Ministry of Education and Science of the Republic of Kazakhstan
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Furniture Online-Store Management System

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Information and communication technologies: Final report Database project

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1. Determine the purpose of your system.

-The database is intended for an online furniture store. For customers, furniture, and addressing of orders. The main function of this database is to create a favorable environment for buying furniture online. You can use it for a website or even for a mobile app. The database has 11 tables, but 3 of the 11 are intermediate tables (cashbox, del_order, warehouse). So, they have real 8 tables: client, AdressToDel, material, CompanyDel, dimension, Furniture_creator, Style_fur, furniture. One example of how this database works: so, a customer wants to buy a new sofa for their living room. And the customer lives in Kazakhstan. Now the customer sees new sofas from the site, and this is the site of our store. And he ordered one sofa for the living room. And he specified the address of the order. The order address is Kazakhstan. And we, as an" online store", say order-company address of the customer and order-company deliver this sofa by plane, because the sofa Creator is not a company from Kazakhstan. And when the order is delivered, we can change the delivery status to "True". Because the "False" is the order hasn't been delivered yet.

• What is the purpose of the database? Why is this needed? What should he do?

- This is a database for an online furniture store. The purpose of the database is to view customer and furniture information. Since the store is online, everything is done through the site. And all the information comes from the site. This helps to simplify store management as well as organize all data for future use.

• Who are users and what are they information needs?

- Administration, technical support and logisticians are users. And customers are end users. They will have access to a website where they can see all the furniture, choose a delivery method and order furniture online.

• What problems should the system solve decide?

- Reduces the risks of shortages of goods. This is due to the constant checking of goods on the store, it is possible to replenish goods from time to time. It also helps in target marketing. This means that I know the information can be advertised to the end user that he will probably buy. This is done using data stored in a database.

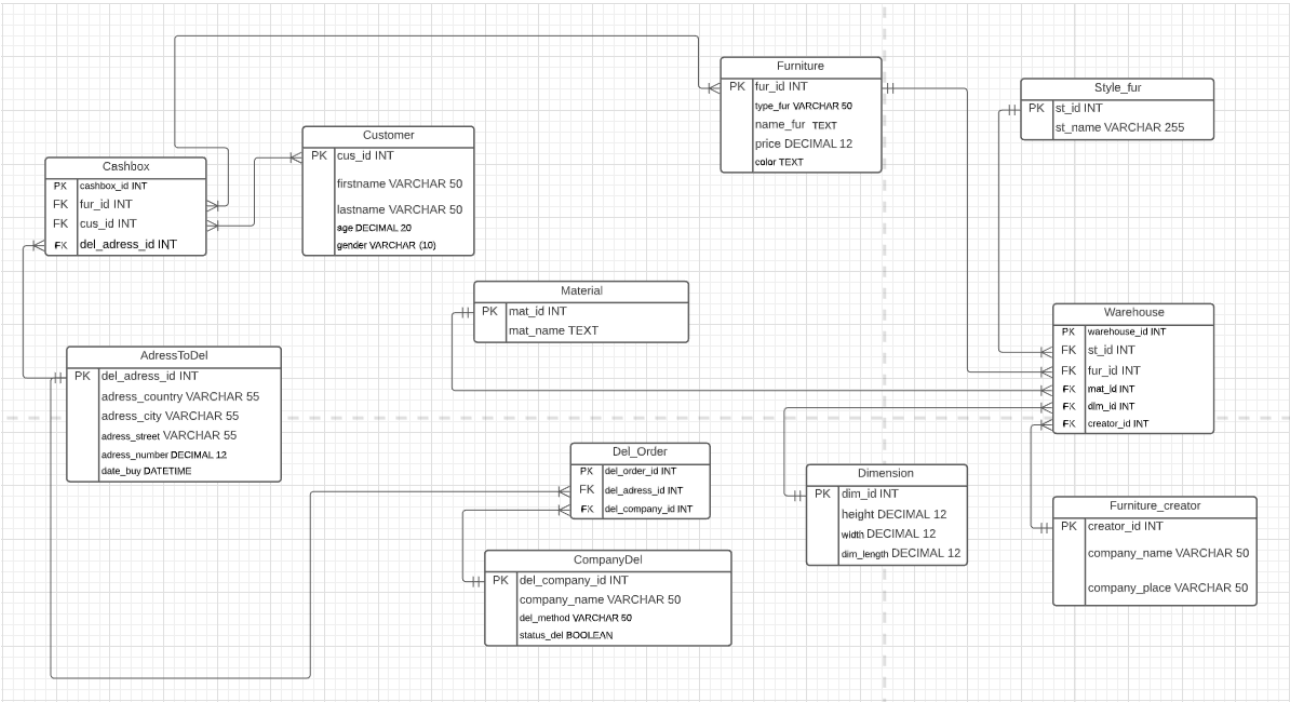
• What input data are available in the database?

- Information about the buyer, information about where and who delivers the goods, deliverystatus, the total amount of all furniture that is in stock, types of furniture: their sizes, their materials, their creators.

• What information should be kept in database?

- Do not store unnecessary information that will not be useful for improving sales or control of goods. The main data of this date base is: Names and addresses of customers, type and price of furniture and delivery details to ensure that delivery will be delivered.

2.Create ERD using Crow’s Foot notation (min.10 well-organized entities; their attributes, and types of relations);



The whole relationship is shown at ERD using Crow's Foot notation:

1. *Cashbox* and *Furniture* many to many;
2. *Cashbox* and *Customer* many to many;
3. *Cashbox* and *AdressToDel* many to one;
4. *AdressToDel* and *Del_Order* one to many;
5. *CompanyDel* and *Del_Order* one to many;
6. *Dimension* and *Warehouse* one to many;
7. *Furniture_creator* and *Warehouse* one to many;
8. *Material* and *Warehouse* one to many;
9. *Style_fur* and *Warehouse* one to many;
10. *Furniture* and *Warehouse* one to many;

Cashbox, *Del_Order* and *Warehouse* are an intermediate table. This means that they link tables to each other with which they relate.

These business rules are the restrictions under which the database will work stably.

