Министерство науки и высшего образования Российской Федерации
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«НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ ИТМО»

Отчет

по Лабораторной Работе № 3

по дисциплине **«Базы Данных»**

7 вариант Курсы»

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Создание таблиц базы данных PostgreSQL. Заполнение таблиц рабочими данными.

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

Оборудование: компьютерный класс.

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.

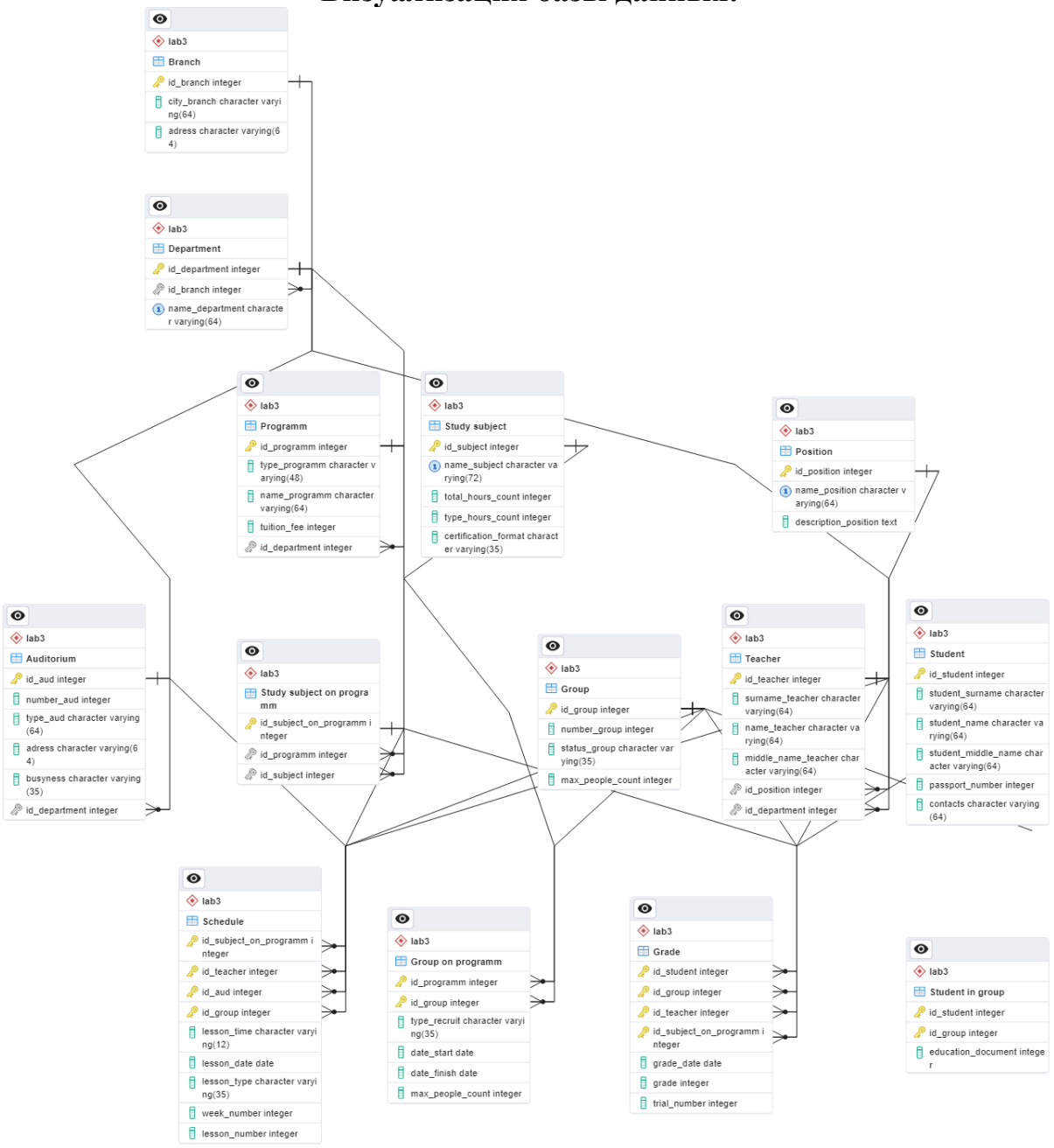
Указание:

Создать две резервные копии:

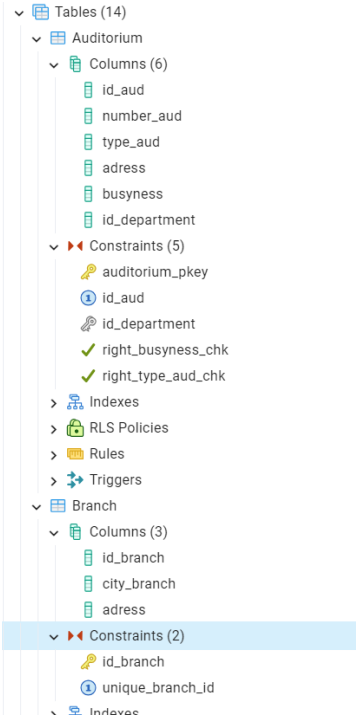
- с расширением CUSTOM для восстановления БД;
- с расширением PLAIN для листинга (в отчете);
- при создании резервных копий БД настроить параметры Dump options для Type of objects и Queries .

