Факультет инфокоммуникационных технологий

**ЛАБОРАТОРНАЯ РАБОТА №1**

АНАЛИЗ ДАННЫХ. ПОСТРОЕНИЕ ИНФОЛОГИЧЕСКОЙ МОДЕЛИ ДАННЫХ БД

**по дисциплине:**
**«Проектирование и Реализация Баз Данных»**

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**Цель лабораторной работы:** овладеть практическими навыками создания таблиц базы данных PostgreSQL 1X, заполнения их рабочими данными, резервного копирования и восстановления БД.

**Задачи:**

1. Создать базу данных с использованием pgAdmin 4 (согласно индивидуальному заданию).
2. Создать схему в составе базы данных.
3. Создать таблицы базы данных.
4. Установить ограничения на данные: Primary Key, Unique, Check, Foreign Key.
5. Заполнить таблицы БД рабочими данными.
6. Создать резервную копию БД.
   a. с расширением CUSTOM для восстановления БД;
   b. с расширением PLAIN для листинга (в отчете);
   c. при создании резервных копий БД настроить параметры Dump options для Type of objects и Queries.
7. Восстановить БД

**Индивидуальное задание. Вариант 15.**

Описание предметной области: БД образовательной организации содержит сведения об аудиториях и расписании проводимых в них занятий. Занятия проводятся на разных площадках. Время начала и окончания занятия по дням недели фиксировано. База данных используется для получения справок о наличии свободных аудиторий в указанное время, о месте и времени проведения определенных занятий.

БД должна содержать следующий минимальный набор сведений: Номер аудитории. Количество мест. Тип аудитории. Название площадки. Адрес площадки. Код дисциплины. Название дисциплины. Вид занятия. ФИО преподавателя. Должность преподавателя. Номер студенческой группы. Учебный год. Код направления. Название направления. Код подразделения. Название подразделения. Максимально возможное количество студентов для посещения занятия. Дата. День недели. Время начала занятия. Время окончания занятия

**Выполнение**

**Создание БД и её схема**

Название базы данных - LabWork_S4_L1, схемы - timetable. Также созданы необходимые таблицы. Установлены различного рода ограничения на поля. Таблицы заполнены фейк данными.
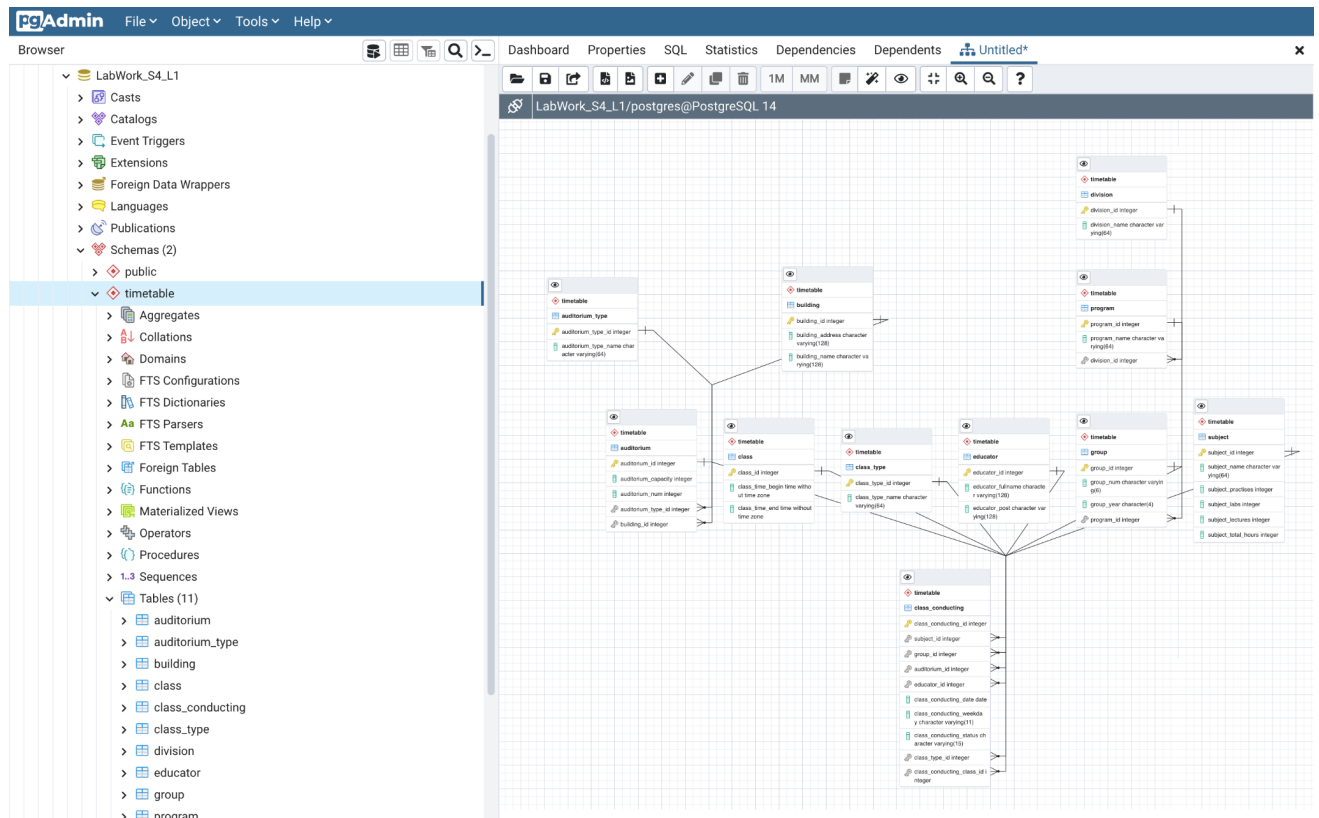
Рисунки 1 - создание базы данных, схемы и таблиц

