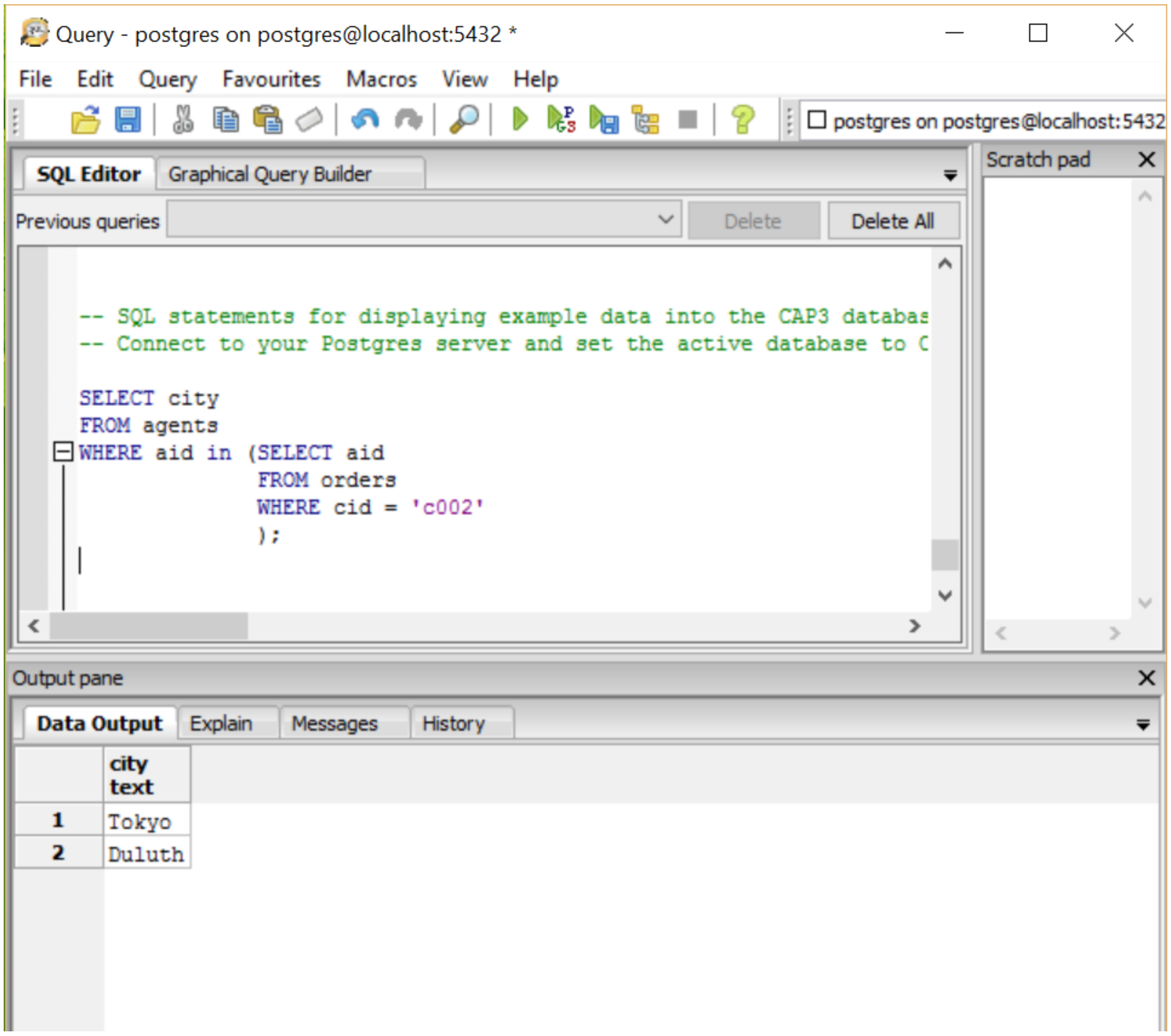
1. Get the cities of agents booking an order for a customer whose cid is 'c002'.

```
SELECT city
FROM agents
WHERE aid in (SELECT aid
          FROM orders
          WHERE cid = 'c002'
          );
```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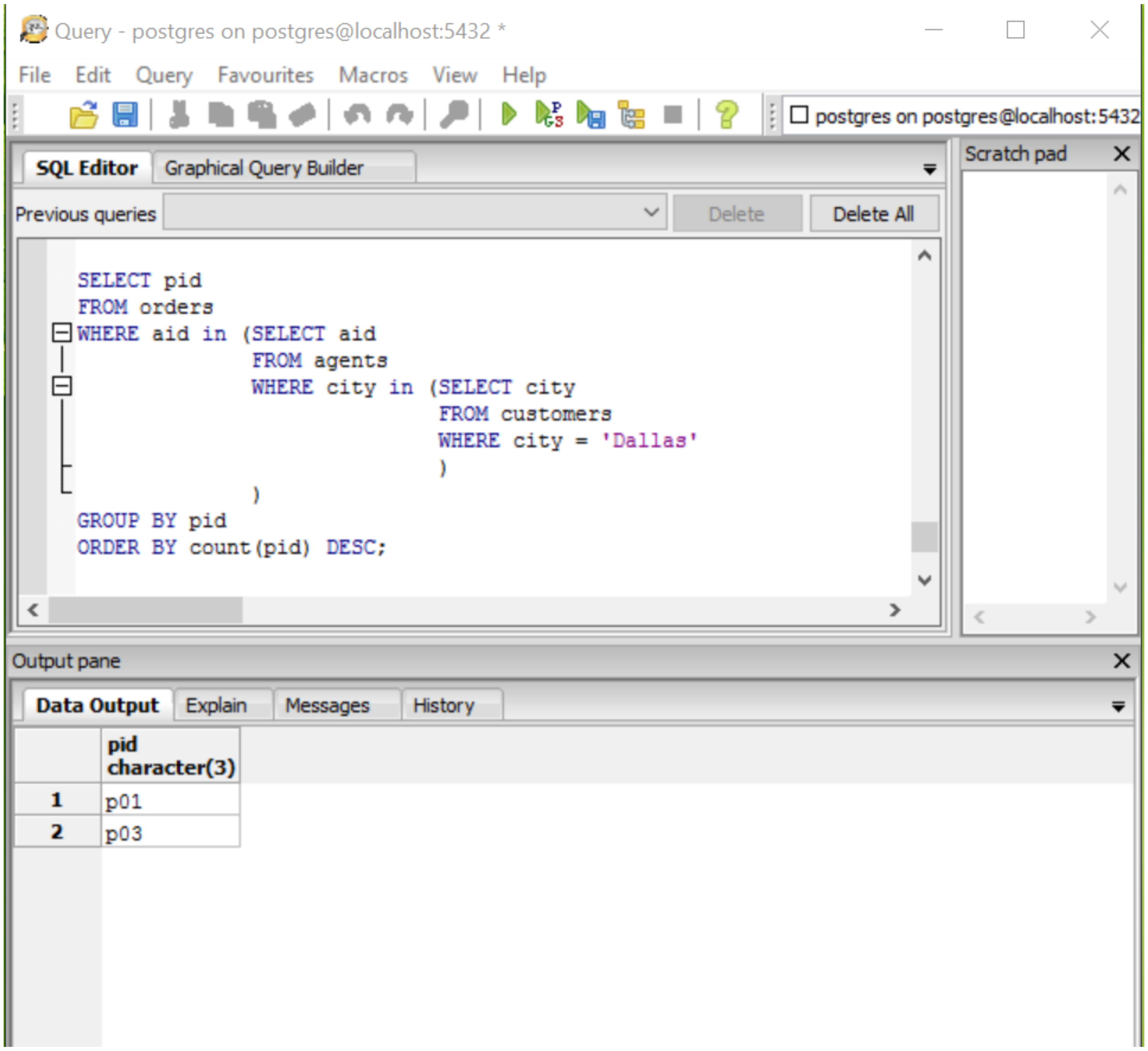
```
-- SQL statements for displaying example data into the CAP3 databas
-- Connect to your Postgres server and set the active database to C

SELECT city
FROM agents
WHERE aid in (SELECT aid
              FROM orders
              WHERE cid = 'c002'
              );
```