1. One *Furniture* has a one *Furniture Creator*
2. One *Furniture Creator* can create one or many *Furniture*
3. Many *Customers* can buy and order many *Furniture*
4. One *Furniture* has only one *Furniture Type*

5. Many *Orders* may have one *Address*

6. Same *Materials* have one or many *Furniture*

7. One *Furniture* has one *Material*

8. On *Furniture* can be only on *Furniture Style*

9. One *Delivery Company* have one or many *Order*

10. One *Furniture* can be order only one *Customer*

3. Create database: tables with entities (tables) and constraints (PK, FK, UK, and etc.);

```
CREATE TABLE Material ( --1
mat_id INT NOT NULL,
mat_name TEXT NOT NULL,
quality VARCHAR(50) NOT NULL,
PRIMARY KEY (mat_id)
);
```

	mat_id [PK] integer	mat_name text
1	1	Fabric
2	2	Fabric
3	3	leather
4	4	Fabric
5	5	leather
6	6	Fabric
7	7	Wood
8	8	Velvet
9	9	Wood
10	10	Velvet
11	11	Wood
12	12	Wood
13	13	Metal
14	14	Wood
15	15	Wood
16	16	Wood
17	17	Plastic
18	18	fibreboard
19	19	Oak

```
CREATE TABLE Furniture ( --2
fur_id INT NOT NULL,
type_fur VARCHAR(50) NOT NULL,
name_fur VARCHAR(50) NOT NULL,
price DECIMAL(12) NOT NULL,
PRIMARY KEY (fur_id)
);
```

Data Output

	fur_id [PK] integer	type_fur character varying (50)	name_fur character varying (50)	price numeric (12)	color text
1	2	Sofa	FRIHETEN	599	Skiftebo ...
2	3	Sofa	FRIHETEN	599	Skiftebo ...
3	4	Sofa	FRIHETEN	699	Hyllie be...
4	5	Sofa	FRIHETEN	699	Bomsta...
5	6	Sofa	KNISLINGE	349	Idhult bl...
6	7	Bed	SEABALLS	249	White
7	8	Bed	DRAGOKURPO	549	Dark blue
8	9	Bed	SEABALLS	349	Dark blue
9	10	Bed	GULLIVER	99	White
10	11	Bed	SUNDVIK	149	White
11	12	Bed	SUNDVIK	249	Red
12	13	Bed	SNIGLAR	79	White
13	14	Bed	SEABALLS	249	White
14	15	Bed	SEABALLS	249	White
15	16	Chair	LEIFARNE	49	Dark yell...
16	18	Desk	STENSELE	35	White
17	19	Desk	MELLTORP	90	Yellow
18	1	Sofa	FRIHETEN	899	Yellow B...

```
CREATE TABLE Style_fur ( --3
st_id INT NOT NULL,
st_name VARCHAR(255) NOT NULL,
PRIMARY KEY (st_id)
);
```

	st_id [PK] integer	st_name character varying (255)
1	1	Living room
2	2	Office room
3	3	Bedroom Furniture
4	4	Living room
5	5	Office room
6	6	Living room
7	7	Bedroom Furniture
8	8	Bedroom Furniture
9	9	Office room
10	10	Living room
11	11	Bedroom Furniture
12	12	Bedroom Furniture
13	13	Living room
14	14	Living room
15	15	Bedroom Furniture
16	16	Bedroom Furniture
17	17	Dining Room Furniture
18	18	Dining Room Furniture
19	19	Dining Room Furniture

```
CREATE TABLE Furniture_creator ( --4
creator_id INT NOT NULL,
company_name VARCHAR(50) NOT NULL,
company_place VARCHAR(50) NOT NULL,
PRIMARY KEY (creator_id)
);
```

	creator_id [PK] integer	company_name character varying (50)	company_place character varying (50)
1	1	American Home Furnishings...	USA
2	2	American Home Furnishings...	USA
3	3	American Home Furnishings...	USA
4	4	EUROMARKET DESIGNG	UK
5	5	American Home Furnishings...	USA
6	6	JASON FURNITURE	CH
7	7	KUKA FURNITURE	MO
8	8	American Home Furnishings...	USA
9	9	American Home Furnishings...	USA
10	10	KUKA FURNITURE	MO
11	11	American Home Furnishings...	USA
12	12	American Home Furnishings...	USA
13	13	JASON FURNITURE	CH
14	14	American Home Furnishings...	USA
15	15	JASON FURNITURE	CH
16	16	EUROMARKET DESIGNG	UK
17	17	KUKA FURNITURE	MO
18	18	American Home Furnishings...	USA
19	19	KUKA FURNITURE	MO

```
CREATE TABLE Dimension ( --5
dim_id INT NOT NULL,
height DECIMAL(12) NOT NULL,
weight DECIMAL(12) NOT NULL,
width DECIMAL(12) NOT NULL,
dim_length DECIMAL(12) NOT NULL,
PRIMARY KEY (dim_id)
);
```

	dim_id [PK] integer	height numeric (12)	width numeric (12)	dim_length numeric (12)
1	1	26	55	90
2	2	26	55	90
3	3	26	55	90
4	4	26	55	90
5	5	26	55	90
6	6	37	80	50
7	7	25	45	50
8	8	26	55	90
9	9	25	45	50
10	10	26	55	90
11	11	25	50	90
12	12	25	50	90
13	13	26	50	90
14	14	25	60	75
15	15	25	45	50
16	16	10	15	20
17	17	10	14	25
18	18	10	12	30
19	19	10	12	25

```
CREATE TABLE Warehouse ( --6
warehouse_id INT NOT NULL,
st_id INT NOT NULL,
fur_id INT NOT NULL,
mat_id INT NOT NULL,
dim_id INT NOT NULL,
creator_id INT NOT NULL,
PRIMARY KEY (warehouse_id),
FOREIGN KEY (st_id) REFERENCES Style_fur(st_id),
FOREIGN KEY (fur_id) REFERENCES Furniture(fur_id),
FOREIGN KEY (mat_id) REFERENCES Material(mat_id),
FOREIGN KEY (dim_id) REFERENCES Dimension(dim_id),
FOREIGN KEY (creator_id) REFERENCES Furniture_creator(creator_id)
);
```

