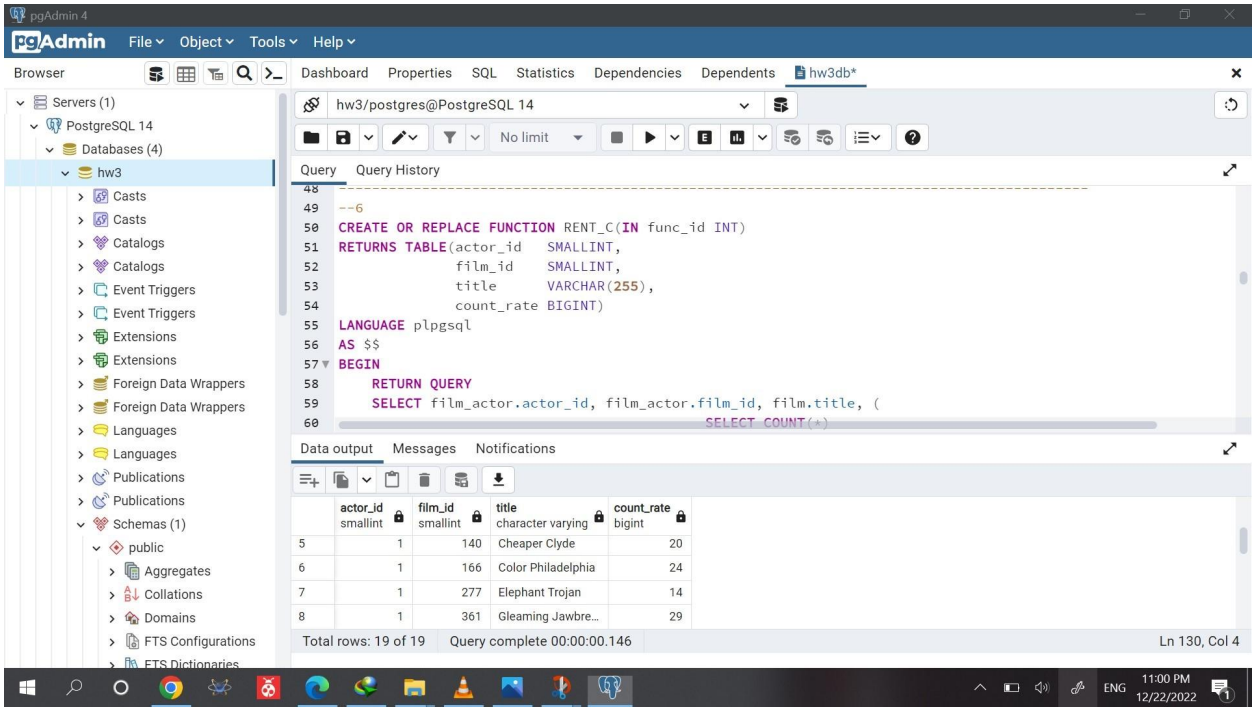
```
55  --5.b
56  BEGIN TRANSACTION;
57
58  UPDATE department
59  SET budget = budget + (SELECT budget/10 FROM department WHERE dept_name = 'medical')
60  WHERE dept_name = 'dental';
61
62  UPDATE department
63  SET budget = budget - (SELECT budget/10 FROM department WHERE dept_name = 'medical')
64  WHERE dept_name = 'medical';
65
66  COMMIT TRANSACTION;
67
68
69
70
71
72
73
74
75
```

Data Output | Messages | Notifications

	dept_name [PK] character varying (20)	building character varying (15)	budget numeric (12,2)
9	Comp. Sci.	Lamberton	106378.69
10	Languages	Linderman	601283.60
11	Finance	Candlestick	866831.75
12	Geology	Palmer	406557.93
13	Cybernetics	Mercer	794541.46
14	Astronomy	Taylor	617253.94
15	Athletics	Bronfman	734550.70
16	Statistics	Taylor	395051.74
17	Psychology	Thompson	848175.04
18	Math	Brodhead	777605.11
19	Elec. Eng.	Main	276527.61
20	Mech. Eng.	Rauch	520350.65
21	dental	Pasteur	870000.00
22	medical	Pasteur	630000.00