**Резервное копирование**

```
--
-- PostgreSQL database dump
--


-- Dumped from database version 14.2
-- Dumped by pg_dump version 14.2


-- Started on 2022-03-09 22:00:31 MSK

SET statement_timeout = 0;
SET lock_timeout = 0;
SET idle_in_transaction_session_timeout = 0;
SET client_encoding = 'UTF8';
SET standard_conforming_strings = on;
SELECT pg_catalog.set_config('search_path', '', false);
SET check_function_bodies = false;
SET xmloption = content;
SET client_min_messages = warning;
SET row_security = off;

DROP DATABASE "LabWork_S4_L1";
--
-- TOC entry 3682 (class 1262 OID 16395)
-- Name: LabWork_S4_L1; Type: DATABASE; Schema: -; Owner: postgres
--

CREATE DATABASE "LabWork_S4_L1" WITH TEMPLATE = template0 ENCODING = 'UTF8' LOCALE = 'C';
```

```sql
ALTER DATABASE "LabWork_S4_L1" OWNER TO postgres;

\connect "LabWork_S4_L1"

SET statement_timeout = 0;
SET lock_timeout = 0;
SET idle_in_transaction_session_timeout = 0;
SET client_encoding = 'UTF8';
SET standard_conforming_strings = on;
SELECT pg_catalog.set_config('search_path', '', false);
SET check_function_bodies = false;
SET xmloption = content;
SET client_min_messages = warning;
SET row_security = off;

--
-- TOC entry 3683 (class 0 OID 0)
-- Dependencies: 3682
-- Name: DATABASE "LabWork_S4_L1"; Type: COMMENT; Schema: -; Owner: postgres
--

COMMENT ON DATABASE "LabWork_S4_L1" IS 'Create a database of laboratory work 1 of the 4th semestr which
contains data from the previous lab';


--
-- TOC entry 6 (class 2615 OID 16396)
-- Name: timetable; Type: SCHEMA; Schema: -; Owner: postgres
--

CREATE SCHEMA timetable;


ALTER SCHEMA timetable OWNER TO postgres;

--
-- TOC entry 3684 (class 0 OID 0)
-- Dependencies: 6
-- Name: SCHEMA timetable; Type: COMMENT; Schema: -; Owner: postgres
--

COMMENT ON SCHEMA timetable IS 'create the core schema';


SET default_tablespace = '';

SET default_table_access_method = heap;

--
-- TOC entry 219 (class 1259 OID 16471)
-- Name: auditorium; Type: TABLE; Schema: timetable; Owner: postgres
--

CREATE TABLE timetable.auditorium (
```

```
        auditorium_id integer NOT NULL,
        auditorium_capacity integer NOT NULL,
        auditorium_num integer NOT NULL,
        auditorium_type_id integer NOT NULL,
        building_id integer NOT NULL
);
```