	warehouse_id [PK] integer	st_id integer	fur_id integer	mat_id integer	dim_id integer	creator_id integer
1	9991	1	1	1	1	1
2	9992	2	2	2	2	2
3	9993	3	3	3	3	3
4	9994	4	4	4	4	4
5	9995	5	5	5	5	5
6	9996	6	6	6	6	6
7	9997	7	7	7	7	7
8	9998	8	8	8	8	8
9	9999	9	9	9	9	9
10	99910	10	10	10	10	10
11	99911	11	11	11	11	11
12	99912	12	12	12	12	12
13	99913	13	13	13	13	13
14	99914	14	14	14	14	14
15	99915	15	15	15	15	15
16	99916	16	16	16	16	16
17	99918	18	18	18	18	18
18	99919	19	19	19	19	19

```
CREATE TABLE CompanyDel ( --7
del_company_id INT NOT NULL,
company_name VARCHAR(50) NOT NULL,
del_method VARCHAR(50) NOT NULL,
PRIMARY KEY (del_company_id)
);
```

	del_company_id [PK] integer	company_name character varying (50)	del_method character varying (50)	status_del boolean
1	7771	City Sprint	Aircraft	true
2	7772	DPD	Aircraft	false
3	7773	ParcelForce	Track	true
4	7774	UPS	Aircraft	false
5	7775	UPS	Track	false
6	7776	DPD	Aircraft	false
7	7777	ParcelForce	Train	true
8	7778	Yodel	Aircraft	false
9	7779	DPD	Aircraft	false
10	77710	ParcelForce	Track	true

```
CREATE TABLE AdressToDel ( --8
del_adress_id INT NOT NULL,
adress_country VARCHAR(55) NOT NULL,
adress_city VARCHAR(55) NOT NULL,
adress_street VARCHAR(55) NOT NULL,
adress_number DECIMAL(12) NOT NULL,
date_buy DATE NOT NULL,
PRIMARY KEY (del_adress_id)
);
```

	del_adress_id [PK] integer	adress_country character varying (55)	adress_city character varying (55)	adress_street character varying (55)	adress_number numeric (12)	date_buy date
1	101	Russia	Moscow	Arbat square	6573	2020-10-17
2	102	Russia	Moscow	Arbat square	6573	2020-10-17
3	103	Germany	Berlin	Hauptstrabe	9374	2020-08-30
4	104	Kazakhstan	Almaty	6 microdistrict	2643	2020-01-05
5	105	Poland	Warsaw	Senate Street	8284	2020-06-23
6	106	UK	London	Adam's Court	1848	2020-03-17
7	107	America	California	Broad Street	6384	2020-11-12
8	108	Kazakhstan	Astana	Abai	5273	2020-02-15
9	109	Russia	Novosibirsk	Pushkin square	3383	2020-04-29
10	110	America	New York	Carson Street	9374	2020-10-08

```
CREATE TABLE Del_Order ( --9
del_order_id INT NOT NULL,
del_adress_id INT NOT NULL,
del_company_id INT NOT NULL,
PRIMARY KEY (del_order_id),
FOREIGN KEY (del_adress_id) REFERENCES AdressToDel(del_adress_id),
FOREIGN KEY (del_company_id) REFERENCES CompanyDel(del_company_id)
);
```

	del_order_id [PK] integer	del_adress_id integer	del_company_id integer
1	251	101	7771
2	252	102	7772
3	253	103	7773
4	254	104	7774
5	255	105	7775
6	256	106	7776
7	257	107	7777
8	258	108	7778
9	259	109	7779
10	260	110	77710

```
CREATE TABLE Customer ( --10
cus_id INT NOT NULL,
firstname VARCHAR(50) NOT NULL,
lastname VARCHAR(50) NOT NULL,
age DECIMAL(20) NOT NULL,
gender VARCHAR(10) NOT NULL,
PRIMARY KEY (cus_id)
);
```

	cus_id [PK] integer	firstname character varying (50)	lastname character varying (50)	age numeric (20)	gender character varying (10)
1	101	Brian	Jackson	30	Male
2	102	Olivia	Smith	35	Female
3	103	Jack	Williams	35	Male
4	104	Charlie	Browns	24	Male
5	105	Emily	Jones	18	Female
6	106	Sophia	Miller	25	Female
7	107	Rick	Davies	23	Male
8	108	Luina	Taylor	32	Male
9	109	John	Wilson	45	Male
10	110	Kate	Moore	36	Male

```
CREATE TABLE Cashbox ( --11
cashbox_id INT NOT NULL,
```

fur_id INT NOT NULL,

cus_id INT NOT NULL,

del_adress_id INT NOT NULL,

PRIMARY KEY (cashbox_id),

FOREIGN KEY (fur_id) REFERENCES Furniture(fur_id),

FOREIGN KEY (cus_id) REFERENCES Customer(cus_id),

FOREIGN KEY (del_adress_id) REFERENCES AdressToDel(del_adress_id)

);

Data Output

	cashbox_id [PK] integer	fur_id integer	cus_id integer	del_adress_id integer
1	3001	1	101	101
2	3002	15	102	102
3	3003	12	103	103
4	3004	13	104	104
5	3005	5	105	105
6	3006	9	106	106
7	3007	10	107	107
8	3008	8	108	108
9	3009	16	109	109
10	30010	19	110	110

4.Write 5 different (add, drop and constraints) ALTER TABLE statements;

1) ALTER TABLE Furniture

ADD color TEXT not null;

ALTER TABLE CompanyDel

ADD status_del BOOLEAN NOT NULL;

2) ALTER TABLE Material

DROP COLUMN quality;

ALTER TABLE Dimension

DROP COLUMN weight;

3) ALTER TABLE Material

ADD PRIMARY KEY (mat_id);

4) ALTER TABLE Del_Order

ADD FOREIGN KEY (del_company_id) REFERENCES CompanyDel(del_company_id);

5) ALTER TABLE Material

ADD test_column TEXT;

ALTER TABLE Material

RENAME COLUMN test_column TO test_column_new;