	city text
1	Tokyo
2	Duluth

2. Get the ids of products ordered through any agent who takes at least one order from a customer in Dallas, sorted by pid from highest to lowest. (This is not the same as asking for ids of products ordered by customers in Dallas.)

```
SELECT pid
FROM orders
WHERE aid in (SELECT aid
        FROM agents
        WHERE city in (SELECT city
                FROM customers
                WHERE city = 'Dallas'
                )
        )
GROUP BY pid
ORDER BY count(pid) DESC;
```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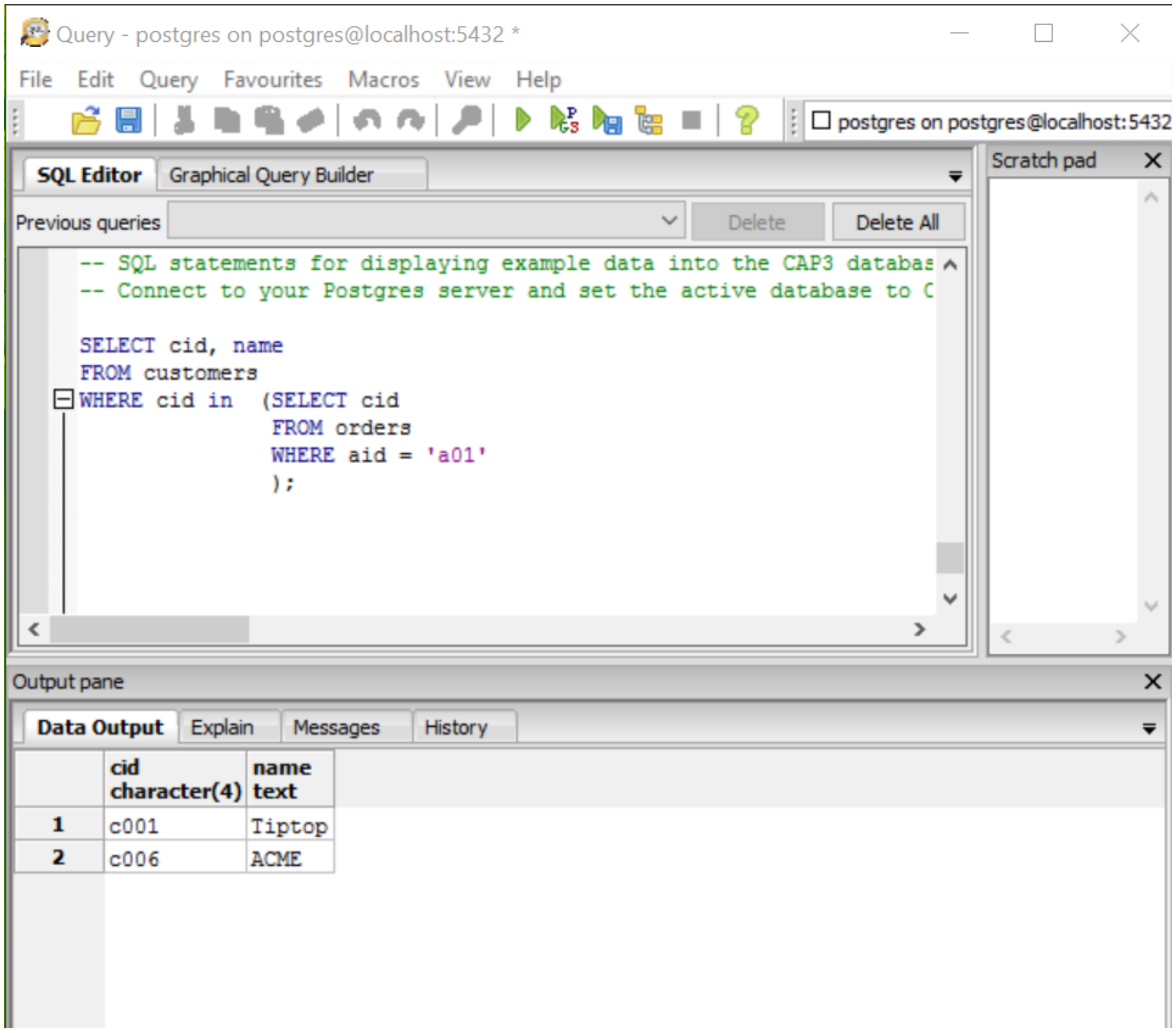
```
SELECT pid
FROM orders
WHERE aid in (SELECT aid
              FROM agents
              WHERE city in (SELECT city
                             FROM customers
                             WHERE city = 'Dallas'
                             )
              )
GROUP BY pid
ORDER BY count(pid) DESC;
```

