

Министерство науки и высшего образования Российской Федерации
федеральное государственное автономное образовательное учреждение высшего
образования
«НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ ИТМО»

Отчет

По лабораторной работе №3
«Создание таблиц базы данных PostgreSQL. Заполнение таблиц рабочими данными»
по дисциплине «Проектирование и реализация баз данных»

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УНИВЕРСИТЕТ ИТМО

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

Программное обеспечение: СУБД PostgreSQL 1X, pgAdmin 4.

Практическое задание:

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.

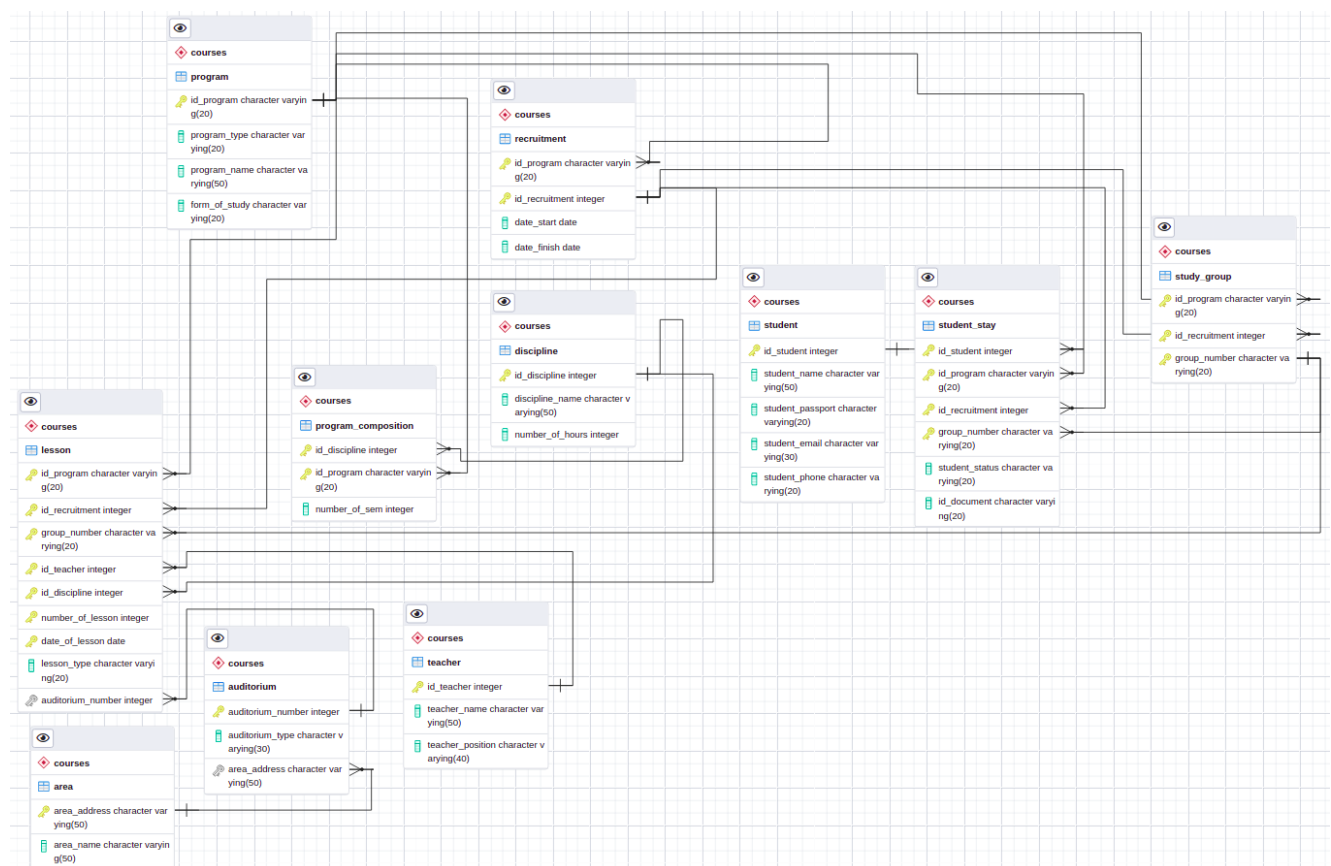
Указание:

Создать две резервные копии:

- с расширением *CUSTOM* для восстановления БД;
- с расширением *PLAIN* для листинга (в отчете);
- при создании резервных копий БД настроить параметры *Dump options* для *Type of objects* и *Queries*.