5.Write SQL query for DML statements (insert, delete, update). Insert - for all tables at least 10 rows, Update – for each table with a condition, Delete – for each table with a condition;

```
INSERT INTO Furniture VALUES (1,'Sofa', 'FRIHETEN' , '699.00' , 'Hyllie dark gray') ;
INSERT INTO Furniture VALUES (2,'Sofa', 'FRIHETEN' , '599.00' , 'Skiftebo blue') ;
INSERT INTO Furniture VALUES (3,'Sofa', 'FRIHETEN' , '599.00' , 'Skiftebo dark gray') ;
INSERT INTO Furniture VALUES (4,'Sofa', 'FRIHETEN' , '699.00' , 'Hyllie beige') ;
INSERT INTO Furniture VALUES (5,'Sofa', 'FRIHETEN' , '699.00' , 'Bomstad black') ;
INSERT INTO Furniture VALUES (6,'Sofa', 'KNISLINGE' , '349.00' , 'Idhult black') ;
INSERT INTO Furniture VALUES (7,'Bed', 'SEABALLS' , '249.00' , 'White') ;
INSERT INTO Furniture VALUES (8,'Bed', 'DRAGOKURPO' , '549.00' , 'Dark blue') ;
INSERT INTO Furniture VALUES (9,'Bed', 'SEABALLS' , '349.00' , 'Dark blue') ;
INSERT INTO Furniture VALUES (10,'Bed', 'GULLIVER' , '99.00' , 'White') ;
INSERT INTO Furniture VALUES (11,'Bed', 'SUNDVIK' , '149.00' , 'White') ;
INSERT INTO Furniture VALUES (12,'Bed', 'SUNDVIK' , '249.00' , 'Red') ;
INSERT INTO Furniture VALUES (13,'Bed', 'SNIGLAR' , '79.00' , 'White') ;
INSERT INTO Furniture VALUES (14,'Bed', 'SEABALLS' , '249.00' , 'White') ;
INSERT INTO Furniture VALUES (15,'Bed', 'SEABALLS' , '249.00' , 'White') ;
```

```
INSERT INTO Furniture VALUES (16,'Chair', 'LEIFARNE' , '49.00' , 'Dark yellow') ;
INSERT INTO Furniture VALUES (17,'Chair', 'INGOLF' , '59.00' , 'White') ;
INSERT INTO Furniture VALUES (18,'Desk', 'STENSELE' , '35.00' , 'White' ) ;
INSERT INTO Furniture VALUES (19,'Desk', 'MELLTORP' , '90.00' , 'Yellow' ) ;

INSERT INTO Style_fur VALUES (1, 'Living room') ;
INSERT INTO Style_fur VALUES (2, 'Office room') ;
INSERT INTO Style_fur VALUES (3, 'Bedroom Furniture') ;
INSERT INTO Style_fur VALUES (4, 'Living room') ;
INSERT INTO Style_fur VALUES (5, 'Office room') ;
INSERT INTO Style_fur VALUES (6, 'Living room') ;
INSERT INTO Style_fur VALUES (7, 'Bedroom Furniture') ;
INSERT INTO Style_fur VALUES (8, 'Bedroom Furniture') ;
INSERT INTO Style_fur VALUES (9, 'Office room') ;
INSERT INTO Style_fur VALUES (10, 'Living room') ;
INSERT INTO Style_fur VALUES (11, 'Bedroom Furniture') ;
INSERT INTO Style_fur VALUES (12, 'Bedroom Furniture') ;
INSERT INTO Style_fur VALUES (13, 'Living room') ;
INSERT INTO Style_fur VALUES (14, 'Living room') ;
INSERT INTO Style_fur VALUES (15, 'Bedroom Furniture') ;
INSERT INTO Style_fur VALUES (16, 'Bedroom Furniture') ;
INSERT INTO Style_fur VALUES (17, 'Dining Room Furniture') ;
INSERT INTO Style_fur VALUES (18, 'Dining Room Furniture') ;
INSERT INTO Style_fur VALUES (19, 'Dining Room Furniture') ;

INSERT INTO Furniture_creator VALUES (1,'American Home Furnishings Alliance', 'USA') ;
INSERT INTO Furniture_creator VALUES (2,'American Home Furnishings Alliance', 'USA') ;
INSERT INTO Furniture_creator VALUES (3,'American Home Furnishings Alliance', 'USA') ;
INSERT INTO Furniture_creator VALUES (4,'EUROMARKET DESIGNG', 'UK') ;
INSERT INTO Furniture_creator VALUES (5,'American Home Furnishings Alliance', 'USA') ;
```

```
INSERT INTO Furniture_creator VALUES (6,'JASON FURNITURE', 'CH') ;
INSERT INTO Furniture_creator VALUES (7,'KUKA FURNITURE', 'MO') ;
INSERT INTO Furniture_creator VALUES (8,'American Home Furnishings Alliance', 'USA') ;
INSERT INTO Furniture_creator VALUES (9,'American Home Furnishings Alliance', 'USA') ;
INSERT INTO Furniture_creator VALUES (10,'KUKA FURNITURE', 'MO') ;
INSERT INTO Furniture_creator VALUES (11,'American Home Furnishings Alliance', 'USA') ;
INSERT INTO Furniture_creator VALUES (12,'American Home Furnishings Alliance', 'USA') ;
INSERT INTO Furniture_creator VALUES (13,'JASON FURNITURE', 'CH') ;
INSERT INTO Furniture_creator VALUES (14,'American Home Furnishings Alliance', 'USA') ;
INSERT INTO Furniture_creator VALUES (15,'JASON FURNITURE', 'CH') ;
INSERT INTO Furniture_creator VALUES (16,'EUROMARKET DESIGNG', 'UK') ;
INSERT INTO Furniture_creator VALUES (17,'KUKA FURNITURE', 'MO') ;
INSERT INTO Furniture_creator VALUES (18,'American Home Furnishings Alliance', 'USA') ;
INSERT INTO Furniture_creator VALUES (19,'KUKA FURNITURE', 'MO') ;

insert into customer values (101, 'Brian', 'Jackson','30', 'Male');
insert into customer values (102, 'Olivia', 'Smith','35', 'Female');
insert into customer values (103, 'Jack', 'Williams','35', 'Male');
insert into customer values (104, 'Charlie', 'Browns','24', 'Male');
insert into customer values (105, 'Emily', 'Jones','18', 'Female');
insert into customer values (106, 'Sophia', 'Miller','25', 'Female');
insert into customer values (107, 'Rick', 'Davies','23', 'Male');
insert into customer values (108, 'Luina', 'Taylor','32', 'Male');
insert into customer values (109, 'John', 'Wilson','45', 'Male');
insert into customer values (110, 'Kate', 'Moore','36', 'Male');

INSERT INTO Material VALUES (1, 'Fabric') ;
INSERT INTO Material VALUES (2, 'Fabric') ;
INSERT INTO Material VALUES (3, 'leather') ;
INSERT INTO Material VALUES (4, 'Fabric') ;
```

```
INSERT INTO Material VALUES (5, 'leather') ;
INSERT INTO Material VALUES (6, 'Fabric') ;
