ICT Final project

Student name: Zhakupov Karim

Group : TS 1902

Topic: Smart House

1 TASK:

The theme of my project is "Smart Home".

I defined relationships in the smart home system database

Only 7 tables:

Specialist - User - Gadget - Usage Time (Hereinafter "time") - Access - Status - Smart Home Devices

(hereinafter “functions”).

The specialist owns information about users, their gadgets and the time they use the system’s devices.

One specialist has many users

One user has one gadget

One gadget gives only one type of access to the system

Access informs about status and

Also Access gives us access to devices

About the user I need to know the ID, name, phone number, gadget ID

About the gadget - the name of the gadget (the full brand of the phone) and its ID.

About usage time - the date and time of the last login to the system and its ID.

About the specialist - name, ID, user ID and time of his login.

About access - ID, access category and price.

About status - ID and "status name" (does the family member have access to the system)

About devices - ID and name of devices

2 TASK:

```
Create TABLE Specialist (
        S_id DECIMAL (24) NOT NULL,
        S_name VARCHAR (255) NOT NULL,
        User_name VARCHAR (255),
```

User_id INT NOT NULL,

Date_id INT NOT NULL,

Constraint pk_spes PRIMARY KEY (S_id),

CONSTRAINT fk_us FOREIGN KEY (User_id) REFERENCES Users(User_id),

CONSTRAINT fk_time FOREIGN KEY (Date_id) REFERENCES Date(Date_id)

ON DELETE CASCADE

ON UPDATE CASCADE

);

SELECT * FROM Specialist;

```
Create TABLE Specialist (
    S_id DECIMAL (24) NOT NULL,
    S_name VARCHAR (255) NOT NULL,
    User_name VARCHAR (255),
    User_id INT NOT NULL,
    Date_id INT NOT NULL,
    Constraint pk_spes PRIMARY KEY (S_id),
    CONSTRAINT fk_us FOREIGN KEY (User_id) REFERENCES Users(User_id),
    CONSTRAINT fk_time FOREIGN KEY (Date_id) REFERENCES Date(Date_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
    );
SELECT * FROM Specialist;
```

s_id [PK] numeric (24)	s_name character varying (255)	user_name character varying (255)

Data Output Explain Messages Notifications

CREATE TABLE Users(

User_id DECIMAL (24) NOT NULL ,

User_name VARCHAR (255) NOT NULL ,

User_phone INT NOT NULL ,

Gadget_name VARCHAR (255) ,

Gadget_id INT NOT NULL,

CONSTRAINT pk_us PRIMARY KEY (User_id) ,

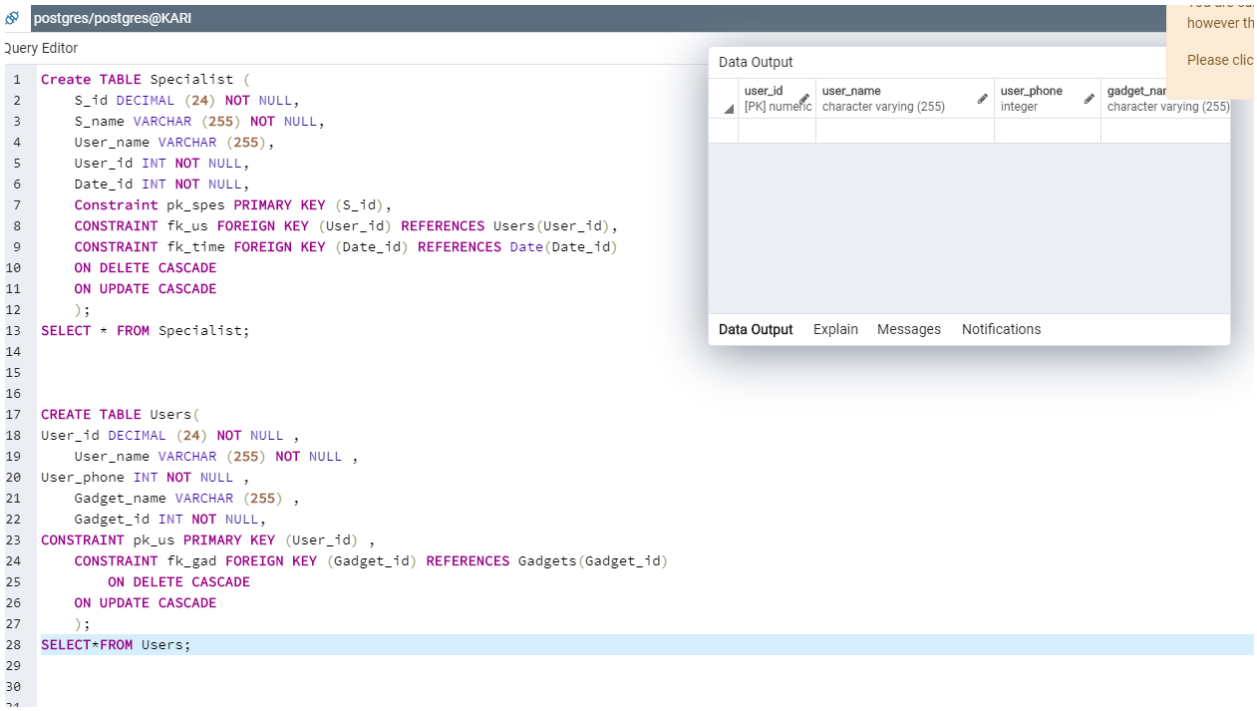
CONSTRAINT fk_gad FOREIGN KEY (Gadget_id) REFERENCES Gadgets(Gadget_id)

ON DELETE CASCADE

ON UPDATE CASCADE

);

SELECT*FROM Users;



Create TABLE Gadgets (

Gadget_id DECIMAL (24) NOT NULL,

Gadget_name VARCHAR (255) NOT NULL,

User_id INT NOT NULL,

Access_id INT NOT NULL,

CONSTRAINT pk_gad PRIMARY KEY (Gadget_id),

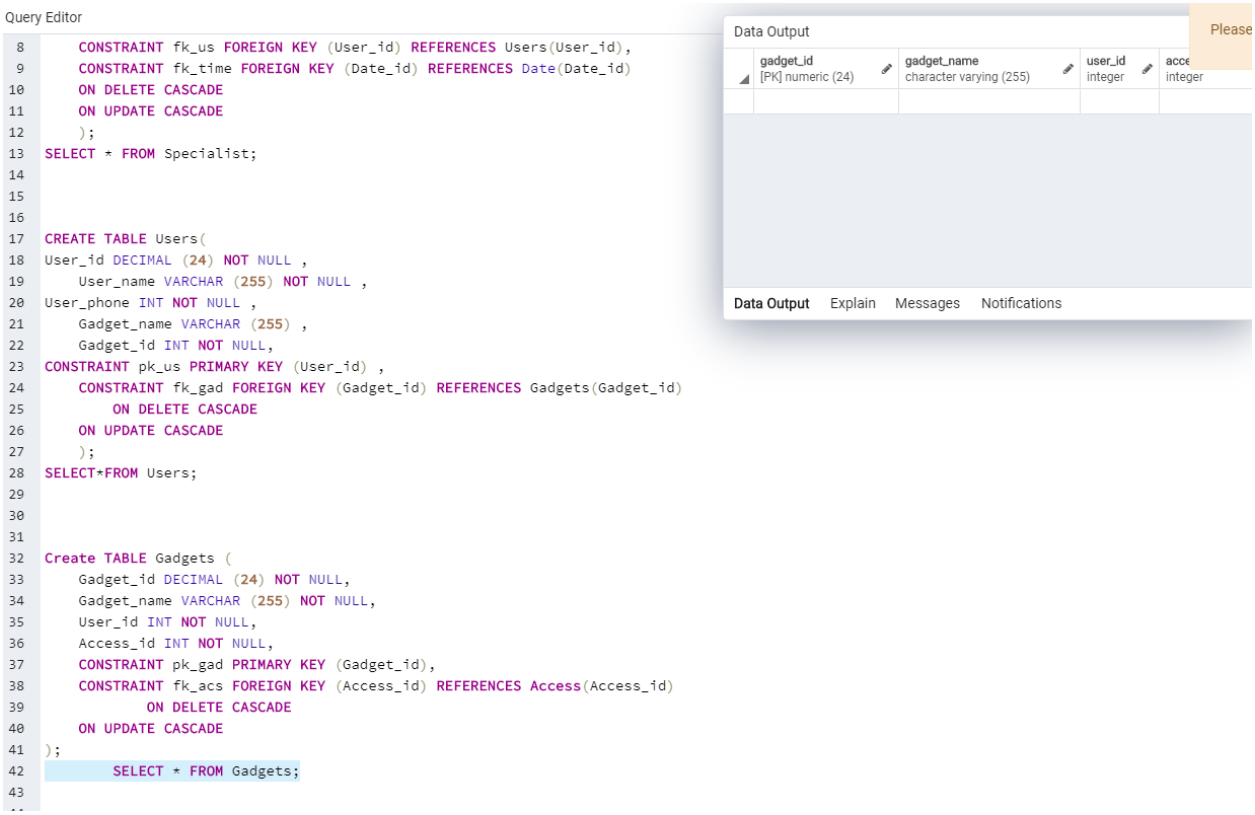
CONSTRAINT fk_acs FOREIGN KEY (Access_id) REFERENCES Access(Access_id)

ON DELETE CASCADE

ON UPDATE CASCADE

);

SELECT * FROM Gadgets;



CREATE TABLE Date (

User_id int not null,

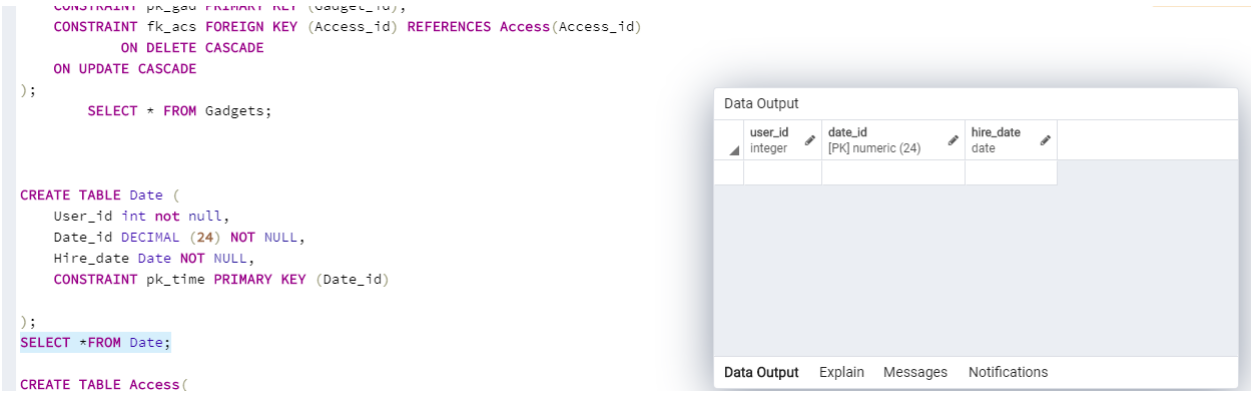
Date_id DECIMAL (24) NOT NULL,

Hire_date Date NOT NULL,

CONSTRAINT pk_time PRIMARY KEY (Date_id)

);

SELECT *FROM Date;



CREATE TABLE Access(

Access_id DECIMAL (24) NOT NULL,

A_category VARCHAR (255) NOT NULL,

A_price REAL NOT NULL,

Status_id INT NOT NULL,

D_id INT NOT NULL,

CONSTRAINT pk_acs PRIMARY KEY (Access_id),

CONSTRAINT fk_stt FOREIGN KEY (Status_id) REFERENCES Status(Status_id),

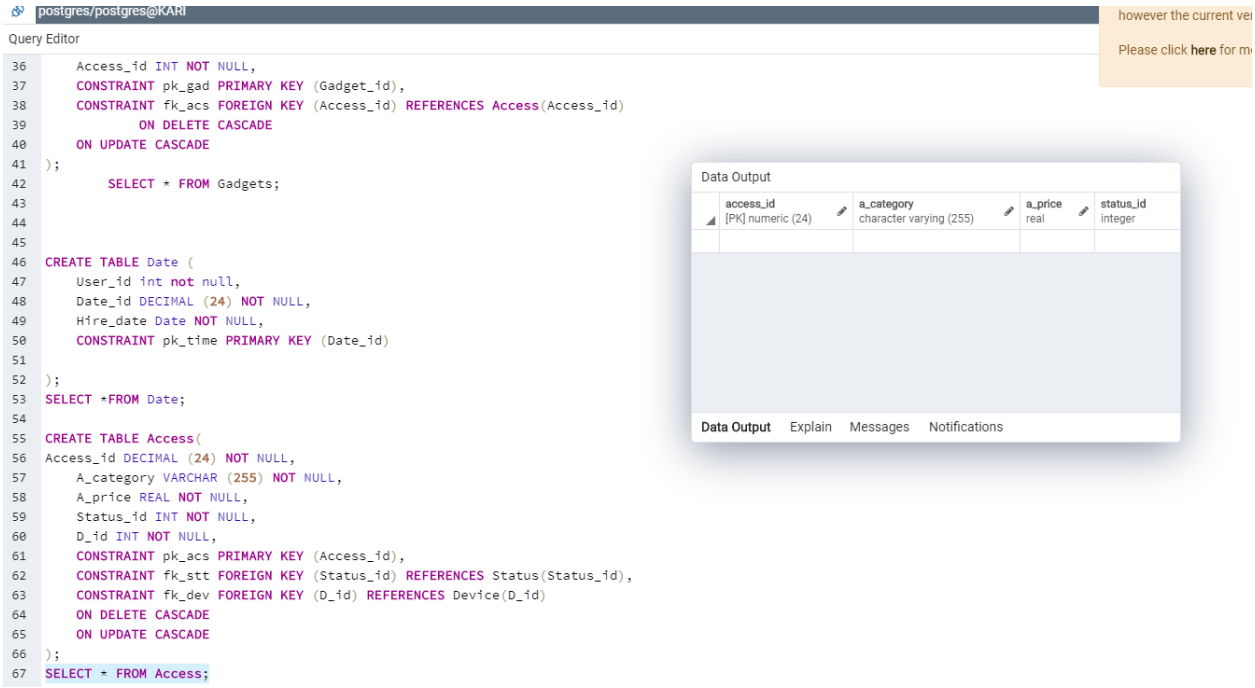
CONSTRAINT fk_dev FOREIGN KEY (D_id) REFERENCES Device(D_id)

ON DELETE CASCADE

ON UPDATE CASCADE

);

SELECT * FROM Access;