7) Восстановить БД.

Визуализация базы данных:



Были созданы указанные выше таблицы со всеми соответствующими «Unique constraint», «Primary key constraint», «Foreign key constraint», «Check constraint» и заполнены данными.



После чего были созданы и восстановлены две копии базы данных (Custom и Plain).

			PID	Type	Server	Object	Start Time	Status	Time Taken (sec)
☐	⊗	🗎	16028	Restore	PostgreSQL 16 (localhost:54...	uni_db	27.10.2023, 12:07:53	Finished	0.56
☐	⊗	🗎	18820	Backup Obje...	PostgreSQL 16 (localhost:54...	postgres	27.10.2023, 12:06:42	Finished	0.21
☐	⊗	🗎	19768	Backup Obje...	PostgreSQL 16 (localhost:54...	postgres	27.10.2023, 12:06:15	Finished	0.23

Листинг plain_dump:

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

-- Dumped from database version 16.0
-- Dumped by pg_dump version 16.0

-- Started on 2023-10-27 12:06:42

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 6 (class 2615 OID 16405)
-- Name: lab3; Type: SCHEMA; Schema: -; Owner: postgres
--

CREATE SCHEMA lab3;


ALTER SCHEMA lab3 OWNER TO postgres;

--
-- TOC entry 2 (class 3079 OID 16384)
-- Name: adminpack; Type: EXTENSION; Schema: -; Owner: -
--

CREATE EXTENSION IF NOT EXISTS adminpack WITH SCHEMA pg_catalog;


--
-- TOC entry 4945 (class 0 OID 0)
-- Dependencies: 2
-- Name: EXTENSION adminpack; Type: COMMENT; Schema: -; Owner:
--

COMMENT ON EXTENSION adminpack IS 'administrative functions for PostgreSQL';
```

```
SET default_tablespace = '';

SET default_table_access_method = heap;

--
-- TOC entry 220 (class 1259 OID 24620)
-- Name: Auditorium; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Auditorium" (
    id_aud integer NOT NULL,
    number_aud integer NOT NULL,
    type_aud character varying(64),
    adress character varying(64) NOT NULL,
    busyness character varying(35),
    id_department integer NOT NULL,
    CONSTRAINT right_busyness_chk CHECK (((busyness)::text = ANY
((ARRAY['свободно'::character varying, 'занято'::character varying])::text[]))),
    CONSTRAINT right_type_aud_chk CHECK (((type_aud)::text = ANY
((ARRAY['лекционная'::character varying, 'лабораторная'::character varying,
'практическая'::character varying, 'коворкинг'::character varying, 'офис'::character
varying])::text[])))
);


ALTER TABLE lab3."Auditorium" OWNER TO postgres;

--
-- TOC entry 216 (class 1259 OID 24581)
-- Name: Branch; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Branch" (
    id_branch integer NOT NULL,
    city_branch character varying(64) NOT NULL,
    adress character varying(64) NOT NULL
);


ALTER TABLE lab3."Branch" OWNER TO postgres;

--
-- TOC entry 217 (class 1259 OID 24586)
-- Name: Department; Type: TABLE; Schema: lab3; Owner: postgres
```

```
--

CREATE TABLE lab3."Department" (
    id_department integer NOT NULL,
    id_branch integer NOT NULL,
    name_department character varying(64) NOT NULL
);


ALTER TABLE lab3."Department" OWNER TO postgres;

--
-- TOC entry 228 (class 1259 OID 24705)
-- Name: Grade; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Grade" (
    id_student integer NOT NULL,
    id_group integer NOT NULL,
    id_teacher integer NOT NULL,
    id_subject_on_programm integer NOT NULL,
    grade_date date NOT NULL,
    grade integer DEFAULT 2,
    trial_number integer DEFAULT 1,
    CONSTRAINT right_grade_chk CHECK (((grade <= 5) AND (grade > 1))),
    CONSTRAINT right_trial_number_chk CHECK ((trial_number <= 3))
);


ALTER TABLE lab3."Grade" OWNER TO postgres;

--
-- TOC entry 223 (class 1259 OID 24646)
-- Name: Group; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Group" (
    id_group integer NOT NULL,
    number_group integer NOT NULL,
    status_group character varying(35) NOT NULL,
    max_people_count integer DEFAULT 30,
    CONSTRAINT right_group_number_chk CHECK (((number_group >= 100) AND
(number_group <= 999))),
    CONSTRAINT status_group_chk CHECK (((status_group)::text = ANY
((ARRAY['обучается'::character varying, 'набирается'::character varying,
'закрыта'::character varying])::text[])))
```