INSERT INTO Material VALUES (7, 'Wood') ;
INSERT INTO Material VALUES (8, 'Velvet') ;
INSERT INTO Material VALUES (9, 'Wood') ;
INSERT INTO Material VALUES (10, 'Velvet') ;
INSERT INTO Material VALUES (11, 'Wood') ;
INSERT INTO Material VALUES (12, 'Wood') ;
INSERT INTO Material VALUES (13, 'Metal') ;
INSERT INTO Material VALUES (14, 'Wood') ;
INSERT INTO Material VALUES (15, 'Wood') ;
INSERT INTO Material VALUES (16, 'Wood') ;
INSERT INTO Material VALUES (17, 'Plastic') ;
INSERT INTO Material VALUES (18, 'fibreboard') ;
INSERT INTO Material VALUES (19, 'Oak') ;

INSERT INTO Dimension VALUES (1, '26','55','90') ;
INSERT INTO Dimension VALUES (2, '26','55','90') ;
INSERT INTO Dimension VALUES (3, '26','55','90') ;
INSERT INTO Dimension VALUES (4, '26','55','90') ;
INSERT INTO Dimension VALUES (5, '26','55','90') ;
INSERT INTO Dimension VALUES (6, '37','80','50') ;
INSERT INTO Dimension VALUES (7, '25','45','50') ;
INSERT INTO Dimension VALUES (8, '26','55','90') ;
INSERT INTO Dimension VALUES (9, '25','45','50') ;
INSERT INTO Dimension VALUES (10, '26','55','90') ;
INSERT INTO Dimension VALUES (11, '25','50','90') ;
INSERT INTO Dimension VALUES (12, '25','50','90') ;
INSERT INTO Dimension VALUES (13, '26','50','90') ;
INSERT INTO Dimension VALUES (14, '25','60','75') ;
```

```
INSERT INTO Dimension VALUES (15, '25','45','50') ;
INSERT INTO Dimension VALUES (16, '10','15','20') ;
INSERT INTO Dimension VALUES (17, '10','14','25') ;
INSERT INTO Dimension VALUES (18, '10','12','30') ;
INSERT INTO Dimension VALUES (19, '10','12','25') ;

insert into AdressToDel(del_adress_id, adress_country, adress_city, adress_street, adress_number, date_buy)
values (101, 'Russia', 'Moscow', 'Arbat square', '6573', '17.10.2020'),
(102, 'Russia', 'Moscow', 'Arbat square', '6573', '17.10.2020'),
(103, 'Germany', 'Berlin', 'Hauptstrabe', '9374', '30.08.2020'),
(104, 'Kazakhstan', 'Almaty', '6 microdistrict', '2643', '05.01.2020'),
(105, 'Poland', 'Warsaw', 'Senate Street', '8284', '23.06.2020'),
(106, 'UK', 'London', 'Adam’s Court', '1848', '17.03.2020'),
(107, 'America', 'California', 'Broad Street', '6384', '12.11.2020'),
(108, 'Kazakhstan', 'Astana', 'Abai', '5273', '15.02.2020'),
(109, 'Russia', 'Novosibirsk', 'Pushkin square', '3383', '29.04.2020'),
(110, 'America', 'New York', 'Carson Street', '9374', '08.10.2020')

INSERT INTO Warehouse VALUES (9991,1,1,1,1,1) ;
INSERT INTO Warehouse VALUES (9992,2,2,2,2,2) ;
INSERT INTO Warehouse VALUES (9993,3,3,3,3,3) ;
INSERT INTO Warehouse VALUES (9994,4,4,4,4,4) ;
INSERT INTO Warehouse VALUES (9995,5,5,5,5,5) ;
INSERT INTO Warehouse VALUES (9996,6,6,6,6,6) ;
INSERT INTO Warehouse VALUES (9997,7,7,7,7,7) ;
INSERT INTO Warehouse VALUES (9998,8,8,8,8,8) ;
INSERT INTO Warehouse VALUES (9999,9,9,9,9,9) ;
INSERT INTO Warehouse VALUES (99910,10,10,10,10,10) ;
INSERT INTO Warehouse VALUES (99911,11,11,11,11,11) ;
```

```
INSERT INTO Warehouse VALUES (99912,12,12,12,12,12) ;
INSERT INTO Warehouse VALUES (99913,13,13,13,13,13) ;
INSERT INTO Warehouse VALUES (99914,14,14,14,14,14) ;
INSERT INTO Warehouse VALUES (99915,15,15,15,15,15) ;
INSERT INTO Warehouse VALUES (99916,16,16,16,16,16) ;
INSERT INTO Warehouse VALUES (99917,17,17,17,17,17) ;
INSERT INTO Warehouse VALUES (99918,18,18,18,18,18) ;
INSERT INTO Warehouse VALUES (99919,19,19,19,19,19) ;

INSERT INTO CASHBOX VALUES (3001,1,101,101) ;
INSERT INTO CASHBOX VALUES (3002,15,102,102) ;
INSERT INTO CASHBOX VALUES (3003,12,103,103) ;
INSERT INTO CASHBOX VALUES (3004,13,104,104) ;
INSERT INTO CASHBOX VALUES (3005,5,105,105) ;
INSERT INTO CASHBOX VALUES (3006,9,106,106) ;
INSERT INTO CASHBOX VALUES (3007,10,107,107) ;
INSERT INTO CASHBOX VALUES (3008,8,108,108) ;
INSERT INTO CASHBOX VALUES (3009,16,109,109) ;
INSERT INTO CASHBOX VALUES (30010,19,110,110) ;

INSERT INTO CompanyDel VALUES (7771,'City Sprint','Aircraft','True')
INSERT INTO CompanyDel VALUES (7772,'DPD','Aircraft','False') ;
INSERT INTO CompanyDel VALUES (7773,'ParcelForce','Track','True') ;
INSERT INTO CompanyDel VALUES (7774,'UPS','Aircraft','False') ;
INSERT INTO CompanyDel VALUES (7775,'UPS','Track','False') ;
INSERT INTO CompanyDel VALUES (7776,'DPD','Aircraft','False') ;
INSERT INTO CompanyDel VALUES (7777,'ParcelForce','Train','True') ;
INSERT INTO CompanyDel VALUES (7778,'Yodel','Aircraft','False') ;
INSERT INTO CompanyDel VALUES (7779,'DPD','Aircraft','False') ;
INSERT INTO CompanyDel VALUES (77710,'ParcelForce','Track','True') ;
```

```
INSERT INTO Del_Order VALUES (251,101,7771) ;
INSERT INTO Del_Order VALUES (252,102,7772) ;
INSERT INTO Del_Order VALUES (253,103,7773) ;
INSERT INTO Del_Order VALUES (254,104,7774) ;
INSERT INTO Del_Order VALUES (255,105,7775) ;
INSERT INTO Del_Order VALUES (256,106,7776) ;
INSERT INTO Del_Order VALUES (257,107,7777) ;
INSERT INTO Del_Order VALUES (258,108,7778) ;
INSERT INTO Del_Order VALUES (259,109,7779) ;
INSERT INTO Del_Order VALUES (260,110,77710) ;

UPDATE Furniture
SET color = 'Yellow Blue Dragon', price = '899'
WHERE fur_id = 1;

UPDATE CompanyDel
SET status_del = 'False'
WHERE del_company_id = 1;

DELETE FROM WAREhouse WHERE fur_id =17 ;

DELETE FROM Furniture WHERE fur_id = 17;
```