Наименование БД: «courses»

ERD Диаграмма: (Файл на гитхабе назван `courses_erd.png`)



Dump файл выложен на гитхаб под названием `courses_dump`

```
-- PostgreSQL database dump

--

-- Dumped from database version 13.2 (Ubuntu 13.2-1.pgdg20.04+1)
-- Dumped by pg_dump version 13.2 (Ubuntu 13.2-1.pgdg20.04+1)


-- Started on 2021-05-03 18:33:17 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;


--

-- TOC entry 4 (class 2615 OID 16703)
-- Name: courses; Type: SCHEMA; Schema: -; Owner: postgres
--

CREATE SCHEMA courses;


ALTER SCHEMA courses OWNER TO postgres;


SET default_tablespace = '';
```

```
SET default_table_access_method = heap;
```

```
--
```

```
-- TOC entry 213 (class 1259 OID 16856)
```

```
-- Name: area; Type: TABLE; Schema: courses; Owner: postgres
```

```
--
```

```
CREATE TABLE courses.area (
```

```
    area_address character varying(50) NOT NULL,
```

```
    area_name character varying(50) NOT NULL
```

```
);
```

```
ALTER TABLE courses.area OWNER TO postgres;
```

```
--
```

```
-- TOC entry 214 (class 1259 OID 16868)
```

```
-- Name: auditorium; Type: TABLE; Schema: courses; Owner: postgres
```

```
--
```

```
CREATE TABLE courses.auditorium (
```

```
    auditorium_number integer NOT NULL,
```

```
    auditorium_type character varying(30) NOT NULL,
```

```
    area_address character varying(50) NOT NULL,
```

```
    CONSTRAINT audotorium_auditorium_number_check CHECK (((auditorium_number > 0) AND  
(auditorium_number < 7999)))
```

```
);
```

```
ALTER TABLE courses.auditorium OWNER TO postgres;
```

```
--
```

```
-- TOC entry 211 (class 1259 OID 16831)
```

```
-- Name: discipline; Type: TABLE; Schema: courses; Owner: postgres
```

```
--
```

```
CREATE TABLE courses.discipline (  
    id_discipline integer NOT NULL,  
    discipline_name character varying(50) NOT NULL,  
    number_of_hours integer NOT NULL  
);
```

```
ALTER TABLE courses.discipline OWNER TO postgres;
```

```
--
```

```
-- TOC entry 210 (class 1259 OID 16829)
```

```
-- Name: discipline_id_discipline_seq; Type: SEQUENCE; Schema: courses; Owner: postgres
```

```
--
```

```
CREATE SEQUENCE courses.discipline_id_discipline_seq  
    AS integer  
    START WITH 1  
    INCREMENT BY 1  
    NO MINVALUE  
    NO MAXVALUE  
    CACHE 1;
```

```

ALTER TABLE courses.discipline_id_discipline_seq OWNER TO postgres;

--

-- TOC entry 3120 (class 0 OID 0)

-- Dependencies: 210

-- Name: discipline_id_discipline_seq; Type: SEQUENCE OWNED BY; Schema: courses; Owner: postgres
--

ALTER SEQUENCE courses.discipline_id_discipline_seq OWNED BY courses.discipline.id_discipline;

--

-- TOC entry 215 (class 1259 OID 16880)

-- Name: lesson; Type: TABLE; Schema: courses; Owner: postgres
--

CREATE TABLE courses.lesson (

    id_program character varying(20) NOT NULL,

    id_recruitment integer NOT NULL,

    group_number character varying(20) NOT NULL,

    id_teacher integer NOT NULL,

    id_discipline integer NOT NULL,

    number_of_lesson integer NOT NULL,

    date_of_lesson date NOT NULL,

    lesson_type character varying(20) NOT NULL,

    auditorium_number integer NOT NULL,

    CONSTRAINT lesson_number_of_lesson_check CHECK (((number_of_lesson > 0) AND
(number_of_lesson < 7)))

);