ALTER TABLE timetable.auditorium OWNER TO postgres;

--
-- TOC entry 3685 (class 0 OID 0)
-- Dependencies: 219
-- Name: TABLE auditorium; Type: COMMENT; Schema: timetable; Owner: postgres
--

COMMENT ON TABLE timetable.auditorium IS 'create a table of auditoriums which uses data from tables of buildings n auditorium types';

--
-- TOC entry 213 (class 1259 OID 16419)
-- Name: auditorium_type; Type: TABLE; Schema: timetable; Owner: postgres
--

```
CREATE TABLE timetable.auditorium_type (
        auditorium_type_id integer NOT NULL,
        auditorium_type_name character varying(64) NOT NULL
);
```

ALTER TABLE timetable.auditorium_type OWNER TO postgres;

--
-- TOC entry 3686 (class 0 OID 0)
-- Dependencies: 213
-- Name: TABLE auditorium_type; Type: COMMENT; Schema: timetable; Owner: postgres
--

COMMENT ON TABLE timetable.auditorium_type IS 'create a table which contains all possible auditorium types';

--
-- TOC entry 212 (class 1259 OID 16410)
-- Name: building; Type: TABLE; Schema: timetable; Owner: postgres
--

```
CREATE TABLE timetable.building (
        building_id integer NOT NULL,
        building_address character varying(128) NOT NULL,
        building_name character varying(128) NOT NULL
);
```

ALTER TABLE timetable.building OWNER TO postgres;

--
-- TOC entry 3687 (class 0 OID 0)
-- Dependencies: 212
-- Name: TABLE building; Type: COMMENT; Schema: timetable; Owner: postgres
--

COMMENT ON TABLE timetable.building IS 'create a table which contains buildings and their names and addresses';

--
-- TOC entry 210 (class 1259 OID 16397)
-- Name: class; Type: TABLE; Schema: timetable; Owner: postgres
--

CREATE TABLE timetable.class (
    class_id integer NOT NULL,
    class_time_begin time without time zone NOT NULL,
    class_time_end time without time zone NOT NULL,
    CONSTRAINT class_timespan CHECK ((class_time_end > class_time_begin))
);

ALTER TABLE timetable.class OWNER TO postgres;

--
-- TOC entry 3688 (class 0 OID 0)
-- Dependencies: 210
-- Name: TABLE class; Type: COMMENT; Schema: timetable; Owner: postgres
--

COMMENT ON TABLE timetable.class IS 'create a class table which contains class id and its time';

--
-- TOC entry 3689 (class 0 OID 0)
-- Dependencies: 210
-- Name: CONSTRAINT class_timespan ON class; Type: COMMENT; Schema: timetable; Owner: postgres
--

COMMENT ON CONSTRAINT class_timespan ON timetable.class IS 'class stars before it ends checker :)';

--
-- TOC entry 220 (class 1259 OID 16488)
-- Name: class_conducting; Type: TABLE; Schema: timetable; Owner: postgres
--

CREATE TABLE timetable.class_conducting (
    class_conducting_id integer NOT NULL,
    subject_id integer NOT NULL,
    group_id integer NOT NULL,
    auditorium_id integer NOT NULL,
    educator_id integer NOT NULL,
    class_conducting_date date NOT NULL,

```
    class_conducting_weekday character varying(11) NOT NULL,
    class_conducting_status character varying(15) NOT NULL,
    class_type_id integer,
    class_conducting_class_id integer
);
```

ALTER TABLE timetable.class_conducting OWNER TO postgres;

--
-- TOC entry 3690 (class 0 OID 0)
-- Dependencies: 220
-- Name: TABLE class_conducting; Type: COMMENT; Schema: timetable; Owner: postgres
--

COMMENT ON TABLE timetable.class_conducting IS 'create a main table which uses all other tables and data from them to create the uni timetable';

--
-- TOC entry 214 (class 1259 OID 16426)
-- Name: class_type; Type: TABLE; Schema: timetable; Owner: postgres
--

```
CREATE TABLE timetable.class_type (
    class_type_id integer NOT NULL,
    class_type_name character varying(64) NOT NULL
);
```

ALTER TABLE timetable.class_type OWNER TO postgres;

--
-- TOC entry 3691 (class 0 OID 0)
-- Dependencies: 214
-- Name: TABLE class_type; Type: COMMENT; Schema: timetable; Owner: postgres
--

