

Курсова работа №1

по Проектиране и администриране на бази данни

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Класно отделение: 12282

Факултетен номер: 111-7419

Задание:

Да се проектира и реализира БД за склад за ел. уреди, която да поддържа данни за:

- ✓ Категории стоки – код на категория, описание.
- ✓ Уреди – код на уред от категория, описание, ед. цена.
- ✓ Клиенти – номер, име, фамилия на клиент, ЕГН.
- ✓ Поръчки – номер на поръчка за клиент, дата.
- ✓ Детайли на поръчката – включва няколко уреда за поръчка, брой.

Да се изведе справка за номер на клиент, име, фамилия на клиент, ЕГН, номер на поръчка за клиента, дата на поръчката, код на уред, описание, ед. цена; брой, сумата за уредите, код на категория, описание. Подредба по номер на клиент.

1. Конекция като sysdba и създаване на нов потребител - petar

New / Select Database Connection

Connection Name	Connection Details
hr	hr@//localhost:1...
sysdba	sys@//localhost:...

Name: sysdba

Database Type: Oracle

User Info: Proxy User

Authentication Type: Default

Username: sys

Password: ...

Role: SYSDBA

Save Password: ☐

Connection Type: Basic

Details: Advanced

Hostname: localhost

Port: 1521

☒ SID: xe

☐ Service name:

Status : Success

Buttons: Help, Save, Clear, Test, Connect, Cancel

```
CREATE USER petar IDENTIFIED by &pass;
```

```
GRANT "DBA" TO petar;
```

```
UNDEFINE pass;
```

Oracle SQL Developer : sysdba

File Edit View Navigate Run Source Team Tools Window Help

Connections

- Oracle Connections
 - hr
 - sysdba
 - Tables (Filtered)
 - Views
 - Indexes
 - Packages
 - Procedures
 - Functions
 - Operators

Reports

- All Reports
 - Analytic View Reports
 - Data Dictionary Reports
 - Data Modeler Reports
 - OLAP Reports
 - TimesTen Reports
 - User Defined Reports

Welcome Page sysdba

Worksheet Query Builder

```

1 CREATE USER petar IDENTIFIED by &pass;
2
3 GRANT "DBA" TO petar;
4
5 UNDEFINE pass;

```

Script Output

Task completed in 0.045 seconds

old:CREATE USER petar IDENTIFIED by &pass
 new:CREATE USER petar IDENTIFIED by 123

User PETAR created.

Grant succeeded.

Saved: sysdba | Line 5 Column 15 | Insert | Modified | Windows: C

New / Select Database Connection

Connection Name	Connection Details
hr	hr@//localhost:1...
petar	petar@//localhos...
sysdba	sys@//localhost:...

Name

Database Type

User Info Proxy User

Authentication Type

Username Role

Password ☒ Save Password

Connection Type

Details Advanced

Hostname

Port

☒ SID

☐ Service name

Status :

2. Създаване на таблиците

```
CREATE TABLE PROD_CATEGORIES
(
  CAT_ID NUMBER,
  CAT_DESCR VARCHAR2(30) NOT NULL,

  CONSTRAINT PK_PRODCAT_CID PRIMARY KEY (CAT_ID)
);
```

```
CREATE TABLE PRODUCTS
(
  PROD_ID NUMBER,
  CAT_ID NUMBER NOT NULL,
  PROD_DESCR VARCHAR(30) NOT NULL,
  PROD_PRICE NUMBER(8,2) NOT NULL,

  CONSTRAINT PK_PRODS_PID
    PRIMARY KEY (PROD_ID),
  CONSTRAINT FK_PRODS_CID_PRODCAT_CID
    FOREIGN KEY (CAT_ID)
      REFERENCES PROD_CATEGORIES(CAT_ID)
);
```

```
CREATE TABLE CLIENTS
(
  CLIENT_ID NUMBER,
  CLIENT_FIRST_NAME VARCHAR2(20) NOT NULL,
  CLIENT_LAST_NAME VARCHAR2(20) NOT NULL,
  CLIENT_UCN CHAR(10),

  CONSTRAINT PK_CLNTS_CLID
    PRIMARY KEY (CLIENT_ID)
);
```

```
CREATE TABLE ORDERS
(
  ORDER_ID NUMBER,
  CLIENT_ID NUMBER NOT NULL,
  ORDER_DATE DATE NOT NULL,

  CONSTRAINT PK_ORDRS_OID
    PRIMARY KEY (ORDER_ID),
  CONSTRAINT FK_ORDRS_OID_CLNTS_CLID
    FOREIGN KEY (CLIENT_ID)
      REFERENCES CLIENTS(CLIENT_ID)
);
```

