Національний технічний університет України

«Київський політехнічний інститут»

Факультет інформатики та обчислювальної техніки

Кафедра АСОІУ

Звіт з лабораторної роботи № 5

з дисципліни

«OLAP та сховища даних»

Виконав:

студент 3-го курсу
групи ІП-52, ФІОТ
Набоков Едуард

Київ 2018

Завдання

Завдання на підготовку до комп'ютерного практикуму

Матеріали лекції - **Матеріали\OLAP and Data Warehousing, [4]**

Завдання 1. Побудувати схему сховища даних за типом «зірка»

Необхідно перебудувати модель отриману в п.11 комп'ютерного практикуму за типом «зірка» *[4, ст360]*

Завдання 2. Побудувати схему сховища даних за типом «сніжинка»

Необхідно перебудувати модель отриману в п.11 комп'ютерного практикуму за типом «сніжинка» . *[4, ст361]*

Завдання 3. Побудувати схему сховища даних за типом «сніжинка»

1. Створити схеми бази даних за отримані в завданнях 1,2.

2. Заповнити таблиці схем тестовими даними

3. Створити по 2 запити з використанням join на кожну схему.
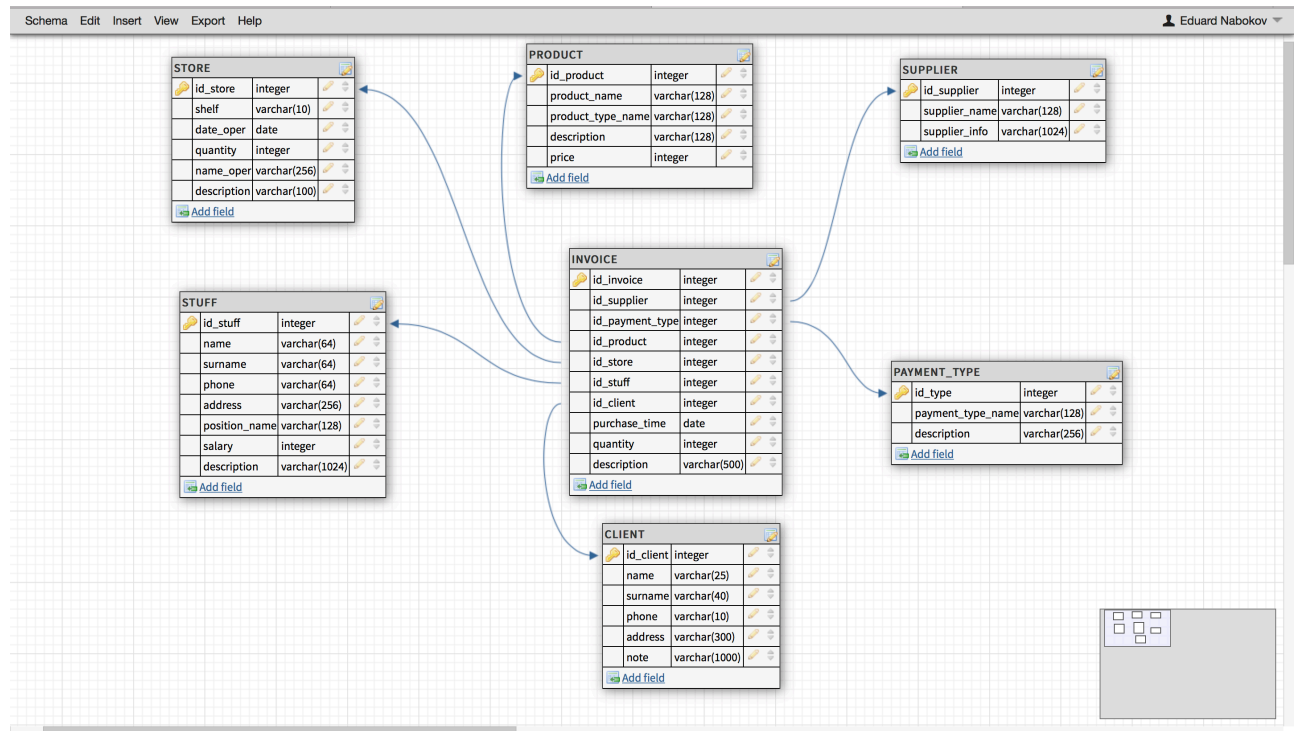
Вимоги до звіту комп'ютерного практикуму

Звіт до комп'ютерного практикуму виконується у Microsoft Word та повинен містити наступні розділи:

3.   Відомості про виконавця
4.   Аналітичні запити з поясненнями та результати їх виконання.

Контрольні запитання та завдання

3.   Переваги та недоліки схем «зірка» та сніжинка.
4.   Підходи до створення багатовимірних моделей.