```

```
ALTER TABLE courses.lesson OWNER TO postgres;
```

```
--
```

```
-- TOC entry 201 (class 1259 OID 16704)
```

```
-- Name: program; Type: TABLE; Schema: courses; Owner: postgres
```

```
--
```

```
CREATE TABLE courses.program (  
    id_program character varying(20) NOT NULL,  
    program_type character varying(20) NOT NULL,  
    program_name character varying(50) NOT NULL,  
    form_of_study character varying(20) NOT NULL  
);
```

```
ALTER TABLE courses.program OWNER TO postgres;
```

```
--
```

```
-- TOC entry 212 (class 1259 OID 16840)
```

```
-- Name: program_composition; Type: TABLE; Schema: courses; Owner: postgres
```

```
--
```

```
CREATE TABLE courses.program_composition (  
    id_discipline integer NOT NULL,  
    id_program character varying(20) NOT NULL,  
    number_of_sem integer NOT NULL,  
    CONSTRAINT program_composition_number_of_sem_check CHECK (((number_of_sem < 9) AND  
(number_of_sem > 0)))  
);
```

```
ALTER TABLE courses.program_composition OWNER TO postgres;
```

```
--
```

```
-- TOC entry 203 (class 1259 OID 16715)
```

```
-- Name: recruitment; Type: TABLE; Schema: courses; Owner: postgres
```

```
--
```

```
CREATE TABLE courses.recruitment (  
    id_program character varying(20) NOT NULL,  
    id_recruitment integer NOT NULL,  
    date_start date NOT NULL,  
    date_finish date NOT NULL,  
    CONSTRAINT recruitment_check CHECK ((date_start < date_finish))  
);
```

```
ALTER TABLE courses.recruitment OWNER TO postgres;
```

```
--
```

```
-- TOC entry 202 (class 1259 OID 16713)
```

```
-- Name: recruitment_id_recruitment_seq; Type: SEQUENCE; Schema: courses; Owner: postgres
```

```
--
```

```
CREATE SEQUENCE courses.recruitment_id_recruitment_seq  
  
    AS integer  
  
    START WITH 1  
  
    INCREMENT BY 1  
  
    NO MINVALUE
```



```

NO MAXVALUE

CACHE 1;


ALTER TABLE courses.recruitment_id_recruitment_seq OWNER TO postgres;


--
-- TOC entry 3121 (class 0 OID 0)
-- Dependencies: 202
-- Name: recruitment_id_recruitment_seq; Type: SEQUENCE OWNED BY; Schema: courses; Owner: postgres
--

ALTER          SEQUENCE          courses.recruitment_id_recruitment_seq          OWNED          BY
courses.recruitment.id_recruitment;


--
-- TOC entry 206 (class 1259 OID 16766)
-- Name: student; Type: TABLE; Schema: courses; Owner: postgres
--

CREATE TABLE courses.student (
    id_student integer NOT NULL,
    student_name character varying(50) NOT NULL,
    student_passport character varying(20) NOT NULL,
    student_email character varying(30),
    student_phone character varying(20)
);

```

```
ALTER TABLE courses.student OWNER TO postgres;
```

```
--
```

```
-- TOC entry 205 (class 1259 OID 16764)
```

```
-- Name: student_id_student_seq; Type: SEQUENCE; Schema: courses; Owner: postgres
```

```
--
```

```
CREATE SEQUENCE courses.student_id_student_seq
```

```
    AS integer
```

```
    START WITH 1
```

```
    INCREMENT BY 1
```

```
    NO MINVALUE
```

```
    NO MAXVALUE
```

```
    CACHE 1;
```

```
ALTER TABLE courses.student_id_student_seq OWNER TO postgres;
```

```
--
```

```
-- TOC entry 3122 (class 0 OID 0)
```

```
-- Dependencies: 205
```

```
-- Name: student_id_student_seq; Type: SEQUENCE OWNED BY; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER SEQUENCE courses.student_id_student_seq OWNED BY courses.student.id_student;
```

```
--
```

```
-- TOC entry 207 (class 1259 OID 16795)
```

```
-- Name: student_stay; Type: TABLE; Schema: courses; Owner: postgres
```

--

```
CREATE TABLE courses.student_stay (  
    id_student integer NOT NULL,  
    id_program character varying(20) NOT NULL,  
    id_recruitment integer NOT NULL,  
    group_number character varying(20) NOT NULL,  
    student_status character varying(20) NOT NULL,  
    id_document character varying(20) NOT NULL  
);
```

```
ALTER TABLE courses.student_stay OWNER TO postgres;
```

--

-- TOC entry 204 (class 1259 OID 16749)

-- Name: study_group; Type: TABLE; Schema: courses; Owner: postgres

--

```
CREATE TABLE courses.study_group (  
    id_program character varying(20) NOT NULL,  
    id_recruitment integer NOT NULL,  
    group_number character varying(20) NOT NULL  
);
```

```
ALTER TABLE courses.study_group OWNER TO postgres;
```