CREATE TABLE Status(

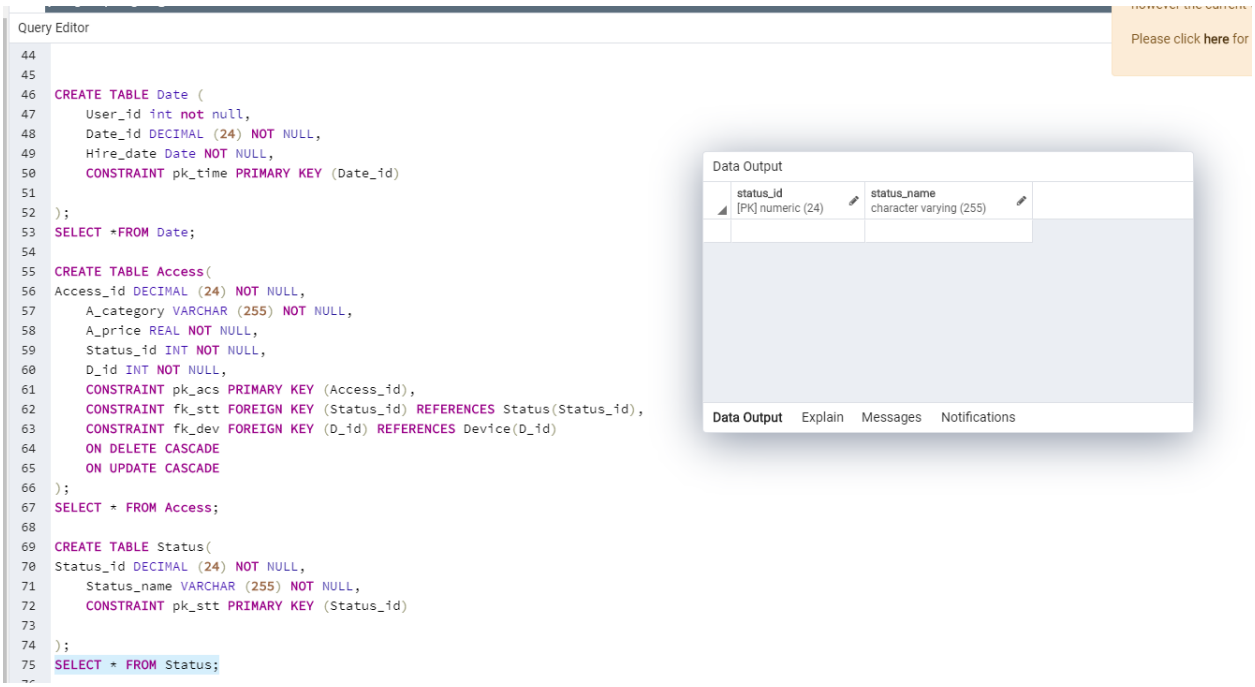
Status_id DECIMAL (24) NOT NULL,

Status_name VARCHAR (255) NOT NULL,

CONSTRAINT pk_stt PRIMARY KEY (Status_id)

);

SELECT * FROM Status;



CREATE TABLE Device(

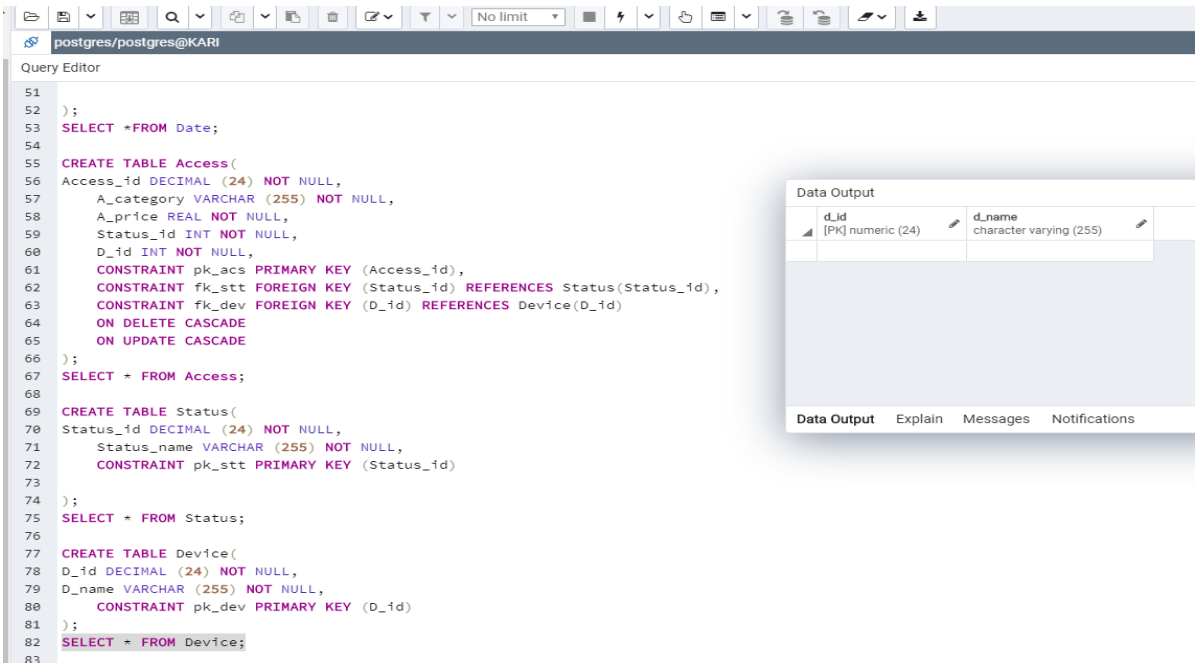
D_id DECIMAL (24) NOT NULL,

D_name VARCHAR (255) NOT NULL,

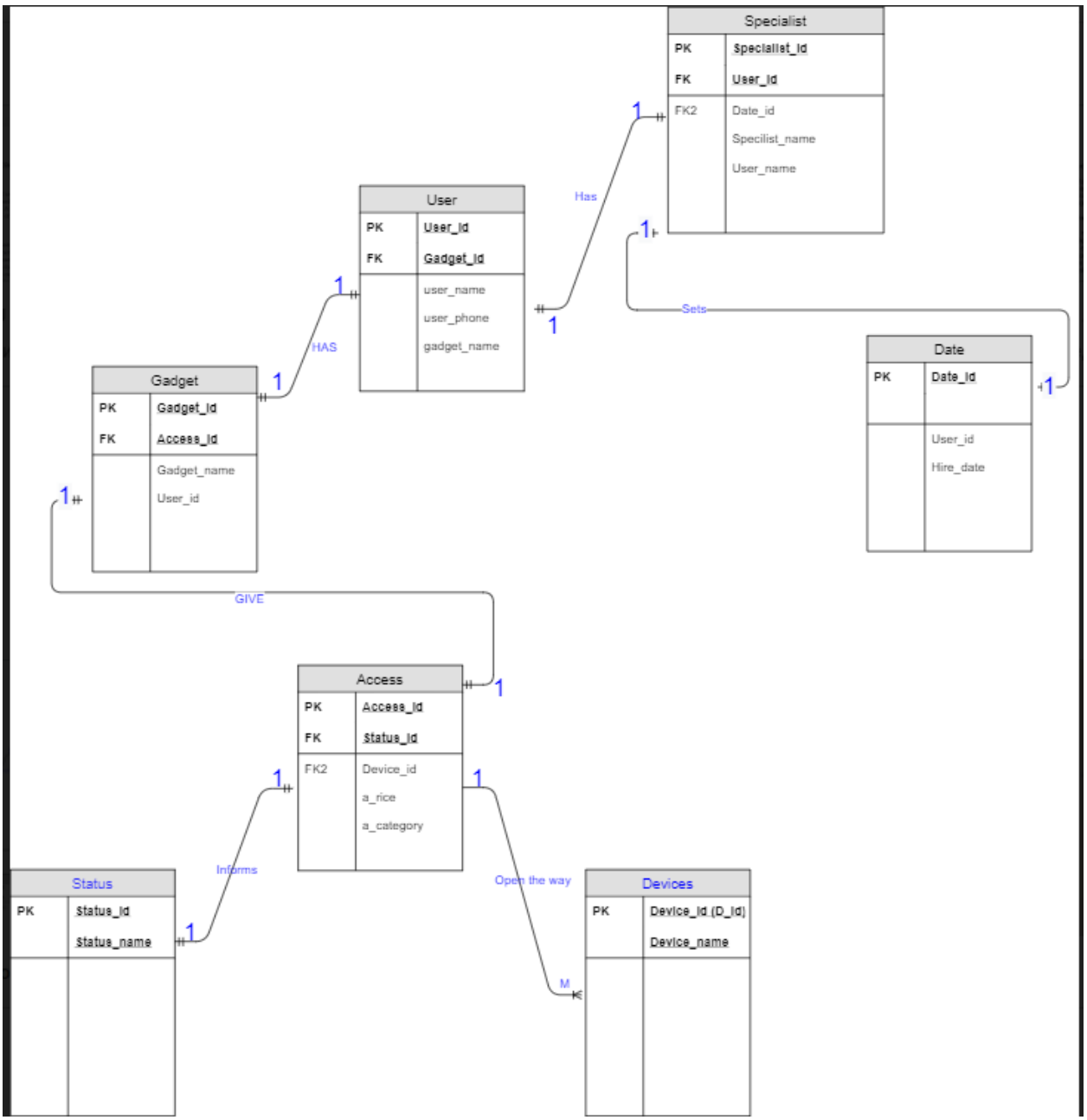
CONSTRAINT pk_dev PRIMARY KEY (D_id)

);

SELECT * FROM Device;



3 TASK:



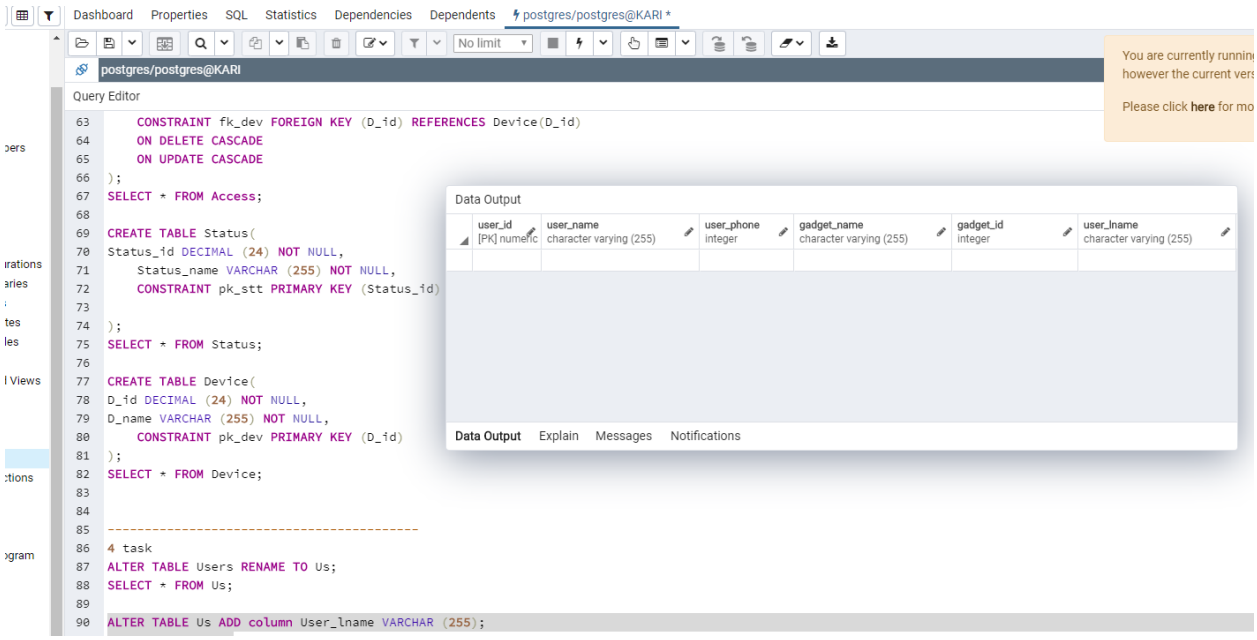
4 TASK:

ALTER TABLE Users RENAME TO Us;

SELECT * FROM Us;

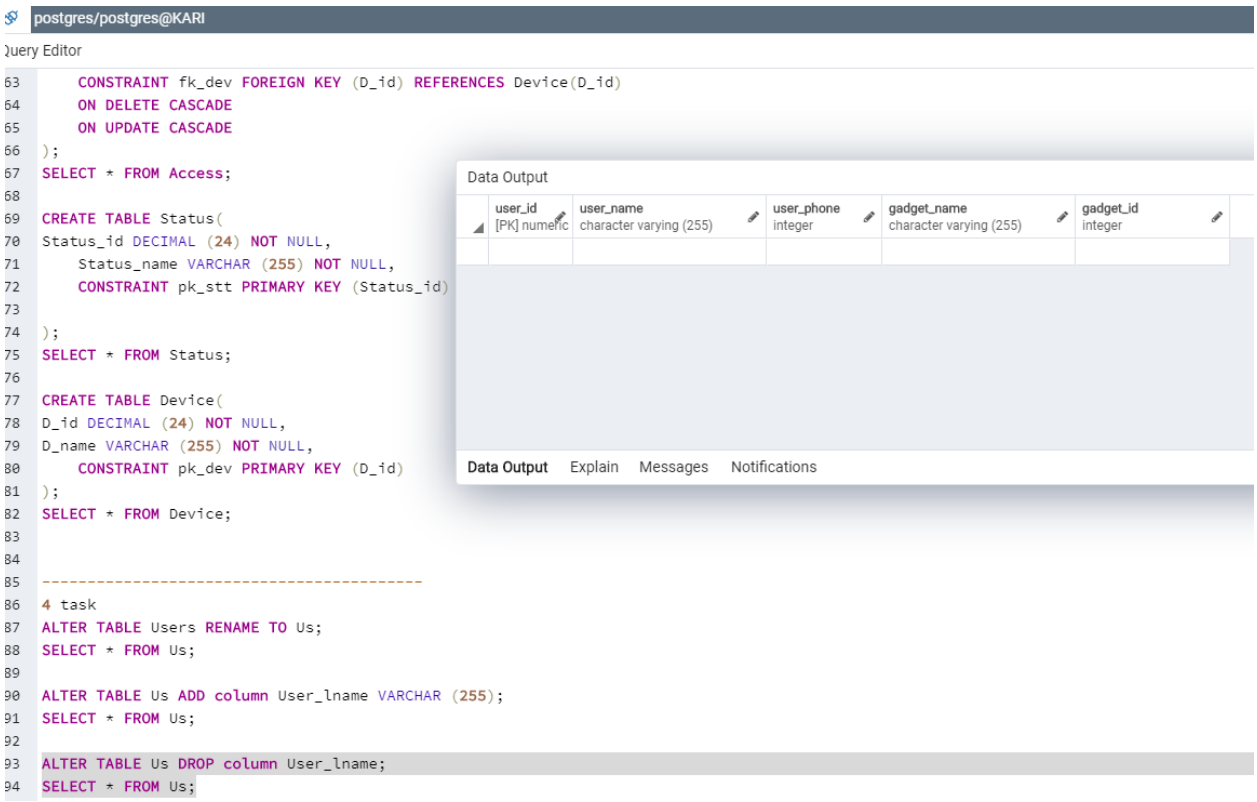
ALTER TABLE Us ADD column User_lname VARCHAR (255);

SELECT * FROM Us;



ALTER TABLE Us DROP column User_lname;

SELECT * FROM Us;



5 ***TASK:***

INSERT INTO Specialist VALUES(01,'Jarim25',101,81),

(02,'Karim',102,82),

(04,'Sarim',104,84),

(03,'Kerim',103,83);

*SELECT * FROM Specialist;*

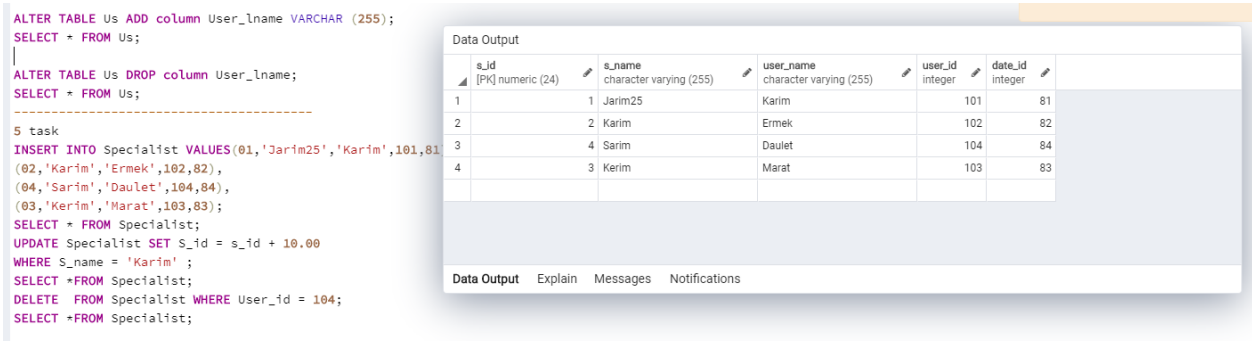
UPDATE Specialist SET S_id = s_id + 10.00