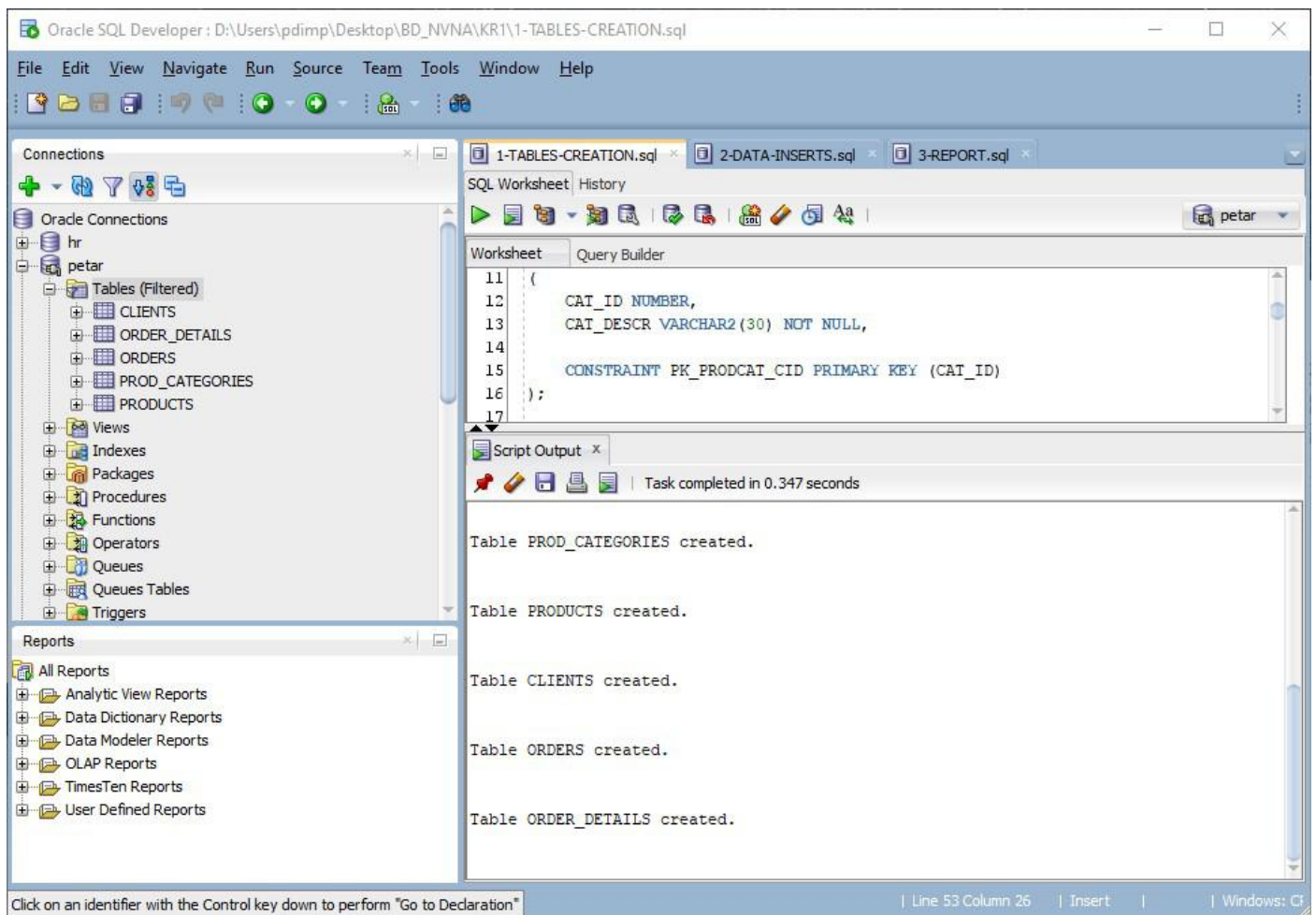
```
CREATE TABLE ORDER_DETAILS
(
  ORDER_ID NUMBER NOT NULL,
  PROD_ID NUMBER NOT NULL,
  PROD_COUNT NUMBER NOT NULL,

  CONSTRAINT FK_ORDRDET_OID_ORDRS_OID
    FOREIGN KEY (ORDER_ID)
      REFERENCES ORDERS(ORDER_ID),
```

```

CONSTRAINT FK_ORDRDET_PID_PRODS_PID
FOREIGN KEY (PROD_ID)
REFERENCES PRODUCTS(PROD_ID)
);