6.Write at least 10 queries: using DISTINCT, conditions (,=), OR, AND, BETWEEN, IN, LIKE, LENGHT, COUNT, MAX, MIN, SUM, AVG, INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL JOIN and etc. The queries should be coherent and complex.

```
1) SELECT * FROM Furniture WHERE price < '100';
```

	fur_id [PK] integer	type_fur character varying (50)	name_fur character varying (50)	price numeric (12)	color text
1	10	Bed	GULLIVER	99	White
2	13	Bed	SNIGLAR	79	White
3	16	Chair	LEIFARNE	49	Dark yell...
4	17	Chair	INGOLF	59	White
5	18	Desk	STENSELE	35	White
6	19	Desk	MELLTORP	90	Yellow

2) SELECT name_fur, price, dim_length

FROM Furniture

INNER JOIN Dimension ON fur_id = dim_id

WHERE price > '140' AND dim_length > '75' ;

	name_fur character varying (50)	price numeric (12)	dim_length numeric (12)
1	FRIHETEN	699	90
2	FRIHETEN	599	90
3	FRIHETEN	599	90
4	FRIHETEN	699	90
5	FRIHETEN	699	90
6	DRAGOKURPO	549	90
7	SUNDVIK	149	90
8	SUNDVIK	249	90

3) SELECT name_fur, price, color, dim_length, company_place

FROM Furniture

INNER JOIN Dimension ON fur_id = dim_id

INNER JOIN Furniture_creator ON dim_id = creator_id

WHERE company_place = 'USA' OR company_place = 'MO'

AND dim_length BETWEEN '90' AND '25' ;

	name_fur character varying (50)	price numeric (12)	color text	dim_length numeric (12)	company_place character varying (50)
1	FRIHETEN	699	Hyllie da...	90	USA
2	FRIHETEN	599	Skiftebo ...	90	USA
3	FRIHETEN	599	Skiftebo ...	90	USA
4	FRIHETEN	699	Bomsta...	90	USA
5	DRAGOKURPO	549	Dark blue	90	USA
6	SEABALLS	349	Dark blue	50	USA
7	SUNDVIK	149	White	90	USA
8	SUNDVIK	249	Red	90	USA
9	SEABALLS	249	White	75	USA
10	STENSELE	35	White	30	USA

4) SELECT * FROM Furniture_creator

WHERE company_place IN ('USA', 'CH') AND creator_id <= '12'

	creator_id [PK] integer	company_name character varying (50)	company_place character varying (50)
1	1	American Home Furnishings...	USA
2	2	American Home Furnishings...	USA
3	3	American Home Furnishings...	USA
4	5	American Home Furnishings...	USA
5	6	JASON FURNITURE	CH
6	8	American Home Furnishings...	USA
7	9	American Home Furnishings...	USA
8	11	American Home Furnishings...	USA
9	12	American Home Furnishings...	USA

5) SELECT * FROM Furniture_creator

WHERE company_place NOT IN ('USA') OR creator_id > '5'

	creator_id [PK] integer	company_name character varying (50)	company_place character varying (50)
1	4	EUROMARKET DESIGNG	UK
2	6	JASON FURNITURE	CH
3	7	KUKA FURNITURE	MO
4	8	American Home Furnishings...	USA
5	9	American Home Furnishings...	USA
6	10	KUKA FURNITURE	MO
7	11	American Home Furnishings...	USA
8	12	American Home Furnishings...	USA
9	13	JASON FURNITURE	CH
10	14	American Home Furnishings...	USA
11	15	JASON FURNITURE	CH
12	16	EUROMARKET DESIGNG	UK
13	17	KUKA FURNITURE	MO
14	18	American Home Furnishings...	USA
15	19	KUKA FURNITURE	MO