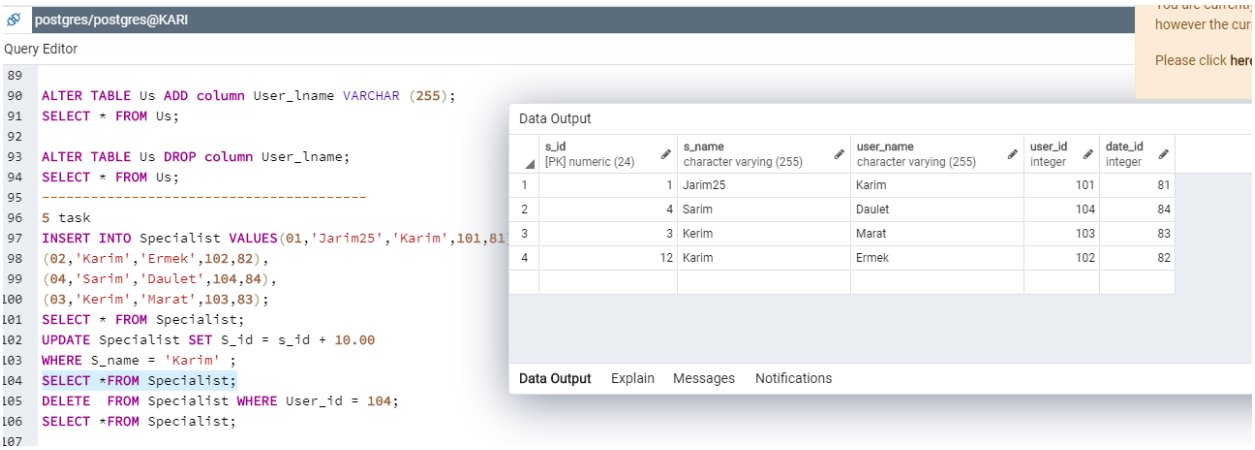
WHERE S_name = 'Karim' ;

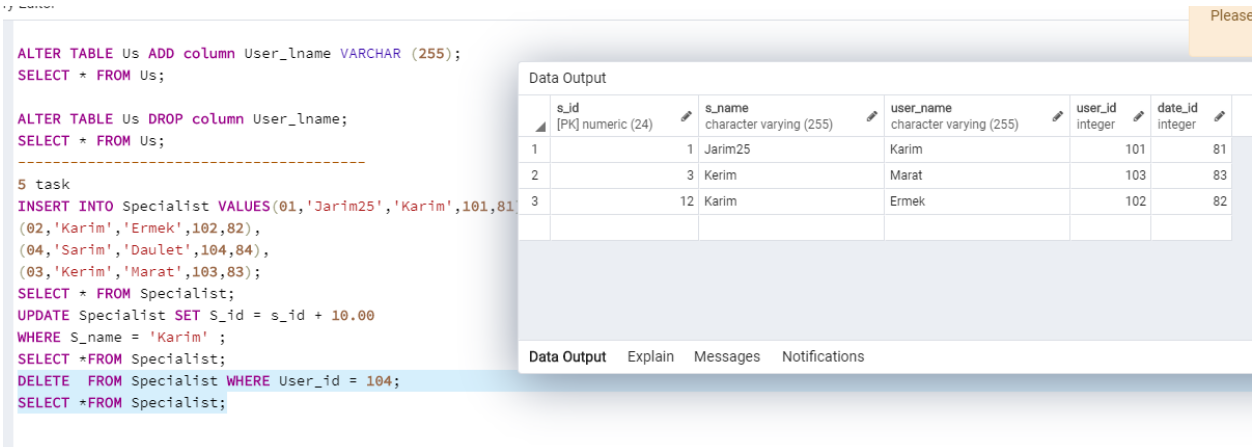
*SELECT *FROM Specialist;*

DELETE FROM Specialist WHERE User_id = 104;

*SELECT *FROM Specialist;*







INSERT INTO Us VALUES(101,'Karim',111111,201),

(102,'Ermek',555555,202),

(104,'Daulet',444444,204),

(103,'Marat',666666,203);

SELECT * FROM Us;

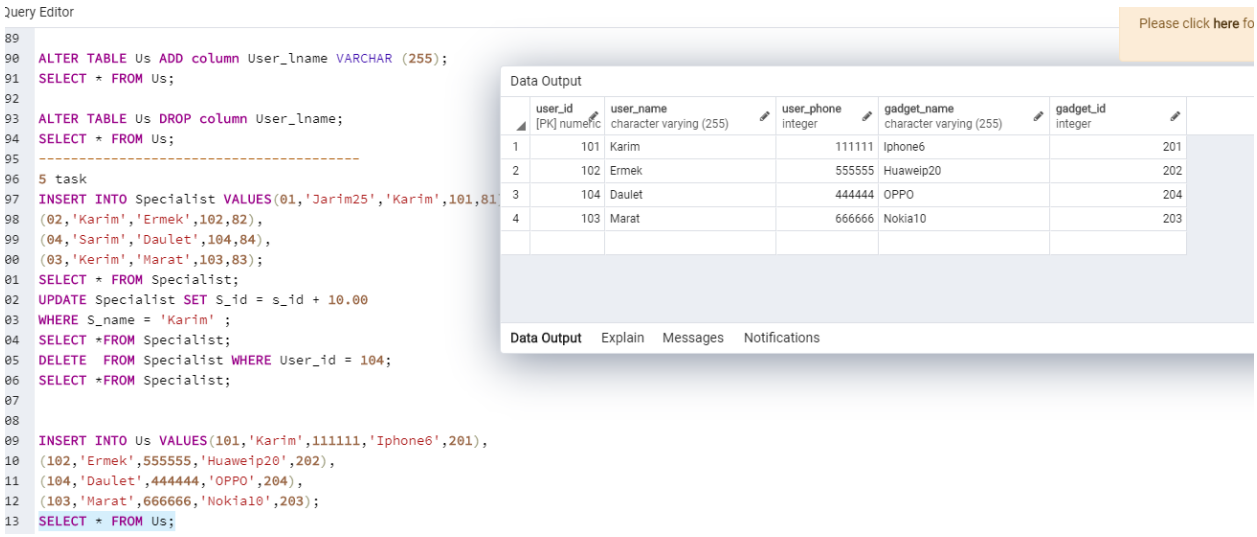
UPDATE Us SET User_phone = 877616

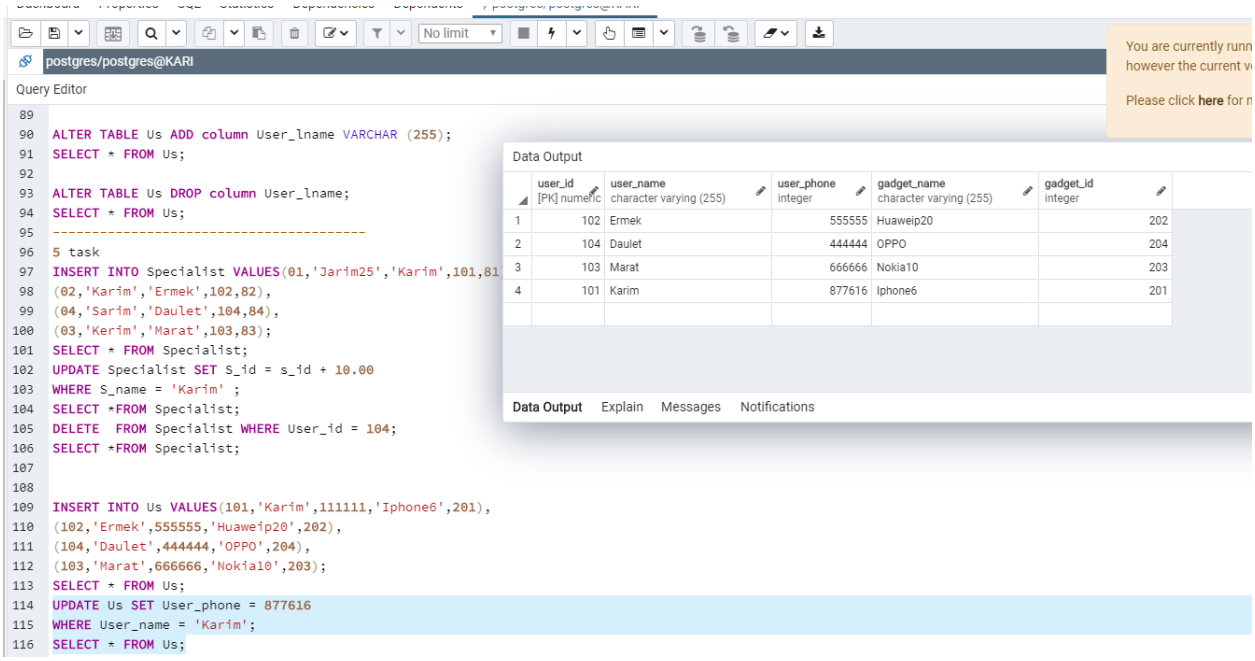
WHERE User_name = 'Karim';

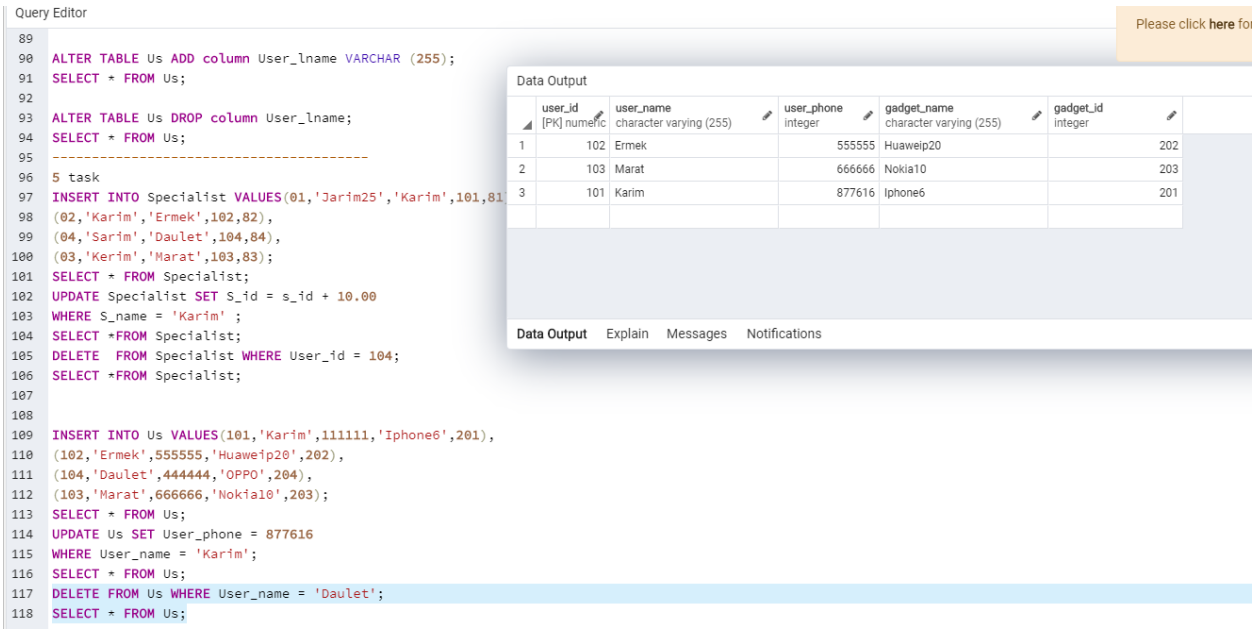
SELECT * FROM Us;

DELETE FROM Us WHERE User_name = 'Daulet';

SELECT * FROM Us;







INSERT INTO Gadgets VALUES(201,'Iphone6',301),

(202,'Huaweip20',302),

(204,'OPPO',304),

(203,'Nokia10',303);

SELECT * FROM Gadgets;

UPDATE Gadgets SET Gadget_name = 'HuaweiP20'

WHERE Gadget_name = 'Huaweip20';

SELECT * FROM Gadgets;

DELETE FROM Gadgets WHERE Gadget_name = 'OPPO';

SELECT * FROM Gadgets;

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Query Editor

```
89
90  ALTER TABLE Us ADD column User_lname VARCHAR (255);
91  SELECT * FROM Us;
92
93  ALTER TABLE Us DROP column User_lname;
94  SELECT * FROM Us;
95  ----------------------------------------
96  5 task
97  INSERT INTO Specialist VALUES(01,'Jarim25','Karim',101,81
98  (02,'Karim','Ermek',102,82),
99  (04,'Sarim','Daulet',104,84),
100 (03,'Kerim','Marat',103,83);
101 SELECT * FROM Specialist;
102 UPDATE Specialist SET S_id = s_id + 10.00
103 WHERE S_name = 'Karim' ;
104 SELECT *FROM Specialist;
105 DELETE  FROM Specialist WHERE User_id = 104;
106 SELECT *FROM Specialist;
107
108
109 INSERT INTO Us VALUES(101,'Karim',111111,'Iphone6',201),
110 (102,'Ermek',555555,'Huaweip20',202),
111 (104,'Daulet',444444,'OPPO',204),
112 (103,'Marat',666666,'Nokial0',203);
113 SELECT * FROM Us;
114 UPDATE Us SET User_phone = 877616
115 WHERE User_name = 'Karim';
116 SELECT * FROM Us;
117 DELETE FROM Us WHERE User_name = 'Daulet';
118 SELECT * FROM Us;
119
120 INSERT INTO Gadgets VALUES(201,'Iphone6',101,301),
121 (202,'Huaweip20',102,302),
122 (204,'OPPO',104,304),
123 (203,'Nokial0',103,303);
124 SELECT * FROM Gadgets;
```

Data Output

	gadget_id [PK] numeric (24)	gadget_name character varying (255)	user_id integer	access_id integer
1	201	Iphone6	101	301
2	202	Huaweip20	102	302
3	204	OPPO	104	304
4	203	Nokia10	103	303

Data Output Explain Messages Notifications

```
ALTER TABLE Us DROP column User_lname;
SELECT * FROM Us;
----------------------------------------
5 task
INSERT INTO Specialist VALUES(01,'Jarim25','Karim',101,81
(02,'Karim','Ermek',102,82),
(04,'Sarim','Daulet',104,84),
(03,'Kerim','Marat',103,83);
SELECT * FROM Specialist;
UPDATE Specialist SET S_id = s_id + 10.00
WHERE S_name = 'Karim' ;
SELECT *FROM Specialist;
DELETE  FROM Specialist WHERE User_id = 104;
SELECT *FROM Specialist;


INSERT INTO Us VALUES(101,'Karim',111111,'Iphone6',201),
(102,'Ermek',555555,'Huaweip20',202),
(104,'Daulet',444444,'OPPO',204),
(103,'Marat',666666,'Nokia10',203);
SELECT * FROM Us;
UPDATE Us SET User_phone = 877616
WHERE User_name = 'Karim';
SELECT * FROM Us;
DELETE FROM Us WHERE User_name = 'Daulet';
SELECT * FROM Us;

INSERT INTO Gadgets VALUES(201,'Iphone6',101,301),
(202,'Huaweip20',102,302),
(204,'OPPO',104,304),
(203,'Nokia10',103,303);
SELECT * FROM Gadgets;
UPDATE Gadgets SET Gadget_name = 'HuaweiP20'
WHERE Gadget_name = 'Huaweip20';
SELECT * FROM Gadgets;
```

Data Output

	gadget_id [PK] numeric (24)	gadget_name character varying (255)	user_id integer	access_id integer
1	201	Iphone6	101	301
2	204	OPPO	104	304
3	203	Nokia10	103	303
4	202	HuaweiP20	102	302