	pid character(3)
1	p01
2	p03

3. Get the ids and names of customers who did not place an order through agent a01.

```
SELECT cid, name
FROM customers
WHERE cid in  (SELECT cid
            FROM orders
            WHERE aid = 'a01'
            );
```



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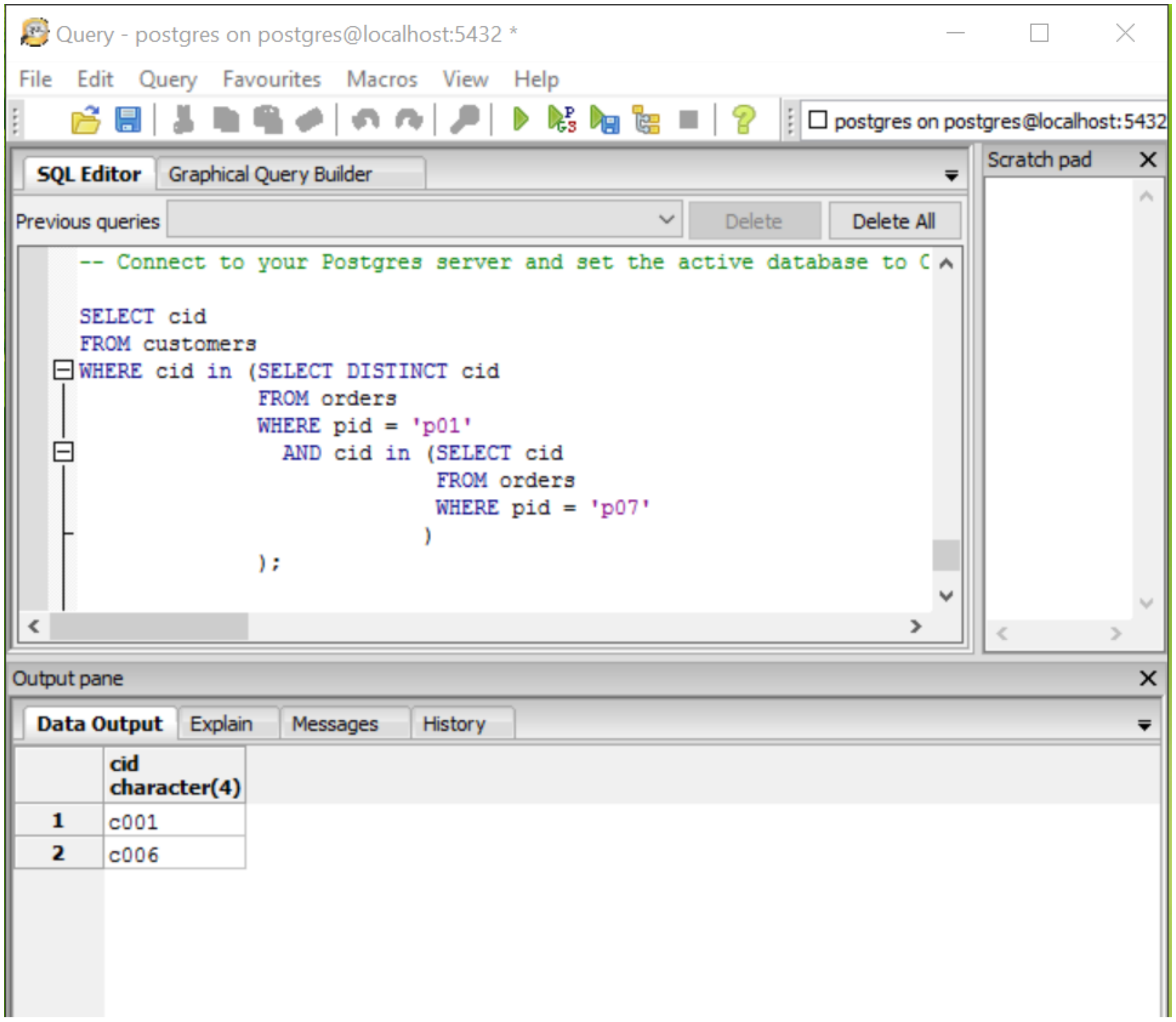
```
-- SQL statements for displaying example data into the CAP3 databas
-- Connect to your Postgres server and set the active database to C

SELECT cid, name
FROM customers
WHERE cid in  (SELECT cid
               FROM orders
               WHERE aid = 'a01'
               );
```