6) SELECT adress_country, adress_city, date_buy

FROM AdressToDel

WHERE adress_city LIKE 'M%'; --Finds any values that start with 'M'

	adress_country character varying (55)	adress_city character varying (55)	date_buy date
1	Russia	Moscow	2020-10-17
2	Russia	Moscow	2020-10-17

7) SELECT adress_country, adress_city, date_buy

FROM AdressToDel

WHERE adress_city LIKE '%a'; --Finds any values that end with "a"

	adress_country character varying (55)	adress_city character varying (55)	date_buy date
1	America	California	2020-11-12
2	Kazakhstan	Astana	2020-02-15

8) SELECT adress_country, adress_city, date_buy

FROM AdressToDel

WHERE adress_country LIKE '%er%'; --Finds any values that have "er" in any position

	adress_country character varying (55)	adress_city character varying (55)	date_buy date
1	Germany	Berlin	2020-08-30
2	America	California	2020-11-12
3	America	New York	2020-10-08

9) SELECT adress_country, adress_city, date_buy

FROM AdressToDel

WHERE adress_city LIKE '_o%'; --Finds any values that have "o" in the second position

	adress_country character varying (55)	adress_city character varying (55)	date_buy date
1	Russia	Moscow	2020-10-17
2	Russia	Moscow	2020-10-17
3	UK	London	2020-03-17
4	Russia	Novosibirsk	2020-04-29

10) SELECT adress_country, adress_city, date_buy

FROM AdressToDel

WHERE adress_city LIKE 'A_%'; --Finds any values that start with "A" and are at least 2 characters in length

	adress_country character varying (55)	adress_city character varying (55)	date_buy date
1	Kazakhstan	Almaty	2020-01-05
2	Kazakhstan	Astana	2020-02-15

11) SELECT adress_country, adress_city, date_buy

FROM AdressToDel

WHERE adress_city LIKE 'A_%'; --Finds any values that start with "A" and are at least 3 characters in length

	adress_country character varying (55)	adress_city character varying (55)	date_buy date
1	Kazakhstan	Almaty	2020-01-05
2	Kazakhstan	Astana	2020-02-15

12) SELECT adress_country, adress_city, date_buy

FROM AdressToDel

WHERE adress_city LIKE 'L%n'; --Finds any values that start with "L" and ends with "n"

	adress_country character varying (55)	adress_city character varying (55)	date_buy date
1	UK	London	2020-03-17

13) SELECT Length (adress_street) FROM AdressToDel WHERE adress_street = 'Abai';

Data Output

	length integer
1	4

14) SELECT firstname,lastname, Customer.cus_id, name_fur ,CASHBOX.cus_id, CASHBOX.fur_id, Furniture.fur_id

FROM Furniture

FULL JOIN CASHBOX ON Furniture.fur_id = CASHBOX.fur_id

RIGHT JOIN Customer ON CASHBOX.cus_id = Customer.cus_id ;

	firstname character varying (50)	lastname character varying (50)	cus_id integer	name_fur character varying (50)	cus_id integer	fur_id integer	fur_id integer
1	Brian	Jackson	101	FRIHETEN	101	1	1
2	Olivia	Smith	102	SEABALLS	102	15	15
3	Jack	Williams	103	SUNDVIK	103	12	12
4	Charlie	Browns	104	SNIGLAR	104	13	13
5	Emily	Jones	105	FRIHETEN	105	5	5
6	Sophia	Miller	106	SEABALLS	106	9	9
7	Rick	Davies	107	GULLIVER	107	10	10
8	Luina	Taylor	108	DRAGOKURPO	108	8	8
9	John	Wilson	109	LEIFARNE	109	16	16
10	Kate	Moore	110	MELLTORP	110	19	19

15) SELECT firstname,lastname, Customer.cus_id, name_fur ,CASHBOX.cus_id, CASHBOX.fur_id, Furniture.fur_id

FROM Furniture

FULL JOIN CASHBOX ON Furniture.fur_id = CASHBOX.fur_id

Left JOIN Customer ON CASHBOX.cus_id = Customer.cus_id ;

	firstname character varying (50)	lastname character varying (50)	cus_id integer	name_fur character varying (50)	cus_id integer	fur_id integer	fur_id integer
1	Brian	Jackson	101	FRIHETEN	101	1	1
2	Olivia	Smith	102	SEABALLS	102	15	15
3	Jack	Williams	103	SUNDVIK	103	12	12
4	Charlie	Browns	104	SNIGLAR	104	13	13
5	Emily	Jones	105	FRIHETEN	105	5	5
6	Sophia	Miller	106	SEABALLS	106	9	9
7	Rick	Davies	107	GULLIVER	107	10	10
8	Luina	Taylor	108	DRAGOKURPO	108	8	8
9	John	Wilson	109	LEIFARNE	109	16	16
10	Kate	Moore	110	MELLTORP	110	19	19
11	[null]	[null]	[null]	SUNDVIK	[null]	[null]	11
12	[null]	[null]	[null]	INGOLF	[null]	[null]	17
13	[null]	[null]	[null]	STENSELE	[null]	[null]	18
14	[null]	[null]	[null]	FRIHETEN	[null]	[null]	2
15	[null]	[null]	[null]	KNISLINGE	[null]	[null]	6
16	[null]	[null]	[null]	FRIHETEN	[null]	[null]	4
17	[null]	[null]	[null]	FRIHETEN	[null]	[null]	3
18	[null]	[null]	[null]	SEABALLS	[null]	[null]	14
19	[null]	[null]	[null]	SEABALLS	[null]	[null]	7

16) SELECT firstname,lastname, Customer.cus_id, name_fur ,CASHBOX.cus_id, CASHBOX.fur_id