--

-- TOC entry 209 (class 1259 OID 16823)

```
-- Name: teacher; Type: TABLE; Schema: courses; Owner: postgres
```

```
--
```

```
CREATE TABLE courses.teacher (  
    id_teacher integer NOT NULL,  
    teacher_name character varying(50) NOT NULL,  
    teacher_position character varying(40) NOT NULL  
);
```

```
ALTER TABLE courses.teacher OWNER TO postgres;
```

```
--
```

```
-- TOC entry 208 (class 1259 OID 16821)
```

```
-- Name: teacher_id_teacher_seq; Type: SEQUENCE; Schema: courses; Owner: postgres
```

```
--
```

```
CREATE SEQUENCE courses.teacher_id_teacher_seq  
    AS integer  
    START WITH 1  
    INCREMENT BY 1  
    NO MINVALUE  
    NO MAXVALUE  
    CACHE 1;
```

```
ALTER TABLE courses.teacher_id_teacher_seq OWNER TO postgres;
```

```
--
```

```
-- TOC entry 3123 (class 0 OID 0)
```

-- Dependencies: 208

-- Name: teacher_id_teacher_seq; Type: SEQUENCE OWNED BY; Schema: courses; Owner: postgres

--

ALTER SEQUENCE courses.teacher_id_teacher_seq OWNED BY courses.teacher.id_teacher;

--

-- TOC entry 2914 (class 2604 OID 16834)

-- Name: discipline id_discipline; Type: DEFAULT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.discipline ALTER COLUMN id_discipline SET DEFAULT
nextval('courses.discipline_id_discipline_seq'::regclass);

--

-- TOC entry 2909 (class 2604 OID 16718)

-- Name: recruitment id_recruitment; Type: DEFAULT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.recruitment ALTER COLUMN id_recruitment SET DEFAULT
nextval('courses.recruitment_id_recruitment_seq'::regclass);

--

-- TOC entry 2911 (class 2604 OID 16769)

-- Name: student id_student; Type: DEFAULT; Schema: courses; Owner: postgres

--

```

ALTER TABLE ONLY courses.student ALTER COLUMN id_student SET DEFAULT
nextval('courses.student_id_student_seq'::regclass);

--

-- TOC entry 2913 (class 2604 OID 16826)

-- Name: teacher id_teacher; Type: DEFAULT; Schema: courses; Owner: postgres
--

ALTER TABLE ONLY courses.teacher ALTER COLUMN id_teacher SET DEFAULT
nextval('courses.teacher_id_teacher_seq'::regclass);

--

-- TOC entry 3112 (class 0 OID 16856)

-- Dependencies: 213

-- Data for Name: area; Type: TABLE DATA; Schema: courses; Owner: postgres
--

COPY courses.area (area_address, area_name) FROM stdin;
Ул. Чайковского 47 чайка
Биржевая линия 20 биржа
Пр. Кронверкский 16 кронва
онлайн онлайн
\.

--

-- TOC entry 3113 (class 0 OID 16868)

-- Dependencies: 214

-- Data for Name: auditorium; Type: TABLE DATA; Schema: courses; Owner: postgres

```

--

```
COPY courses.auditorium (auditorium_number, auditorium_type, area_address) FROM stdin;
```

```
114    лекционная    Пр. Кронверкский 16
```

```
302    лекционная    Пр. Кронверкский 16
```

```
210    лабораторная Пр. Кронверкский 16
```

```
532    семинарная   Пр. Кронверкский 16
```

```
205    лекционная    Биржевая линия 20
```

```
304    лабораторная Биржевая линия 20
```

```
404    семинарная   Биржевая линия 20
```

```
242    семинарная   Ул. Чайковского 47
```

```
1      онлайн онлайн
```

```
\.
```

--

```
-- TOC entry 3110 (class 0 OID 16831)
```

```
-- Dependencies: 211
```

```
-- Data for Name: discipline; Type: TABLE DATA; Schema: courses; Owner: postgres
```

--

```
COPY courses.discipline (id_discipline, discipline_name, number_of_hours) FROM stdin;
```

```
1      Физическая химия      48
```

```
2      Механика      48
```

```
3      Основы html      64
```

```
4      Генетика      32
```

```
5      Основы механики      32
```

```
6      Физика 48
```

```
\.
```

--

-- TOC entry 3114 (class 0 OID 16880)

-- Dependencies: 215

-- Data for Name: lesson; Type: TABLE DATA; Schema: courses; Owner: postgres

--

```
COPY courses.lesson (id_program, id_recruitment, group_number, id_teacher, id_discipline,
number_of_lesson, date_of_lesson, lesson_type, auditorium_number) FROM stdin;
```

0001	1	P111	1	5	1	2021-01-19	лекция	302	
0001	1	P111	3	2	2	2021-04-30	практика		404
0003	3	W333	4	3	1	2021-02-01	лекция	1	
0003	3	W333	4	3	3	2021-05-05	практика		1
0002	2	B222	2	4	2	2021-02-10	лекция	205	
0002	2	B222	2	4	1	2021-03-18	лабораторная		210

\.