Виконання роботи


```
DROP TABLE INVOICE CASCADE CONSTRAINTS;
DROP TABLE STUFF;
DROP TABLE CLIENT;
DROP TABLE SUPPLIER;
DROP TABLE PRODUCT;
DROP TABLE STORE;
DROP TABLE PAYMENT_TYPE;


CREATE TABLE "STUFF" (
  "id_stuff"       INT PRIMARY KEY,
  "name"           varchar(255),
  "surname"        varchar(255),
  "phone"          varchar(255),
  "address"        varchar(255),
  "position_name"  varchar(255),
  "salary"         INT,
  "description"    varchar(255)
);

CREATE TABLE "CLIENT" (
  "id_client" INT PRIMARY KEY,
  "name"      varchar(255),
  "surname"   varchar(255),
  "phone"     varchar(255),
  "address"   varchar(255),
  "email"     varchar(255)
);
```

```sql
CREATE TABLE "SUPPLIER" (
  "id_supplier"   INT PRIMARY KEY,
  "supplier_name" varchar(255),
  "supplier_info" varchar(255)
);

CREATE TABLE "PRODUCT" (
  "id_product"       INT PRIMARY KEY,
  "product_name"     varchar(255),
  "product_type_name" varchar(255),
  "description"      varchar(255),
  "price"            INT
);

CREATE TABLE "STORE" (
  "id_store"    INT PRIMARY KEY,
  "shelf"       varchar(255),
  "date_oper"   DATE,
  "quantity"    INT,
  "name_oper"   varchar(255),
  "description" varchar(255)
);

CREATE TABLE "PAYMENT_TYPE" (
  "id_type"           INT PRIMARY KEY,
  "payment_type_name" varchar(255),
  "description"       varchar(255)
);

CREATE TABLE "INVOICE" (
  "id_invoice"      INT PRIMARY KEY,
  "id_supplier"     INT REFERENCES SUPPLIER("id_supplier"),
  "id_payment_type" INT REFERENCES PAYMENT_TYPE("id_type"),
  "id_product"      INT REFERENCES PRODUCT("id_product"),
  "id_store"        INT REFERENCES STORE("id_store"),
  "id_stuff"        INT REFERENCES STUFF("id_stuff"),
  "id_client"       INT REFERENCES CLIENT("id_client"),
  "purchase_time"   DATE,
  "quantity"        INT,
  "description"     varchar(255)
);

insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (1, 'Aaron', 'Smih', '365-54-87', '????', 'Smih@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (2, 'Adam', 'Thomas', '584-98-44', '????', 'Thomas@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (3, 'Barry', 'Davies', '063-564-54-54', '????',
'Davies@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (4, 'Basil', 'White', '097-347-44-99', '????',
'White@market.com');
```

```sql
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (5, 'Simon', 'Hughes', '050-54-21', '????', 'Hughes@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (6, 'Carlton', 'Edwards', '546-21-64', '????',
'Edwards@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (7, 'Sebastian', 'Green', '878-54-63', '????',
'Green@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (8, 'Scott', 'Wood', '050-879-54-16', '????', 'Wood@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (9, 'Galvin', 'Harris', '093-879-23-54', '????',
'Harris@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (10, 'Bob', 'Martin', '097-213-54-69', '????',
'Martin@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (11, 'Hunter', 'Anderson', '023-878-54-96', '??????????',
'Anderson@market.com');

insert into PAYMENT_TYPE ("id_type", "payment_type_name", "description")
values (1, 'a', 'text...text..text');
insert into PAYMENT_TYPE ("id_type", "payment_type_name", "description")
values (2, 'b', 'text...text..text');
insert into PAYMENT_TYPE ("id_type", "payment_type_name", "description")
values (3, 'c', 'text...text..text');
insert into PAYMENT_TYPE ("id_type", "payment_type_name", "description")
values (4, 'd', 'text...text..text');
insert into PAYMENT_TYPE ("id_type", "payment_type_name", "description")
values (5, 'e', 'text...text..text');
insert into PAYMENT_TYPE ("id_type", "payment_type_name", "description")
values (6, 'f', 'text...text..text');

insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (1, 'aa', 'LoungeBar ROSHEN', 'sweet', 5);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (2, 'bb', 'ROSHEN', null, 10);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (3, 'cc',
'???????????? ????????? ?? ?????????? ?????????? ???????', null, 10);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (5, 'dd',
'"???????????? ??????" ? ????????? ???????? ?? ????? ????????', null,
65);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (6, 'ee', '??????? ????????', null, 55);
```

```sql