```
);


ALTER TABLE lab3."Group" OWNER TO postgres;

--
-- TOC entry 225 (class 1259 OID 24668)
-- Name: Group on programm; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Group on programm" (
    id_programm integer NOT NULL,
    id_group integer NOT NULL,
    type_recruit character varying(35) NOT NULL,
    date_start date NOT NULL,
    date_finish date NOT NULL,
    max_people_count integer,
    CONSTRAINT right_dates_chk CHECK ((date_finish > date_start)),
    CONSTRAINT right_type_recruit_chk CHECK (((type_recruit)::text = ANY
((ARRAY['очный'::character varying, 'дистанционный'::character varying])::text[])))
);


ALTER TABLE lab3."Group on programm" OWNER TO postgres;

--
-- TOC entry 218 (class 1259 OID 24597)
-- Name: Position; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Position" (
    id_position integer NOT NULL,
    name_position character varying(64) NOT NULL,
    description_position text NOT NULL
);


ALTER TABLE lab3."Position" OWNER TO postgres;

--
-- TOC entry 222 (class 1259 OID 24635)
-- Name: Programm; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Programm" (
    id_programm integer NOT NULL,
```

```
    type_programm character varying(48) NOT NULL,
    name_programm character varying(64) NOT NULL,
    tuition_fee integer DEFAULT 0,
    id_department integer NOT NULL,
    CONSTRAINT right_programm_type_chk CHECK (((type_programm)::text = ANY
((ARRAY['бакалавриат'::character varying, 'аспирантура'::character varying,
'магистратура'::character varying])::text[])))
);


ALTER TABLE lab3."Programm" OWNER TO postgres;

--
-- TOC entry 229 (class 1259 OID 24734)
-- Name: Schedule; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Schedule" (
    id_subject_on_programm integer NOT NULL,
    id_teacher integer NOT NULL,
    id_aud integer NOT NULL,
    id_group integer NOT NULL,
    lesson_time character varying(12) NOT NULL,
    lesson_date date NOT NULL,
    lesson_type character varying(35) NOT NULL,
    week_number integer NOT NULL,
    lesson_number integer DEFAULT 0,
    CONSTRAINT right_lesson_type_chk CHECK (((lesson_type)::text = ANY
((ARRAY['лабораторный практикум'::character varying, 'лекция'::character varying,
'практика'::character varying])::text[])))
);


ALTER TABLE lab3."Schedule" OWNER TO postgres;

--
-- TOC entry 221 (class 1259 OID 24630)
-- Name: Student; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Student" (
    id_student integer NOT NULL,
    student_surname character varying(64) NOT NULL,
    student_name character varying(64) NOT NULL,
    student_middle_name character varying(64),
    passport_number integer,
```

```
    contacts character varying(64) NOT NULL
);


ALTER TABLE lab3."Student" OWNER TO postgres;

--
-- TOC entry 224 (class 1259 OID 24652)
-- Name: Student in group; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Student in group" (
    id_student integer NOT NULL,
    id_group integer NOT NULL,
    education_document integer
);


ALTER TABLE lab3."Student in group" OWNER TO postgres;

--
-- TOC entry 226 (class 1259 OID 24684)
-- Name: Study subject; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Study subject" (
    id_subject integer NOT NULL,
    name_subject character varying(72) NOT NULL,
    total_hours_count integer NOT NULL,
    type_hours_count integer,
    certification_format character varying(35) NOT NULL,
    CONSTRAINT right_certification_format_chk CHECK (((certification_format)::text =
ANY ((ARRAY['экзамен'::character varying, 'зачет'::character varying,
'дифференцированный зачет'::character varying])::text[])))
);


ALTER TABLE lab3."Study subject" OWNER TO postgres;

--
-- TOC entry 227 (class 1259 OID 24689)
-- Name: Study subject on programm; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Study subject on programm" (
    id_subject_on_programm integer NOT NULL,
```

```
    id_programm integer NOT NULL,
    id_subject integer NOT NULL
);


ALTER TABLE lab3."Study subject on programm" OWNER TO postgres;

--
-- TOC entry 219 (class 1259 OID 24604)
-- Name: Teacher; Type: TABLE; Schema: lab3; Owner: postgres
--

CREATE TABLE lab3."Teacher" (
    id_teacher integer NOT NULL,
    surname_teacher character varying(64) NOT NULL,
    name_teacher character varying(64) NOT NULL,
    middle_name_teacher character varying(64),
    id_position integer NOT NULL,
    id_department integer NOT NULL
);


ALTER TABLE lab3."Teacher" OWNER TO postgres;

--
-- TOC entry 4930 (class 0 OID 24620)
-- Dependencies: 220
-- Data for Name: Auditorium; Type: TABLE DATA; Schema: lab3; Owner: postgres
--

COPY lab3."Auditorium" (id_aud, number_aud, type_aud, adress, busyness, id_department)
FROM stdin;
1       101     лекционная Чайковского 11     свободно     1
2       2102    лабораторная       Ломоносова 9       свободно     1
3       2201    практическая       Ломоносова 9       занято       2
4       3202    лабораторная       Кронверский 49     занято       2
5       4301    коворкинг    Ломоносова 9       свободно     3
6       302     офис  Биржевая 14          свободно     3
7       401     лекционная Биржевая 14          занято       1
8       4402    практическая       Ломоносова 9       занято       3
9       2501    лекционная Кронверский 49     свободно     4
10      502     лабораторная       Чайковского 11     свободно     5
\.