--

-- TOC entry 3100 (class 0 OID 16704)

-- Dependencies: 201

-- Data for Name: program; Type: TABLE DATA; Schema: courses; Owner: postgres

--

```
COPY courses.program (id_program, program_type, program_name, form_of_study) FROM stdin;
```

0001	очно	Физика	офлайн
0002	заочно	Биология	офлайн
0003	заочно	Web-программирование	онлайн

\.


```
--  
  
-- TOC entry 3111 (class 0 OID 16840)  
  
-- Dependencies: 212  
  
-- Data for Name: program_composition; Type: TABLE DATA; Schema: courses; Owner: postgres  
  
--
```

```
COPY courses.program_composition (id_discipline, id_program, number_of_sem) FROM stdin;
```

```
1      0001      2  
  
5      0001      1  
  
2      0001      2  
  
3      0003      1  
  
4      0002      1  
  
\.
```

```
--  
  
-- TOC entry 3102 (class 0 OID 16715)  
  
-- Dependencies: 203  
  
-- Data for Name: recruitment; Type: TABLE DATA; Schema: courses; Owner: postgres  
  
--
```

```
COPY courses.recruitment (id_program, id_recruitment, date_start, date_finish) FROM stdin;
```

```
0001    1      2021-01-10    2021-05-31  
  
0002    2      2021-01-10    2021-05-31  
  
0003    3      2021-01-10    2021-03-31  
  
0003    4      2021-04-01    2021-07-31  
  
\.
```

--

-- TOC entry 3105 (class 0 OID 16766)

-- Dependencies: 206

-- Data for Name: student; Type: TABLE DATA; Schema: courses; Owner: postgres

--

```
COPY courses.student (id_student, student_name, student_passport, student_email, student_phone)
FROM stdin;
```

1	Лакиза Александр Николаевич	2421010101	alelakiza@yandex.ru	88005553535
2	Пушкин Андрей Игоревич	5104998877	pushkaai@yandex.ru	\N
3	Соболев Виктор Викторович	5104921833	sobvivi.@mail.ru	\N
4	Кобелева Ирина Владимировна	5151221833	kobirina_v.@gmail.com	89022805555
5	Игорева Анна Дмитриевна	7611221833	\N	89873214455

\.

--

-- TOC entry 3106 (class 0 OID 16795)

-- Dependencies: 207

-- Data for Name: student_stay; Type: TABLE DATA; Schema: courses; Owner: postgres

--

```
COPY courses.student_stay (id_student, id_program, id_recruitment, group_number, student_status,
id_document) FROM stdin;
```

1	0001	1	P111	учится	P000001
2	0001	1	P111	отчислился	P000002
3	0002	2	B222	учится	B000003
4	0003	3	W333	учится	W000004
5	0003	3	W333	академ.отпуск	W000005