	cid character(4)	name text
1	c001	Tiptop
2	c006	ACME

4. Get the ids of customers who ordered both product p01 and p07.

```
SELECT cid
FROM customers
WHERE cid in (SELECT DISTINCT cid
        FROM orders
        WHERE pid = 'p01'
         AND cid in (SELECT cid
                FROM orders
                WHERE pid = 'p07'
               )
        );
```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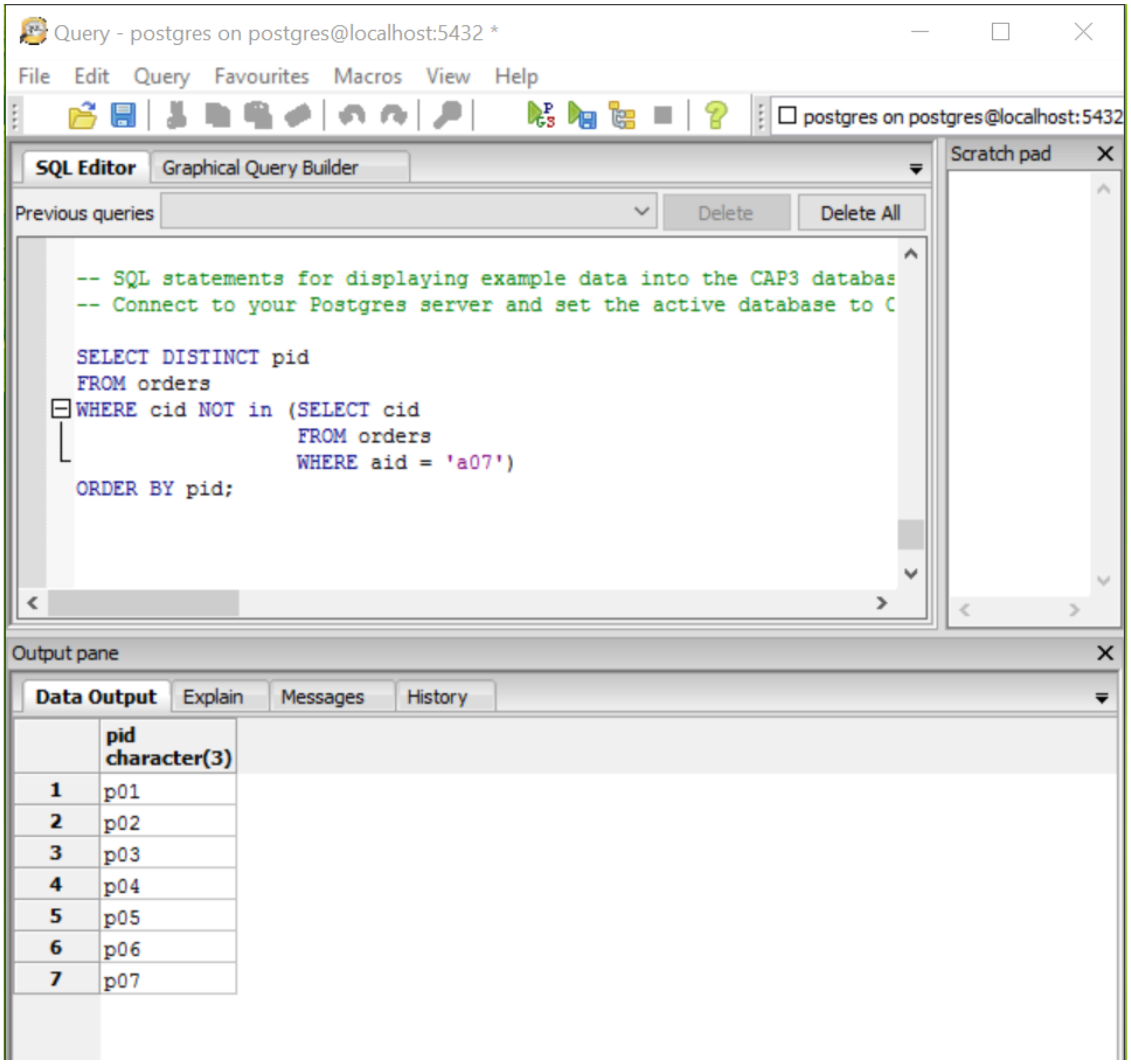
```
-- Connect to your Postgres server and set the active database to C

SELECT cid
FROM customers
WHERE cid in (SELECT DISTINCT cid
              FROM orders
              WHERE pid = 'p01'
                AND cid in (SELECT cid
                            FROM orders
                            WHERE pid = 'p07'
                           )
              );
```