Total rows: 22 of 22 | Query complete 00:00:00.103

Q6


pgAdmin 4
File
Object
Tools
Help
Browser
Dashboard
Properties
SQL
Statistics
Dependencies
Dependents
hw3db*
Servers (1)
PostgreSQL 14
Databases (4)
hw3
Casts
Casts
Catalogs
Catalogs
Event Triggers
Event Triggers
Extensions
Extensions
Foreign Data Wrappers
Foreign Data Wrappers
Languages
Languages
Publications
Publications
Schemas (1)
public
Aggregates
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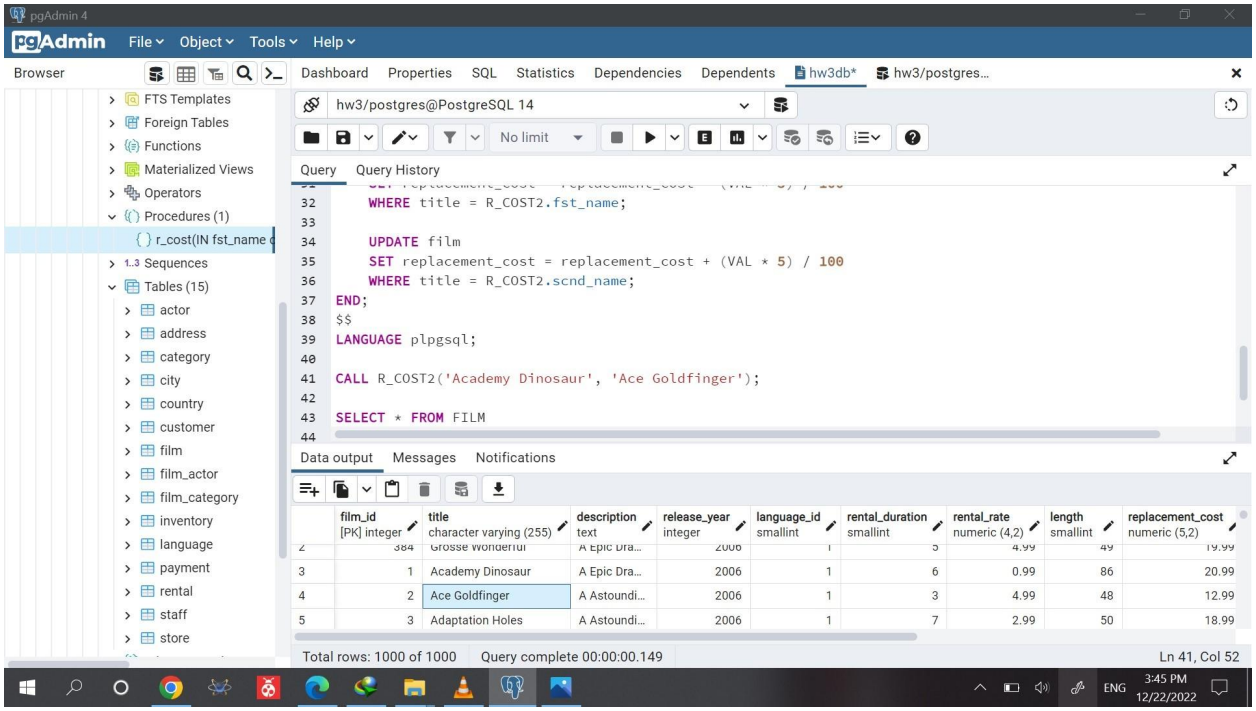
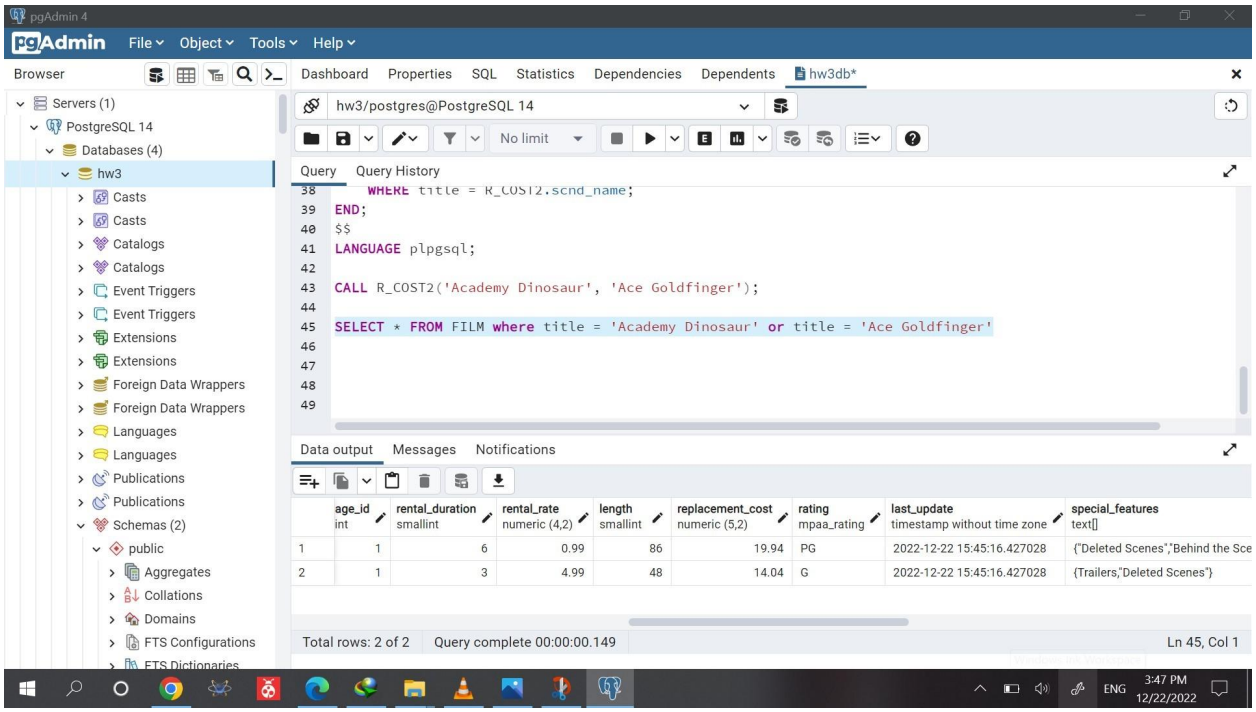
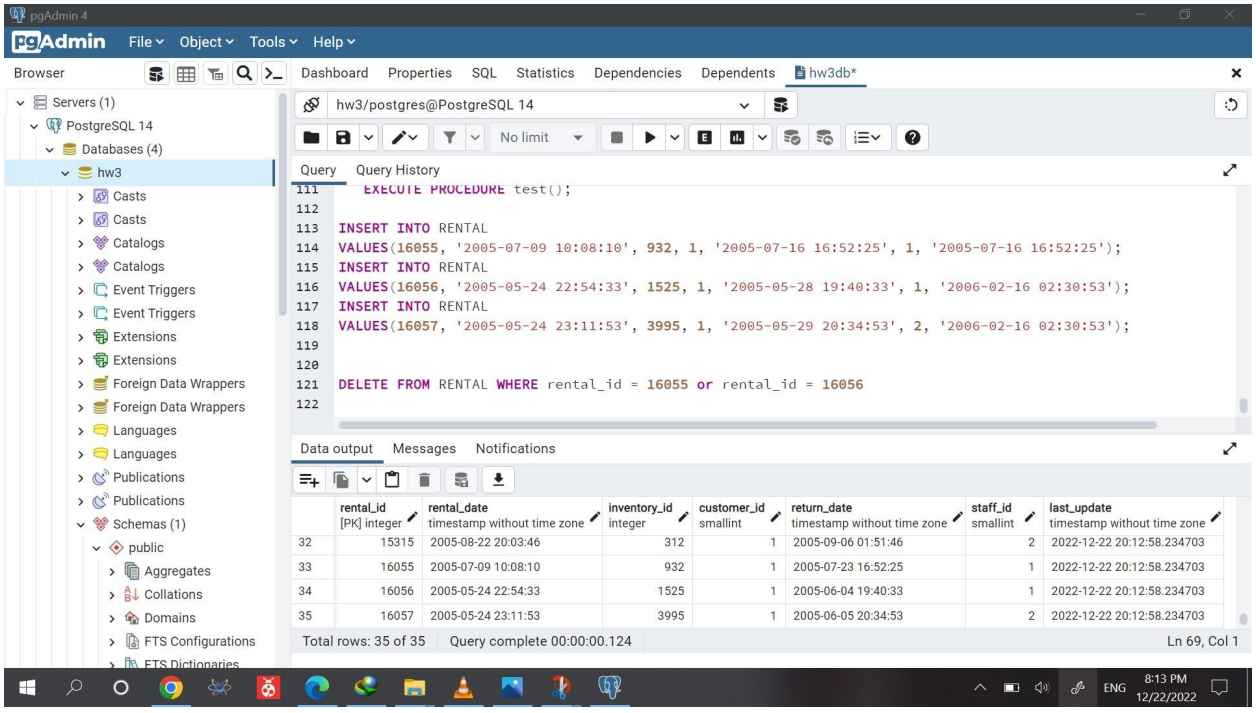
Domains
FTS Configurations
hw3/postgres@PostgreSQL 14
No limit
Query
Query History
--6
CREATE OR REPLACE FUNCTION RENT_C(IN func_id INT)
RETURNS TABLE(actor_id SMALLINT,
film_id SMALLINT,
title VARCHAR(255),
count_rate BIGINT)
LANGUAGE plpgsql
AS $$
BEGIN
RETURN QUERY
SELECT film_actor.actor_id, film_actor.film_id, film.title, (
SELECT COUNT(*)
Data output
Messages
Notifications
actor_id smallint
film_id smallint
title character varying
count_rate bigint
5 1 140 Cheaper Clyde 20
6 1 166 Color Philadelphia 24
7 1 277 Elephant Trojan 14
8 1 361 Gleaming Jawbre... 29
Total rows: 19 of 19
Query complete 00:00:00.146
Ln 130, Col 4
ENG
11:00 PM
12/22/2022