\.

```
--  
  
-- TOC entry 3103 (class 0 OID 16749)  
  
-- Dependencies: 204  
  
-- Data for Name: study_group; Type: TABLE DATA; Schema: courses; Owner: postgres  
  
--
```

```
COPY courses.study_group (id_program, id_recruitment, group_number) FROM stdin;
```

```
0001    1      P111
```

```
0002    2      B222
```

```
0003    3      W333
```

```
0003    4      W334
```

```
\\.
```

```
--  
  
-- TOC entry 3108 (class 0 OID 16823)  
  
-- Dependencies: 209  
  
-- Data for Name: teacher; Type: TABLE DATA; Schema: courses; Owner: postgres  
  
--
```

```
COPY courses.teacher (id_teacher, teacher_name, teacher_position) FROM stdin;
```

```
1      Козлова Светлана Викторовна  Преподаватель физики, Кандидат физ.наук
```

```
2      Шерстнева Валентина Васильевна      Преподаватель биологии
```

```
3      Зиновьев Евгений Олегович      Преподаватель механики
```

```
4      Хамицевич Андрей Сергеевич      Преподаватель информатики
```

```
5      Сизова Ольга Александровна      Преподаватель физ.химии
```

```
\\.
```

```
--  
  
-- TOC entry 3124 (class 0 OID 0)  
  
-- Dependencies: 210  
  
-- Name: discipline_id_discipline_seq; Type: SEQUENCE SET; Schema: courses; Owner: postgres  
  
--
```

```
SELECT pg_catalog.setval('courses.discipline_id_discipline_seq', 6, true);
```

```
--  
  
-- TOC entry 3125 (class 0 OID 0)  
  
-- Dependencies: 202  
  
-- Name: recruitment_id_recruitment_seq; Type: SEQUENCE SET; Schema: courses; Owner: postgres  
  
--
```

```
SELECT pg_catalog.setval('courses.recruitment_id_recruitment_seq', 4, true);
```

```
--  
  
-- TOC entry 3126 (class 0 OID 0)  
  
-- Dependencies: 205  
  
-- Name: student_id_student_seq; Type: SEQUENCE SET; Schema: courses; Owner: postgres  
  
--
```

```
SELECT pg_catalog.setval('courses.student_id_student_seq', 5, true);
```

```
--  
  
-- TOC entry 3127 (class 0 OID 0)  
  
-- Dependencies: 208
```

```
-- Name: teacher_id_teacher_seq; Type: SEQUENCE SET; Schema: courses; Owner: postgres
```

```
--
```

```
SELECT pg_catalog.setval('courses.teacher_id_teacher_seq', 5, true);
```

```
--
```

```
-- TOC entry 2916 (class 2606 OID 16946)
```

```
-- Name: area_area_address_check; Type: CHECK CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE courses.area
```

```
    ADD CONSTRAINT area_area_address_check CHECK (((area_address)::text = ANY  
((ARRAY['онлайн'::character varying, 'Ул. Чайковского 47'::character varying, 'Биржевая линия  
20'::character varying, 'Пр. Кронверкский 16'::character varying])::text[]))) NOT VALID;
```

```
--
```

```
-- TOC entry 2947 (class 2606 OID 16864)
```

```
-- Name: area_area_address_key; Type: CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY courses.area
```

```
    ADD CONSTRAINT area_area_address_key UNIQUE (area_address);
```

```
--
```

```
-- TOC entry 2917 (class 2606 OID 16947)
```

```
-- Name: area_area_name_check; Type: CHECK CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE courses.area
```

```
    ADD CONSTRAINT area_area_name_check CHECK (((area_name)::text = ANY
((ARRAY['онлайн'::character varying, 'чайка'::character varying, 'биржа'::character varying,
'кронва'::character varying])::text[]))) NOT VALID;
```

```
--
```

```
-- TOC entry 2949 (class 2606 OID 16862)
```

```
-- Name: area area_pkey; Type: CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY courses.area
```

```
    ADD CONSTRAINT area_pkey PRIMARY KEY (area_address);
```

```
--
```

```
-- TOC entry 2918 (class 2606 OID 16945)
```

```
-- Name: auditorium auditorium_auditorium_type_check; Type: CHECK CONSTRAINT; Schema: courses;
Owner: postgres
```

```
--
```

```
ALTER TABLE courses.auditorium
```

```
    ADD CONSTRAINT auditorium_auditorium_type_check CHECK (((auditorium_type)::text = ANY
((ARRAY['онлайн'::character varying, 'лекционная'::character varying, 'семинарная'::character
varying, 'лабораторная'::character varying])::text[]))) NOT VALID;
```

```
--
```

```
-- TOC entry 2951 (class 2606 OID 16874)
```

```
-- Name: auditorium audotorium_pkey; Type: CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY courses.auditorium
```

```

ADD CONSTRAINT audotorium_pkey PRIMARY KEY (auditorium_number);

--

-- TOC entry 2941 (class 2606 OID 16839)

-- Name: discipline discipline_id_discipline_key; Type: CONSTRAINT; Schema: courses; Owner:
postgres

--

ALTER TABLE ONLY courses.discipline

    ADD CONSTRAINT discipline_id_discipline_key UNIQUE (id_discipline);

--

-- TOC entry 2943 (class 2606 OID 16836)

-- Name: discipline discipline_pkey; Type: CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.discipline

    ADD CONSTRAINT discipline_pkey PRIMARY KEY (id_discipline);

--

-- TOC entry 2907 (class 2606 OID 16935)

-- Name: program form_of_study; Type: CHECK CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE courses.program

    ADD CONSTRAINT form_of_study CHECK (((form_of_study)::text = ANY ((ARRAY['онлайн'::character
varying, 'офлайн'::character varying])::text[]))) NOT VALID;

```

--

-- TOC entry 2920 (class 2606 OID 16940)

-- Name: lesson_lesson_type_check; Type: CHECK CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE courses.lesson

ADD CONSTRAINT lesson_lesson_type_check CHECK (((lesson_type)::text = ANY ((ARRAY['лекция'::character_varying, 'практика'::character_varying, 'лабораторная'::character_varying])::text[]))) NOT VALID;

--

-- TOC entry 2953 (class 2606 OID 16886)

-- Name: lesson_lesson_pkey; Type: CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.lesson