```



3. Вмъкване на данни в таблиците

```

INSERT ALL
  INTO PROD_CATEGORIES (cat_id, cat_descr) VALUES (100, 'Phones')
  INTO PROD_CATEGORIES (cat_id, cat_descr) VALUES (200, 'Notebooks')
  INTO PROD_CATEGORIES (cat_id, cat_descr) VALUES (300, 'Tablets')
  INTO PROD_CATEGORIES (cat_id, cat_descr) VALUES (400, 'Drones')
  INTO PROD_CATEGORIES (cat_id, cat_descr) VALUES (500, 'Kitchen supplies')
  INTO PROD_CATEGORIES (cat_id, cat_descr) VALUES (600, 'Garden supplies')
SELECT * FROM dual;

INSERT ALL
  INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (106, 100, 'Kids phone 4S', 19.99)
  INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (107, 100, 'Gaming phone 12XS+', 2499.99)
  INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (108, 100, 'Work phone 10', 149.99)
  INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (109, 100, 'Home phone 3G', 9.99)
  INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (110, 100, 'Brick 1', 9.99)

  INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (211, 200, 'Mega Note', 1499.99)
  INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (212, 200, 'Noted One', 1999.99)
  INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (213, 200, 'Brick Mega Gaming 3', 9999.99)