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (7, 'ff', '??????? EsfeRo Crema', null, 78);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (8, 'gg', 'Nescafe Gold', null, 60);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (9, 'hh', '??????', null, 12);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (10, 'jj', '??? ??????????', null, 65);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (11, 'kk', '?????', null, 12);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (12, 'll', '??? ????????', null, 15);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (13, 'mm', '???????', null, 15);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (14, 'nn', '?????? ???????', null, 25);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (15, 'oo', '?????? ????', null, 30);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (16, 'pp', '??????', null, 15);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (17, 'qq', '??????? ??????????', null, 100);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (18, 'rr', '??????? ???????', null, 120);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (19, 'ss', '?????? ??????????', null, 170);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (20, 'tt', '?????', null, 98);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (21, 'uu', '????????', null, 95);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (22, 'vv', '???? ???????????', null, 4);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (23, 'ww', '???? ???????????', null, 7);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (24, 'zz', '???? ?????', null, 3);
insert into PRODUCT ("id_product", "product_name", "product_type_name",
"description", "price")
values (25, 'qw', '????????', null, 3);
```

```sql
insert into STORE ("id_store", "shelf", "date_oper", "quantity",
"name_oper", "description")
values (1, '7', to_date('22-05-2012 21:14:02', 'dd-mm-yyyy hh24:mi:ss'),
1, 9, null);
insert into STORE ("id_store", "shelf", "date_oper", "quantity",
"name_oper", "description")
values (2, '15', to_date('16-11-2013 09:54:21', 'dd-mm-yyyy
hh24:mi:ss'), 1, 5, null);
insert into STORE ("id_store", "shelf", "date_oper", "quantity",
"name_oper", "description")
values (3, '13', to_date('20-05-2012 01:12:18', 'dd-mm-yyyy
hh24:mi:ss'), 2, 1, null);
insert into STORE ("id_store", "shelf", "date_oper", "quantity",
"name_oper", "description")
values (4, '14', to_date('08-08-2013 17:16:10', 'dd-mm-yyyy
hh24:mi:ss'), 1, 7, null);
insert into STORE ("id_store", "shelf", "date_oper", "quantity",
"name_oper", "description")
values (5, '1', to_date('14-06-2012 18:34:32', 'dd-mm-yyyy hh24:mi:ss'),
1, 7, null);
insert into STORE ("id_store", "shelf", "date_oper", "quantity",
"name_oper", "description")
values (6, '15', to_date('01-09-2011 16:16:32', 'dd-mm-yyyy
hh24:mi:ss'), 2, 8, null);
insert into STORE ("id_store", "shelf", "date_oper", "quantity",
"name_oper", "description")
values (7, '17', to_date('26-11-2013 22:10:58', 'dd-mm-yyyy
hh24:mi:ss'), 2, 8, null);
insert into STORE ("id_store", "shelf", "date_oper", "quantity",
"name_oper", "description")
values (8, '9', to_date('20-04-2013 13:11:13', 'dd-mm-yyyy hh24:mi:ss'),
2, 9, null);
insert into STORE ("id_store", "shelf", "date_oper", "quantity",
"name_oper", "description")
values (9, '11', to_date('01-01-2014 14:11:30', 'dd-mm-yyyy
hh24:mi:ss'), 2, 4, null);
insert into STORE ("id_store", "shelf", "date_oper", "quantity",
"name_oper", "description")
values (10, '12', to_date('01-08-2013 19:20:29', 'dd-mm-yyyy
hh24:mi:ss'), 2, 8, null);

insert into STUFF ("id_stuff", "name", "surname", "phone", "address",
"salary", "description")
values (1, 'Aaron', 'Smih', '365-54-87', '????', 1500, null);
insert into STUFF ("id_stuff", "name", "surname", "phone", "address",
"salary", "description")
values (2, 'Adam', 'Thomas', '584-98-44', '????', 1234, null);
insert into STUFF ("id_stuff", "name", "surname", "phone", "address",
"salary", "description")
values (3, 'Barry', 'Davies', '063-564-54-54', '????', 5323, null);
insert into STUFF ("id_stuff", "name", "surname", "phone", "address",
"salary", "description")
values (4, 'Basil', 'White', '097-347-44-99', '????', 5234, null);
insert into STUFF ("id_stuff", "name", "surname", "phone", "address",
"salary", "description")
values (5, 'Simon', 'Hughes', '050-54-21', '????', 1234, null);
insert into STUFF ("id_stuff", "name", "surname", "phone", "address",