COMMENT ON TABLE timetable.class_type IS 'create a table which contains all possible class types';

--
-- TOC entry 215 (class 1259 OID 16433)
-- Name: division; Type: TABLE; Schema: timetable; Owner: postgres
--

```
CREATE TABLE timetable.division (
    division_id integer NOT NULL,
    division_name character varying(64) NOT NULL
);
```

ALTER TABLE timetable.division OWNER TO postgres;

--

```
--
-- TOC entry 3692 (class 0 OID 0)
-- Dependencies: 215
-- Name: TABLE division; Type: COMMENT; Schema: timetable; Owner: postgres
--

COMMENT ON TABLE timetable.division IS 'create a table of divisions w their names';



--
-- TOC entry 211 (class 1259 OID 16405)
-- Name: educator; Type: TABLE; Schema: timetable; Owner: postgres
--

CREATE TABLE timetable.educator (
    educator_id integer NOT NULL,
    educator_fullname character varying(128) NOT NULL,
    educator_post character varying(128) NOT NULL
);


ALTER TABLE timetable.educator OWNER TO postgres;

--
-- TOC entry 3693 (class 0 OID 0)
-- Dependencies: 211
-- Name: TABLE educator; Type: COMMENT; Schema: timetable; Owner: postgres
--

COMMENT ON TABLE timetable.educator IS 'create a table which contains educators with their basic information';



--
-- TOC entry 217 (class 1259 OID 16452)
-- Name: group; Type: TABLE; Schema: timetable; Owner: postgres
--

CREATE TABLE timetable."group" (
    group_id integer NOT NULL,
    group_num character varying(6) NOT NULL,
    group_year character(4) NOT NULL,
    program_id integer NOT NULL
);


ALTER TABLE timetable."group" OWNER TO postgres;

--
-- TOC entry 3694 (class 0 OID 0)
-- Dependencies: 217
-- Name: TABLE "group"; Type: COMMENT; Schema: timetable; Owner: postgres
--

COMMENT ON TABLE timetable."group" IS 'create a table with uni groups';
```

```
--
-- TOC entry 216 (class 1259 OID 16440)
-- Name: program; Type: TABLE; Schema: timetable; Owner: postgres
--

CREATE TABLE timetable.program (
    program_id integer NOT NULL,
    program_name character varying(64) NOT NULL,
    division_id integer NOT NULL
);


ALTER TABLE timetable.program OWNER TO postgres;


--
-- TOC entry 3695 (class 0 OID 0)
-- Dependencies: 216
-- Name: TABLE program; Type: COMMENT; Schema: timetable; Owner: postgres
--

COMMENT ON TABLE timetable.program IS 'create a table of educational programs with their titles ';


--
-- TOC entry 218 (class 1259 OID 16464)
-- Name: subject; Type: TABLE; Schema: timetable; Owner: postgres
--

CREATE TABLE timetable.subject (
    subject_id integer NOT NULL,
    subject_name character varying(64) NOT NULL,
    subject_practises integer,
    subject_labs integer,
    subject_lectures integer NOT NULL,
    subject_total_hours integer NOT NULL
);


ALTER TABLE timetable.subject OWNER TO postgres;


--
-- TOC entry 3696 (class 0 OID 0)
-- Dependencies: 218
-- Name: TABLE subject; Type: COMMENT; Schema: timetable; Owner: postgres
--

COMMENT ON TABLE timetable.subject IS 'create a table of subjects with their fulfillment';


--
-- TOC entry 3675 (class 0 OID 16471)
-- Dependencies: 219
-- Data for Name: auditorium; Type: TABLE DATA; Schema: timetable; Owner: postgres
--
```

--
-- TOC entry 3669 (class 0 OID 16419)
-- Dependencies: 213
-- Data for Name: auditorium_type; Type: TABLE DATA; Schema: timetable; Owner: postgres
--

INSERT INTO timetable.auditorium_type (auditorium_type_id, auditorium_type_name) VALUES (1, 'лаборатория');
INSERT INTO timetable.auditorium_type (auditorium_type_id, auditorium_type_name) VALUES (2, 'лекционная');
INSERT INTO timetable.auditorium_type (auditorium_type_id, auditorium_type_name) VALUES (3, 'большой зал');


