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федеральное государственное автономное образовательное учреждение высшего образования
«САНКТ-ПЕТЕРБУРГСКИЙ НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ ИТМО»
Факультет среднего профессионального образования

ОТЧЁТ
О ПРАКТИЧЕСКОЙ РАБОТЕ № 4

по теме: Анализ данных. Создание таблиц базы данных PostgreSQL. Заполнение таблиц рабочими данными.
по дисциплине: Основы проектирования баз данных

Специальность 09.02.07 Информационные системы и программирование

Проверил:

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Дата: «____» _____ 2020г.

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ПОСТАНОВКА ЗАДАЧИ

Цель лабораторной работы №6: овладеть практическими навыками создания таблиц базы данных PostgreSQL 10 (11), заполнения их рабочими данными, резервного копирования и восстановления баз данных.

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. Заполнить таблицы рабочими данными.

5. Создать резервную копию базы данных.

6. Восстановить базу данных на другом ПК.

ВЫПОЛНЕНИЕ

Dump, содержащий скрипты работы БД, представлен ниже:

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

-- Dumped from database version 11.2
-- Dumped by pg_dump version 11.2

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 client_min_messages = warning;
SET row_security = off;

SET default_tablespace = '';

SET default_with_oids = false;

--
-- Name: Cabinet; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public."Cabinet" (
    number_of_cabinet integer NOT NULL,
    id_teacher integer,
    id_class integer,
    cabinet_specialization text NOT NULL
);


ALTER TABLE public."Cabinet" OWNER TO postgres;

--
-- Name: Class; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public."Class" (
    class_number integer NOT NULL,
```

```
    id_teacher integer,
    number_of_students integer
);


ALTER TABLE public."Class" OWNER TO postgres;

--
-- Name: Journal; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public."Journal" (
    id_note integer NOT NULL,
    id_student integer,
    class_number integer,
    id_teacher integer,
    work_grade integer
);


ALTER TABLE public."Journal" OWNER TO postgres;

--
-- Name: Lesson; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public."Lesson" (
    id_lesson integer NOT NULL,
    id_teacher integer NOT NULL,
    subject_name text NOT NULL,
    number_of_cabinet integer NOT NULL,
    id_timetable integer,
    id_replacement integer,
    id_note integer,
    class_number integer,
    time_start timestamp(4) without time zone,
    whether_the_lesson text
);


ALTER TABLE public."Lesson" OWNER TO postgres;

--
-- Name: Replacement; Type: TABLE; Schema: public; Owner: postgres
--
```

```
CREATE TABLE public."Replacement" (
    id_replacement integer NOT NULL,
    replacing_teacher integer NOT NULL,
    sick_teacher integer NOT NULL
);


ALTER TABLE public."Replacement" OWNER TO postgres;

--
-- Name: Student; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public."Student" (
    id_student integer NOT NULL,
    class_number integer NOT NULL,
    id_teacher integer NOT NULL,
    gender text NOT NULL,
    academic_performance integer
);


ALTER TABLE public."Student" OWNER TO postgres;

--
-- Name: Subject; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public."Subject" (
    subject_name text NOT NULL,
    id_teacher integer NOT NULL,
    number_of_subjects integer
);


ALTER TABLE public."Subject" OWNER TO postgres;

--
-- Name: Teacher; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public."Teacher" (
    id_teacher integer NOT NULL,
    specialty text NOT NULL,
```

```
    class_leadership text,
    own_cabinet integer
);


ALTER TABLE public."Teacher" OWNER TO postgres;

--
-- Name: Timetable; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public."Timetable" (
    number_of_cabinet integer,
    id_teacher integer,
    id_timetable integer NOT NULL,
    day_of_the_week date NOT NULL,
    lesson_number integer NOT NULL,
    subject_name text NOT NULL
);


ALTER TABLE public."Timetable" OWNER TO postgres;

--
-- Data for Name: Cabinet; Type: TABLE DATA; Schema: public; Owner: post-
gres
--

COPY public."Cabinet" (number_of_cabinet, id_teacher, id_class, cabi-
net_specialization) FROM stdin;
123     2       \N      Russian
124     2       \N      Literature
125     4       \N      Biology
126     5       2       Chemestry
\.