"salary", "description")
```

```sql
values (6, 'Carlton', 'Edwards', '546-21-64', '????', 6342, null);
insert into STUFF ("id_stuff", "name", "surname", "phone", "address",
"salary", "description")
values (7, 'Sebastian', 'Green', '878-54-63', '????', 2313, null);
insert into STUFF ("id_stuff", "name", "surname", "phone", "address",
"salary", "description")
values (8, 'Scott', 'Wood', '050-879-54-16', '????', 6134, null);
insert into STUFF ("id_stuff", "name", "surname", "phone", "address",
"salary", "description")
values (9, 'Galvin', 'Harris', '093-879-23-54', '????', 4432, null);
insert into STUFF ("id_stuff", "name", "surname", "phone", "address",
"salary", "description")
values (10, 'Bob', 'Martin', '097-213-54-69', '????', 5235, null);
insert into STUFF ("id_stuff", "name", "surname", "phone", "address",
"salary", "description")
values (11, 'Hunter', 'Anderson', '023-878-54-96', '??????????', 4321,
null);

insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (1, 'ROSHEN', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (2, '???', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (3, '????-?????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (4, 'Nestle', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (5, 'Ferrero', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (6, 'Kraft Food', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (7, '??????????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (8, '?????????????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (9, 'Danone', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (10, '????????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (11, '????????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (12, '???? ????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (13, 'ө????? ???????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (14, '????????????? ?????????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (15, '???', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (16, '????????', null);

insert into INVOICE ("id_invoice", "id_supplier", "id_payment_type",
"id_product", "id_store", "id_stuff", "id_client", "purchase_time",
"quantity", "description")
values (1, 5, 1, 5, 1, 8, 5, to_date('20-07-2016 10:14:02', 'dd-mm-yyyy
hh24:mi:ss'), 15, 'text.text.etxe');
```

```sql
insert into INVOICE ("id_invoice", "id_supplier", "id_payment_type",
"id_product", "id_store", "id_stuff", "id_client", "purchase_time",
"quantity", "description")
values (2, 4, 2, 6, 2, 7, 4, to_date('22-02-2012 11:14:02', 'dd-mm-yyyy
hh24:mi:ss'), 12, 'text.text.etxe');
insert into INVOICE ("id_invoice", "id_supplier", "id_payment_type",
"id_product", "id_store", "id_stuff", "id_client", "purchase_time",
"quantity", "description")
values (3, 2, 3, 8, 3, 5, 3, to_date('10-06-2014 12:14:02', 'dd-mm-yyyy
hh24:mi:ss'), 17, 'text.text.etxe');
insert into INVOICE ("id_invoice", "id_supplier", "id_payment_type",
"id_product", "id_store", "id_stuff", "id_client", "purchase_time",
"quantity", "description")
values (4, 6, 4, 10, 4, 6, 2, to_date('12-04-2012 11:14:02', 'dd-mm-yyyy
hh24:mi:ss'), 43, 'text.text.etxe');
insert into INVOICE ("id_invoice", "id_supplier", "id_payment_type",
"id_product", "id_store", "id_stuff", "id_client", "purchase_time",
"quantity", "description")
values (5, 8, 5, 14, 5, 3, 1, to_date('24-01-2010 12:14:02', 'dd-mm-yyyy
hh24:mi:ss'), 23, 'text.text.etxe');
insert into INVOICE ("id_invoice", "id_supplier", "id_payment_type",
"id_product", "id_store", "id_stuff", "id_client", "purchase_time",
"quantity", "description")
values (6, 10, 1, 22, 6, 5, 6, to_date('09-02-2016 16:14:02', 'dd-mm-
yyyy hh24:mi:ss'), 1, 'text.text.etxe');
insert into INVOICE ("id_invoice", "id_supplier", "id_payment_type",
"id_product", "id_store", "id_stuff", "id_client", "purchase_time",
"quantity", "description")
values (7, 11, 3, 7, 7, 5, 7, to_date('03-06-2008 14:14:02', 'dd-mm-yyyy
hh24:mi:ss'), 0, 'text.text.etxe');
insert into INVOICE ("id_invoice", "id_supplier", "id_payment_type",
"id_product", "id_store", "id_stuff", "id_client", "purchase_time",
"quantity", "description")
values (8, 16, 2, 9, 8, 3, 8, to_date('02-01-2000 14:14:02', 'dd-mm-yyyy
hh24:mi:ss'), 61, 'text.text.etxe');
insert into INVOICE ("id_invoice", "id_supplier", "id_payment_type",