Data Output | Explain | Messages | Notifications

ry Editor

```
UPDATE Specialist SET S_id = s_id + 10.00
WHERE S_name = 'Karim' ;
SELECT *FROM Specialist;
DELETE  FROM Specialist WHERE User_id = 104;
SELECT *FROM Specialist;


INSERT INTO Us VALUES(101,'Karim',111111,'Iphone6',201),
(102,'Ermek',555555,'Huaweip20',202),
(104,'Daulet',444444,'OPPO',204),
(103,'Marat',666666,'Nokia10',203);
SELECT * FROM Us;
UPDATE Us SET User_phone = 877616
WHERE User_name = 'Karim';
SELECT * FROM Us;
DELETE FROM Us WHERE User_name = 'Daulet';
SELECT * FROM Us;

INSERT INTO Gadgets VALUES(201,'Iphone6',101,301),
(202,'Huaweip20',102,302),
(204,'OPPO',104,304),
(203,'Nokia10',103,303);
SELECT * FROM Gadgets;
UPDATE Gadgets SET Gadget_name = 'HuaweiP20'
WHERE Gadget_name = 'Huaweip20';
SELECT * FROM Gadgets;
DELETE FROM Gadgets WHERE Gadget_name = 'OPPO';
SELECT * FROM Gadgets;
```

Data Output

	gadget_id [PK] numeric (24)	gadget_name character varying (255)	user_id integer	access_id integer
1	201	Iphone6	101	301
2	203	Nokia10	103	303
3	202	HuaweiP20	102	302

Data Output | Explain | Messages | Notifications

Insert INTO Date VALUES(101,81,'2019-12-05'),

(102,82,'2019-12-05'),

(104,84,'2019-12-05'),

(103,83,'2019-12-05');

SELECT * FROM Date;

```
UPDATE Date SET Hire_date = '2019-12-04'

WHERE User_id = 104;

SELECT * FROM Date;

DELETE FROM Date WHERE User_id = 104;

SELECT * FROM Date;
```

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Query Editor

```
(104,'Daulet',444444,'OPPO',204),
(103,'Marat',666666,'Nokia10',203);
SELECT * FROM Us;
UPDATE Us SET User_phone = 877616
WHERE User_name = 'Karim';
SELECT * FROM Us;
DELETE FROM Us WHERE User_name = 'Daulet';
SELECT * FROM Us;

INSERT INTO Gadgets VALUES(201,'Iphone6',101,301),
(202,'Huaweip20',102,302),
(204,'OPPO',104,304),
(203,'Nokia10',103,303);
SELECT * FROM Gadgets;
UPDATE Gadgets SET Gadget_name = 'HuaweiP20'
WHERE Gadget_name = 'Huaweip20';
SELECT * FROM Gadgets;
DELETE FROM Gadgets WHERE Gadget_name = 'OPPO';
SELECT * FROM Gadgets;

Insert INTO Date VALUES(101,81,'2019-12-05'),
(102,82,'2019-12-06'),
(104,84,'2019-12-05'),
(103,83,'2019-12-07');
```

Data Output

	user_id integer	date_id [PK] numeric (24)	hire_date date
1	101	81	2019-12-05
2	102	82	2019-12-06
3	104	84	2019-12-05
4	103	83	2019-12-07

Data Output | Explain | Messages | Notifications


```
(104,'Daulet',444444,'OPPO',204),
(103,'Marat',666666,'Nokia10',203);
SELECT * FROM Us;
UPDATE Us SET User_phone = 877616
WHERE User_name = 'Karim';
SELECT * FROM Us;
DELETE FROM Us WHERE User_name = 'Daulet';
SELECT * FROM Us;

INSERT INTO Gadgets VALUES(201,'Iphone6',101,301),
(202,'Huaweip20',102,302),
(204,'OPPO',104,304),
(203,'Nokia10',103,303);
SELECT * FROM Gadgets;
UPDATE Gadgets SET Gadget_name = 'HuaweiP20'
WHERE Gadget_name = 'Huaweip20';
SELECT * FROM Gadgets;
DELETE FROM Gadgets WHERE Gadget_name = 'OPPO';
SELECT * FROM Gadgets;

Insert INTO Date VALUES(101,81,'2019-12-05'),
(102,82,'2019-12-06'),
(104,84,'2019-12-05'),
(103,83,'2019-12-07');
SELECT * FROM Date;
UPDATE Date SET Hire_date = '2019-12-05'
WHERE User_id = 104;
SELECT * FROM Date;
```


Data Output

	user_id integer	date_id [PK] numeric (24)	hire_date date
1	101	81	2019-12-05
2	102	82	2019-12-06
3	103	83	2019-12-07
4	104	84	2019-12-05

Data Output | Explain | Messages | Notifications

```
(104,'Daulet',444444,'OPPO',204),
(103,'Marat',666666,'Nokia10',203);
SELECT * FROM Us;
UPDATE Us SET User_phone = 877616
WHERE User_name = 'Karim';
SELECT * FROM Us;
DELETE FROM Us WHERE User_name = 'Daulet';
SELECT * FROM Us;

INSERT INTO Gadgets VALUES(201,'Iphone6',101,301),
(202,'Huaweip20',102,302),
(204,'OPPO',104,304),
(203,'Nokia10',103,303);
SELECT * FROM Gadgets;
UPDATE Gadgets SET Gadget_name = 'HuaweiP20'
WHERE Gadget_name = 'Huaweip20';
SELECT * FROM Gadgets;
DELETE FROM Gadgets WHERE Gadget_name = 'OPPO';
SELECT * FROM Gadgets;

Insert INTO Date VALUES(101,81,'2019-12-05'),
(102,82,'2019-12-06'),
(104,84,'2019-12-05'),
(103,83,'2019-12-07');
SELECT * FROM Date;
UPDATE Date SET Hire_date = '2019-12-05'
WHERE User_id = 104;
SELECT * FROM Date;
DELETE FROM Date WHERE User_id = 104;
SELECT * FROM Date;
```

Data Output

	user_id integer	date_id [PK] numeric (24)	hire_date date
1	101	81	2019-12-05
2	102	82	2019-12-06
3	103	83	2019-12-07

Data Output Explain Messages Notifications

INSERT INTO Access VALUES(301,'A',20.45 , 401,501),

(302,'B',15.00 ,402,502),

(304,'',0 ,404,504),

(303,'A-',17.55 ,403,503);

SELECT * FROM Access ;

UPDATE Access SET A_category = 'F'

WHERE A_category = '';

SELECT * FROM Access ;

DELETE FROM Access WHERE A_category = 'F';

SELECT * FROM Access ;

Query Editor

```
SELECT * FROM Us;
UPDATE Us SET User_phone = 877616
WHERE User_name = 'Karim';
SELECT * FROM Us;
DELETE FROM Us WHERE User_name = 'Daulet';
SELECT * FROM Us;

INSERT INTO Gadgets VALUES(201,'Iphone6',101,301),
(202,'Huaweip20',102,302),
(204,'OPPO',104,304),
(203,'Nokia10',103,303);
SELECT * FROM Gadgets;
UPDATE Gadgets SET Gadget_name = 'HuaweiP20'
WHERE Gadget_name = 'Huaweip20';
SELECT * FROM Gadgets;
DELETE FROM Gadgets WHERE Gadget_name = 'OPPO';
SELECT * FROM Gadgets;

Insert INTO Date VALUES(101,81,'2019-12-05'),
(102,82,'2019-12-06'),
(104,84,'2019-12-05'),
(103,83,'2019-12-07');
SELECT * FROM Date;
UPDATE Date SET Hire_date = '2019-12-05'
WHERE User_id = 104;
SELECT * FROM Date;
DELETE FROM Date WHERE User_id = 104;
SELECT * FROM Date;

INSERT INTO Access VALUES(301,'A',20.45  , 401,501),
(302,'B',15.00 ,402,502),
(304,'',0 ,404,504),
(303,'A-',17.55 ,403,503);
SELECT * FROM Access ;
```

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Data Output

	access_id [PK] numeric (24)	a_category character varying (255)	a_price real	status_id integer	d_id integer
1	301	A	20.45	401	501
2	302	B	15	402	502
3	304		0	404	504
4	303	A-	17.55	403	503

Data Output Explain Messages Notifications

Query Editor

```
UPDATE Us SET User_phone = 877616
WHERE User_name = 'Karim';
SELECT * FROM Us;
DELETE FROM Us WHERE User_name = 'Daulet';
SELECT * FROM Us;

INSERT INTO Gadgets VALUES(201,'Iphone6',101,301),
(202,'Huaweip20',102,302),
(204,'OPPO',104,304),
(203,'Nokia10',103,303);
SELECT * FROM Gadgets;
UPDATE Gadgets SET Gadget_name = 'HuaweiP20'
WHERE Gadget_name = 'Huaweip20';
SELECT * FROM Gadgets;
DELETE FROM Gadgets WHERE Gadget_name = 'OPPO';
SELECT * FROM Gadgets;

Insert INTO Date VALUES(101,81,'2019-12-05'),
(102,82,'2019-12-06'),
(104,84,'2019-12-05'),
(103,83,'2019-12-07');
SELECT * FROM Date;
UPDATE Date SET Hire_date = '2019-12-05'
WHERE User_id = 104;
SELECT * FROM Date;
DELETE FROM Date WHERE User_id = 104;
SELECT * FROM Date;

INSERT INTO Access VALUES(301,'A',20.45  , 401,501),
(302,'B',15.00 ,402,502),
(304,'',0 ,404,504),
(303,'A-',17.55 ,403,503);
SELECT * FROM Access ;
UPDATE Access SET A_category = 'F'
WHERE A_category = '';
SELECT * FROM Access ;
```

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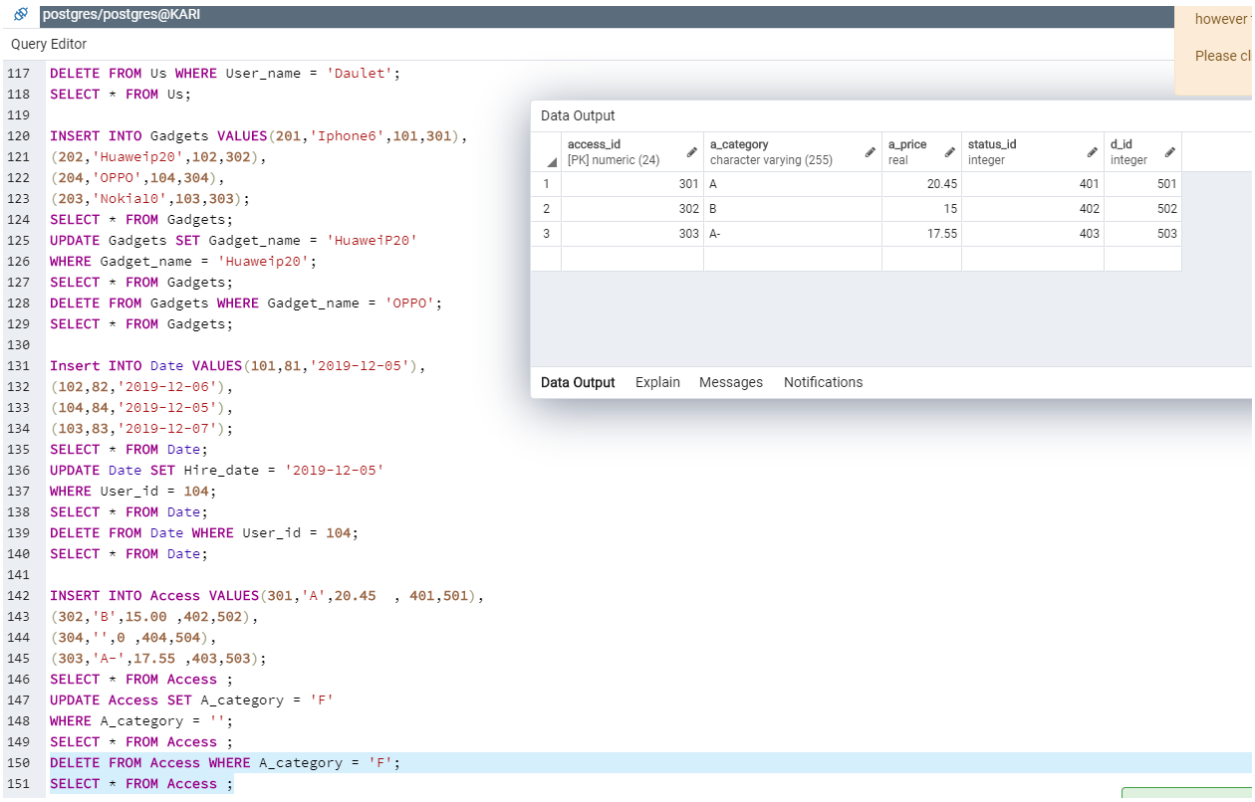
Data Output

	access_id [PK] numeric (24)	a_category character varying (255)	a_price real	status_id integer	d_id integer
1	301	A	20.45	401	501
2	302	B	15	402	502
3	303	A-	17.55	403	503
4	304	F	0	404	504

Data Output Explain Messages Notifications



INSERT INTO Status VALUES(401,'online'),

(402,'online'),

(404,'offline'),

(403,'online');

SELECT * FROM Status;

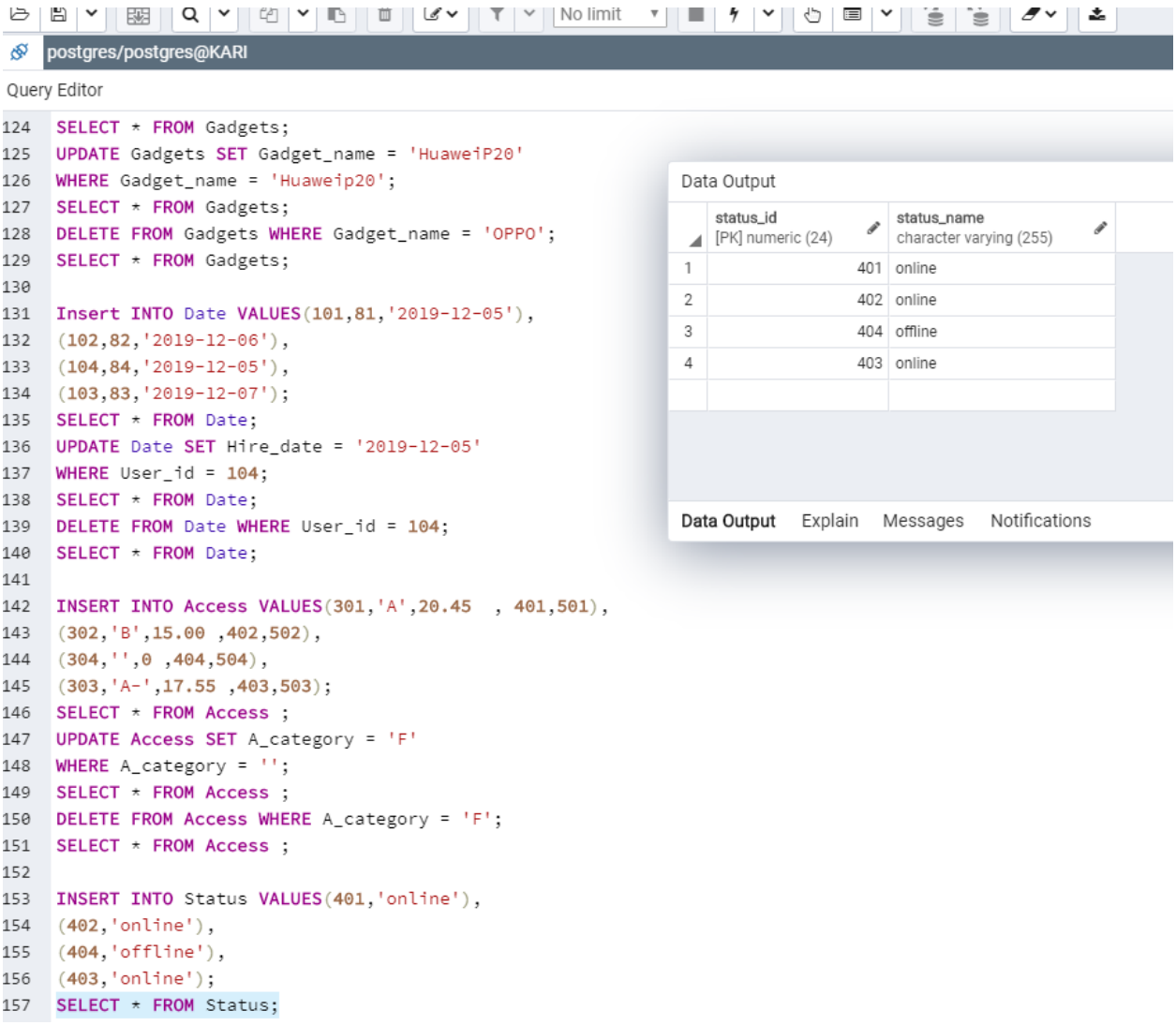
UPDATE Status SET Status_name = 'work'