--
-- TOC entry 3668 (class 0 OID 16410)
-- Dependencies: 212
-- Data for Name: building; Type: TABLE DATA; Schema: timetable; Owner: postgres
--

INSERT INTO timetable.building (building_id, building_address, building_name) VALUES (1, 'ул. Герцена, гастроном №22', 'ИТМО один');
INSERT INTO timetable.building (building_id, building_address, building_name) VALUES (2, 'ул. Итмошная д.3', 'ИТМО два');
INSERT INTO timetable.building (building_id, building_address, building_name) VALUES (3, 'ул. Итмошная д.2', 'ИТМО три');


--
-- TOC entry 3666 (class 0 OID 16397)
-- Dependencies: 210
-- Data for Name: class; Type: TABLE DATA; Schema: timetable; Owner: postgres
--

INSERT INTO timetable.class (class_id, class_time_begin, class_time_end) VALUES (1, '05:30:00', '07:00:00');
INSERT INTO timetable.class (class_id, class_time_begin, class_time_end) VALUES (2, '07:30:00', '09:00:00');
INSERT INTO timetable.class (class_id, class_time_begin, class_time_end) VALUES (3, '02:00:00', '03:30:00');


--
-- TOC entry 3676 (class 0 OID 16488)
-- Dependencies: 220
-- Data for Name: class_conducting; Type: TABLE DATA; Schema: timetable; Owner: postgres
--


--
-- TOC entry 3670 (class 0 OID 16426)
-- Dependencies: 214
-- Data for Name: class_type; Type: TABLE DATA; Schema: timetable; Owner: postgres
--

INSERT INTO timetable.class_type (class_type_id, class_type_name) VALUES (1, 'семинар');
INSERT INTO timetable.class_type (class_type_id, class_type_name) VALUES (2, 'лекция');
INSERT INTO timetable.class_type (class_type_id, class_type_name) VALUES (3, 'практика');

```sql
INSERT INTO timetable.class_type (class_type_id, class_type_name) VALUES (4, 'консультация');
INSERT INTO timetable.class_type (class_type_id, class_type_name) VALUES (5, 'лабораторная');
```

--
-- TOC entry 3671 (class 0 OID 16433)
-- Dependencies: 215
-- Data for Name: division; Type: TABLE DATA; Schema: timetable; Owner: postgres
--

```sql
INSERT INTO timetable.division (division_id, division_name) VALUES (1, 'ФИКТ');
INSERT INTO timetable.division (division_id, division_name) VALUES (2, 'ФКИТ');
INSERT INTO timetable.division (division_id, division_name) VALUES (3, 'ФТИК');
INSERT INTO timetable.division (division_id, division_name) VALUES (4, 'ФКТИ');
INSERT INTO timetable.division (division_id, division_name) VALUES (5, 'ФТКИ');
INSERT INTO timetable.division (division_id, division_name) VALUES (6, 'ФИТК');
```

--
-- TOC entry 3667 (class 0 OID 16405)
-- Dependencies: 211
-- Data for Name: educator; Type: TABLE DATA; Schema: timetable; Owner: postgres
--

```sql
INSERT INTO timetable.educator (educator_id, educator_fullname, educator_post) VALUES (1, 'Алаженов Блсексей Викторович', 'junior лектор');
INSERT INTO timetable.educator (educator_id, educator_fullname, educator_post) VALUES (2, 'Александров Александр Александрович', 'просто декан');
INSERT INTO timetable.educator (educator_id, educator_fullname, educator_post) VALUES (3, 'Блинская Мария', 'практик++');
```

--
-- TOC entry 3673 (class 0 OID 16452)
-- Dependencies: 217
-- Data for Name: group; Type: TABLE DATA; Schema: timetable; Owner: postgres
--

--
-- TOC entry 3672 (class 0 OID 16440)
-- Dependencies: 216
-- Data for Name: program; Type: TABLE DATA; Schema: timetable; Owner: postgres
--

```sql
INSERT INTO timetable.program (program_id, program_name, division_id) VALUES (1, 'ПИ и ПИ', 1);
INSERT INTO timetable.program (program_id, program_name, division_id) VALUES (2, 'СГТИ', 2);
INSERT INTO timetable.program (program_id, program_name, division_id) VALUES (3, 'ПМ минус ПУ', 3);
```