"id_product", "id_store", "id_stuff", "id_client", "purchase_time",
"quantity", "description")
values (9, 4, 3, 11, 9, 2, 4, to_date('02-05-2012 13:14:02', 'dd-mm-yyyy
hh24:mi:ss'), 53, 'text.text.etxe');
insert into INVOICE ("id_invoice", "id_supplier", "id_payment_type",
"id_product", "id_store", "id_stuff", "id_client", "purchase_time",
"quantity", "description")
values (10, 15, 3, 14, 10, 1, 2, to_date('05-05-2005 16:14:02', 'dd-mm-
yyyy hh24:mi:ss'), 62, 'text.text.etxe');


-- query 1
SELECT "name", "surname", "purchase_time", "quantity" FROM INVOICE
JOIN STUFF S on INVOICE."id_stuff" = S."id_stuff";

-- query 2
SELECT c2."name", c2."surname", i."quantity", p."product_name",
TYPE2."payment_type_name" FROM INVOICE
JOIN CLIENT C2 on INVOICE."id_client" = C2."id_client"
JOIN INVOICE I on C2."id_client" = I."id_client"
JOIN PAYMENT_TYPE TYPE2 on I."id_payment_type" = TYPE2."id_type"
JOIN PRODUCT P on I."id_product" = P."id_product";
```
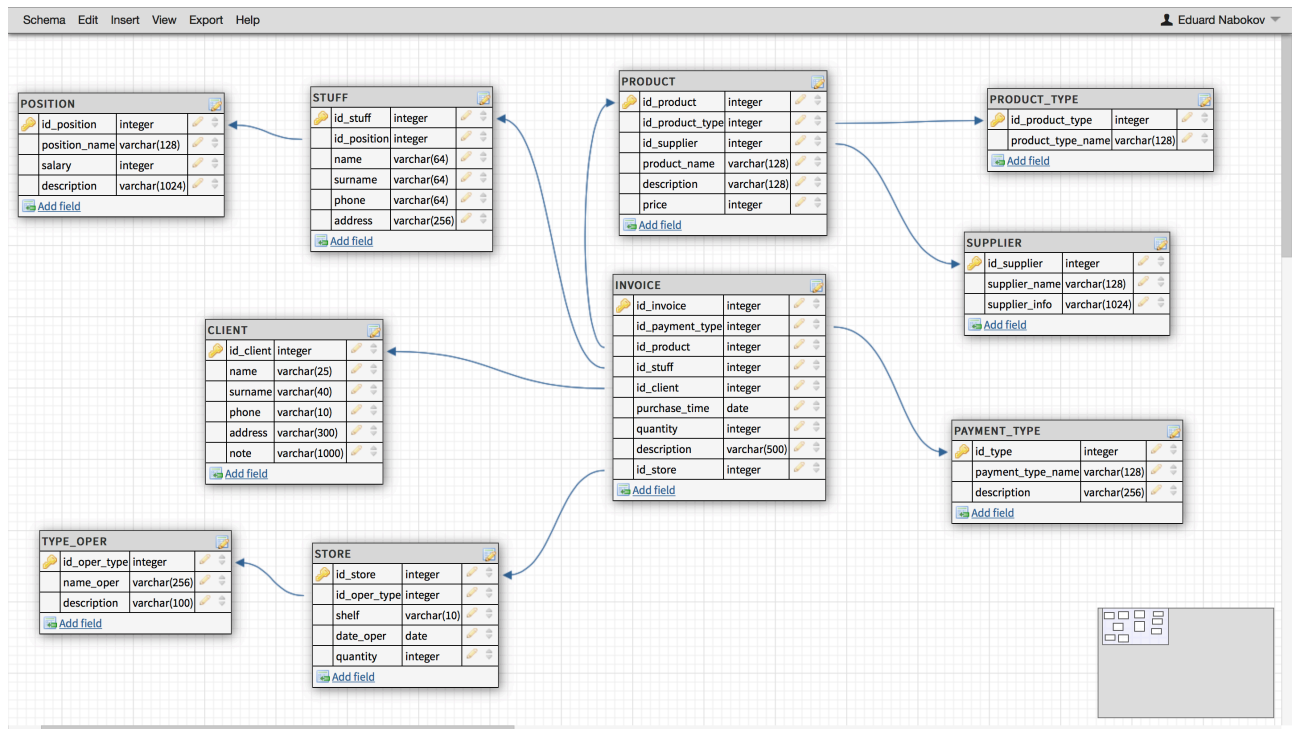
```sql
DROP TABLE TYPE_OPER CASCADE CONSTRAINTS;
DROP TABLE POSITION CASCADE CONSTRAINTS;
DROP TABLE STUFF CASCADE CONSTRAINTS;
DROP TABLE CLIENT CASCADE CONSTRAINTS;
DROP TABLE PRODUCT_TYPE CASCADE CONSTRAINTS;
DROP TABLE SUPPLIER CASCADE CONSTRAINTS;
DROP TABLE PRODUCT CASCADE CONSTRAINTS;
DROP TABLE STORE CASCADE CONSTRAINTS;
DROP TABLE PAYMENT_TYPE CASCADE CONSTRAINTS;
DROP TABLE INVOICE CASCADE CONSTRAINTS;

CREATE TABLE "TYPE_OPER" (
      "id_oper_type" INT PRIMARY KEY,
      "name_oper" varchar(255),
      "description" varchar(255)
);

CREATE TABLE "POSITION" (
      "id_position" INT PRIMARY KEY,
      "position_name" varchar(255),
      "salary" INT,
      "description" varchar(255)
);

CREATE TABLE "STUFF" (
  "id_stuff"    INT PRIMARY KEY,
  "id_position" INT REFERENCES POSITION("id_position"),
  "name"        varchar(255),
  "surname"     varchar(255),
  "phone"       varchar(255),
```

```sql
    "address"      varchar(255)
);

CREATE TABLE "CLIENT" (
    "id_client" INT PRIMARY KEY,
    "name" varchar(255),
    "surname" varchar(255),
    "phone" varchar(255),
    "address" varchar(255),
    "email" varchar(255)
);

CREATE TABLE "PRODUCT_TYPE" (
    "id_product_type" INT PRIMARY KEY,
    "product_type_name" varchar(255)
);

CREATE TABLE "SUPPLIER" (
    "id_supplier" INT PRIMARY KEY,
    "supplier_name" varchar(255),
    "supplier_info" varchar(255)
);

CREATE TABLE "PRODUCT" (
  "id_product"      INT PRIMARY KEY,
  "id_product_type" INT REFERENCES PRODUCT_TYPE("id_product_type"),
  "id_supplier"     INT REFERENCES SUPPLIER("id_supplier"),
  "product_name"    varchar(255),
  "description"     varchar(255),
  "price"           INT
);

CREATE TABLE "STORE" (
  "id_store"     INT PRIMARY KEY,
  "id_oper_type" INT REFERENCES TYPE_OPER("id_oper_type"),
  "shelf"        varchar(255),
  "date_oper"    DATE,
  "quantity"     INT
);

CREATE TABLE "PAYMENT_TYPE" (
    "id_type" INT PRIMARY KEY,
    "payment_type_name" varchar(255),
    "description" varchar(255)
);

CREATE TABLE "INVOICE" (
  "id_invoice"      INT PRIMARY KEY,
  "id_payment_type" INT REFERENCES PAYMENT_TYPE("id_type"),
  "id_product"      INT REFERENCES PRODUCT("id_product"),
  "id_stuff"        INT REFERENCES STUFF("id_stuff"),
  "id_client"       INT REFERENCES CLIENT("id_client"),
  "id_store"        INT REFERENCES STORE("id_store"),
  "purchase_time"   DATE,
  "quantity"        INT,
  "description"     varchar(255)
);
```

```sql
insert into TYPE_OPER ("id_oper_type", "name_oper", "description")
values (1, 'IN', '??????????? ?? ??????.');
insert into TYPE_OPER ("id_oper_type", "name_oper", "description")
values (2, 'OUT', null);

insert into POSITION ("id_position", "position_name", "salary",
"description")
values (1, '?????????-?????', 3000, null);
insert into POSITION ("id_position", "position_name", "salary",
"description")
values (2, '?????????', 5000, null);
insert into POSITION ("id_position", "position_name", "salary",
"description")
values (3, '???????? ??????? ???????', 7000, null);
insert into POSITION ("id_position", "position_name", "salary",
"description")
values (4, '?????', 6000, null);
insert into POSITION ("id_position", "position_name", "salary",
"description")
values (5, '?????', 6000, null);

insert into STUFF ("id_stuff", "id_position", "name", "surname",
"phone", "address")
