**САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ ПОЛИТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ**

**Институт компьютерных наук и технологий**

**Кафедра Компьютерных Систем и Программных Технологий**

**Отчет по дисциплине**

**«Базы данных»**

**Язык SQL-DDL**

**Работу выполнил студент группы №:** 43501/3 Иванов И. М.

**Работу принял преподаватель:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Мяснов А.В.

**Санкт-Петербург**

**2016 г.**

## Цели работы:

## Познакомить студентов с основами проектирования схемы БД, способами нормализации отношений в БД.

## Программа работы

1. Представить SQL-схему БД, соответствующую заданию (должно получиться не менее 7 таблиц)
2. Привести схему БД к [3НФ](http://ru.wikipedia.org/wiki/%D0%A2%D1%80%D0%B5%D1%82%D1%8C%D1%8F_%D0%BD%D0%BE%D1%80%D0%BC%D0%B0%D0%BB%D1%8C%D0%BD%D0%B0%D1%8F_%D1%84%D0%BE%D1%80%D0%BC%D0%B0)
3. Согласовать с преподавателем схему БД. Обосновать соответствие схемы [3НФ](http://ru.wikipedia.org/wiki/%D0%A2%D1%80%D0%B5%D1%82%D1%8C%D1%8F_%D0%BD%D0%BE%D1%80%D0%BC%D0%B0%D0%BB%D1%8C%D0%BD%D0%B0%D1%8F_%D1%84%D0%BE%D1%80%D0%BC%D0%B0).
4. Продемонстрировать результаты преподавателю

**Ход работы:**

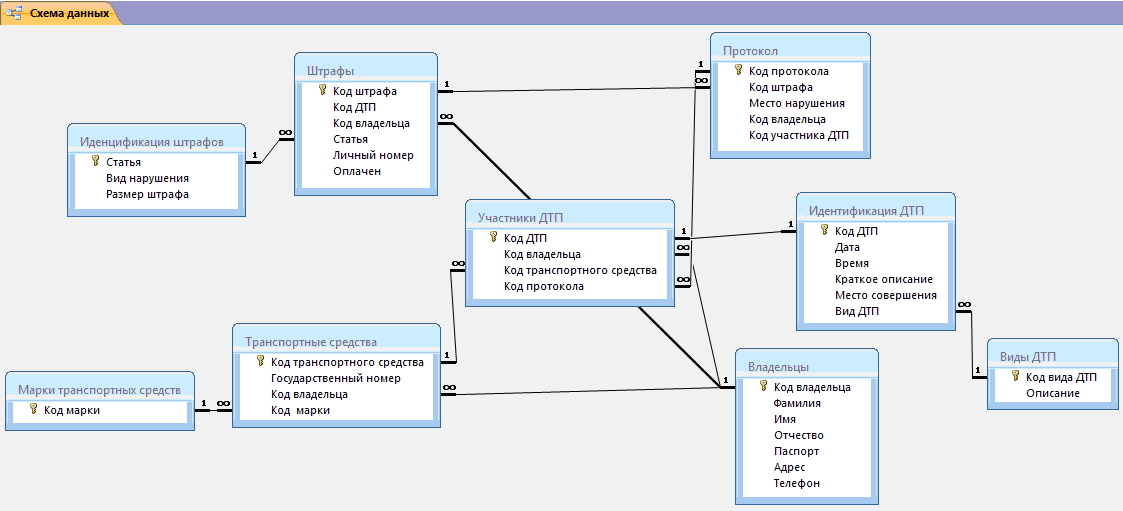
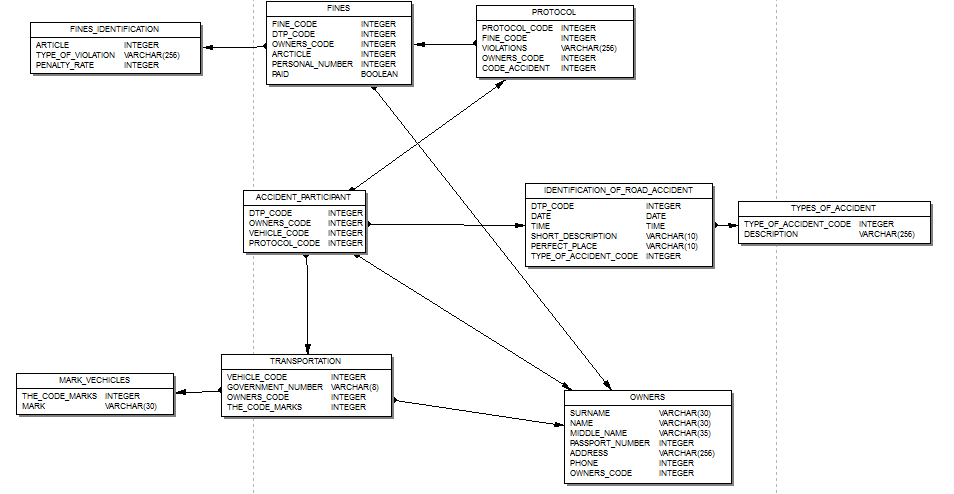