	cid character(4)
1	c001
2	c006

5. Get the ids of products not ordered by any customers who placed any order through agent a07 in pid order from highest to lowest.

```
SELECT DISTINCT pid
FROM orders
WHERE cid NOT in (SELECT cid
            FROM orders
            WHERE aid = 'a07')
ORDER BY pid;
```



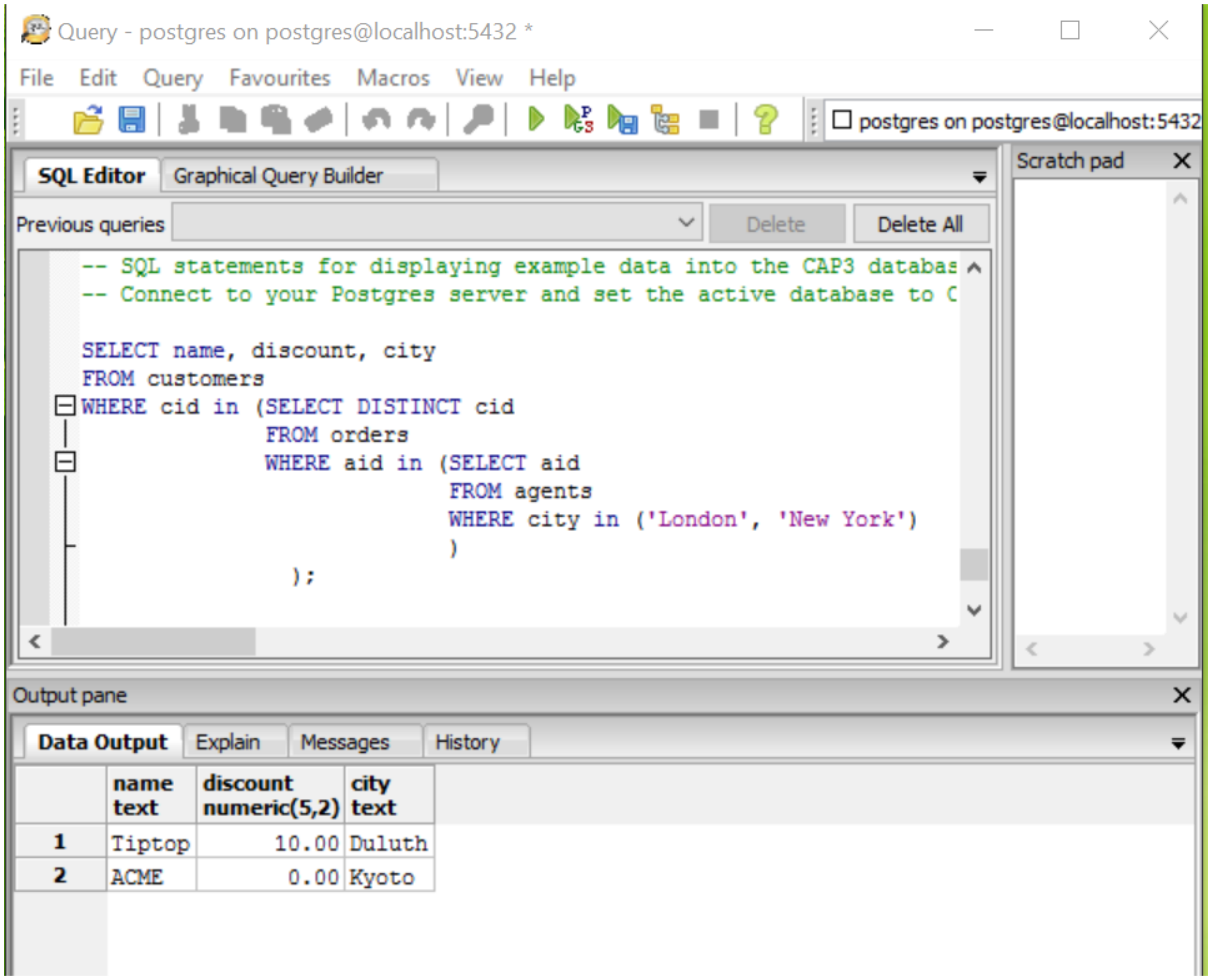
```
-- SQL statements for displaying example data into the CAP3 databas
-- Connect to your Postgres server and set the active database to C

SELECT DISTINCT pid
FROM orders
WHERE cid NOT in (SELECT cid
                  FROM orders
                  WHERE aid = 'a07')
ORDER BY pid;
```