```

```

    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (214, 200, 'Gaming Pro 10',
4999.99)
    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (215, 200, 'WorkBook 12',
1479.99)

    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (301, 300, 'Kiddy Tab 2', 49.99)
    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (302, 300, 'Worker Pro', 149.99)
    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (303, 300, 'Gamers Wish', 349.99)
    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (304, 300, 'WorkingTab 3',
299.99)
    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (305, 300, 'HomeTabby', 199.99)

    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (436, 400, 'Military Drone 10',
1999.99)
    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (437, 400, 'Medical Drone Pro
Health', 2999.99)
    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (438, 400, 'Spying Drone 2',
199.99)

    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (501, 500, 'Blender', 49.99)
    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (502, 500, 'Toaster', 21.99)
    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (503, 500, 'Microwave', 149.99)
    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (504, 500, 'Juicer', 69.99)
    INTO PRODUCTS (PROD_ID, CAT_ID, PROD_DESCR, PROD_PRICE) VALUES (505, 500, 'Coffe grinder', 36.99)
SELECT * FROM dual;

INSERT ALL
    INTO CLIENTS (CLIENT_ID, CLIENT_FIRST_NAME, CLIENT_LAST_NAME, CLIENT_UCN) VALUES (1001,
'Ivan', 'Ivanov', '1524023512')
    INTO CLIENTS (CLIENT_ID, CLIENT_FIRST_NAME, CLIENT_LAST_NAME, CLIENT_UCN) VALUES (1002,
'Ivanka', 'Ivanova', '1525623512')
    INTO CLIENTS (CLIENT_ID, CLIENT_FIRST_NAME, CLIENT_LAST_NAME, CLIENT_UCN) VALUES (1003,
'Vanio', 'Ivanovich', '1524468512')
    INTO CLIENTS (CLIENT_ID, CLIENT_FIRST_NAME, CLIENT_LAST_NAME, CLIENT_UCN) VALUES (1004,
'Venci', 'Venciev', '7584652310')
    INTO CLIENTS (CLIENT_ID, CLIENT_FIRST_NAME, CLIENT_LAST_NAME, CLIENT_UCN) VALUES (1005,
'Pesho', 'Peshov', '7526213252')
    INTO CLIENTS (CLIENT_ID, CLIENT_FIRST_NAME, CLIENT_LAST_NAME, CLIENT_UCN) VALUES (1006,
'Gosho', 'Goshev', '7563125262')
SELECT * FROM dual;

INSERT ALL
    INTO ORDERS (ORDER_ID, CLIENT_ID, ORDER_DATE) VALUES (5168, 1001, '31-may-98')
    INTO ORDERS (ORDER_ID, CLIENT_ID, ORDER_DATE) VALUES (5615, 1001, '2-may-98')
    INTO ORDERS (ORDER_ID, CLIENT_ID, ORDER_DATE) VALUES (8456, 1003, '1-may-99')
    INTO ORDERS (ORDER_ID, CLIENT_ID, ORDER_DATE) VALUES (8452, 1005, '4-may-00')
    INTO ORDERS (ORDER_ID, CLIENT_ID, ORDER_DATE) VALUES (7897, 1003, '21-may-11')
    INTO ORDERS (ORDER_ID, CLIENT_ID, ORDER_DATE) VALUES (1567, 1004, '11-may-20')
    INTO ORDERS (ORDER_ID, CLIENT_ID, ORDER_DATE) VALUES (1256, 1002, '23-may-85')
    INTO ORDERS (ORDER_ID, CLIENT_ID, ORDER_DATE) VALUES (5631, 1002, '16-may-98')
    INTO ORDERS (ORDER_ID, CLIENT_ID, ORDER_DATE) VALUES (9542, 1006, '17-may-98')
SELECT * FROM dual;

INSERT ALL
    INTO ORDER_DETAILS (ORDER_ID, PROD_ID, PROD_COUNT) VALUES (5168, 437, 10)
    INTO ORDER_DETAILS (ORDER_ID, PROD_ID, PROD_COUNT) VALUES (5168, 436, 2)
    INTO ORDER_DETAILS (ORDER_ID, PROD_ID, PROD_COUNT) VALUES (5615, 215, 14)
    INTO ORDER_DETAILS (ORDER_ID, PROD_ID, PROD_COUNT) VALUES (8456, 501, 1)
    INTO ORDER_DETAILS (ORDER_ID, PROD_ID, PROD_COUNT) VALUES (8452, 107, 3)
    INTO ORDER_DETAILS (ORDER_ID, PROD_ID, PROD_COUNT) VALUES (7897, 436, 110)
    INTO ORDER_DETAILS (ORDER_ID, PROD_ID, PROD_COUNT) VALUES (1567, 502, 2)

```

```

    INTO ORDER_DETAILS (ORDER_ID, PROD_ID, PROD_COUNT) VALUES (1256, 305, 2)
    INTO ORDER_DETAILS (ORDER_ID, PROD_ID, PROD_COUNT) VALUES (5631, 213, 8)
    INTO ORDER_DETAILS (ORDER_ID, PROD_ID, PROD_COUNT) VALUES (9542, 503, 9)
SELECT * FROM dual;

COMMIT;

```

4. Describe на таблиците и Select на всички вмъкнати данни

i. PROD_CATEGORIES

- *DESCRIBE PROD_CATEGORIES;*

```

Name      Null?   Type
-----
CAT_ID     NOT NULL NUMBER
CAT_DESCR  NOT NULL VARCHAR2(30)