values (1, 1, 'Aaron', 'Smih', '365-54-87', '????');
insert into STUFF ("id_stuff", "id_position", "name", "surname",
"phone", "address")
values (2, 1, 'Adam', 'Thomas', '584-98-44', '????');
insert into STUFF ("id_stuff", "id_position", "name", "surname",
"phone", "address")
values (3, 1, 'Barry', 'Davies', '063-564-54-54', '????');
insert into STUFF ("id_stuff", "id_position", "name", "surname",
"phone", "address")
values (4, 1, 'Basil', 'White', '097-347-44-99', '????');
insert into STUFF ("id_stuff", "id_position", "name", "surname",
"phone", "address")
values (5, 1, 'Simon', 'Hughes', '050-54-21', '????');
insert into STUFF ("id_stuff", "id_position", "name", "surname",
"phone", "address")
values (6, 1, 'Carlton', 'Edwards', '546-21-64', '????');
insert into STUFF ("id_stuff", "id_position", "name", "surname",
"phone", "address")
values (7, 2, 'Sebastian', 'Green', '878-54-63', '????');
insert into STUFF ("id_stuff", "id_position", "name", "surname",
"phone", "address")
values (8, 3, 'Scott', 'Wood', '050-879-54-16', '????');
insert into STUFF ("id_stuff", "id_position", "name", "surname",
"phone", "address")
values (9, 4, 'Galvin', 'Harris', '093-879-23-54', '????');
insert into STUFF ("id_stuff", "id_position", "name", "surname",
"phone", "address")
values (10, 5, 'Bob', 'Martin', '097-213-54-69', '????');
insert into STUFF ("id_stuff", "id_position", "name", "surname",
"phone", "address")
values (11, 4, 'Hunter', 'Anderson', '023-878-54-96', '??????????');

insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (1, 'Aaron', 'Smih', '365-54-87', '????', 'Smih@market.com');
```

```sql
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (2, 'Adam', 'Thomas', '584-98-44', '????', 'Thomas@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (3, 'Barry', 'Davies', '063-564-54-54', '????',
'Davies@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (4, 'Basil', 'White', '097-347-44-99', '????',
'White@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (5, 'Simon', 'Hughes', '050-54-21', '????', 'Hughes@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (6, 'Carlton', 'Edwards', '546-21-64', '????',
'Edwards@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (7, 'Sebastian', 'Green', '878-54-63', '????',
'Green@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (8, 'Scott', 'Wood', '050-879-54-16', '????', 'Wood@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (9, 'Galvin', 'Harris', '093-879-23-54', '????',
'Harris@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (10, 'Bob', 'Martin', '097-213-54-69', '????',
'Martin@market.com');
insert into CLIENT ("id_client", "name", "surname", "phone", "address",
"email")
values (11, 'Hunter', 'Anderson', '023-878-54-96', '??????????',
'Anderson@market.com');

insert into PRODUCT_TYPE ("id_product_type", "product_type_name")
values (1, 'aa');
insert into PRODUCT_TYPE ("id_product_type", "product_type_name")
values (2, 'bb');
insert into PRODUCT_TYPE ("id_product_type", "product_type_name")
values (3, 'cc');
insert into PRODUCT_TYPE ("id_product_type", "product_type_name")
values (4, 'dd');
insert into PRODUCT_TYPE ("id_product_type", "product_type_name")
values (5, 'ee');
insert into PRODUCT_TYPE ("id_product_type", "product_type_name")
values (6, 'ff');
insert into PRODUCT_TYPE ("id_product_type", "product_type_name")
values (7, 'gg');
insert into PRODUCT_TYPE ("id_product_type", "product_type_name")
values (8, 'jj');

insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (1, 'ROSHEN', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
```

```sql
values (2, '???', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (3, '????-?????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (4, 'Nestle', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (5, 'Ferrero', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (6, 'Kraft Food', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (7, '??????????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (8, '?????????????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (9, 'Danone', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (10, '????????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (11, '????????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (12, '???? ????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (13, 'θ????? ???????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (14, '????????????? ?????????', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (15, '???', null);