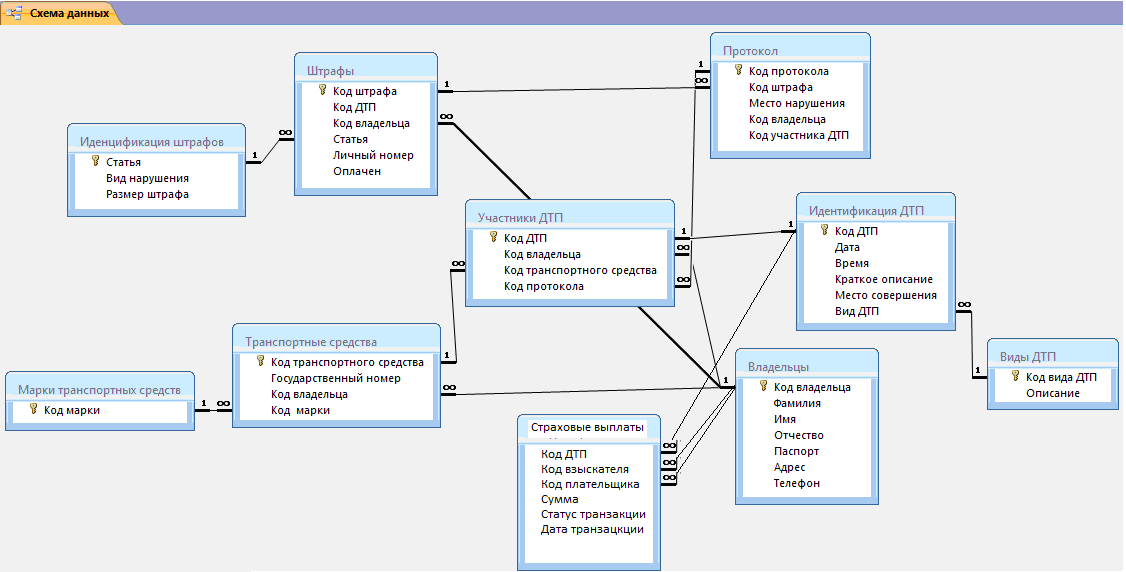
Рисунок 1. Схема базы данных

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| SET SQL DIALECT 3;  SET NAMES WIN1251;  SET CLIENTLIB 'C:\Program Files (x86)\Firebird\Firebird\_3\_0\fbclient.dll';  CREATE DATABASE 'C:\7semestr\database\MYONE.FDB'  USER 'SYSDBA' PASSWORD 'masterkey'  PAGE\_SIZE 16384  DEFAULT CHARACTER SET WIN1251 COLLATION WIN1251;  CREATE TABLE ACCIDENT\_PARTICIPANT (  DTP\_CODE INTEGER NOT NULL,  OWNERS\_CODE INTEGER NOT NULL,  VEHICLE\_CODE INTEGER NOT NULL,  PROTOCOL\_CODE INTEGER NOT NULL  );  CREATE TABLE FINES (  FINE\_CODE INTEGER NOT NULL,  DTP\_CODE INTEGER NOT NULL,  OWNERS\_CODE INTEGER NOT NULL,  ARCTICLE INTEGER NOT NULL,  PERSONAL\_NUMBER INTEGER NOT NULL,  PAID BOOLEAN NOT NULL  );  CREATE TABLE FINES\_IDENTIFICATION (  ARTICLE INTEGER NOT NULL,  TYPE\_OF\_VIOLATION VARCHAR(256) NOT NULL,  PENALTY\_RATE INTEGER NOT NULL  );  CREATE TABLE IDENTIFICATION\_OF\_ROAD\_ACCIDENT (  DTP\_CODE INTEGER NOT NULL,  "DATE" DATE NOT NULL,  "TIME" TIME NOT NULL,  SHORT\_DESCRIPTION VARCHAR(10) NOT NULL,  PERFECT\_PLACE VARCHAR(10) NOT NULL,  TYPE\_OF\_ACCIDENT\_CODE INTEGER NOT NULL  );  CREATE TABLE MARK\_VECHICLES (  THE\_CODE\_MARKS INTEGER NOT NULL,  MARK VARCHAR(30) NOT NULL  );  CREATE TABLE OWNERS (  SURNAME VARCHAR(30) NOT NULL,  NAME VARCHAR(30) NOT NULL,  MIDDLE\_NAME VARCHAR(35) NOT NULL,  PASSPORT\_NUMBER INTEGER NOT NULL,  ADDRESS VARCHAR(256) NOT NULL,  PHONE INTEGER NOT NULL,  OWNERS\_CODE INTEGER NOT NULL  );  CREATE TABLE PROTOCOL (  PROTOCOL\_CODE INTEGER NOT NULL,  FINE\_CODE INTEGER NOT NULL,  VIOLATIONS VARCHAR(256) NOT NULL,  OWNERS\_CODE INTEGER NOT NULL,  CODE\_ACCIDENT INTEGER NOT NULL  );  CREATE TABLE TRANSPORTATION (  VEHICLE\_CODE INTEGER NOT NULL,  GOVERNMENT\_NUMBER VARCHAR(8) NOT NULL,  OWNERS\_CODE INTEGER NOT NULL,  THE\_CODE\_MARKS INTEGER NOT NULL  );  CREATE TABLE TYPES\_OF\_ACCIDENT (  TYPE\_OF\_ACCIDENT\_CODE INTEGER NOT NULL,  DESCRIPTION VARCHAR(256) NOT NULL  );  ALTER TABLE IDENTIFICATION\_OF\_ROAD\_ACCIDENT ADD CONSTRAINT UNQ1\_IDENTIFICATION\_OF\_ROAD\_ACC UNIQUE (TYPE\_OF\_ACCIDENT\_CODE);  ALTER