```

- *SELECT * FROM PROD_CATEGORIES;*

	CAT_ID	CAT_DESCR
1	100	Phones
2	200	Notebooks
3	300	Tablets
4	400	Drones
5	500	Kitchen supplies
6	600	Garden supplies

ii. PRODUCTS

- *DESCRIBE PRODUCTS;*

```

Name      Null?   Type
-----
PROD_ID    NOT NULL NUMBER
CAT_ID     NOT NULL NUMBER
PROD_DESCR NOT NULL VARCHAR2(30)
PROD_PRICE NOT NULL NUMBER(8,2)

```

- *SELECT * FROM PRODUCTS;*

	PROD_ID	CAT_ID	PROD_DESCR	PROD_PRICE
1	106	100	Kids phone 4S	19.99
2	107	100	Gaming phone 12XS+	2499.99
3	108	100	Work phone 10	149.99
4	109	100	Home phone 3G	9.99
5	110	100	Brick 1	9.99
6	211	200	Mega Note	1499.99
7	212	200	Noted One	1999.99
8	213	200	Brick Mega Gaming 3	9999.99
9	214	200	Gaming Pro 10	4999.99
10	215	200	WorkBook 12	1479.99
11	301	300	Kiddy Tab 2	49.99
12	302	300	Worker Pro	149.99
13	303	300	Gamers Wish	349.99
14	304	300	WorkingTab 3	299.99
15	305	300	HomeTabby	199.99
16	436	400	Military Drone 10	1999.99
17	437	400	Medical Drone Pro Health	2999.99
18	438	400	Spying Drone 2	199.99
19	501	500	Blender	49.99
20	502	500	Toaster	21.99
21	503	500	Microwave	149.99
22	504	500	Juicer	69.99
23	505	500	Coffe grinder	36.99

iii. CLIENTS

- *DESCRIBE CLIENTS;*

Name	Null?	Type
CLIENT_ID	NOT NULL	NUMBER
CLIENT_FIRST_NAME	NOT NULL	VARCHAR2(20)
CLIENT_LAST_NAME	NOT NULL	VARCHAR2(20)
CLIENT_UCN		CHAR(10)

- *SELECT * FROM CLIENTS;*

	CLIENT_ID	CLIENT_FIRST_NAME	CLIENT_LAST_NAME	CLIENT_UCN
1	1001	Ivan	Ivanov	1524023512
2	1002	Ivanka	Ivanova	1525623512
3	1003	Vanio	Ivanovich	1524468512
4	1004	Venci	Venciev	7584652310
5	1005	Pesho	Peshov	7526213252
6	1006	Gosho	Goshev	7563125262

iv. ORDERS

- *DESCRIBE ORDERS;*

Name Null? Type

ORDER_ID NOT NULL NUMBER

CLIENT_ID NOT NULL NUMBER

ORDER_DATE NOT NULL DATE

- *SELECT * FROM ORDERS;*

	ORDER_ID	CLIENT_ID	ORDER_DATE
1	5168	1001	31-MAY-98
2	5615	1001	02-MAY-98
3	8456	1003	01-MAY-99
4	8452	1005	04-MAY-00
5	7897	1003	21-MAY-11
6	1567	1004	11-MAY-20
7	1256	1002	23-MAY-85
8	5631	1002	16-MAY-98
9	9542	1006	17-MAY-98

v. ORDER_DETAILS

- *DESCRIBE ORDER_DETAILS;*

Name Null? Type

ORDER_ID NOT NULL NUMBER

PROD_ID NOT NULL NUMBER

PROD_COUNT NOT NULL NUMBER

- *SELECT * FROM ORDER_DETAILS;*

	ORDER_ID	PROD_ID	PROD_COUNT
1	5168	437	10
2	5168	436	2
3	5615	215	14
4	8456	501	1
5	8452	107	3
6	7897	436	110
7	1567	502	2
8	1256	305	2
9	5631	213	8
10	9542	503	9