WHERE Status_name = 'online';

SELECT * FROM Status;

DELETE FROM Status WHERE Status_name = 'offline';

SELECT * FROM Status;

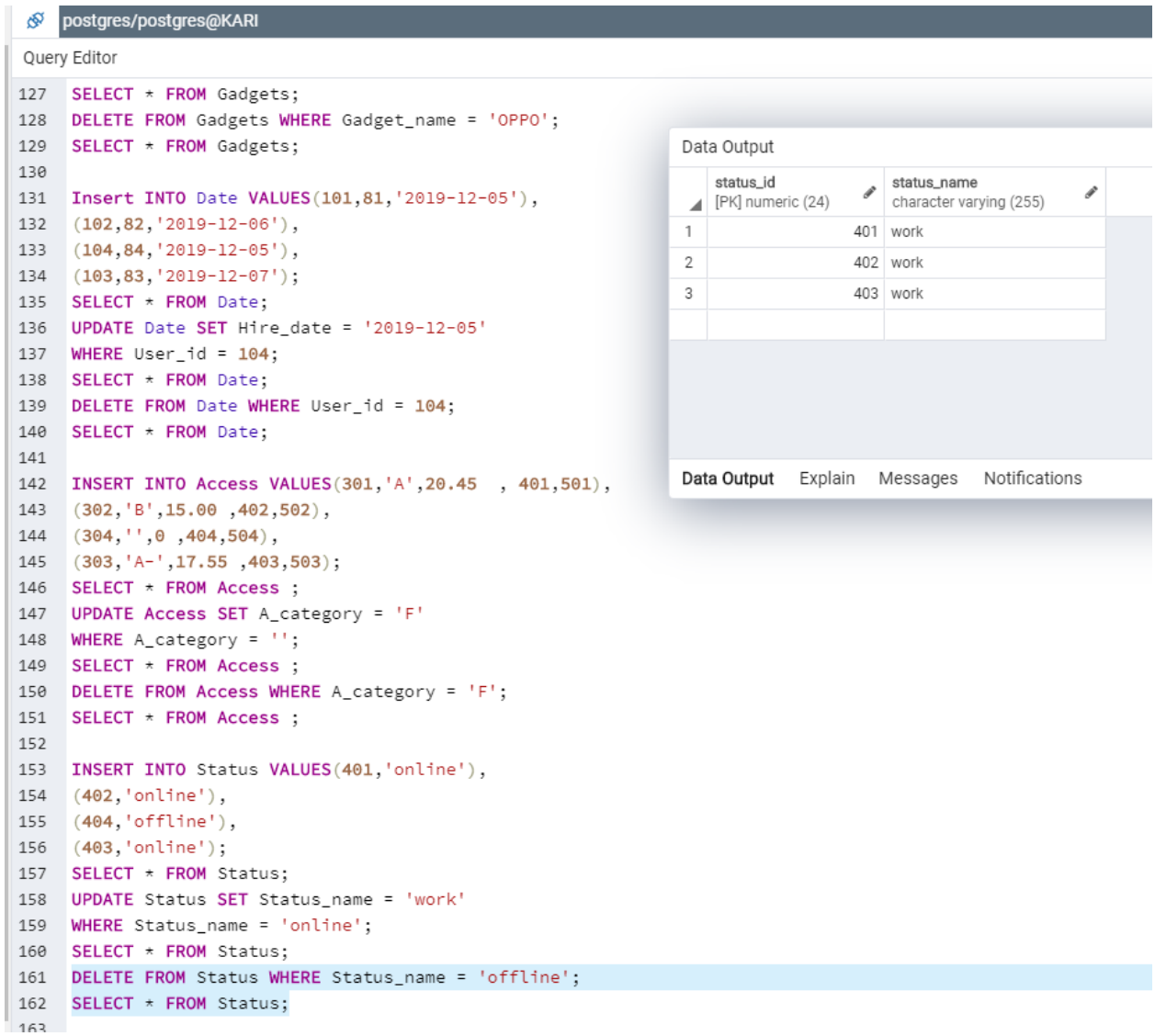

No limit
postgres/postgres@KARI
Query Editor
SELECT * FROM Gadgets;
UPDATE Gadgets SET Gadget_name = 'HuaweiP20'
WHERE Gadget_name = 'Huaweip20';
SELECT * FROM Gadgets;
DELETE FROM Gadgets WHERE Gadget_name = 'OPPO';
SELECT * FROM Gadgets;
Insert INTO Date VALUES(101,81,'2019-12-05'),
(102,82,'2019-12-06'),
(104,84,'2019-12-05'),
(103,83,'2019-12-07');
SELECT * FROM Date;
UPDATE Date SET Hire_date = '2019-12-05'
WHERE User_id = 104;
SELECT * FROM Date;
DELETE FROM Date WHERE User_id = 104;
SELECT * FROM Date;
INSERT INTO Access VALUES(301,'A',20.45 , 401,501),
(302,'B',15.00 ,402,502),
(304,'',0 ,404,504),
(303,'A-',17.55 ,403,503);
SELECT * FROM Access ;
UPDATE Access SET A_category = 'F'
WHERE A_category = '';
SELECT * FROM Access ;
DELETE FROM Access WHERE A_category = 'F';
SELECT * FROM Access ;
INSERT INTO Status VALUES(401,'online'),
(402,'online'),
(404,'offline'),
(403,'online');
SELECT * FROM Status;
Data Output
status_id
[PK] numeric (24)
status_name
character varying (255)
1 401 online
2 402 online
3 404 offline
4 403 online
Data Output
Explain
Messages
Notifications

```sql
SELECT * FROM Gadgets;
DELETE FROM Gadgets WHERE Gadget_name = 'OPPO';
SELECT * FROM Gadgets;

Insert INTO Date VALUES(101,81,'2019-12-05'),
(102,82,'2019-12-06'),
(104,84,'2019-12-05'),
(103,83,'2019-12-07');
SELECT * FROM Date;
UPDATE Date SET Hire_date = '2019-12-05'
WHERE User_id = 104;
SELECT * FROM Date;
DELETE FROM Date WHERE User_id = 104;
SELECT * FROM Date;

INSERT INTO Access VALUES(301,'A',20.45  , 401,501),
(302,'B',15.00 ,402,502),
(304,'',0 ,404,504),
(303,'A-',17.55 ,403,503);
SELECT * FROM Access ;
UPDATE Access SET A_category = 'F'
WHERE A_category = '';
SELECT * FROM Access ;
DELETE FROM Access WHERE A_category = 'F';
SELECT * FROM Access ;

INSERT INTO Status VALUES(401,'online'),
(402,'online'),
(404,'offline'),
(403,'online');
SELECT * FROM Status;
UPDATE Status SET Status_name = 'work'
WHERE Status_name = 'online';
SELECT * FROM Status;
```

Data Output

	status_id [PK] numeric (24)	status_name character varying (255)
1	404	offline
2	401	work
3	402	work
4	403	work

Data Output Explain Messages Notifications



INSERT INTO Device VALUES(501,'Climate,cinema,water,doors'),

(502,'Climate,doors'),

(504,'-'),

(503,'Climate,cinema,water');

SELECT * FROM Device;

UPDATE Device SET D_name = 'Nothing'

WHERE D_name = '-';

SELECT * FROM Device;

DELETE FROM Device

WHERE D_name = 'Nothing';

SELECT * FROM Device;

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Query Editor

```
143 (302,'B',15.00 ,402,502),
144 (304,'',0 ,404,504),
145 (303,'A-',17.55 ,403,503);
146 SELECT * FROM Access ;
147 UPDATE Access SET A_category = 'F'
148 WHERE A_category = '';
149 SELECT * FROM Access ;
150 DELETE FROM Access WHERE A_category = 'F';
151 SELECT * FROM Access ;
152
153 INSERT INTO Status VALUES(401,'online'),
154 (402,'online'),
155 (404,'offline'),
156 (403,'online');
157 SELECT * FROM Status;
158 UPDATE Status SET Status_name = 'work'
159 WHERE Status_name = 'online';
160 SELECT * FROM Status;
161 DELETE FROM Status WHERE Status_name = 'offline';
162 SELECT * FROM Status;
163
164 INSERT INTO Device VALUES(501,'Climate,cinema,water,doors'),
165 (502,'Climate,doors'),
166 (504,'-'),
167 (503,'Climate,cinema,water');
168 SELECT * FROM Device;
```

Data Output

	d_id [PK] numeric (24)	d_name character varying (255)
1	501	Climate,cinema,water,doors
2	502	Climate,doors
3	504	-
4	503	Climate,cinema,water

Data Output Explain Messages Notifications

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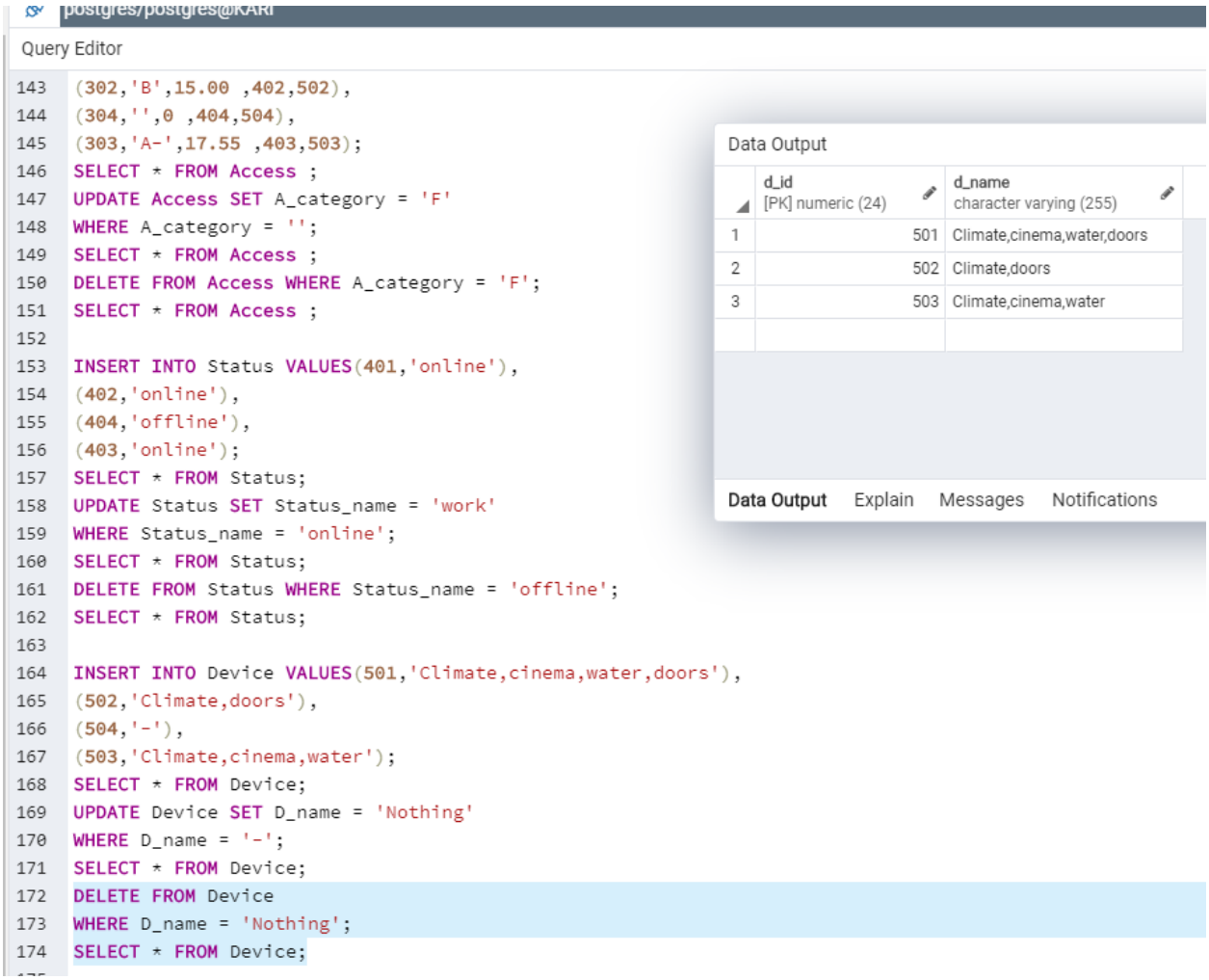
Query Editor

```
143 (302,'B',15.00 ,402,502),
144 (304,'',0 ,404,504),
145 (303,'A-',17.55 ,403,503);
146 SELECT * FROM Access ;
147 UPDATE Access SET A_category = 'F'
148 WHERE A_category = '';
149 SELECT * FROM Access ;
150 DELETE FROM Access WHERE A_category = 'F';
151 SELECT * FROM Access ;
152
153 INSERT INTO Status VALUES(401,'online'),
154 (402,'online'),
155 (404,'offline'),
156 (403,'online');
157 SELECT * FROM Status;
158 UPDATE Status SET Status_name = 'work'
159 WHERE Status_name = 'online';
160 SELECT * FROM Status;
161 DELETE FROM Status WHERE Status_name = 'offline';
162 SELECT * FROM Status;
163
164 INSERT INTO Device VALUES(501,'Climate,cinema,water,doors'),
165 (502,'Climate,doors'),
166 (504,'-'),
167 (503,'Climate,cinema,water');
168 SELECT * FROM Device;
169 UPDATE Device SET D_name = 'Nothing'
170 WHERE D_name = '-';
171 SELECT * FROM Device;
```

Data Output

	d_id [PK] numeric (24)	d_name character varying (255)
1	501	Climate,cinema,water,doors
2	502	Climate,doors
3	503	Climate,cinema,water
4	504	Nothing

Data Output Explain Messages Notifications



6 task

1NF

Specialist_id	S_name	User_id	U_name	U_phone	Gadget_id	G_name
2	Karim	1	Karim	87761636477	201	Iphone6
1	Jarim25	2	Ermek	87055736069	203	HuaweiP20
3	Kerim	3	Daulet	87001009899	202	Nokia10

Access_id	A_category	A_price	Device_id	D_name	Status_id	St_name
401	A	45.83	41	Climate,cinema, doors, water.	51	Online
402	B	30.25	42	Cinema , doors.	52	Online
403	A-	28.67	43	Climate , water,doors.	53	Online

Date_id	Hire_date
101	‘2017-12-01’
102	‘2017-12-05’

103	‘2017-12-07’

1NF: FD1=[S_id, U_id, G_id, A_id, D_id, S_id, D_id]—(S_name), (U_name, U_phone) , (G_name), (A_category,A_price), (D_name), (S_name), (Hire_date)

=>Partial dependence.

Anomalies:

1) We can’t delete specialist Jarim, else we lost data about user Ermek.
2) We can’t update data of Marat, else we have to update Kerim .
3) We can’t insert new specialist , whose on this time doesn’t have users.