--
-- TOC entry 3674 (class 0 OID 16464)
-- Dependencies: 218
-- Data for Name: subject; Type: TABLE DATA; Schema: timetable; Owner: postgres
```

--

INSERT INTO timetable.subject (subject_id, subject_name, subject_practises, subject_labs, subject_lectures, subject_total_hours) VALUES (1, 'Низшая математика', 1, NULL, 1, 3);
INSERT INTO timetable.subject (subject_id, subject_name, subject_practises, subject_labs, subject_lectures, subject_total_hours) VALUES (2, 'Русский язык для программирования', NULL, NULL, 20, 30);
INSERT INTO timetable.subject (subject_id, subject_name, subject_practises, subject_labs, subject_lectures, subject_total_hours) VALUES (3, 'Теория круп', 30, NULL, 20, 75);
INSERT INTO timetable.subject (subject_id, subject_name, subject_practises, subject_labs, subject_lectures, subject_total_hours) VALUES (4, 'Теория вафли и математическая сосиска', 20, NULL, 10, 45);


--
-- TOC entry 3508 (class 2606 OID 16477)
-- Name: auditorium auditorium_auditorium_num_building_id_key; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.auditorium
    ADD CONSTRAINT auditorium_auditorium_num_building_id_key UNIQUE (auditorium_num, building_id);


--
-- TOC entry 3510 (class 2606 OID 16475)
-- Name: auditorium auditorium_pkey; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.auditorium
    ADD CONSTRAINT auditorium_pkey PRIMARY KEY (auditorium_id);


--
-- TOC entry 3484 (class 2606 OID 16425)
-- Name: auditorium_type auditorium_type_auditorium_type_name_key; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.auditorium_type
    ADD CONSTRAINT auditorium_type_auditorium_type_name_key UNIQUE (auditorium_type_name);


--
-- TOC entry 3486 (class 2606 OID 16423)
-- Name: auditorium_type auditorium_type_pkey; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.auditorium_type
    ADD CONSTRAINT auditorium_type_pkey PRIMARY KEY (auditorium_type_id);


--
-- TOC entry 3478 (class 2606 OID 16416)
-- Name: building building_building_address_key; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

```sql
ALTER TABLE ONLY timetable.building
    ADD CONSTRAINT building_building_address_key UNIQUE (building_address);
```

--
-- TOC entry 3480 (class 2606 OID 16418)
-- Name: building building_building_name_key; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

```sql
ALTER TABLE ONLY timetable.building
    ADD CONSTRAINT building_building_name_key UNIQUE (building_name);
```

--
-- TOC entry 3482 (class 2606 OID 16414)
-- Name: building building_pkey; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

```sql
ALTER TABLE ONLY timetable.building
    ADD CONSTRAINT building_pkey PRIMARY KEY (building_id);
```

--
-- TOC entry 3472 (class 2606 OID 16404)
-- Name: class class_class_time_begin_class_time_end_key; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

```sql
ALTER TABLE ONLY timetable.class
    ADD CONSTRAINT class_class_time_begin_class_time_end_key UNIQUE (class_time_begin, class_time_end);
```

--
-- TOC entry 3512 (class 2606 OID 16496)
-- Name: class_conducting class_conducting_educator_id_class_conducting_date_class_co_key; Type: CONSTRAINT;
Schema: timetable; Owner: postgres
--

```sql
ALTER TABLE ONLY timetable.class_conducting
    ADD CONSTRAINT class_conducting_educator_id_class_conducting_date_class_co_key UNIQUE (educator_id,
class_conducting_date, class_conducting_class_id);
```

--
-- TOC entry 3514 (class 2606 OID 16494)
-- Name: class_conducting class_conducting_group_id_class_conducting_date_class_condu_key; Type: CONSTRAINT;
Schema: timetable; Owner: postgres
--

```sql
ALTER TABLE ONLY timetable.class_conducting
    ADD CONSTRAINT class_conducting_group_id_class_conducting_date_class_condu_key UNIQUE (group_id,
class_conducting_date, class_conducting_class_id);
```

--
-- TOC entry 3516 (class 2606 OID 16492)

```
-- Name: class_conducting class_conducting_pkey; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.class_conducting
    ADD CONSTRAINT class_conducting_pkey PRIMARY KEY (class_conducting_id);


--
-- TOC entry 3474 (class 2606 OID 16402)
-- Name: class class_pkey; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.class
    ADD CONSTRAINT class_pkey PRIMARY KEY (class_id);