--
```

```
-- TOC entry 4926 (class 0 OID 24581)
-- Dependencies: 216
-- Data for Name: Branch; Type: TABLE DATA; Schema: lab3; Owner: postgres
--

COPY lab3."Branch" (id_branch, city_branch, adress) FROM stdin;
1	Санкт-Петербург	Биржевая 14
2	Санкт-Петербург	Ломоносова 9
3	Санкт-Петербург	Кронверский 10
4	Санкт-Петербург	Чайковского 11
\.


--
-- TOC entry 4927 (class 0 OID 24586)
-- Dependencies: 217
-- Data for Name: Department; Type: TABLE DATA; Schema: lab3; Owner: postgres
--

COPY lab3."Department" (id_department, id_branch, name_department) FROM stdin;
1	1	ИКТ
2	3	ФИТИП
3	2	ФТМФ
4	2	НОЖ
5	4	ФТМИ
\.


--
-- TOC entry 4938 (class 0 OID 24705)
-- Dependencies: 228
-- Data for Name: Grade; Type: TABLE DATA; Schema: lab3; Owner: postgres
--

COPY lab3."Grade" (id_student, id_group, id_teacher, id_subject_on_programm,
grade_date, grade, trial_number) FROM stdin;
3	2	6	3	2023-01-12	4	2
7	4	1	4	2022-01-03	3	1
\.


--
-- TOC entry 4933 (class 0 OID 24646)
-- Dependencies: 223
-- Data for Name: Group; Type: TABLE DATA; Schema: lab3; Owner: postgres
--
```

COPY lab3."Group" (id_group, number_group, status_group, max_people_count) FROM stdin;
1	101	набирается	20
2	102	обучается	25
3	201	набирается	15
4	202	закрыта	15
5	301	обучается	30
6	302	набирается	25
7	401	обучается	20
8	402	набирается	20
9	501	закрыта	15
10	502	набирается	25
\.

--
-- TOC entry 4935 (class 0 OID 24668)
-- Dependencies: 225
-- Data for Name: Group on programm; Type: TABLE DATA; Schema: lab3; Owner: postgres
--

COPY lab3."Group on programm" (id_programm, id_group, type_recruit, date_start, date_finish, max_people_count) FROM stdin;
1	1	очный	2022-09-01	2023-05-31	32
2	2	очный	2021-12-01	2022-08-31	32
1	3	дистанционный	2022-09-01	2023-02-28	45
3	4	дистанционный	2022-01-15	2022-06-30	45
2	5	очный	2022-02-01	2022-11-30	32
4	6	очный	2022-09-01	2023-04-30	25
3	7	дистанционный	2021-11-15	2022-03-31	35
1	8	очный	2022-01-01	2022-08-31	21
4	9	дистанционный	2022-09-01	2023-03-31	34
2	10	очный	2022-04-01	2022-12-31	27
\.

--
-- TOC entry 4928 (class 0 OID 24597)
-- Dependencies: 218
-- Data for Name: Position; Type: TABLE DATA; Schema: lab3; Owner: postgres
--

COPY lab3."Position" (id_position, name_position, description_position) FROM stdin;

1	Преподаватель математики	Проводить лекции и практические занятия по мтаематике
2	Практик по математике	Проводить практические занятия по математике
3	Ментор по математике	Проверять домашние, рубежные и контрольные работы студентов
4	Менеджер программы	Следить за всеми процессами на направлении
5	Преподаватель английского языка	Проводить практические занятия по английскому языку
6	Преподаватель по объектно-ориентированному программированию	Проводить лекции, практические занятия и лабораторыне практики по объектно-ориентированному программированию
7	Ментор по объектно-ориентированному программированию	Проверять лабораторные работы студентов по объектно-ориентированному программированию
8	Преподаватель по механике	Проводить лекции, практические занятия и лабораторные практикумы по механике
9	Преподаватель по экономике	Проводить лекции и практические занятия по экономике
\.

--
-- TOC entry 4932 (class 0 OID 24635)
-- Dependencies: 222
-- Data for Name: Programm; Type: TABLE DATA; Schema: lab3; Owner: postgres
--

COPY lab3."Programm" (id_programm, type_programm, name_programm, tuition_fee, id_department) FROM stdin;
1	бакалавриат	Прикладная информатика	300000	1
2	бакалавриат	Школа разработки видеоигр	250000	1
3	магистратура	Программирование и интернет-технологии	450000	2
4	аспирантура	Фотоника	350000	3
5	аспирантура	Региональная и отраслевая экономика	350000	5
6	магистратура	Прикладная геномика	370000	4
\.

--
-- TOC entry 4939 (class 0 OID 24734)
-- Dependencies: 229
-- Data for Name: Schedule; Type: TABLE DATA; Schema: lab3; Owner: postgres
--

COPY lab3."Schedule" (id_subject_on_programm, id_teacher, id_aud, id_group, lesson_time, lesson_date, lesson_type, week_number, lesson_number) FROM stdin;
3	6	9	2	11:40	2022-05-12	лабораторный практикум	4	3

\.

--
-- TOC entry 4931 (class 0 OID 24630)
-- Dependencies: 221
-- Data for Name: Student; Type: TABLE DATA; Schema: lab3; Owner: postgres
--

COPY lab3."Student" (id_student, student_surname, student_name, student_middle_name, passport_number, contacts) FROM stdin;
1	Кадникова	Екатерина	Михайловна	4011111	tg/@rrrwwwaaarrr
2	Кузнецова	Кира	Александровна	402300000	tg/@kikirkw
3	Тарасов	Алексей	Михайлович	401622222	tg/@tarrrasa
4	Иванов	Иван	Иванович	123456789	ivanov@mail.com
5	Петров	Петр	Петрович	987654321	petrov@mail.com
6	Сидоров	Сидор	Сидорович	456789123	sidorov@mail.com
7	Кузнецов	Кузьма	Кузьмич	258369147	kuznetsov@mail.com
8	Алексеев	Алексей	Алексеевич	147896325	alekseev@mail.com
9	Смирнов	Семен	Семенович	963852741	smirnov@mail.com
10	Николаев	Николай	Николаевич	654123987	nikolaev@mail.com
11	Морозов	Михаил	Михайлович	321789654	morozov@mail.com
12	Васильев	Василий	Васильевич	741852963	vasiliev@mail.com
13	Козлов	Константин	Константинович	987123654	kozlov@mail.com
\.

--
-- TOC entry 4934 (class 0 OID 24652)
-- Dependencies: 224
-- Data for Name: Student in group; Type: TABLE DATA; Schema: lab3; Owner: postgres
--

COPY lab3."Student in group" (id_student, id_group, education_document) FROM stdin;
1	1	45678294
2	1	58358792
3	2	58392010
4	2	16479403
5	3	9274718
6	3	16363849
7	4	34464839
8	4	12456789
9	5	87654322
10	5	2234567
\.