Q7


pgAdmin 4
File Object Tools Help
Browser
Dashboard Properties SQL Statistics Dependencies Dependents hw3db* hw3/postgres...
hw3/postgres@PostgreSQL 14
No limit
Query Query History
WHERE title = R_COST2.fst_name;
UPDATE film
SET replacement_cost = replacement_cost + (VAL * 5) / 100
WHERE title = R_COST2.scnd_name;
END;
$$
LANGUAGE plpgsql;
CALL R_COST2('Academy Dinosaur', 'Ace Goldfinger');
SELECT * FROM FILM
Data output Messages Notifications
film_id [PK] integer
title character varying (255)
description text
release_year integer
language_id smallint
rental_duration smallint
rental_rate numeric (4,2)
length smallint
replacement_cost numeric (5,2)
3 1 Academy Dinosaur A Epic Dra... 2006 1 6 0.99 86 20.99
4 2 Ace Goldfinger A Astoundi... 2006 1 3 4.99 48 12.99
5 3 Adaptation Holes A Astoundi... 2006 1 7 2.99 50 18.99
Total rows: 1000 of 1000
Query complete 00:00:00.149
Ln 41, Col 52
ENG 3:45 PM 12/22/2022


pgAdmin 4
File Object Tools Help
Browser
Dashboard Properties SQL Statistics Dependencies Dependents hw3db*
hw3/postgres@PostgreSQL 14
No limit
Query Query History
WHERE title = R_COST2.scnd_name;
END;
$$
LANGUAGE plpgsql;
CALL R_COST2('Academy Dinosaur', 'Ace Goldfinger');
SELECT * FROM FILM where title = 'Academy Dinosaur' or title = 'Ace Goldfinger'
Data output Messages Notifications
age_id int
rental_duration smallint
rental_rate numeric (4,2)
length smallint
replacement_cost numeric (5,2)
rating mpaa_rating
last_update timestamp without time zone
special_features text[]
1 1 6 0.99 86 19.94 PG 2022-12-22 15:45:16.427028 {"Deleted Scenes","Behind the Sce
2 1 3 4.99 48 14.04 G 2022-12-22 15:45:16.427028 {Trailers,"Deleted Scenes"}