ADD CONSTRAINT lesson_pkey PRIMARY KEY (id_program, id_recruitment, group_number, id_teacher, id_discipline, number_of_lesson, date_of_lesson);

--

-- TOC entry 2908 (class 2606 OID 16934)

-- Name: program_prog_type; Type: CHECK CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE courses.program

ADD CONSTRAINT prog_type CHECK (((program_type)::text = ANY ((ARRAY['очно'::character_varying, 'заочно'::character_varying])::text[]))) NOT VALID;


```

--

-- TOC entry 2945 (class 2606 OID 16845)

-- Name: program_composition program_composition_pkey; Type: CONSTRAINT; Schema: courses; Owner:
postgres

--

ALTER TABLE ONLY courses.program_composition

    ADD CONSTRAINT program_composition_pkey PRIMARY KEY (id_discipline, id_program);

--

-- TOC entry 2923 (class 2606 OID 16712)

-- Name: program program_id_program_key; Type: CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.program

    ADD CONSTRAINT program_id_program_key UNIQUE (id_program);

--

-- TOC entry 2925 (class 2606 OID 16710)

-- Name: program program_pkey; Type: CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.program

    ADD CONSTRAINT program_pkey PRIMARY KEY (id_program);

--

-- TOC entry 2927 (class 2606 OID 16748)

```

```
-- Name: recruitment_recruitment_id_recruitment_key; Type: CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY courses.recruitment
```

```
    ADD CONSTRAINT recruitment_id_recruitment_key UNIQUE (id_recruitment);
```

```
--
```

```
-- TOC entry 2929 (class 2606 OID 16721)
```

```
-- Name: recruitment_recruitment_pkey; Type: CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY courses.recruitment
```

```
    ADD CONSTRAINT recruitment_pkey PRIMARY KEY (id_program, id_recruitment);
```

```
--
```

```
-- TOC entry 2935 (class 2606 OID 16771)
```

```
-- Name: student_student_pkey; Type: CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY courses.student
```

```
    ADD CONSTRAINT student_pkey PRIMARY KEY (id_student);
```

```
--
```

```
-- TOC entry 2912 (class 2606 OID 16936)
```

```
-- Name: student_stay_student_status; Type: CHECK CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE courses.student_stay
```

```
    ADD CONSTRAINT student_status CHECK (((student_status)::text = ANY
((ARRAY['учится'::character varying, 'отчислился'::character varying,
'академ.отпуск'::character varying, 'выпустился'::character varying]))::text[]))) NOT VALID;
```

```
--
```

```
-- TOC entry 2937 (class 2606 OID 16800)
```

```
-- Name: student_stay student_stay_pkey; Type: CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY courses.student_stay
```

```
    ADD CONSTRAINT student_stay_pkey PRIMARY KEY (id_student, id_program, id_recruitment,
group_number);
```

```
--
```

```
-- TOC entry 2931 (class 2606 OID 16794)
```

```
-- Name: study_group study_group_group_number_key; Type: CONSTRAINT; Schema: courses; Owner:
postgres
```

```
--
```

```
ALTER TABLE ONLY courses.study_group
```

```
    ADD CONSTRAINT study_group_group_number_key UNIQUE (group_number);
```

```
--
```

```
-- TOC entry 2933 (class 2606 OID 16753)
```

```
-- Name: study_group study_group_pkey; Type: CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY courses.study_group
```

```
    ADD CONSTRAINT study_group_pkey PRIMARY KEY (id_program, id_recruitment, group_number);
```

```
--
```

```
-- TOC entry 2939 (class 2606 OID 16828)
```

```
-- Name: teacher teacher_pkey; Type: CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY courses.teacher
```

```
    ADD CONSTRAINT teacher_pkey PRIMARY KEY (id_teacher);
```

```
--
```

```
-- TOC entry 2963 (class 2606 OID 16875)
```

```
-- Name: auditorium audotorium_area_address_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY courses.auditorium
```

```
    ADD CONSTRAINT audotorium_area_address_fkey FOREIGN KEY (area_address) REFERENCES courses.area(area_address);
```

```
--
```

```
-- TOC entry 2964 (class 2606 OID 16912)
```

```
-- Name: lesson lesson_auditorium_number_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY courses.lesson
```

```

    ADD CONSTRAINT lesson_auditorium_number_fkey FOREIGN KEY (auditorium_number) REFERENCES
courses.auditorium(auditorium_number);

--

-- TOC entry 2967 (class 2606 OID 16897)

-- Name: lesson lesson_group_number_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres
--

ALTER TABLE ONLY courses.lesson

    ADD CONSTRAINT lesson_group_number_fkey FOREIGN KEY (group_number) REFERENCES
courses.study_group(group_number);

--

-- TOC entry 2969 (class 2606 OID 16907)

-- Name: lesson lesson_id_discipline_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres
--

ALTER TABLE ONLY courses.lesson

    ADD CONSTRAINT lesson_id_discipline_fkey FOREIGN KEY (id_discipline) REFERENCES
courses.discipline(id_discipline);

--

-- TOC entry 2965 (class 2606 OID 16887)

-- Name: lesson lesson_id_program_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres
--

ALTER TABLE ONLY courses.lesson

    ADD CONSTRAINT lesson_id_program_fkey FOREIGN KEY (id_program) REFERENCES
courses.program(id_program);