--
-- TOC entry 3488 (class 2606 OID 16432)
-- Name: class_type class_type_class_type_name_key; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.class_type
    ADD CONSTRAINT class_type_class_type_name_key UNIQUE (class_type_name);


--
-- TOC entry 3490 (class 2606 OID 16430)
-- Name: class_type class_type_pkey; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.class_type
    ADD CONSTRAINT class_type_pkey PRIMARY KEY (class_type_id);


--
-- TOC entry 3492 (class 2606 OID 16439)
-- Name: division division_division_name_key; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.division
    ADD CONSTRAINT division_division_name_key UNIQUE (division_name);


--
-- TOC entry 3494 (class 2606 OID 16437)
-- Name: division division_pkey; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.division
    ADD CONSTRAINT division_pkey PRIMARY KEY (division_id);


--
-- TOC entry 3476 (class 2606 OID 16409)
-- Name: educator educators_pkey; Type: CONSTRAINT; Schema: timetable; Owner: postgres
```

--

ALTER TABLE ONLY timetable.educator
    ADD CONSTRAINT educators_pkey PRIMARY KEY (educator_id);


--
-- TOC entry 3500 (class 2606 OID 16458)
-- Name: group group_group_num_key; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable."group"
    ADD CONSTRAINT group_group_num_key UNIQUE (group_num);


--
-- TOC entry 3502 (class 2606 OID 16456)
-- Name: group group_pkey; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable."group"
    ADD CONSTRAINT group_pkey PRIMARY KEY (group_id);


--
-- TOC entry 3496 (class 2606 OID 16444)
-- Name: program program_pkey; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.program
    ADD CONSTRAINT program_pkey PRIMARY KEY (program_id);


--
-- TOC entry 3498 (class 2606 OID 16446)
-- Name: program program_program_name_key; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.program
    ADD CONSTRAINT program_program_name_key UNIQUE (program_name);


--
-- TOC entry 3504 (class 2606 OID 16468)
-- Name: subject subject_pkey; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.subject
    ADD CONSTRAINT subject_pkey PRIMARY KEY (subject_id);


--
-- TOC entry 3506 (class 2606 OID 16470)
-- Name: subject subject_subject_name_key; Type: CONSTRAINT; Schema: timetable; Owner: postgres
--

```
ALTER TABLE ONLY timetable.subject
    ADD CONSTRAINT subject_subject_name_key UNIQUE (subject_name);


--
-- TOC entry 3519 (class 2606 OID 16478)
-- Name: auditorium auditorium_auditorium_type_id_fkey; Type: FK CONSTRAINT; Schema: timetable; Owner:
postgres
--

ALTER TABLE ONLY timetable.auditorium
    ADD CONSTRAINT auditorium_auditorium_type_id_fkey FOREIGN KEY (auditorium_type_id) REFERENCES
timetable.auditorium_type(auditorium_type_id) ON UPDATE RESTRICT ON DELETE RESTRICT;


--
-- TOC entry 3520 (class 2606 OID 16483)
-- Name: auditorium auditorium_building_id_fkey; Type: FK CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.auditorium
    ADD CONSTRAINT auditorium_building_id_fkey FOREIGN KEY (building_id) REFERENCES
timetable.building(building_id) ON UPDATE RESTRICT ON DELETE RESTRICT NOT VALID;


--
-- TOC entry 3523 (class 2606 OID 16507)
-- Name: class_conducting class_conducting_auditorium_id_fkey; Type: FK CONSTRAINT; Schema: timetable; Owner:
postgres
--

ALTER TABLE ONLY timetable.class_conducting
    ADD CONSTRAINT class_conducting_auditorium_id_fkey FOREIGN KEY (auditorium_id) REFERENCES
timetable.auditorium(auditorium_id) ON UPDATE RESTRICT ON DELETE RESTRICT NOT VALID;


--
-- TOC entry 3526 (class 2606 OID 16522)
-- Name: class_conducting class_conducting_class_conducting_class_id_fkey; Type: FK CONSTRAINT; Schema:
timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.class_conducting
    ADD CONSTRAINT class_conducting_class_conducting_class_id_fkey FOREIGN KEY (class_conducting_class_id)
REFERENCES timetable.class(class_id) ON UPDATE RESTRICT ON DELETE RESTRICT NOT VALID;