	pid character(3)
1	p01
2	p02
3	p03
4	p04
5	p05
6	p06
7	p07

6. Get the name, discounts, and city for all customers who place orders through agents in London or New York.

```
SELECT name, discount, city
FROM customers
WHERE cid in (SELECT DISTINCT cid
          FROM orders
          WHERE aid in (SELECT aid
                    FROM agents
                    WHERE city in ('London', 'New York')
                    )
           );
```



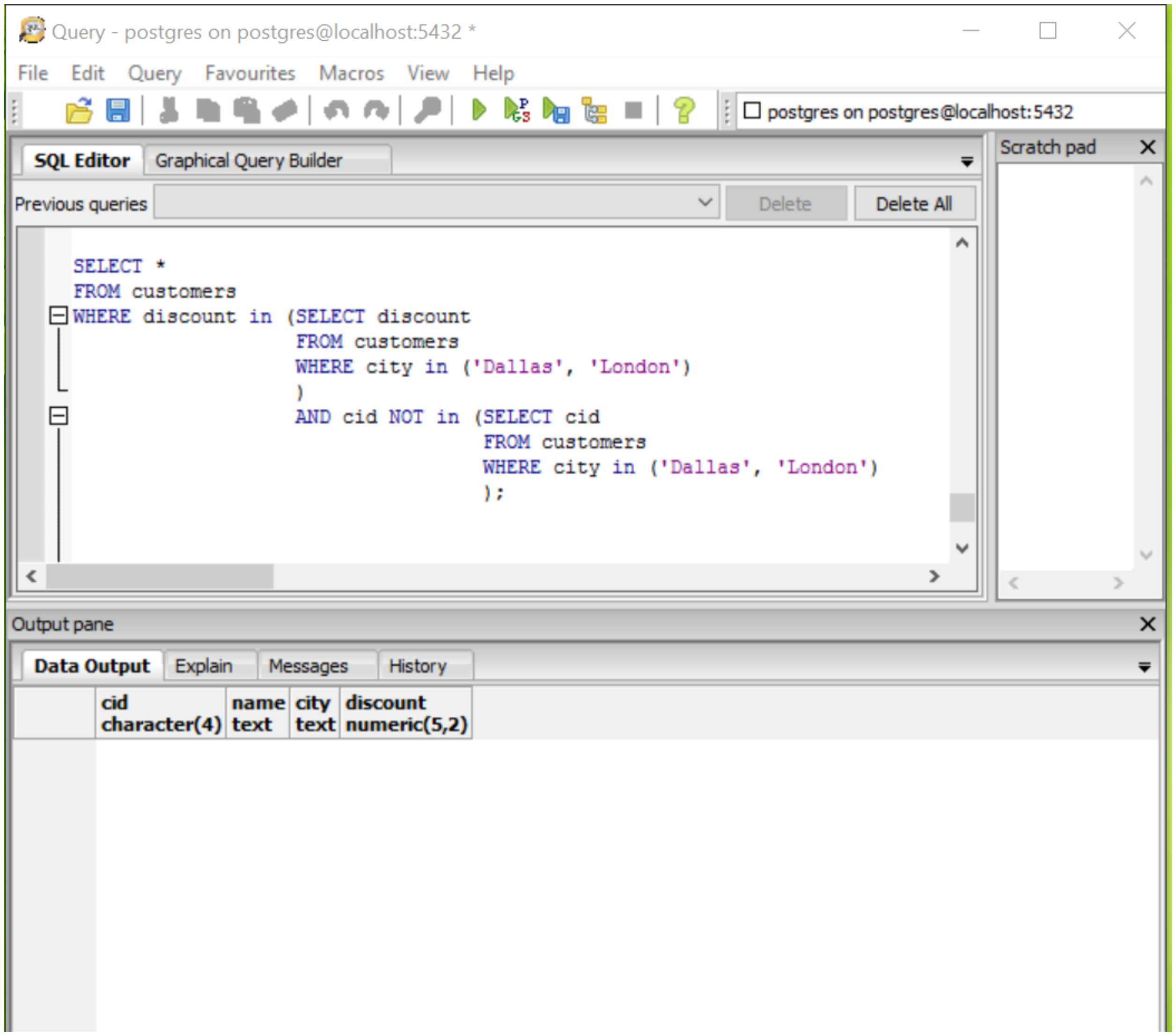
```
-- SQL statements for displaying example data into the CAP3 databas
-- Connect to your Postgres server and set the active database to C

SELECT name, discount, city
FROM customers
WHERE cid in (SELECT DISTINCT cid
              FROM orders
              WHERE aid in (SELECT aid
                            FROM agents
                            WHERE city in ('London', 'New York')
                            )
                  );
```

	name text	discount numeric(5,2)	city text
1	Tiptop	10.00	Duluth
2	ACME	0.00	Kyoto

7. Get all customers who have the same discount as that of any customers in Dallas or London

```
SELECT *
FROM customers
WHERE discount in (SELECT discount
            FROM customers
            WHERE city in ('Dallas', 'London')
            )
            AND cid NOT in (SELECT cid
                  FROM customers
                  WHERE city in ('Dallas', 'London')
                  );
```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```
SELECT *
FROM customers
WHERE discount in (SELECT discount
                   FROM customers
                   WHERE city in ('Dallas', 'London')
                   )
                   AND cid NOT in (SELECT cid
                                   FROM customers
                                   WHERE city in ('Dallas', 'London')
                                   );
```

```
cid           name  city  discount
character(4)  text  text  numeric(5,2)
```

8. Tell me about check constraints: What are they? What are they good for? What’s the advantage of putting that sort of thing inside the database? Make up some examples of good uses of check constraints and some examples of bad uses of check constraints. Explain the differences in your examples and argue your case.

Check constraints are the limitations that validate the kind of data is being entered into a record. Check constraints can be anything that identify acceptable data into a column of a database. For example, there can be a check constraint on days of a week that ranges from 1 till 7. This way, the data will be consistent and the probability of making a mistake decreases. On the other hand, a constraint for address check (in a registration database, for instance), where State has to have two characters might not be a good constraint. People who come from other countries would not be able to provide state names simply because not every country has states, and some countries have regions that are names that cannot be abbreviated into two characters. This constraint can be very frustrating and not allow an otherwise eligible person to register simply because of the constraint. Entering some two random characters will mislead people and make the data inaccurate. So, check constraints can be very powerful and make a database be more accurate and consistent, or, if used carelessly, bring a lot of trouble to the users of the database.