Total rows: 2 of 2
Query complete 00:00:00.149
Ln 45, Col 1
ENG 3:47 PM 12/22/2022

Q8


pgAdmin 4
File
Object
Tools
Help
Browser
Dashboard
Properties
SQL
Statistics
Dependencies
Dependents
hw3db*
Servers (1)
PostgreSQL 14
Databases (4)
hw3
Casts
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Foreign Data Wrappers
Languages
Publications
Schemas (1)
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Aggregates
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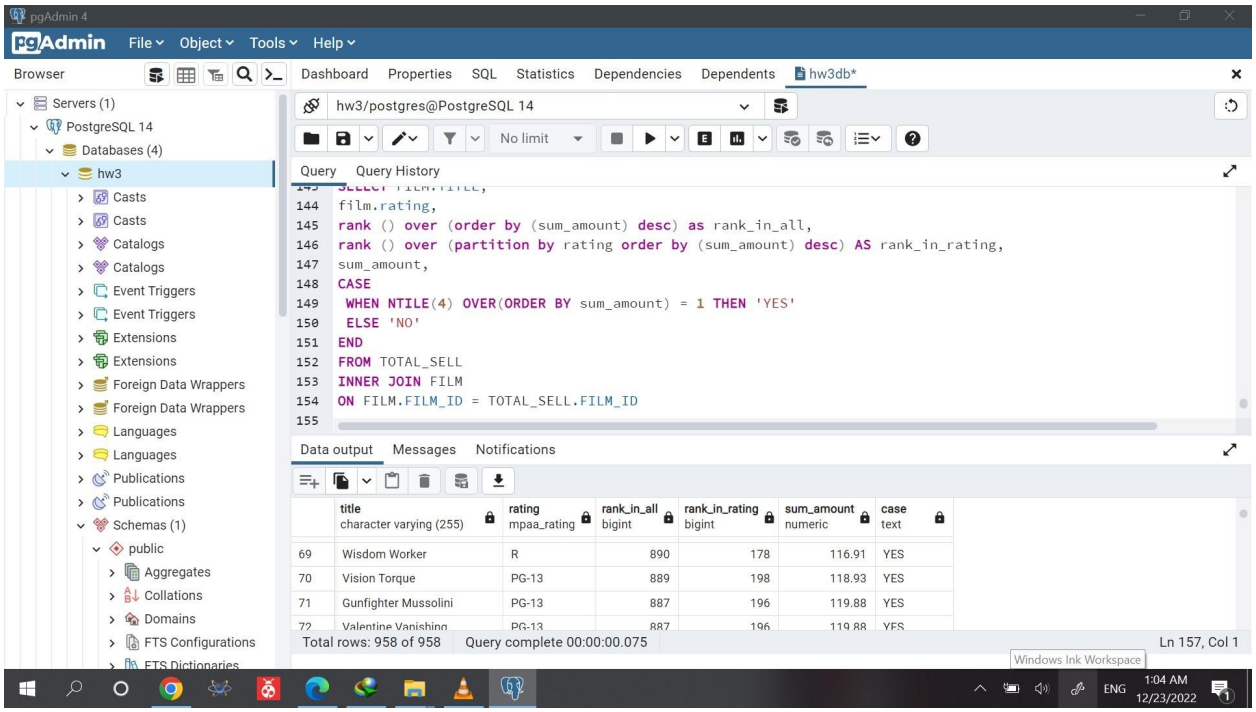
FTS Configurations
hw3/postgres@PostgreSQL 14
No limit
Query
Query History
EXECUTE PROCEDURE test();
INSERT INTO RENTAL
VALUES(16055, '2005-07-09 10:08:10', 932, 1, '2005-07-16 16:52:25', 1, '2005-07-16 16:52:25');
INSERT INTO RENTAL
VALUES(16056, '2005-05-24 22:54:33', 1525, 1, '2005-05-28 19:40:33', 1, '2006-02-16 02:30:53');
INSERT INTO RENTAL
VALUES(16057, '2005-05-24 23:11:53', 3995, 1, '2005-05-29 20:34:53', 2, '2006-02-16 02:30:53');
DELETE FROM RENTAL WHERE rental_id = 16055 or rental_id = 16056
Data output
Messages
Notifications
rental_id [PK] integer
rental_date timestamp without time zone
inventory_id integer
customer_id smallint
return_date timestamp without time zone
staff_id smallint
last_update timestamp without time zone
32 15315 2005-08-22 20:03:46 312 1 2005-09-06 01:51:46 2 2022-12-22 20:12:58.234703
33 16055 2005-07-09 10:08:10 932 1 2005-07-23 16:52:25 1 2022-12-22 20:12:58.234703
34 16056 2005-05-24 22:54:33 1525 1 2005-06-04 19:40:33 1 2022-12-22 20:12:58.234703
35 16057 2005-05-24 23:11:53 3995 1 2005-06-05 20:34:53 2 2022-12-22 20:12:58.234703
Total rows: 35 of 35
Query complete 00:00:00.124
Ln 69, Col 1
ENG
8:13 PM
12/22/2022