FROM Customer

FULL JOIN CASHBOX ON Customer.cus_id = CASHBOX.cus_id

right JOIN Furniture ON CASHBOX.fur_id = Furniture.fur_id ;

	firstname character varying (50)	lastname character varying (50)	cus_id integer	name_fur character varying (50)	cus_id integer	fur_id integer	fur_id integer
1	Brian	Jackson	101	FRIHETEN	101	1	1
2	Olivia	Smith	102	SEABALLS	102	15	15
3	Jack	Williams	103	SUNDVIK	103	12	12
4	Charlie	Browns	104	SNIGLAR	104	13	13
5	Emily	Jones	105	FRIHETEN	105	5	5
6	Sophia	Miller	106	SEABALLS	106	9	9
7	Rick	Davies	107	GULLIVER	107	10	10
8	Luina	Taylor	108	DRAGOKURPO	108	8	8
9	John	Wilson	109	LEIFARNE	109	16	16
10	Kate	Moore	110	MELLTORP	110	19	19
11	[null]	[null]	[null]	SUNDVIK	[null]	[null]	11
12	[null]	[null]	[null]	INGOLF	[null]	[null]	17
13	[null]	[null]	[null]	STENSELE	[null]	[null]	18
14	[null]	[null]	[null]	FRIHETEN	[null]	[null]	2
15	[null]	[null]	[null]	KNISLINGE	[null]	[null]	6
16	[null]	[null]	[null]	FRIHETEN	[null]	[null]	4
17	[null]	[null]	[null]	FRIHETEN	[null]	[null]	3
18	[null]	[null]	[null]	SEABALLS	[null]	[null]	14
19	[null]	[null]	[null]	SEABALLS	[null]	[null]	7

17) SELECT COUNT (firstname)

FROM Customer

INNER JOIN Cashbox ON Customer.cus_id = Cashbox.cus_id

RIGHT JOIN Furniture ON Cashbox.fur_id = Furniture.fur_id;

Data Output

	count bigint
1	10

18) SELECT AVG(price) AS "Average purchase",

MIN(price) AS "Minimum purchase",

MAX(price) AS "Maximum purchase",

```
SUM(price) AS "Total money spent"
FROM Customer
INNER JOIN Cashbox ON Customer.cus_id = Cashbox.cus_id
Left JOIN Furniture ON Cashbox.fur_id = Furniture.fur_id ;
```

Data Output

	Average purchase numeric	Minimum purchase numeric	Maximum purchase numeric	Total money spent numeric
1	311.1000000000000000	49	699	3111

7.Write at least 5 subqueries: single-row, multiple-row and multiple-column subqueries, and etc.;

1) -- single row

```
SELECT firstname,lastname
  FROM Customer
  WHERE cus_id = (SELECT cus_id FROM Customer WHERE firstname = 'Rick');
```

	firstname character varying (50)	lastname character varying (50)
1	Rick	Davies

2) -- multiple row

```
SELECT company_name, del_method, status_del
  FROM CompanyDel
  WHERE del_company_id IN (SELECT del_company_id FROM Del_Order WHERE del_method = 'Aircraft');
```

	company_name character varying (50)	del_method character varying (50)	status_del boolean
1	City Sprint	Aircraft	true
2	DPD	Aircraft	false
3	UPS	Aircraft	false
4	DPD	Aircraft	false
5	Yodel	Aircraft	false
6	DPD	Aircraft	false

3) ---Multiple Column Subqueries

SELECT price, fur_id, color, name_fur FROM Furniture WHERE (fur_id,price) IN (SELECT fur_id,price FROM Furniture WHERE name_fur = 'FRIHETEN');

Data Output

	price numeric (12)	fur_id [PK] integer	color text	name_fur character varying (50)
1	599	2	Skiftebo blue	FRIHETEN
2	599	3	Skiftebo dark gray	FRIHETEN
3	699	4	Hyllie beige	FRIHETEN
4	699	5	Bomstad black	FRIHETEN
5	899	1	Yellow Blue Dragon	FRIHETEN

4) --Multiple Column Subqueries

SELECT date_buy, del_adress_id, adress_country, adress_number

FROM AdressToDel WHERE (del_adress_id,date_buy) IN (SELECT del_adress_id,date_buy FROM AdressToDel WHERE date_buy = '2020-10-17');

	date_buy date	del_adress_id [PK] integer	adress_country character varying (55)	adress_number numeric (12)
1	2020-10-17	101	Russia	6573
2	2020-10-17	102	Russia	6573

5) – Multiple Row Subqueries

```
SELECT width, dim_id,dim_length FROM Dimension
  WHERE dim_id IN (SELECT dim_id FROM Dimension WHERE width > '14' AND width <>
'50');
```

	width numeric (12)	dim_id [PK] integer	dim_length numeric (12)
1	55	1	90
2	55	2	90
3	55	3	90
4	55	4	90
5	55	5	90
6	80	6	50
7	45	7	50
8	55	8	90
9	45	9	50
10	55	10	90
11	60	14	75
12	45	15	50
13	15	16	20

6)-- Multiple Column Subqueries

```
SELECT price, fur_id, color, name_fur
FROM Furniture
WHERE (fur_id,price)
IN
(SELECT fur_id,price
FROM Furniture GROUP BY fur_id
 );
```

	price numeric (12)	fur_id [PK] integer	color text	name_fur character varying (50)
1	599	2	Skiftebo ...	FRIHETEN
2	599	3	Skiftebo ...	FRIHETEN
3	699	4	Hyllie be...	FRIHETEN
4	699	5	Bomsta...	FRIHETEN
5	349	6	Idhult bl...	KNISLINGE
6	249	7	White	SEABALLS
7	549	8	Dark blue	DRAGOKURPO
8	349	9	Dark blue	SEABALLS
9	99	10	White	GULLIVER
10	149	11	White	SUNDVIK
11	249	12	Red	SUNDVIK
12	79	13	White	SNIGLAR
13	249	14	White	SEABALLS
14	249	15	White	SEABALLS
15	49	16	Dark yell...	LEIFARNE
16	35	18	White	STENSELE
17	90	19	Yellow	MELLTORP
18	899	1	Yellow B...	FRIHETEN

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1. https://www.ikea.com/us/en/cat/all-sofas-39130/

- To keep all prices real for sofas.

2. https://www.bassettfurniture.com/blog/different-types-of-furniture.aspx

3. https://en.wikipedia.org/wiki/List_of_furniture_types

- Studied all styles for furniture.