TABLE FINES ADD CONSTRAINT PK\_FINES PRIMARY KEY (FINE\_CODE);  ALTER TABLE FINES\_IDENTIFICATION ADD CONSTRAINT PK\_FINES\_IDENTIFICATION PRIMARY KEY (ARTICLE);  ALTER TABLE IDENTIFICATION\_OF\_ROAD\_ACCIDENT ADD CONSTRAINT PK\_IDENTIFICATION\_OF\_ROAD\_ACCID PRIMARY KEY (DTP\_CODE);  ALTER TABLE MARK\_VECHICLES ADD CONSTRAINT PK\_MARK\_VECHICLES PRIMARY KEY (THE\_CODE\_MARKS);  ALTER TABLE OWNERS ADD CONSTRAINT PK\_OWNERS PRIMARY KEY (OWNERS\_CODE);  ALTER TABLE PROTOCOL ADD CONSTRAINT PK\_PROTOCOL PRIMARY KEY (PROTOCOL\_CODE);  ALTER TABLE TRANSPORTATION ADD CONSTRAINT PK\_TRANSPORTATION PRIMARY KEY (VEHICLE\_CODE);  ALTER TABLE TYPES\_OF\_ACCIDENT ADD CONSTRAINT PK\_TYPES\_OF\_ACCIDENT PRIMARY KEY (TYPE\_OF\_ACCIDENT\_CODE);  ALTER TABLE ACCIDENT\_PARTICIPANT ADD CONSTRAINT FK\_ACCIDENT\_PARTICIPANT\_1 FOREIGN KEY (VEHICLE\_CODE) REFERENCES TRANSPORTATION (VEHICLE\_CODE);  ALTER TABLE ACCIDENT\_PARTICIPANT ADD CONSTRAINT FK\_ACCIDENT\_PARTICIPANT\_2 FOREIGN KEY (OWNERS\_CODE) REFERENCES OWNERS (OWNERS\_CODE);  ALTER TABLE ACCIDENT\_PARTICIPANT ADD CONSTRAINT FK\_ACCIDENT\_PARTICIPANT\_3 FOREIGN KEY (DTP\_CODE) REFERENCES IDENTIFICATION\_OF\_ROAD\_ACCIDENT (DTP\_CODE);  ALTER TABLE ACCIDENT\_PARTICIPANT ADD CONSTRAINT FK\_ACCIDENT\_PARTICIPANT\_4 FOREIGN KEY (PROTOCOL\_CODE) REFERENCES PROTOCOL (PROTOCOL\_CODE);  ALTER TABLE FINES ADD CONSTRAINT FK\_FINES\_1 FOREIGN KEY (ARCTICLE) REFERENCES FINES\_IDENTIFICATION (ARTICLE);  ALTER TABLE FINES ADD CONSTRAINT FK\_FINES\_2 FOREIGN KEY (OWNERS\_CODE) REFERENCES OWNERS (OWNERS\_CODE);  ALTER TABLE IDENTIFICATION\_OF\_ROAD\_ACCIDENT ADD CONSTRAINT FK\_IDENTIFICATION\_OF\_ROAD\_ACCID FOREIGN KEY (TYPE\_OF\_ACCIDENT\_CODE) REFERENCES TYPES\_OF\_ACCIDENT (TYPE\_OF\_ACCIDENT\_CODE);  ALTER TABLE PROTOCOL ADD CONSTRAINT FK\_PROTOCOL\_1 FOREIGN KEY (FINE\_CODE) REFERENCES FINES (FINE\_CODE);  ALTER TABLE TRANSPORTATION ADD CONSTRAINT FK\_TRANSPORTATION\_1 FOREIGN KEY (THE\_CODE\_MARKS) REFERENCES MARK\_VECHICLES (THE\_CODE\_MARKS);  ALTER TABLE TRANSPORTATION ADD CONSTRAINT FK\_TRANSPORTATION\_2 FOREIGN KEY (OWNERS\_CODE) REFERENCES OWNERS (OWNERS\_CODE); |