insert into SUPPLIER ("id_supplier", "supplier_name", "supplier_info")
values (16, '????????', null);

insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (1, 1, 1, '?????? ??????? ? ???????? ?LoungeBar
ROSHEN? ???????? ???????', ' sweet', 5);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (2, 1, 1, '?ROSHEN? ????? ? ?????? ???????? ????????', null, 10);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (3, 1, 1,
'???????????? ????????? ?? ?????????? ?????????? ???????', null, 10);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (5, 1, 2,
'"???????????? ??????" ? ????????? ???????? ?? ????? ????????', null,
65);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (6, 1, 2, '??????? ????????', null, 55);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (7, 1, 3, '??????? EsfeRo Crema', null, 78);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (8, 1, 4, 'Nescafe Gold', null, 60);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (9, 3, 7, '??????', null, 12);
```

```sql
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (10, 4, 7, '??? ??????????', null, 65);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (11, 3, 7, '?????', null, 12);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (12, 3, 8, '??? ????????', null, 15);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (13, 3, 8, '???????', null, 15);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (14, 5, 12, '?????? ???????', null, 25);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (15, 5, 12, '?????? ????', null, 30);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (16, 3, 10, '??????', null, 15);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (17, 6, 13, '??????? ??????????', null, 100);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (18, 6, 13, '??????? ???????', null, 120);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (19, 6, 13, '?????? ??????????', null, 170);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (20, 5, 14, '?????', null, 98);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (21, 5, 14, '????????', null, 95);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (22, 7, 15, '???? ???????????', null, 4);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (23, 7, 15, '???? ???????????', null, 7);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (24, 7, 16, '???? ?????', null, 3);
insert into PRODUCT ("id_product", "id_product_type", "id_supplier",
"product_name", "description", "price")
values (25, 7, 16, '????????', null, 3);

insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (1, 1, '7', to_date('22-05-2012 21:14:02', 'dd-mm-yyyy
hh24:mi:ss'), 9);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (2, 2, '15', to_date('16-11-2013 09:54:21', 'dd-mm-yyyy
hh24:mi:ss'), 5);
```

```sql
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (3, 1, '13', to_date('20-05-2012 01:12:18', 'dd-mm-yyyy
hh24:mi:ss'), 1);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (4, 1, '14', to_date('08-08-2013 17:16:10', 'dd-mm-yyyy
hh24:mi:ss'), 7);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (5, 2, '1', to_date('14-06-2012 18:34:32', 'dd-mm-yyyy
hh24:mi:ss'), 7);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (6, 1, '15', to_date('01-09-2011 16:16:32', 'dd-mm-yyyy
hh24:mi:ss'), 8);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (7, 1, '17', to_date('26-11-2013 22:10:58', 'dd-mm-yyyy
hh24:mi:ss'), 8);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (8, 2, '9', to_date('20-04-2013 13:11:13', 'dd-mm-yyyy
hh24:mi:ss'), 9);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (9, 2, '11', to_date('01-01-2014 14:11:30', 'dd-mm-yyyy
hh24:mi:ss'), 4);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (10, 2, '12', to_date('01-08-2013 19:20:29', 'dd-mm-yyyy
hh24:mi:ss'), 8);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (11, 1, '7', to_date('28-09-2013 11:20:31', 'dd-mm-yyyy
hh24:mi:ss'), 10);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (12, 2, '15', to_date('05-03-2013 10:35:54', 'dd-mm-yyyy
hh24:mi:ss'), 5);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (13, 2, '6', to_date('15-05-2013 09:14:03', 'dd-mm-yyyy