2NF:

Specialist_id	User_id	User_name	User_phone	Gadget_name
01	101	Karim	8776163	Iphone6
02	102	Daulet	666666	IphoneXS
02	103	Ermek	333333	HuaweiP20

User_ID	User_name	User_phone	Gadget_name
101		8776163	Iphone6
102		666666	IphoneXS
103		333333	HuaweiP20

Specialist_id	S_name
1	Orthopaedic
2	Oncology
3	Urology

Doctor_ID	Nurse_id	N_name	N_date_of_birth	N_works_year
	1	Tom Cruise	1945-07-23	6
	2	John Travolta	1968-11-01	10
	3	Steve Martin	1985-01-05	1
	4	Johnny Depp	1952-01-05	4

Specialist_id	User_id	Gadget_id	Date_id

Specialist_id	User_id	Gadget_id

Gadget_id	Access_id	

2fd1(transitivity): {s_id}->{user_id}->{date_id}

2Fd2(transitivity): {user_id}->{gadget_id}

2Fd3(transitivity): Specialist_id->User_id->u_name, user_phone, gadget_name,date_id}

2FD4(transitivity):_id->Gadget_id_id->G_name,User_id

2FD SpecilistId->-user + date + gadget

2FD (full): specialist_id->specialist_name

Anomalies:

1) We can't insert new user
2) We can't update IphoneXS, otherwise we have to update to rows
3) We can't delete user Daulet else we also delete Kerim

3nF:

S_id	S_name
1	Jarim
3	Sarim
2	Karim

U_id	U_name	U_phone
101	Karim	877613
102	Daulet	444444
103	Ermek	666666

G_id	G_name
201	Iphone6
12	OPPO
13	Nokia10

A_id	A_category	A_price
Access_id	A_category	A_price
31	A	20.45
32	B	15.00
33	A-	17.45

Device_id	D_name
41	
42	
43	

Status_id	S_name
1	Online
2	Online
3	Online

Date_id	Hire_date
01	‘2017-12-05’
02	‘2017-12-05’
03	‘2017-12-05’

Specialist_id	User_id	Gadget_id	Date_id
Gadget_id	Access_id		
Access_id	Status_id	Device_id	

3FD1 = S_id => S_name

3FD2 = User_id = >UseR_name,User_phone

3fd3 = Gadget_id => Gadget_name

3fd4 = A_id = >A_category + A_price

3fd5 = D_id = >d_name

3fd6 = St_id = >St_name

3fd7 =Date_id => Hire_date + D_time

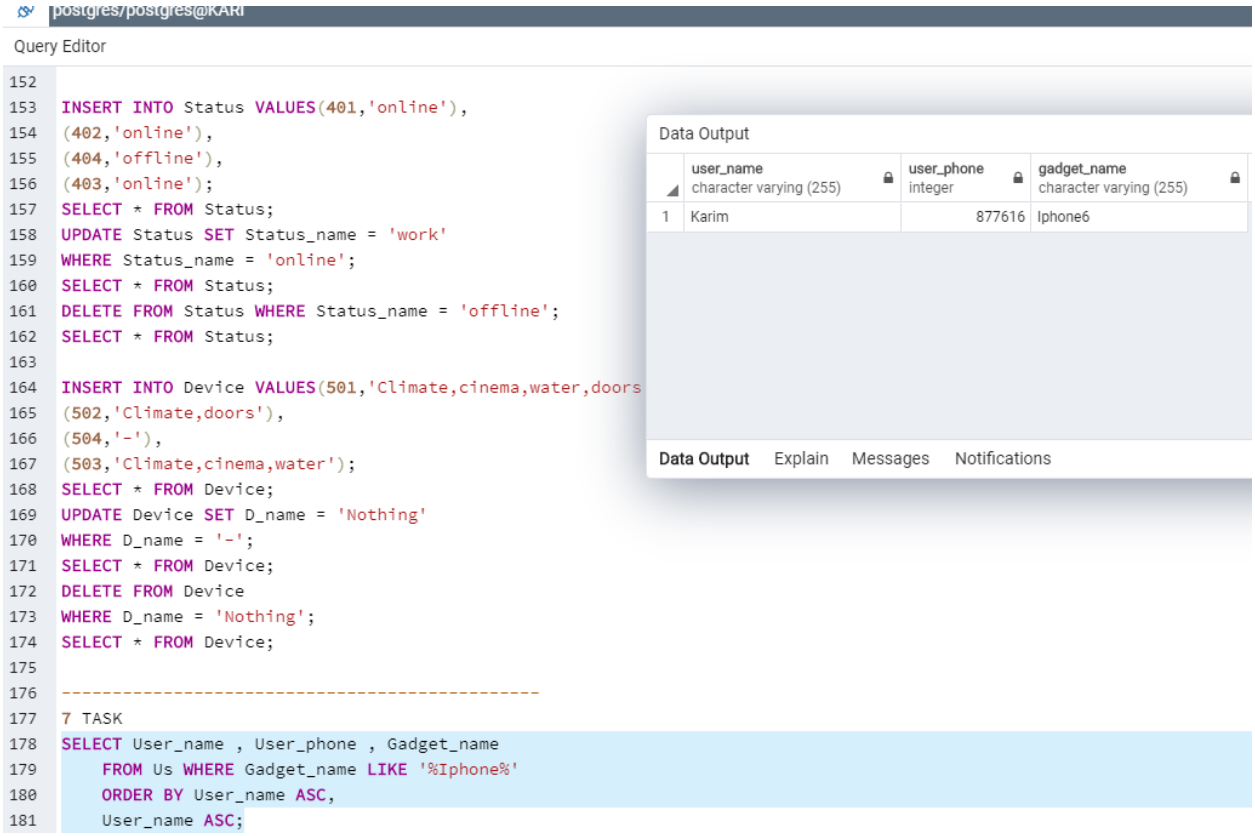
3fd8 = S_id = >U_id + G_id + D_id

3fd9 = G_id=>A_id+St_id3fd10 = A_id => Device_id

We can make changes(UPDATE,DELETE,INSERT) in the database without anomalies in the 3NF

7 TASK:

```
SELECT User_name , User_phone , Gadget_name
        FROM Us WHERE Gadget_name LIKE '%Iphone%'
        ORDER BY User_name ASC,
        User_name ASC;
```



SELECT max (DISTINCT a_price) AS max_price FROM Access;

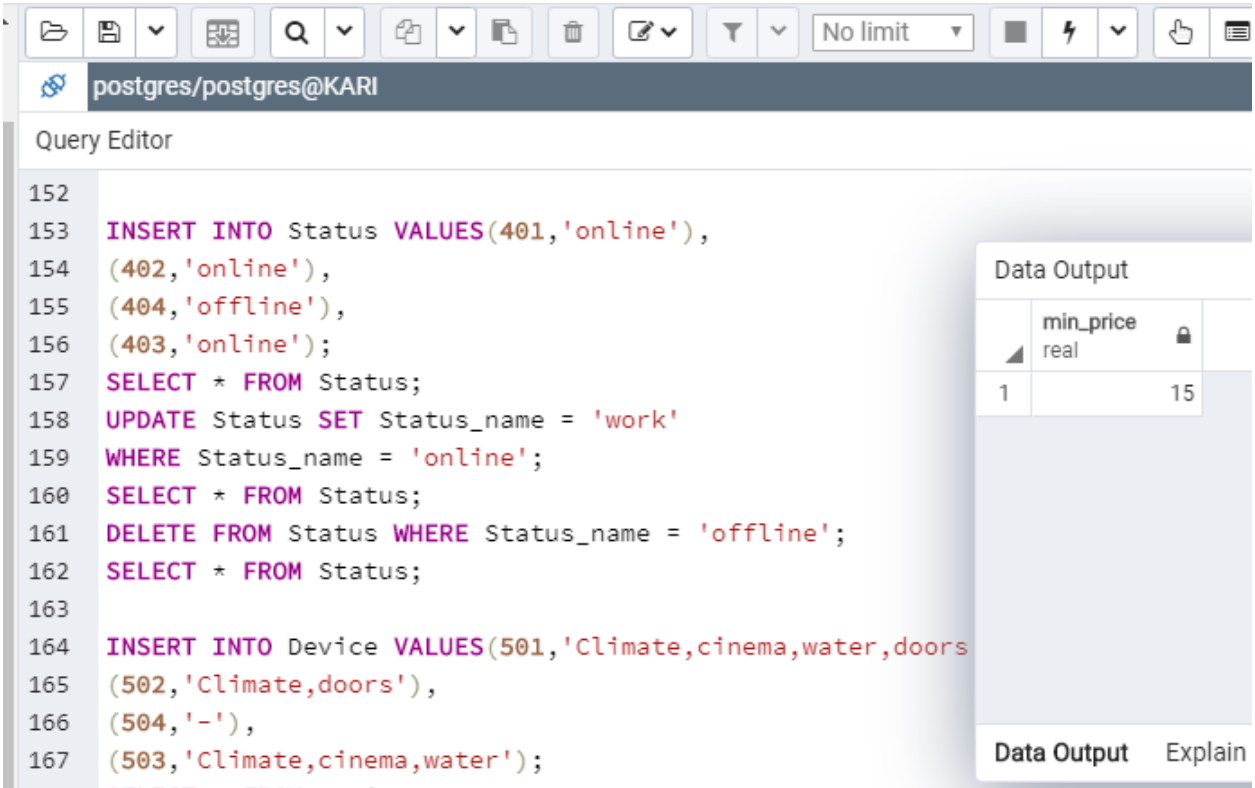
```
52
53  INSERT INTO Status VALUES(401,'online'),
54  (402,'online'),
55  (404,'offline'),
56  (403,'online');
57  SELECT * FROM Status;
58  UPDATE Status SET Status_name = 'work'
59  WHERE Status_name = 'online';
60  SELECT * FROM Status;
61  DELETE FROM Status WHERE Status_name = 'offline';
62  SELECT * FROM Status;
63
64  INSERT INTO Device VALUES(501,'Climate,cinema,water,doors
65  (502,'Climate,doors'),
66  (504,'-'),
67  (503,'Climate,cinema,water');
68  SELECT * FROM Device;
69  UPDATE Device SET D_name = 'Nothing'
70  WHERE D_name = '-';
71  SELECT * FROM Device;
72  DELETE FROM Device
73  WHERE D_name = 'Nothing';
74  SELECT * FROM Device;
75
76  ------------------------------------------------
77  7 TASK
78  SELECT User_name , User_phone , Gadget_name
79      FROM Us WHERE Gadget_name LIKE '%Iphone%'
80      ORDER BY User_name ASC,
81      User_name ASC;
82
83      SELECT max (DISTINCT a_price) AS max_price FROM Access;
```

Data Output

	max_price real
1	20.45

Data Output Explai

SELECT min (DISTINCT a_price) AS min_price FROM Access;




```
152
153 INSERT INTO Status VALUES(401,'online'),
154 (402,'online'),
155 (404,'offline'),
156 (403,'online');
157 SELECT * FROM Status;
158 UPDATE Status SET Status_name = 'work'
159 WHERE Status_name = 'online';
160 SELECT * FROM Status;
161 DELETE FROM Status WHERE Status_name = 'offline';
162 SELECT * FROM Status;
163
164 INSERT INTO Device VALUES(501,'Climate,cinema,water,doors
165 (502,'Climate,doors'),
166 (504,'-'),
167 (503,'Climate,cinema,water');
168 SELECT * FROM Device;
169 UPDATE Device SET D_name = 'Nothing'
170 WHERE D_name = '-';
171 SELECT * FROM Device;
172 DELETE FROM Device
173 WHERE D_name = 'Nothing';
174 SELECT * FROM Device;
175
176 ------------------------------------------------
177 7 TASK
178 SELECT User_name , User_phone , Gadget_name
179     FROM Us WHERE Gadget_name LIKE '%Iphone%'
180     ORDER BY User_name ASC,
181     User_name ASC;
182
183     SELECT max (DISTINCT a_price) AS max_price FROM Access;
184     SELECT min (DISTINCT a_price) AS min_price FROM Access;
```

SELECT avg (DISTINCT a_price) AS avr_price FROM Access;

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Query Editor

```
53  INSERT INTO Status VALUES(401,'online'),
54  (402,'online'),
55  (404,'offline'),
56  (403,'online');
57  SELECT * FROM Status;
58  UPDATE Status SET Status_name = 'work'
59  WHERE Status_name = 'online';
60  SELECT * FROM Status;
61  DELETE FROM Status WHERE Status_name = 'offline';
62  SELECT * FROM Status;
63
64  INSERT INTO Device VALUES(501,'Climate,cinema,water,doors
65  (502,'Climate,doors'),
66  (504,'-'),
67  (503,'Climate,cinema,water');
68  SELECT * FROM Device;
69  UPDATE Device SET D_name = 'Nothing'
70  WHERE D_name = '-';
71  SELECT * FROM Device;
72  DELETE FROM Device
73  WHERE D_name = 'Nothing';
74  SELECT * FROM Device;
75
76  ---------------------------------------------
77  7 TASK
78  SELECT User_name , User_phone , Gadget_name
79      FROM Us WHERE Gadget_name LIKE '%Iphone%'
80      ORDER BY User_name ASC,
81      User_name ASC;
82
83      SELECT max (DISTINCT a_price) AS max_price FROM Access;
84      SELECT min (DISTINCT a_price) AS min_price FROM Access;
85      SELECT avg (DISTINCT a_price) AS avr_price FROM Access;
```

Data Output

	avr_price double precision
1	17.6666666666667

Data Output Explain Messages

SELECT sum (DISTINCT a_price) AS sum_price FROM Access;

Query Editor

```
INSERT INTO Status VALUES(401,'online'),
(402,'online'),
(404,'offline'),
(403,'online');
SELECT * FROM Status;
UPDATE Status SET Status_name = 'work'
WHERE Status_name = 'online';
SELECT * FROM Status;
DELETE FROM Status WHERE Status_name = 'offline';
SELECT * FROM Status;

INSERT INTO Device VALUES(501,'Climate,cinema,water,doors
(502,'Climate,doors'),
(504,'-'),
(503,'Climate,cinema,water');
SELECT * FROM Device;
UPDATE Device SET D_name = 'Nothing'
WHERE D_name = '-';
SELECT * FROM Device;
DELETE FROM Device
WHERE D_name = 'Nothing';
SELECT * FROM Device;

-----------------------------------------------
7 TASK
SELECT User_name , User_phone , Gadget_name
    FROM Us WHERE Gadget_name LIKE '%Iphone%'
    ORDER BY User_name ASC,
    User_name ASC;

    SELECT max (DISTINCT a_price) AS max_price FROM Access;
    SELECT min (DISTINCT a_price) AS min_price FROM Access;
    SELECT avg (DISTINCT a_price) AS avr_price FROM Access;
    SELECT sum (DISTINCT a_price) AS sum_price FROM Access;

```

Data Output

	sum_price real
1	53

Data Output | Explain | Messages | Notifications

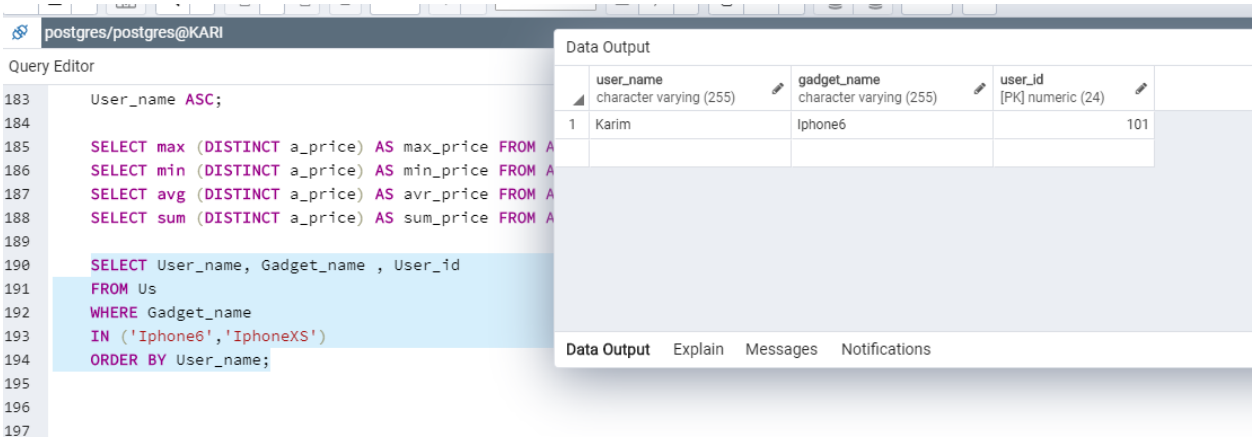
SELECT User_name, Gadget_name , User_id

FROM Us

WHERE Gadget_name

IN ('Iphone6','IphoneXS')