--
-- TOC entry 3525 (class 2606 OID 16517)
-- Name: class_conducting class_conducting_class_type_id_fkey; Type: FK CONSTRAINT; Schema: timetable; Owner:
postgres
--

ALTER TABLE ONLY timetable.class_conducting
```

ADD CONSTRAINT class_conducting_class_type_id_fkey FOREIGN KEY (class_type_id) REFERENCES timetable.class_type(class_type_id) ON UPDATE RESTRICT ON DELETE RESTRICT NOT VALID;


--
-- TOC entry 3524 (class 2606 OID 16512)
-- Name: class_conducting class_conducting_educator_id_fkey; Type: FK CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.class_conducting
    ADD CONSTRAINT class_conducting_educator_id_fkey FOREIGN KEY (educator_id) REFERENCES timetable.educator(educator_id) ON UPDATE RESTRICT ON DELETE RESTRICT NOT VALID;


--
-- TOC entry 3522 (class 2606 OID 16502)
-- Name: class_conducting class_conducting_group_id_fkey; Type: FK CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.class_conducting
    ADD CONSTRAINT class_conducting_group_id_fkey FOREIGN KEY (group_id) REFERENCES timetable."group"(group_id) ON UPDATE RESTRICT ON DELETE RESTRICT NOT VALID;


--
-- TOC entry 3521 (class 2606 OID 16497)
-- Name: class_conducting class_conducting_subject_id_fkey; Type: FK CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.class_conducting
    ADD CONSTRAINT class_conducting_subject_id_fkey FOREIGN KEY (subject_id) REFERENCES timetable.subject(subject_id) ON UPDATE RESTRICT ON DELETE RESTRICT NOT VALID;


--
-- TOC entry 3518 (class 2606 OID 16459)
-- Name: group group_program_id_fkey; Type: FK CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable."group"
    ADD CONSTRAINT group_program_id_fkey FOREIGN KEY (program_id) REFERENCES timetable.program(program_id) ON UPDATE RESTRICT ON DELETE RESTRICT;


--
-- TOC entry 3517 (class 2606 OID 16447)
-- Name: program program_division_id_fkey; Type: FK CONSTRAINT; Schema: timetable; Owner: postgres
--

ALTER TABLE ONLY timetable.program
    ADD CONSTRAINT program_division_id_fkey FOREIGN KEY (division_id) REFERENCES timetable.division(division_id) ON UPDATE RESTRICT ON DELETE RESTRICT;

-- Completed on 2022-03-09 22:00:31 MSK


--

-- PostgreSQL database dump complete

--
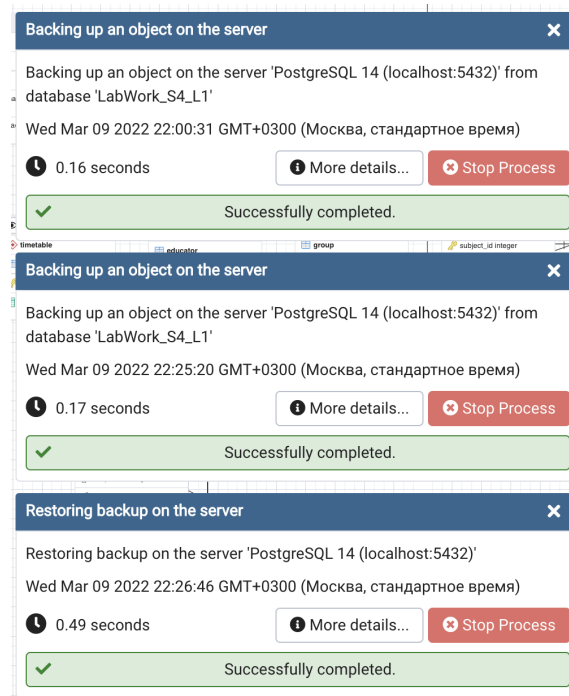


Рисунок 2 - Бэкап и Восстановление

Рисунок 3 - Схема БД

**Вывод**

В ходе выполнения работы была создана база данных, таблицы и ограничения в PostgreSQL. В базу данных были занесены данные, а также была создана логическая модель и dump. Программа pgAdmin позволяет создавать базы данных: либо напрямую посредством взаимодействия через интерфейс или же работу на встроенном генераторе ER диаграмм.