```
--
-- TOC entry 4936 (class 0 OID 24684)
-- Dependencies: 226
-- Data for Name: Study subject; Type: TABLE DATA; Schema: lab3; Owner: postgres
--

COPY lab3."Study subject" (id_subject, name_subject, total_hours_count,
type_hours_count, certification_format) FROM stdin;
1	Математика	216	108	экзамен
2	Экономика	108	54	зачет
3	Объектно-ориентированное программирование	288	144
	дифференцированный зачет
4	История	108	54	экзамен
5	Английский язык	216	216	зачет
\.


--
-- TOC entry 4937 (class 0 OID 24689)
-- Dependencies: 227
-- Data for Name: Study subject on programm; Type: TABLE DATA; Schema: lab3; Owner:
postgres
--

COPY lab3."Study subject on programm" (id_subject_on_programm, id_programm,
id_subject) FROM stdin;
1	1	3
2	1	1
3	2	3
4	3	1
5	3	5
6	4	1
7	5	2
8	5	5
9	5	4
\.


--
-- TOC entry 4929 (class 0 OID 24604)
-- Dependencies: 219
-- Data for Name: Teacher; Type: TABLE DATA; Schema: lab3; Owner: postgres
--
```

```
COPY lab3."Teacher" (id_teacher, surname_teacher, name_teacher, middle_name_teacher, id_position, id_department) FROM stdin;
1	Петров	Иван	Иванович	1	5
2	Смирнова	Елена	Александровна	2	4
3	Иванов	Алексей	Петрович	3	3
4	Кузнецова	Марина	Сергеевна	4	2
5	Алексеев	Денис	Владимирович	5	1
6	Сидорова	Ольга	Викторовна	6	2
7	Васильев	Сергей	Игоревич	7	3
8	Николаева	Юлия	Алексеевна	8	4
9	Куликов	Андрей	Викторович	9	5
\.