ER-диаграмма.

Изменим таблицу в соответствии с индивидуальным заданием.



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| CREATE TABLE INSURANCE\_PAYMENTS (  DTP\_CODE INTEGER NOT NULL,  CREDITOR\_CODE INTEGER NOT NULL,  PAYER\_CODE INTEGER NOT NULL,  "SUM" INTEGER NOT NULL,  TRANSACTION\_STATUS VARCHAR(30) NOT NULL,  DATE\_OF\_TRANSACTION DATE NOT NULL,  PAYER\_CODE INTEGER NOT NULL  );  ALTER TABLE INSURANCE\_PAYMENTS ADD CONSTRAINT FK\_INSURANCE\_PAYMENTS\_1 FOREIGN KEY (CREDITOR\_CODE) REFERENCES OWNERS (OWNERS\_CODE);  ALTER TABLE INSURANCE\_PAYMENTS ADD CONSTRAINT FK\_INSURANCE\_PAYMENTS\_2 FOREIGN KEY (PAYER\_CODE) REFERENCES OWNERS (OWNERS\_CODE);  ALTER TABLE INSURANCE\_PAYMENTS ADD CONSTRAINT FK\_INSURANCE\_PAYMENTS\_3 FOREIGN KEY (DTP\_CODE) REFERENCES IDENTIFICATION\_OF\_ROAD\_ACCIDENT (DTP\_CODE);  ALTER TABLE MARK\_VECHICLES ADD MARK VARCHAR(30) NOT NULL; |

**ER-диаграмма:**