```

--

-- TOC entry 2966 (class 2606 OID 16892)

-- Name: lesson lesson_id_recruitment_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.lesson

ADD CONSTRAINT lesson_id_recruitment_fkey FOREIGN KEY (id_recruitment) REFERENCES
courses.recruitment(id_recruitment);

--

-- TOC entry 2968 (class 2606 OID 16902)

-- Name: lesson lesson_id_teacher_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.lesson

ADD CONSTRAINT lesson_id_teacher_fkey FOREIGN KEY (id_teacher) REFERENCES
courses.teacher(id_teacher);

--

-- TOC entry 2961 (class 2606 OID 16846)

-- Name: program_composition program_composition_id_discipline_fkey; Type: FK CONSTRAINT;
Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.program_composition

ADD CONSTRAINT program_composition_id_discipline_fkey FOREIGN KEY (id_discipline) REFERENCES
courses.discipline(id_discipline);

--

-- TOC entry 2962 (class 2606 OID 16851)

-- Name: program_composition_program_composition_id_program_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.program_composition

ADD CONSTRAINT program_composition_id_program_fkey FOREIGN KEY (id_program) REFERENCES courses.program(id_program);

--

-- TOC entry 2954 (class 2606 OID 16722)

-- Name: recruitment_recruitment_id_program_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.recruitment

ADD CONSTRAINT recruitment_id_program_fkey FOREIGN KEY (id_program) REFERENCES courses.program(id_program);

--

-- TOC entry 2960 (class 2606 OID 16816)

-- Name: student_stay_student_stay_group_number_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.student_stay

ADD CONSTRAINT student_stay_group_number_fkey FOREIGN KEY (group_number) REFERENCES courses.study_group(group_number);

--

-- TOC entry 2958 (class 2606 OID 16806)

-- Name: student_stay student_stay_id_program_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.student_stay

ADD CONSTRAINT student_stay_id_program_fkey FOREIGN KEY (id_program) REFERENCES courses.program(id_program);

--

-- TOC entry 2959 (class 2606 OID 16811)

-- Name: student_stay student_stay_id_recruitment_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.student_stay

ADD CONSTRAINT student_stay_id_recruitment_fkey FOREIGN KEY (id_recruitment) REFERENCES courses.recruitment(id_recruitment);

--

-- TOC entry 2957 (class 2606 OID 16801)

-- Name: student_stay student_stay_id_student_fkey; Type: FK CONSTRAINT; Schema: courses; Owner: postgres

--

ALTER TABLE ONLY courses.student_stay

ADD CONSTRAINT student_stay_id_student_fkey FOREIGN KEY (id_student) REFERENCES courses.student(id_student);


```

--

-- TOC entry 2955 (class 2606 OID 16754)

-- Name: study_group study_group_id_program_fkey; Type: FK CONSTRAINT; Schema: courses; Owner:
postgres

--

ALTER TABLE ONLY courses.study_group

    ADD CONSTRAINT study_group_id_program_fkey FOREIGN KEY (id_program) REFERENCES
courses.program(id_program);

--

-- TOC entry 2956 (class 2606 OID 16759)

-- Name: study_group study_group_id_recruitment_fkey; Type: FK CONSTRAINT; Schema: courses;
Owner: postgres

--

ALTER TABLE ONLY courses.study_group

    ADD CONSTRAINT study_group_id_recruitment_fkey FOREIGN KEY (id_recruitment) REFERENCES
courses.recruitment(id_recruitment);

-- Completed on 2021-05-03 18:33:17 MSK

--

-- PostgreSQL database dump complete

--

```

Вывод: В ходе проделанной работы был изучен функционал программного обеспечения PgAdmin 4, созданы база данных, схема и таблицы, определены типы данных, ограничения, первичные и внешние ключи. В базу загружены рабочие данные. Сделана резервная копия БД, и реализовано восстановление БД из текстового файла.