--
-- TOC entry 4725 (class 2606 OID 24624)
-- Name: Auditorium auditorium_pkey; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Auditorium"
    ADD CONSTRAINT auditorium_pkey PRIMARY KEY (id_aud);


--
-- TOC entry 4760 (class 2606 OID 24711)
-- Name: Grade grade_pkey; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Grade"
    ADD CONSTRAINT grade_pkey PRIMARY KEY (id_student, id_group, id_teacher, id_subject_on_programm);


--
-- TOC entry 4745 (class 2606 OID 24672)
-- Name: Group on programm group_on_programm_pkey; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Group on programm"
    ADD CONSTRAINT group_on_programm_pkey PRIMARY KEY (id_programm, id_group);


--
```

```
-- TOC entry 4737 (class 2606 OID 24651)
-- Name: Group group_pkey; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Group"
    ADD CONSTRAINT group_pkey PRIMARY KEY (id_group);


--
-- TOC entry 4727 (class 2606 OID 32769)
-- Name: Auditorium id_aud; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Auditorium"
    ADD CONSTRAINT id_aud UNIQUE (id_aud);


--
-- TOC entry 4703 (class 2606 OID 24585)
-- Name: Branch id_branch; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Branch"
    ADD CONSTRAINT id_branch PRIMARY KEY (id_branch);


--
-- TOC entry 4708 (class 2606 OID 24590)
-- Name: Department id_department; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Department"
    ADD CONSTRAINT id_department PRIMARY KEY (id_department);


--
-- TOC entry 4739 (class 2606 OID 32771)
-- Name: Group id_group; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Group"
    ADD CONSTRAINT id_group UNIQUE (id_group);


--
-- TOC entry 4714 (class 2606 OID 24603)
```

```
-- Name: Position id_position; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Position"
    ADD CONSTRAINT id_position PRIMARY KEY (id_position);



--
-- TOC entry 4733 (class 2606 OID 24640)
-- Name: Programm id_programm; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Programm"
    ADD CONSTRAINT id_programm PRIMARY KEY (id_programm);



--
-- TOC entry 4729 (class 2606 OID 24634)
-- Name: Student id_student; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Student"
    ADD CONSTRAINT id_student PRIMARY KEY (id_student);



--
-- TOC entry 4747 (class 2606 OID 32775)
-- Name: Study subject id_subject; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Study subject"
    ADD CONSTRAINT id_subject UNIQUE (id_subject);



--
-- TOC entry 4754 (class 2606 OID 24693)
-- Name: Study subject on programm id_subject_on_programm; Type: CONSTRAINT;
Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Study subject on programm"
    ADD CONSTRAINT id_subject_on_programm PRIMARY KEY
(id_subject_on_programm);



--
```

```
-- TOC entry 4721 (class 2606 OID 24608)
-- Name: Teacher id_teacher; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Teacher"
    ADD CONSTRAINT id_teacher PRIMARY KEY (id_teacher);



--
-- TOC entry 4749 (class 2606 OID 32816)
-- Name: Study subject name_subject; Type: CONSTRAINT; Schema: lab3; Owner:
postgres
--

ALTER TABLE ONLY lab3."Study subject"
    ADD CONSTRAINT name_subject UNIQUE (name_subject);



--
-- TOC entry 4763 (class 2606 OID 24739)
-- Name: Schedule schedule_pkey; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Schedule"
    ADD CONSTRAINT schedule_pkey PRIMARY KEY (id_subject_on_programm,
id_teacher, id_aud, id_group);



--
-- TOC entry 4751 (class 2606 OID 24688)
-- Name: Study subject stude_subject_pkey; Type: CONSTRAINT; Schema: lab3; Owner:
postgres
--

ALTER TABLE ONLY lab3."Study subject"
    ADD CONSTRAINT stude_subject_pkey PRIMARY KEY (id_subject);



--
-- TOC entry 4742 (class 2606 OID 24656)
-- Name: Student in group student_in_group_pkey; Type: CONSTRAINT; Schema: lab3;
Owner: postgres
--

ALTER TABLE ONLY lab3."Student in group"
    ADD CONSTRAINT student_in_group_pkey PRIMARY KEY (id_student, id_group);
```

```
--
-- TOC entry 4705 (class 2606 OID 32925)
-- Name: Branch unique_branch_id; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Branch"
    ADD CONSTRAINT unique_branch_id UNIQUE (id_branch);


--
-- TOC entry 4710 (class 2606 OID 32915)
-- Name: Department unique_department_name; Type: CONSTRAINT; Schema: lab3;
Owner: postgres
--

ALTER TABLE ONLY lab3."Department"
    ADD CONSTRAINT unique_department_name UNIQUE (name_department);


--
-- TOC entry 4712 (class 2606 OID 32913)
-- Name: Department unique_deprtment_id; Type: CONSTRAINT; Schema: lab3; Owner:
postgres
--

ALTER TABLE ONLY lab3."Department"
    ADD CONSTRAINT unique_deprtment_id UNIQUE (id_department);


--
-- TOC entry 4716 (class 2606 OID 32906)
-- Name: Position unique_id_position; Type: CONSTRAINT; Schema: lab3; Owner:
postgres
--

ALTER TABLE ONLY lab3."Position"
    ADD CONSTRAINT unique_id_position UNIQUE (id_position);