5. Графично и писмено представяне на таблиците и техните връзки

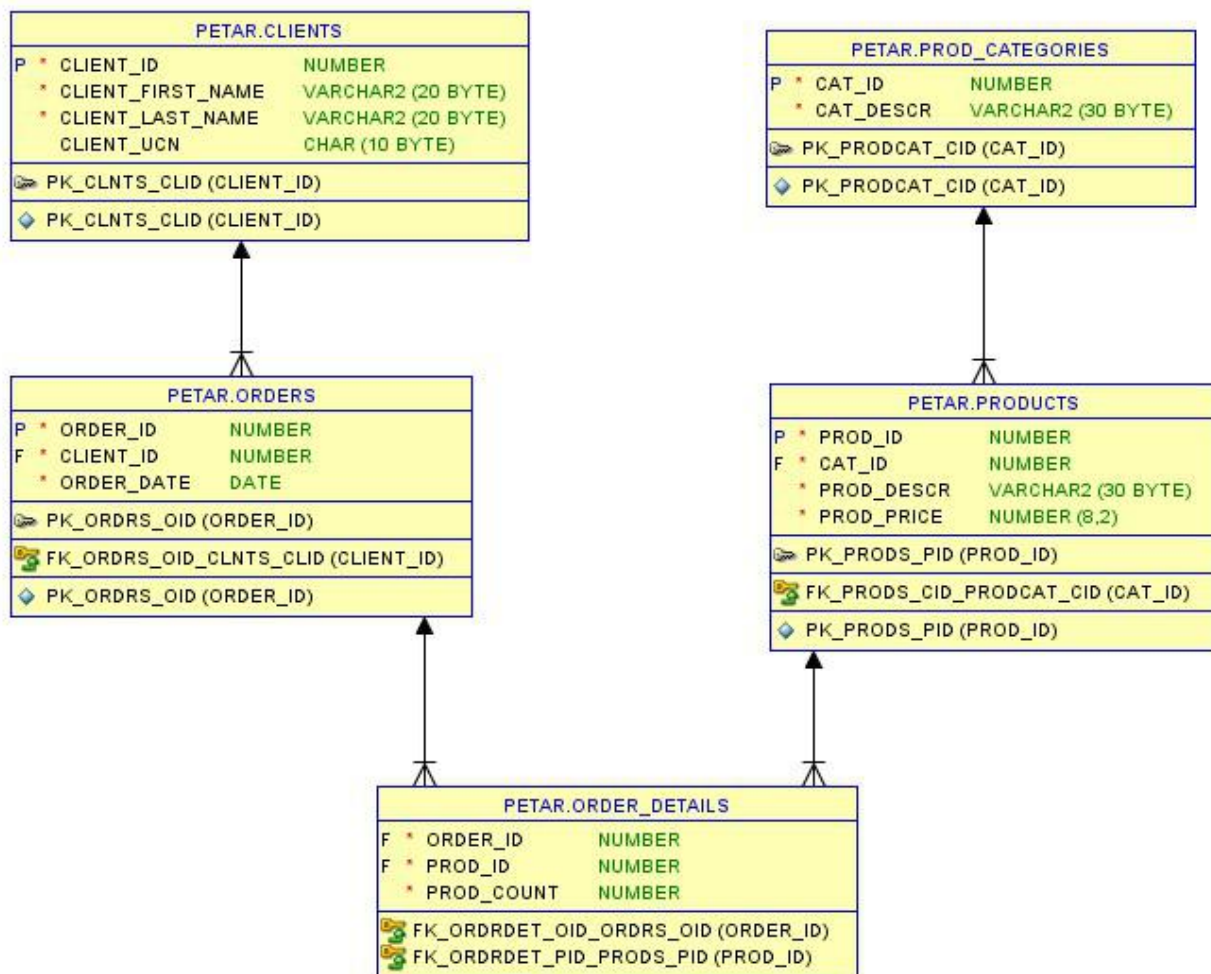


Таблица *CLIENTS* и *ORDERS*:

- една самостоятелна връзка, независима, един към много осъществена чрез primary key PK_CLNTS_CLID по колона CLIENT_ID от CLIENTS и foreign key FK_ORDRS_OID_CLNTS_CLID по колона CLIENT_ID от ORDERS

Таблица *PROD_CATEGORIES* и *PRODUCTS*:

- една самостоятелна връзка, независима, един към много осъществена чрез primary key PK_PRODCAT_CID по колона CAT_ID от PROD_CATEGORIES и foreign key FK_PRODS_CID_PRODCAT_CID по колона CAT_ID от PRODUCTS

Таблица *ORDERS* и *PRODUCTS*

- една връзка много към много осъществена чрез primary key PK_ORDRS_OID - колона ORDER_ID от таблица ORDERS, primary key PK_PRODS_PID - колона CAT_ID от таблица PRODUCTS и съответно foreign key FK_ORDRDET_OID_ORDRS_OID - колона ORDER_ID от таблица ORDER_DETAILS, foreign key FK_ORDDDET_PID_PRODS_PID - колона PROD_ID от таблица ORDER_DETAILS

6. Извеждане на справка от всички таблици

```

SELECT
  C.CLIENT_ID,
  C.CLIENT_FIRST_NAME,
  C.CLIENT_LAST_NAME,
  C.CLIENT_UCN,
  O.ORDER_ID,
  O.ORDER_DATE,
  O_DET.PROD_ID,
  O_DET.PROD_COUNT,
  O_DET.PROD_COUNT * P.PROD_PRICE AS FINAL_PRICE,
  P.PROD_DESCR,
  P.PROD_PRICE,
  P_CAT.CAT_ID,
  P_CAT.CAT_DESCR
FROM CLIENTS C
JOIN ORDERS O
  ON C.CLIENT_ID = O.CLIENT_ID
JOIN ORDER_DETAILS O_DET
  ON O.ORDER_ID = O_DET.ORDER_ID
JOIN PRODUCTS P
  ON O_DET.PROD_ID = P.PROD_ID
JOIN PROD_CATEGORIES P_CAT
  ON P.CAT_ID = P_CAT.CAT_ID
ORDER BY
  C.CLIENT_ID,
  O.ORDER_DATE;

```

	CLIENT_ID	CLIENT_FIRST_NAME	CLIENT_LAST_NAME	CLIENT_UCN	ORDER_ID	ORDER_DATE	PROD_ID	PROD_COUNT	FINAL_PRICE	PROD_DESCR	PROD_PRICE	CAT_ID	CAT_DESCR
1	1001	Ivan	Ivanov	1524023512	5615	02-MAY-98	215	14	20719.86	WorkBook 12	1479.99	200	Notebooks
2	1001	Ivan	Ivanov	1524023512	5168	31-MAY-98	437	10	29999.9	Medical Drone Pro Health	2999.99	400	Drones
3	1001	Ivan	Ivanov	1524023512	5168	31-MAY-98	436	2	3999.98	Military Drone 10	1999.99	400	Drones
4	1002	Ivanka	Ivanova	1525623512	1256	23-MAY-85	305	2	399.98	HomeTabby	199.99	300	Tablets
5	1002	Ivanka	Ivanova	1525623512	5631	16-MAY-98	213	8	79999.92	Brick Mega Gaming 3	9999.99	200	Notebooks
6	1003	Vanio	Ivanovich	1524468512	8456	01-MAY-99	501	1	49.99	Blender	49.99	500	Kitchen supplies
7	1003	Vanio	Ivanovich	1524468512	7897	21-MAY-11	436	110	219998.9	Military Drone 10	1999.99	400	Drones
8	1004	Venci	Venciev	7584652310	1567	11-MAY-20	502	2	43.98	Toaster	21.99	500	Kitchen supplies
9	1005	Pesho	Peshov	7526213252	8452	04-MAY-00	107	3	7499.97	Gaming phone 12XS+	2499.99	100	Phones
10	1006	Gosho	Goshev	7563125262	9542	17-MAY-98	503	9	1349.91	Microwave	149.99	500	Kitchen supplies