--
-- Data for Name: Class; Type: TABLE DATA; Schema: public; Owner: postgres
--

COPY public."Class" (class_number, id_teacher, number_of_students) FROM
stdin;
5       1       2
6       3       2
```

```
2	5	2
\.


--
-- Data for Name: Journal; Type: TABLE DATA; Schema: public; Owner: post-
gres
--

COPY public."Journal" (id_note, id_student, class_number, id_teacher,
work_grade) FROM stdin;
456	1	5	1	5
457	2	5	1	4
458	3	6	3	3
459	4	6	3	5
460	5	2	5	5
461	6	2	5	3
\.


--
-- Data for Name: Lesson; Type: TABLE DATA; Schema: public; Owner: postgres
--

COPY public."Lesson" (id_lesson, id_teacher, subject_name, number_of_cabinet,
id_timetable, id_replacement, id_note, class_number, time_start, wheth-
er_the_lesson) FROM stdin;
991	2	Russian 123	445	657	\N	2	2020-01-08 09:00:00	Yes
992	2	Literature	124	446	\N	\N	6	2020-01-09 10:00:00
Yes
993	4	Biology 125	447	660	\N	5	2020-01-10 11:00:00	No
995	1	Match	126	449	\N	456	5	2020-01-12 13:00:00	Yes
996	3	English 124	500	\N	458	6	2020-01-13 14:00:00	Yes
994	5	Chemistry	126	448	659	461	2	2020-01-11 12:00:00
No
\.


--
-- Data for Name: Replacement; Type: TABLE DATA; Schema: public; Owner:
postgres
--

COPY public."Replacement" (id_replacement, replacing_teacher, sick_teacher)
FROM stdin;
```

```
656	2	1
657	3	2
658	2	3
659	4	5
660	5	4
\.


--
-- Data for Name: Student; Type: TABLE DATA; Schema: public; Owner: post-
gres
--

COPY public."Student" (id_student, class_number, id_teacher, gender, academ-
ic_performance) FROM stdin;
1	5	1	male	10
2	5	1	female	9
3	6	3	male	8
4	6	3	male	8
5	2	5	female	7
6	2	5	female	10
\.


--
-- Data for Name: Subject; Type: TABLE DATA; Schema: public; Owner: post-
gres
--

COPY public."Subject" (subject_name, id_teacher, number_of_subjects) FROM
stdin;
English 3	2
Russian 2	3
Literature	2	4
Match	1	5
Chemistry	5	2
Biology 4	1
\.


--
-- Data for Name: Teacher; Type: TABLE DATA; Schema: public; Owner: post-
gres
--
```

```
COPY public."Teacher" (id_teacher, specialty, class_leadership, own_cabinet)
FROM stdin;
1	math	yes	0
2	russian/literature	no	1
3	english	yes	0
4	biology	no	1
5	chemestry	yes	1
\.


--
-- Data for Name: Timetable; Type: TABLE DATA; Schema: public; Owner:
postgres
--

COPY public."Timetable" (number_of_cabinet, id_teacher, id_timetable,
day_of_the_week, lesson_number, subject_name) FROM stdin;
123	2	445	2020-01-08	1	Russian
124	2	446	2020-01-09	2	Literature
125	4	447	2020-01-10	3	Biology
126	5	448	2020-01-11	4	Chemistry
126	1	449	2020-01-12	5	Match
124	3	500	2020-01-13	6	English
\.