--
-- TOC entry 4756 (class 2606 OID 32910)
-- Name: Study subject on programm unique_id_subject_on_programm; Type:
CONSTRAINT; Schema: lab3; Owner: postgres
--
```

```
ALTER TABLE ONLY lab3."Study subject on programm"
    ADD CONSTRAINT unique_id_subject_on_programm UNIQUE
(id_subject_on_programm);


--
-- TOC entry 4718 (class 2606 OID 32908)
-- Name: Position unique_position_name; Type: CONSTRAINT; Schema: lab3; Owner:
postgres
--

ALTER TABLE ONLY lab3."Position"
    ADD CONSTRAINT unique_position_name UNIQUE (name_position);


--
-- TOC entry 4735 (class 2606 OID 32919)
-- Name: Programm unique_programm_id; Type: CONSTRAINT; Schema: lab3; Owner:
postgres
--

ALTER TABLE ONLY lab3."Programm"
    ADD CONSTRAINT unique_programm_id UNIQUE (id_programm);


--
-- TOC entry 4731 (class 2606 OID 32923)
-- Name: Student unique_student_id; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Student"
    ADD CONSTRAINT unique_student_id UNIQUE (id_student);


--
-- TOC entry 4723 (class 2606 OID 32917)
-- Name: Teacher unique_teacher_id; Type: CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Teacher"
    ADD CONSTRAINT unique_teacher_id UNIQUE (id_teacher);


--
-- TOC entry 4761 (class 1259 OID 24755)
```

```
-- Name: fki_id_аудитории; Type: INDEX; Schema: lab3; Owner: postgres
--

CREATE INDEX "fki_id_аудитории" ON lab3."Schedule" USING btree (id_aud);


--
-- TOC entry 4740 (class 1259 OID 24667)
-- Name: fki_id_группы; Type: INDEX; Schema: lab3; Owner: postgres
--

CREATE INDEX "fki_id_группы" ON lab3."Student in group" USING btree (id_group);


--
-- TOC entry 4752 (class 1259 OID 24704)
-- Name: fki_id_дисциплины; Type: INDEX; Schema: lab3; Owner: postgres
--

CREATE INDEX "fki_id_дисциплины" ON lab3."Study subject on programm" USING
btree (id_subject);


--
-- TOC entry 4757 (class 1259 OID 24733)
-- Name: fki_id_дисциплины_на_программе; Type: INDEX; Schema: lab3; Owner:
postgres
--

CREATE INDEX "fki_id_дисциплины_на_программе" ON lab3."Grade" USING btree
(id_subject_on_programm);


--
-- TOC entry 4719 (class 1259 OID 24619)
-- Name: fki_id_подразделения; Type: INDEX; Schema: lab3; Owner: postgres
--

CREATE INDEX "fki_id_подразделения" ON lab3."Teacher" USING btree
(id_department);


--
-- TOC entry 4758 (class 1259 OID 24727)
-- Name: fki_id_преподавателя; Type: INDEX; Schema: lab3; Owner: postgres
--
```

```
CREATE INDEX "fki_id_преподавателя" ON lab3."Grade" USING btree (id_teacher);


--
-- TOC entry 4743 (class 1259 OID 24678)
-- Name: fki_id_программы; Type: INDEX; Schema: lab3; Owner: postgres
--

CREATE INDEX "fki_id_программы" ON lab3."Group on programm" USING btree
(id_programm);


--
-- TOC entry 4706 (class 1259 OID 24596)
-- Name: fki_ш; Type: INDEX; Schema: lab3; Owner: postgres
--

CREATE INDEX "fki_ш" ON lab3."Department" USING btree (id_branch);


--
-- TOC entry 4779 (class 2606 OID 24750)
-- Name: Schedule id_aud; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Schedule"
    ADD CONSTRAINT id_aud FOREIGN KEY (id_aud) REFERENCES
lab3."Auditorium"(id_aud);


--
-- TOC entry 4764 (class 2606 OID 24591)
-- Name: Department id_branch; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Department"
    ADD CONSTRAINT id_branch FOREIGN KEY (id_branch) REFERENCES
lab3."Branch"(id_branch);


--
-- TOC entry 4765 (class 2606 OID 24614)
-- Name: Teacher id_department; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
--
```

```
ALTER TABLE ONLY lab3."Teacher"
    ADD CONSTRAINT id_department FOREIGN KEY (id_department) REFERENCES
lab3."Department"(id_department);


--
-- TOC entry 4767 (class 2606 OID 24625)
-- Name: Auditorium id_department; Type: FK CONSTRAINT; Schema: lab3; Owner:
postgres
--

ALTER TABLE ONLY lab3."Auditorium"
    ADD CONSTRAINT id_department FOREIGN KEY (id_department) REFERENCES
lab3."Department"(id_department);


--
-- TOC entry 4768 (class 2606 OID 24641)
-- Name: Programm id_department; Type: FK CONSTRAINT; Schema: lab3; Owner:
postgres
--