hh24:mi:ss'), 5);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (14, 1, '4', to_date('18-12-2013 08:15:11', 'dd-mm-yyyy
hh24:mi:ss'), 10);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (15, 1, '14', to_date('15-02-2012 08:31:12', 'dd-mm-yyyy
hh24:mi:ss'), 4);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (16, 1, '5', to_date('09-08-2013 08:14:07', 'dd-mm-yyyy
hh24:mi:ss'), 5);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
```

```sql
values (17, 1, '12', to_date('16-07-2013 06:52:47', 'dd-mm-yyyy
hh24:mi:ss'), 3);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (18, 1, '11', to_date('03-11-2011 16:10:13', 'dd-mm-yyyy
hh24:mi:ss'), 2);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (19, 2, '17', to_date('27-07-2012 07:36:18', 'dd-mm-yyyy
hh24:mi:ss'), 3);
insert into STORE ("id_store", "id_oper_type", "shelf", "date_oper",
"quantity")
values (20, 1, '11', to_date('22-07-2013 14:19:40', 'dd-mm-yyyy
hh24:mi:ss'), 6);

insert into PAYMENT_TYPE ("id_type", "payment_type_name", "description")
values (1, '?????????? ??????????', null);
insert into PAYMENT_TYPE ("id_type", "payment_type_name", "description")
values (2, '????????????? ??????????', null);

insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (3, 1, 5, 11, 10, 15, to_date('12-09-2011 13:24:43', 'dd-mm-yyyy
hh24:mi:ss'), 15, null);
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (4, 1, 3, 10, 5, 20, to_date('25-09-2011 08:57:03', 'dd-mm-yyyy
hh24:mi:ss'), 16, null);
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (5, 1, 5, 9, 2, 4, to_date('01-08-2012 08:51:18', 'dd-mm-yyyy
hh24:mi:ss'), 60, null);
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (6, 2, 6, 8, 8, 14, to_date('11-03-2013 15:41:48', 'dd-mm-yyyy
hh24:mi:ss'), 70, null);
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (7, 1, 1, 7, 2, 1, to_date('16-02-2012 08:18:04', 'dd-mm-yyyy
hh24:mi:ss'), 32, null);
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (8, 1, 3, 6, 1, 5, to_date('17-10-2012 21:40:40', 'dd-mm-yyyy
hh24:mi:ss'), 23, null);
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (9, 2, 5, 5, 6, 6, to_date('24-12-2012 02:36:56', 'dd-mm-yyyy
hh24:mi:ss'), 14, null);
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
```

```sql
values (10, 2, 5, 4, 8, 8, to_date('09-06-2013 08:45:01', 'dd-mm-yyyy
hh24:mi:ss'), 67, null);
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (11, 1, 3, 3, 6, 12, to_date('27-09-2011 19:18:38', 'dd-mm-yyyy
hh24:mi:ss'), 12, null);
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (12, 2, 4, 2, 7, 16, to_date('21-01-2014 14:06:15', 'dd-mm-yyyy
hh24:mi:ss'), 63, null);
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (13, 2, 2, 1, 6, 18, to_date('01-10-2012 05:20:36', 'dd-mm-yyyy
hh24:mi:ss'), 76, null );
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (14, 2, 3, 1, 4, 13, to_date('20-01-2014 20:42:28', 'dd-mm-yyyy
hh24:mi:ss'), 100, null );
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (15, 1, 2, 4, 10, 1, to_date('11-08-2013 05:16:26', 'dd-mm-yyyy
hh24:mi:ss'), 12, null );
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (16, 1, 3, 6, 10, 4, to_date('10-02-2012 13:18:18', 'dd-mm-yyyy
hh24:mi:ss'), 1, null );
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (17, 2, 5, 7, 10, 3, to_date('07-02-2013 11:27:05', 'dd-mm-yyyy
hh24:mi:ss'), 23, null );
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (18, 1, 6, 6, 11, 12, to_date('14-01-2012 20:16:22', 'dd-mm-yyyy
hh24:mi:ss'), 32, null );
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (19, 1, 5, 2, 7, 7, to_date('29-10-2012 04:08:29', 'dd-mm-yyyy
hh24:mi:ss'), 151, null );
insert into INVOICE ("id_invoice", "id_payment_type", "id_product",
"id_stuff", "id_client", "id_store", "purchase_time", "quantity",
"description")
values (20, 1, 3, 6, 6, 6, to_date('05-10-2012 21:25:57', 'dd-mm-yyyy
hh24:mi:ss'), 0, null );


-- query 1
SELECT "name", "surname", "purchase_time", "quantity" FROM INVOICE
JOIN STUFF S on INVOICE."id_stuff" = S."id_stuff";
```

```sql
-- query 2
SELECT s."name", p."position_name", p."salary", p2."product_name",
TYPE2."product_type_name", "quantity" FROM INVOICE
JOIN STUFF S on INVOICE."id_stuff" = S."id_stuff"
JOIN POSITION P on S."id_position" = P."id_position"
JOIN PRODUCT P2 on INVOICE."id_product" = P2."id_product"
JOIN PRODUCT_TYPE TYPE2 on P2."id_product_type" =
TYPE2."id_product_type";
```