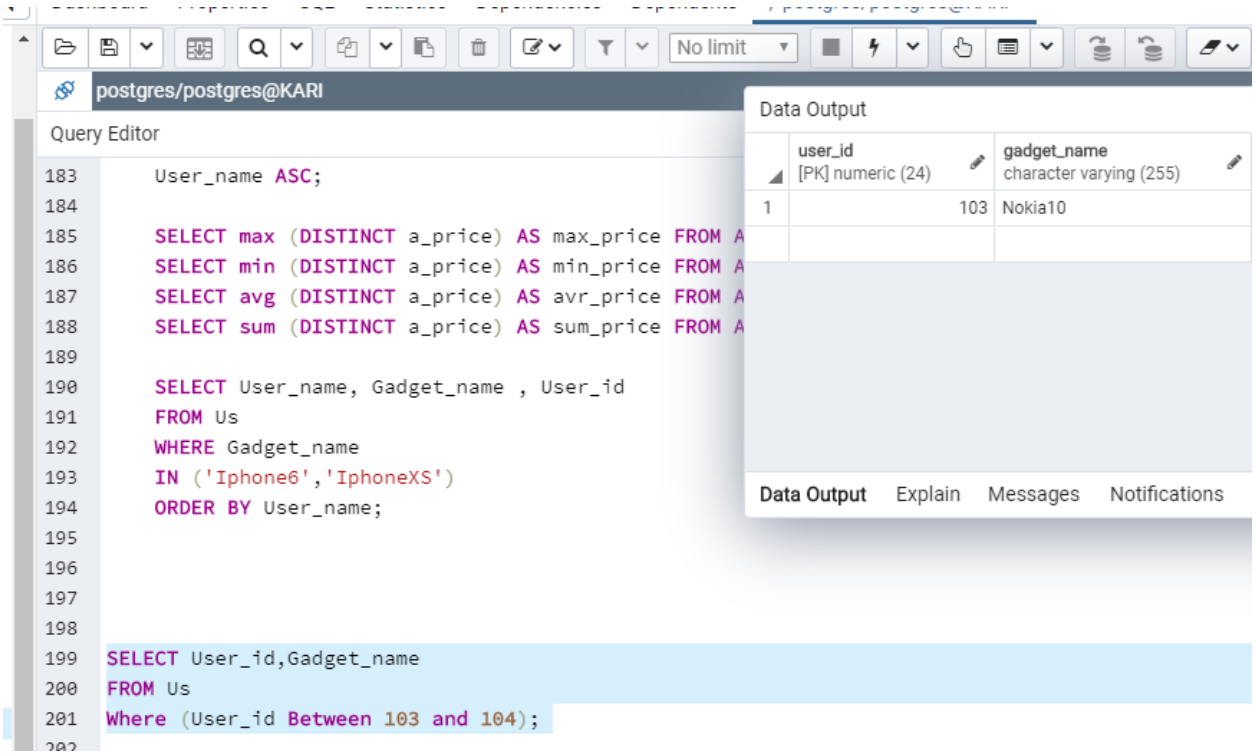
ORDER BY User_name;



SELECT User_id,Gadget_name

FROM Us

Where (User_id Between 103 and 104);



SELECT User_id,Gadget_name

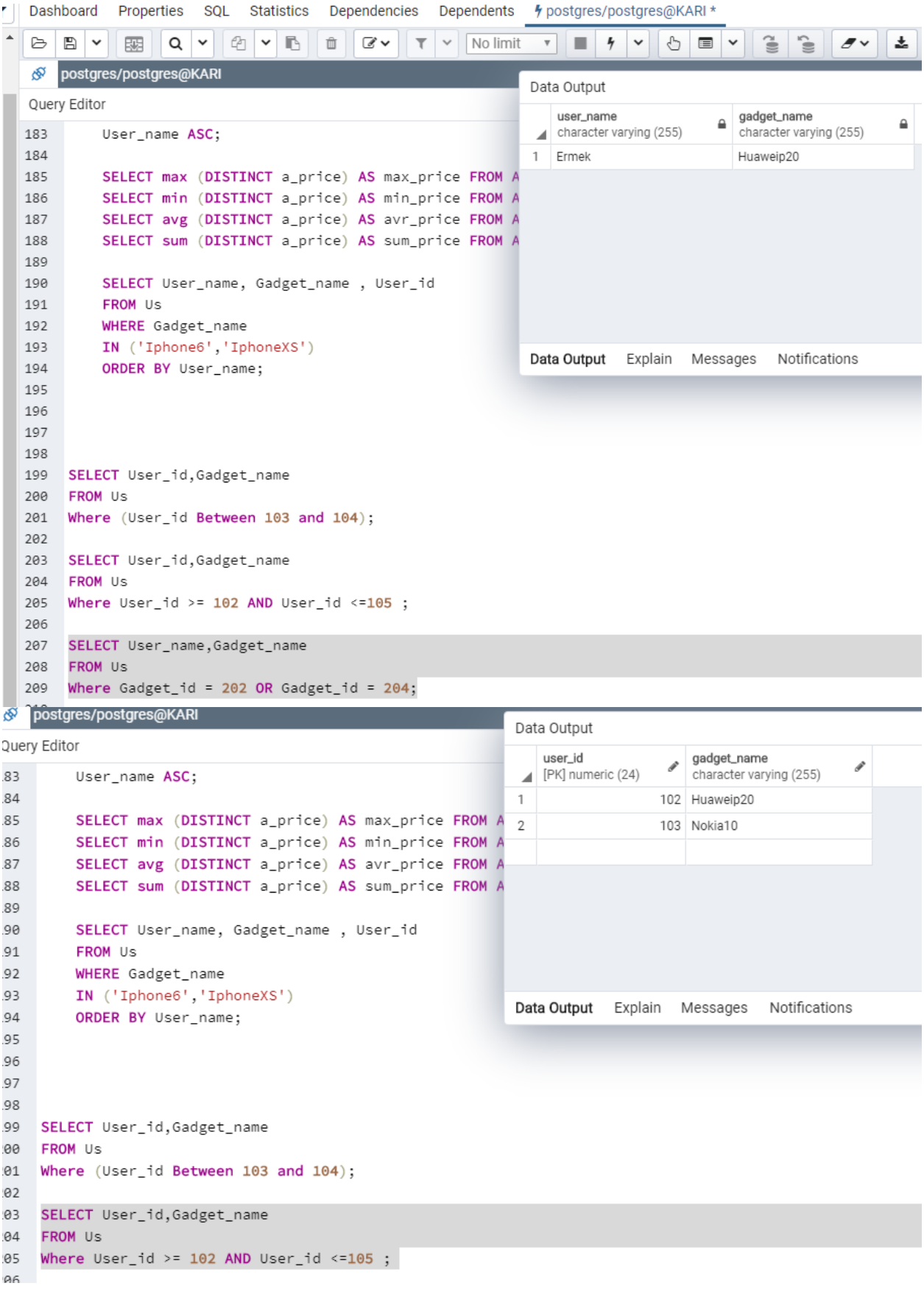
FROM Us

Where User_id >= 102 AND User_id <=105 ;

SELECT User_name,Gadget_name

FROM Us

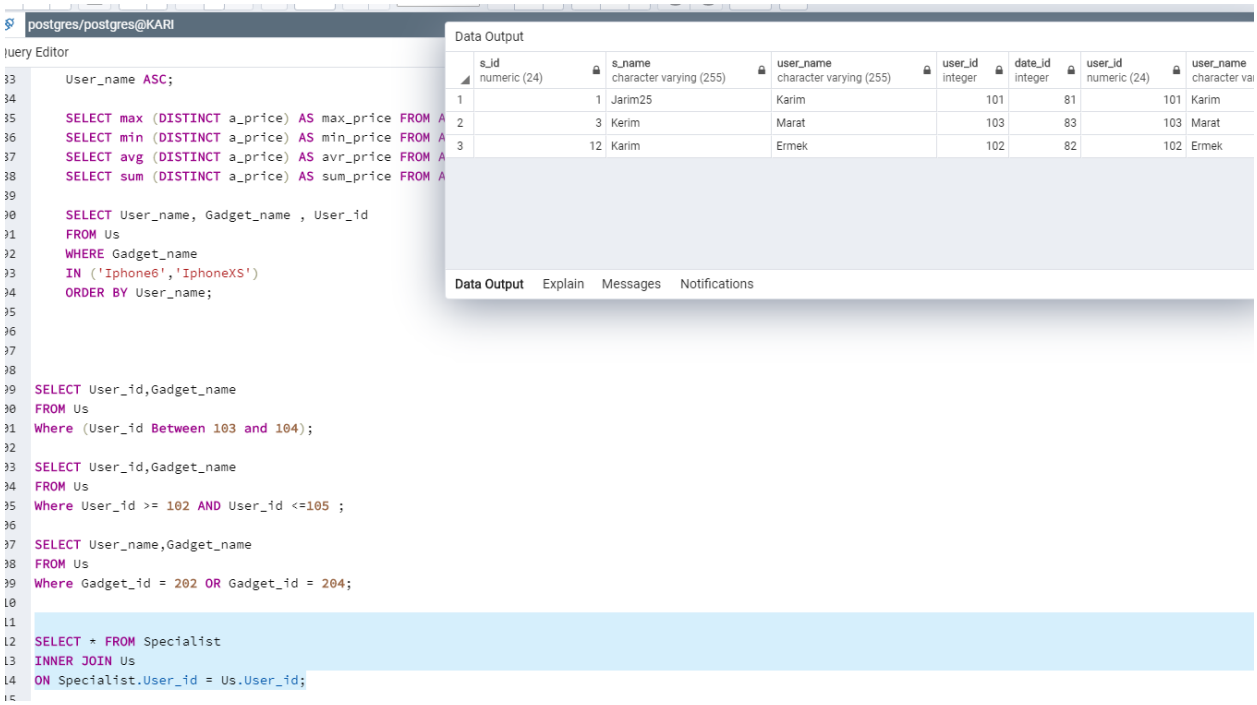
Where Gadget_id = 202 OR Gadget_id = 204;



SELECT * FROM Specialist

INNER JOIN Us

ON Specialist.User_id = Us.User_id;

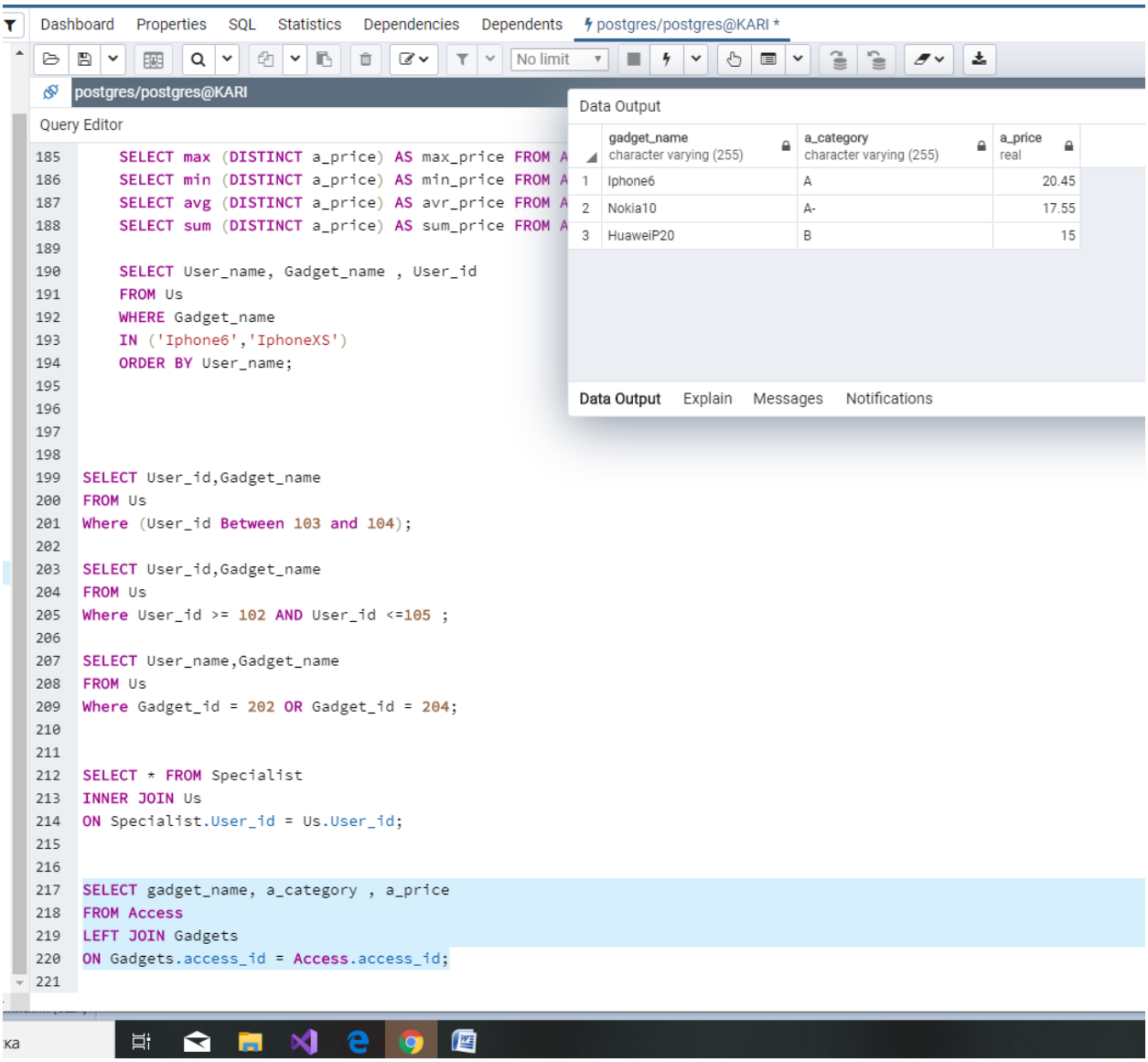


SELECT gadget_name, a_category , a_price

FROM Access

LEFT JOIN Gadgets

ON Gadgets.access_id = Access.access_id;

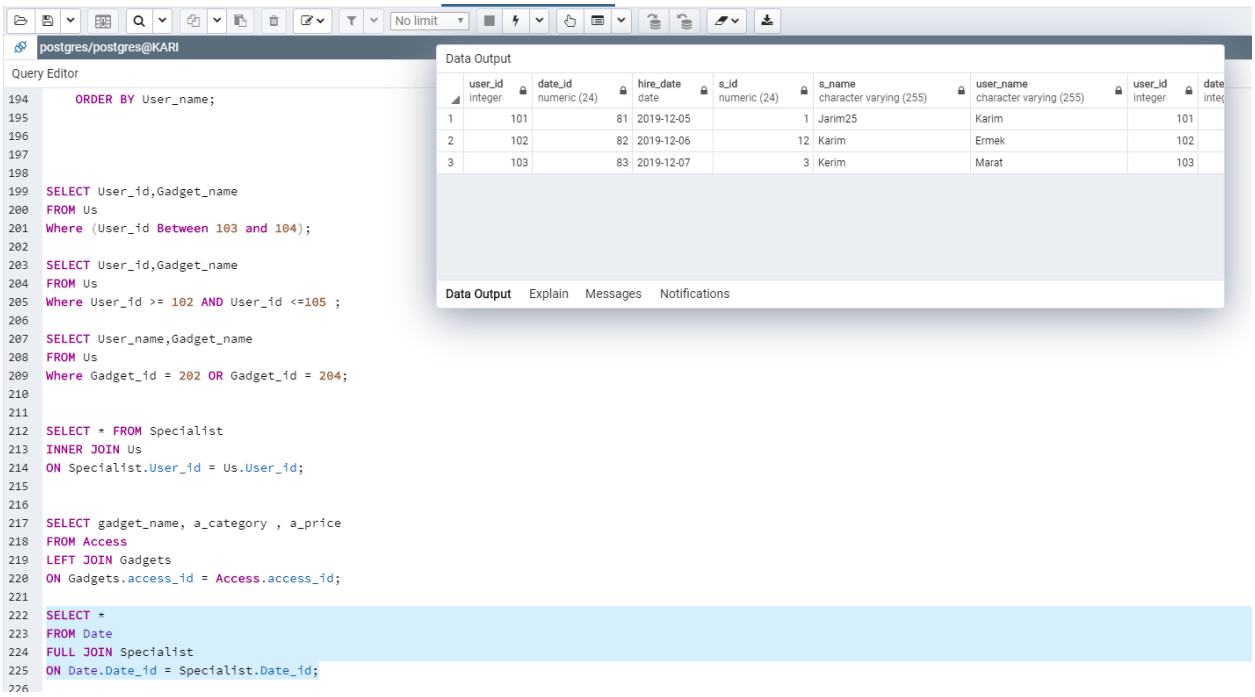


SELECT *

FROM Date

FULL JOIN Specialist

ON Date.Date_id = Specialist.Date_id;