ALTER TABLE ONLY lab3."Programm"
    ADD CONSTRAINT id_department FOREIGN KEY (id_department) REFERENCES
lab3."Department"(id_department);


--
-- TOC entry 4769 (class 2606 OID 24662)
-- Name: Student in group id_group; Type: FK CONSTRAINT; Schema: lab3; Owner:
postgres
--

ALTER TABLE ONLY lab3."Student in group"
    ADD CONSTRAINT id_group FOREIGN KEY (id_group) REFERENCES
lab3."Group"(id_group);


--
-- TOC entry 4771 (class 2606 OID 24679)
-- Name: Group on programm id_group; Type: FK CONSTRAINT; Schema: lab3; Owner:
postgres
--

ALTER TABLE ONLY lab3."Group on programm"
```

```
    ADD CONSTRAINT id_group FOREIGN KEY (id_group) REFERENCES
lab3."Group"(id_group);


--
-- TOC entry 4775 (class 2606 OID 24717)
-- Name: Grade id_group; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Grade"
    ADD CONSTRAINT id_group FOREIGN KEY (id_group) REFERENCES
lab3."Group"(id_group);


--
-- TOC entry 4780 (class 2606 OID 24756)
-- Name: Schedule id_group; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Schedule"
    ADD CONSTRAINT id_group FOREIGN KEY (id_group) REFERENCES
lab3."Group"(id_group);


--
-- TOC entry 4766 (class 2606 OID 24609)
-- Name: Teacher id_position; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Teacher"
    ADD CONSTRAINT id_position FOREIGN KEY (id_position) REFERENCES
lab3."Position"(id_position);


--
-- TOC entry 4772 (class 2606 OID 24673)
-- Name: Group on programm id_programm; Type: FK CONSTRAINT; Schema: lab3;
Owner: postgres
--

ALTER TABLE ONLY lab3."Group on programm"
    ADD CONSTRAINT id_programm FOREIGN KEY (id_programm) REFERENCES
lab3."Programm"(id_programm);


--
```

```
-- TOC entry 4773 (class 2606 OID 24694)
-- Name: Study subject on programm id_programm; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Study subject on programm"
    ADD CONSTRAINT id_programm FOREIGN KEY (id_programm) REFERENCES lab3."Programm"(id_programm);


--
-- TOC entry 4770 (class 2606 OID 24657)
-- Name: Student in group id_student; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Student in group"
    ADD CONSTRAINT id_student FOREIGN KEY (id_student) REFERENCES lab3."Student"(id_student);


--
-- TOC entry 4776 (class 2606 OID 24712)
-- Name: Grade id_student; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Grade"
    ADD CONSTRAINT id_student FOREIGN KEY (id_student) REFERENCES lab3."Student"(id_student);


--
-- TOC entry 4774 (class 2606 OID 24699)
-- Name: Study subject on programm id_subject; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Study subject on programm"
    ADD CONSTRAINT id_subject FOREIGN KEY (id_subject) REFERENCES lab3."Study subject"(id_subject);


--
-- TOC entry 4777 (class 2606 OID 24728)
-- Name: Grade id_subject_on_programm; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
```

--

ALTER TABLE ONLY lab3."Grade"
    ADD CONSTRAINT id_subject_on_programm FOREIGN KEY
(id_subject_on_programm) REFERENCES lab3."Study subject on
programm"(id_subject_on_programm);

--
-- TOC entry 4781 (class 2606 OID 24740)
-- Name: Schedule id_subject_on_programm; Type: FK CONSTRAINT; Schema: lab3;
Owner: postgres
--

ALTER TABLE ONLY lab3."Schedule"
    ADD CONSTRAINT id_subject_on_programm FOREIGN KEY
(id_subject_on_programm) REFERENCES lab3."Study subject on
programm"(id_subject_on_programm);

--
-- TOC entry 4778 (class 2606 OID 24722)
-- Name: Grade id_teacher; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Grade"
    ADD CONSTRAINT id_teacher FOREIGN KEY (id_teacher) REFERENCES
lab3."Teacher"(id_teacher);

--
-- TOC entry 4782 (class 2606 OID 24745)
-- Name: Schedule id_teacher; Type: FK CONSTRAINT; Schema: lab3; Owner: postgres
--

ALTER TABLE ONLY lab3."Schedule"
    ADD CONSTRAINT id_teacher FOREIGN KEY (id_teacher) REFERENCES
lab3."Teacher"(id_teacher);

-- Completed on 2023-10-27 12:06:43

--
-- PostgreSQL database dump complete
--

Выводы:

В рамках данной лабораторной работы была разработана полноценная база данных, в которой учтены все необходимые ограничения и проверки для обеспечения целостности данных.

Для обеспечения уникальности определенных атрибутов были установлены "UNIQUE CONSTRAINTS", а также добавлены "CHECK CONSTRAINTS" для валидации и проверки данных.

Были созданы две резервные копии базы данных (Custom и Plain), которые позволят восстановить всю хранящуюся в ней информацию в случае необходимости.