Q9


pgAdmin 4
File
Object
Tools
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Dependents
hw3db*
Servers (1)
PostgreSQL 14
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hw3
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Event Triggers
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Extensions
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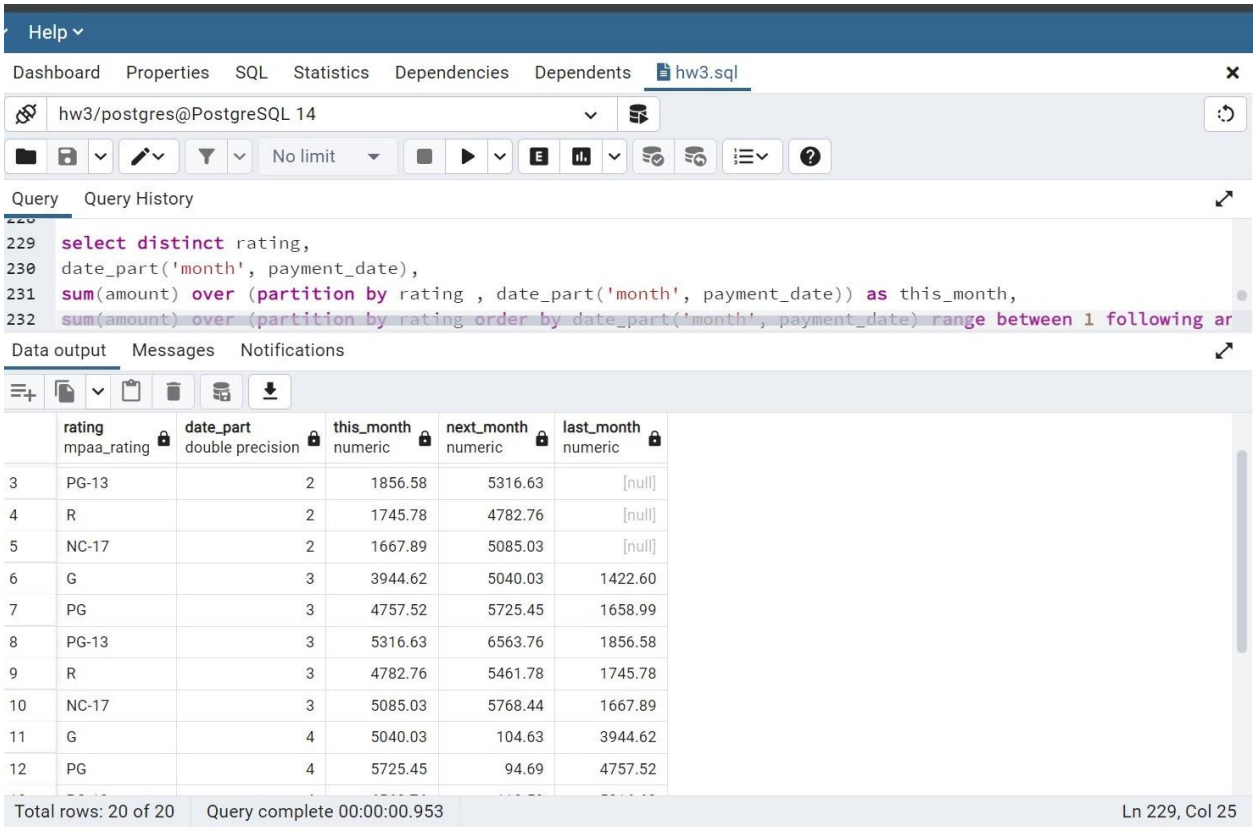
hw3/postgres@PostgreSQL 14
No limit
Query
Query History
film.rating,
rank () over (order by (sum_amount) desc) as rank_in_all,
rank () over (partition by rating order by (sum_amount) desc) AS rank_in_rating,
sum_amount,
CASE
WHEN NTILE(4) OVER(ORDER BY sum_amount) = 1 THEN 'YES'
ELSE 'NO'
END
FROM TOTAL_SELL
INNER JOIN FILM
ON FILM.FILM_ID = TOTAL_SELL.FILM_ID
Data output
Messages
Notifications
title character varying (255)
rating mpaa_rating
rank_in_all bigint
rank_in_rating bigint
sum_amount numeric
case text
69 Wisdom Worker R 890 178 116.91 YES
70 Vision Torque PG-13 889 198 118.93 YES
71 Gunfighter Mussolini PG-13 887 196 119.88 YES
Total rows: 958 of 958
Query complete 00:00:00.075
Ln 157, Col 1
Windows Ink Workspace
ENG
1:04 AM
12/23/2022

Q10



Help

Dashboard | Properties | SQL | Statistics | Dependencies | Dependents | hw3.sql

hw3/postgres@PostgreSQL 14

No limit

Query | Query History

```
229 select distinct rating,
230 date_part('month', payment_date),
231 sum(amount) over (partition by rating , date_part('month', payment_date)) as this_month,
232 sum(amount) over (partition by rating order by date_part('month', payment_date) range between 1 following ar
```

Data output | Messages | Notifications

	rating mpaa_rating	date_part double precision	this_month numeric	next_month numeric	last_month numeric
3	PG-13	2	1856.58	5316.63	[null]
4	R	2	1745.78	4782.76	[null]
5	NC-17	2	1667.89	5085.03	[null]
6	G	3	3944.62	5040.03	1422.60
7	PG	3	4757.52	5725.45	1658.99
8	PG-13	3	5316.63	6563.76	1856.58
9	R	3	4782.76	5461.78	1745.78
10	NC-17	3	5085.03	5768.44	1667.89
11	G	4	5040.03	104.63	3944.62
12	PG	4	5725.45	94.69	4757.52

Total rows: 20 of 20 | Query complete 00:00:00.953 | Ln 229, Col 25