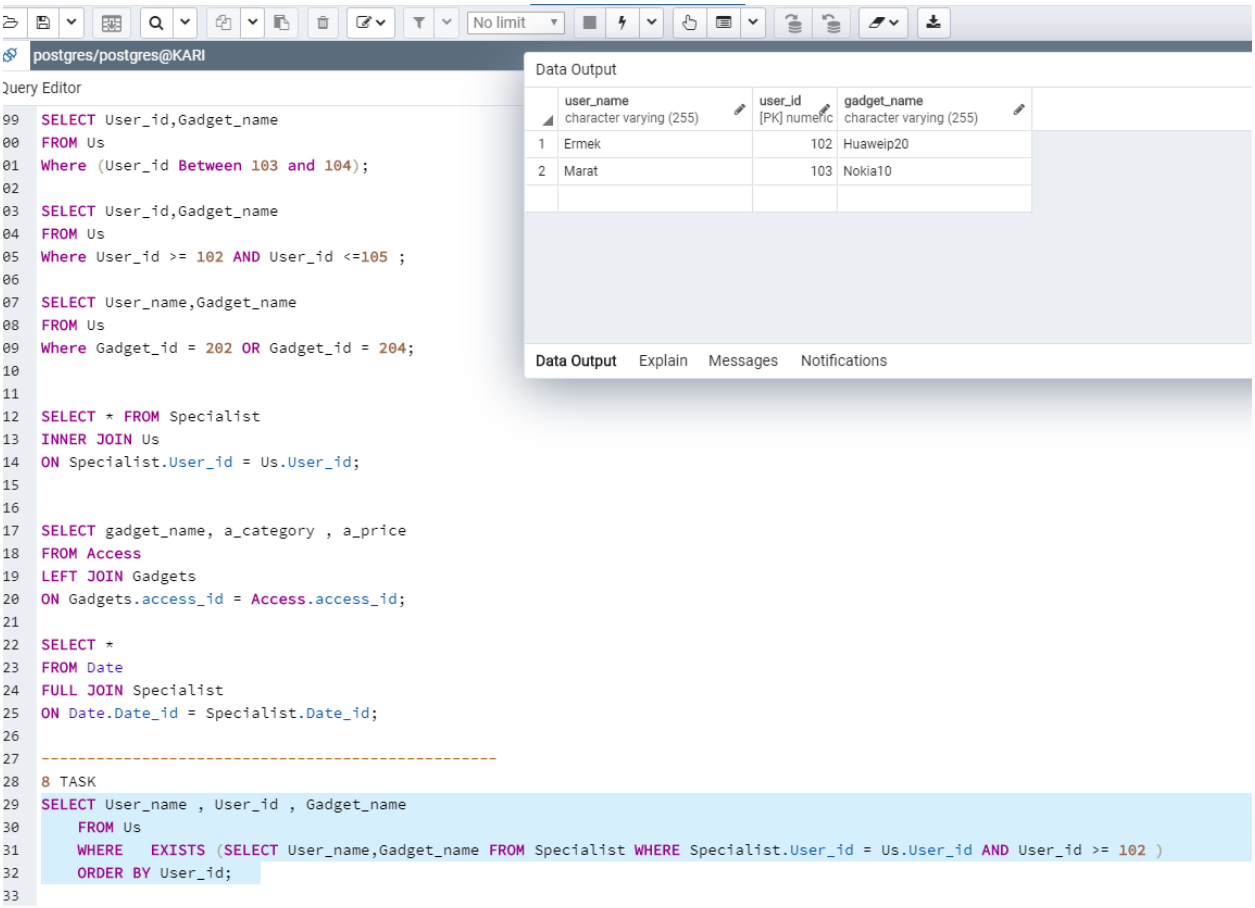
8 task

SELECT User_name , User_id , Gadget_name

FROM Us

WHERE EXISTS (SELECT User_name,Gadget_name FROM Specialist WHERE Specialist.User_id = Us.User_id AND User_id >= 102)

ORDER BY User_id;

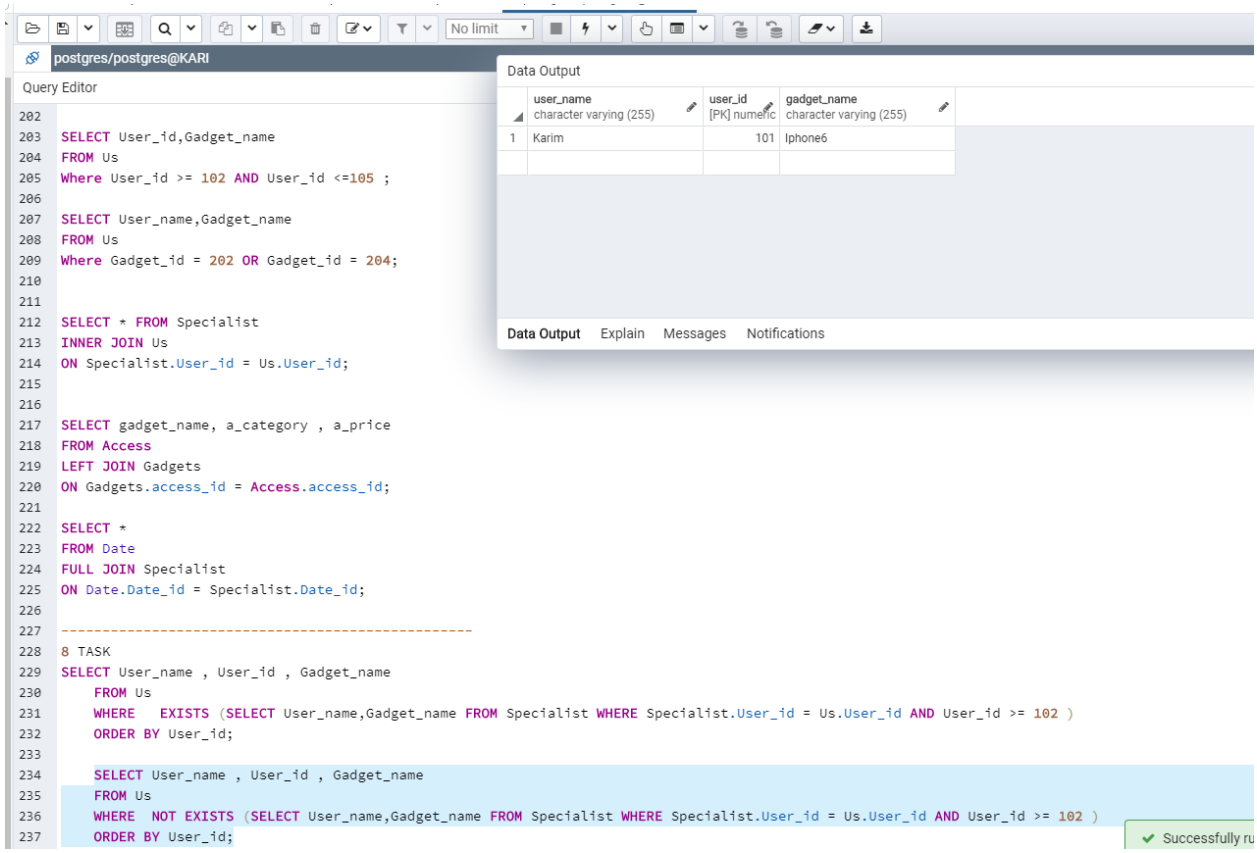


SELECT User_name , User_id , Gadget_name

FROM Us

WHERE NOT EXISTS (SELECT User_name,Gadget_name FROM Specialist WHERE Specialist.User_id = Us.User_id AND User_id >= 102)

ORDER BY User_id;



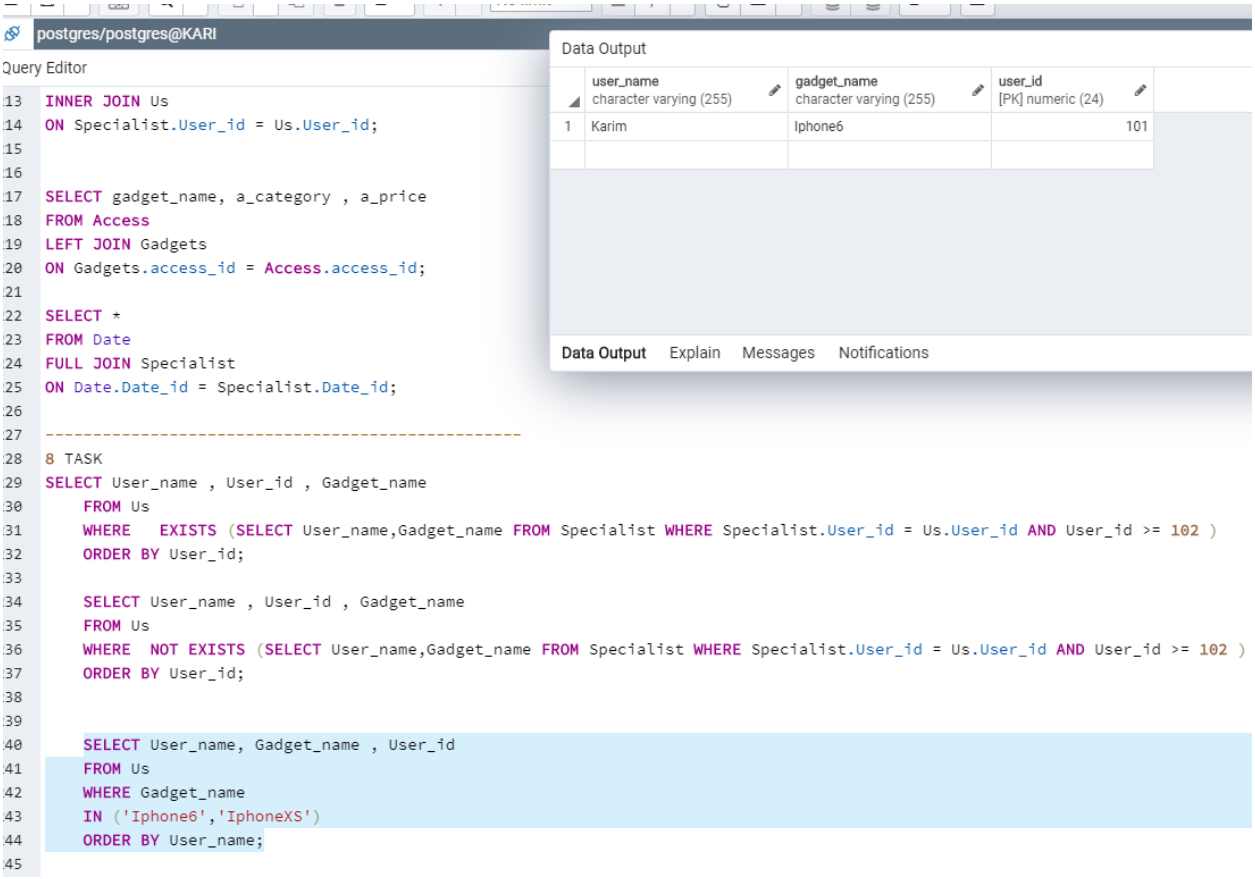
SELECT User_name, Gadget_name , User_id

FROM Us

WHERE Gadget_name

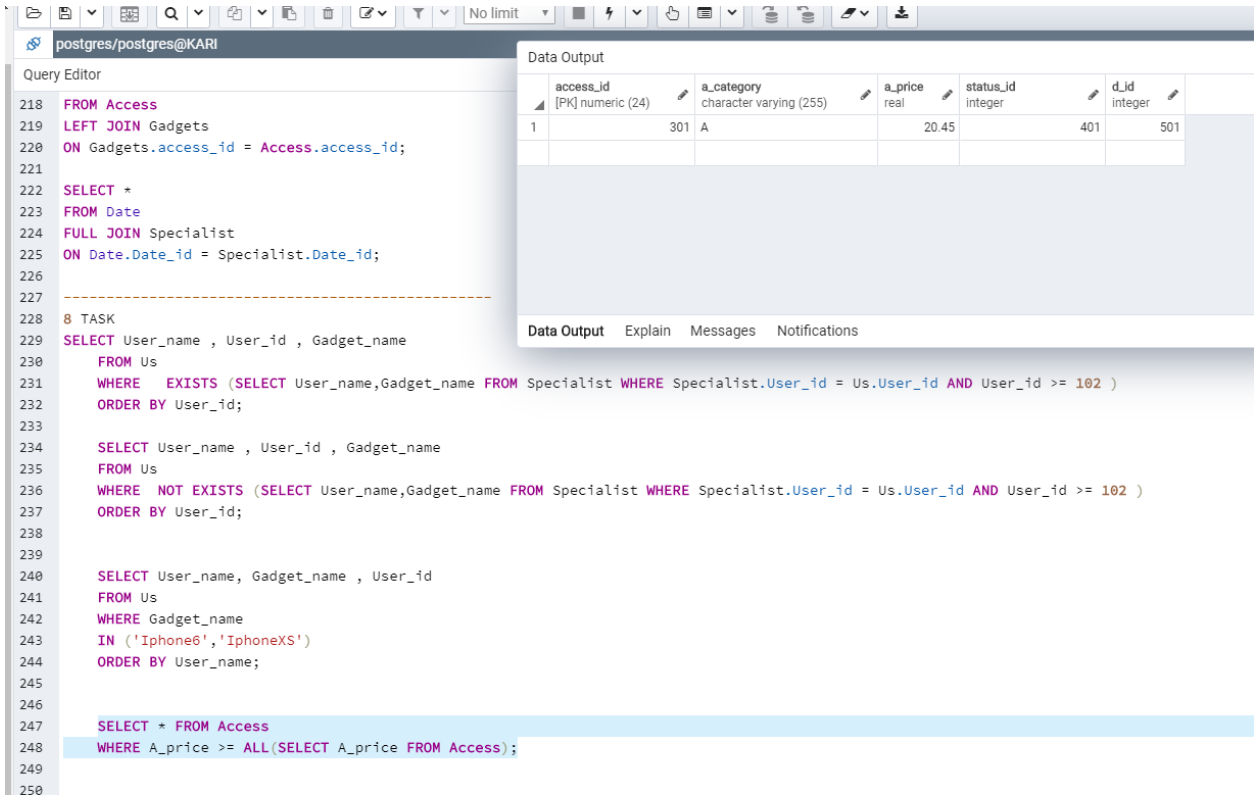
IN ('Iphone6','IphoneXS')

ORDER BY User_name;



SELECT * FROM Access

WHERE A_price >= ALL(SELECT A_price FROM Access);



SELECT a_category , a_price

FROM Access

WHERE a_price >ANY(SELECT a_price FROM Access)

ORDER BY a_category;