--
-- Name: Cabinet Cabinet_pkey; Type: CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public."Cabinet"
    ADD CONSTRAINT "Cabinet_pkey" PRIMARY KEY (number_of_cabinet);


--
-- Name: Class Class_pkey; Type: CONSTRAINT; Schema: public; Owner: post-
gres
--

ALTER TABLE ONLY public."Class"
    ADD CONSTRAINT "Class_pkey" PRIMARY KEY (class_number);


--
```

```
-- Name: Journal Journal_pkey; Type: CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public."Journal"
    ADD CONSTRAINT "Journal_pkey" PRIMARY KEY (id_note);


--
-- Name: Lesson Lesson_pkey; Type: CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public."Lesson"
    ADD CONSTRAINT "Lesson_pkey" PRIMARY KEY (id_lesson);


--
-- Name: Replacement Replacement_pkey; Type: CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE ONLY public."Replacement"
    ADD CONSTRAINT "Replacement_pkey" PRIMARY KEY (id_replacement);


--
-- Name: Student Student_pkey; Type: CONSTRAINT; Schema: public; Owner:
postgres
--

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


--
-- Name: Subject Subject_pkey; Type: CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public."Subject"
    ADD CONSTRAINT "Subject_pkey" PRIMARY KEY (subject_name);


--
```

```
-- Name: Teacher Teacher_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres
--

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


--
-- Name: Timetable Timetable_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Timetable"
    ADD CONSTRAINT "Timetable_pkey" PRIMARY KEY (id_timetable);


--
-- Name: Student class_number; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Student"
    ADD CONSTRAINT class_number FOREIGN KEY (class_number) REFERENCES public."Class"(class_number);


--
-- Name: Journal class_number; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Journal"
    ADD CONSTRAINT class_number FOREIGN KEY (class_number) REFERENCES public."Class"(class_number);


--
-- Name: Lesson class_number; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Lesson"
    ADD CONSTRAINT class_number FOREIGN KEY (class_number) REFERENCES public."Class"(class_number);
```

```
--
-- Name: Cabinet id_class; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Cabinet"
    ADD CONSTRAINT id_class FOREIGN KEY (id_class) REFERENCES public."Class"(class_number);


--
-- Name: Lesson id_note; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Lesson"
    ADD CONSTRAINT id_note FOREIGN KEY (id_note) REFERENCES public."Journal"(id_note);


--
-- Name: Lesson id_replacement; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Lesson"
    ADD CONSTRAINT id_replacement FOREIGN KEY (id_replacement) REFERENCES public."Replacement"(id_replacement);


--
-- Name: Journal id_student; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Journal"
    ADD CONSTRAINT id_student FOREIGN KEY (id_student) REFERENCES public."Student"(id_student);


--
-- Name: Class id_teacher; Type: FK CONSTRAINT; Schema: public; Owner: postgres
```

```
--

ALTER TABLE ONLY public."Class"
    ADD CONSTRAINT id_teacher FOREIGN KEY (id_teacher) REFERENCES
public."Teacher"(id_teacher);


--
-- Name: Cabinet id_teacher; Type: FK CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public."Cabinet"
    ADD CONSTRAINT id_teacher FOREIGN KEY (id_teacher) REFERENCES
public."Teacher"(id_teacher);


--
-- Name: Student id_teacher; Type: FK CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public."Student"
    ADD CONSTRAINT id_teacher FOREIGN KEY (id_teacher) REFERENCES
public."Teacher"(id_teacher);


--
-- Name: Journal id_teacher; Type: FK CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public."Journal"
    ADD CONSTRAINT id_teacher FOREIGN KEY (id_teacher) REFERENCES
public."Teacher"(id_teacher);


--
-- Name: Subject id_teacher; Type: FK CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public."Subject"
    ADD CONSTRAINT id_teacher FOREIGN KEY (id_teacher) REFERENCES
public."Teacher"(id_teacher);
```

```
--
-- Name: Timetable id_teacher; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Timetable"
    ADD CONSTRAINT id_teacher FOREIGN KEY (id_teacher) REFERENCES public."Teacher"(id_teacher);


--
-- Name: Lesson id_teacher; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Lesson"
    ADD CONSTRAINT id_teacher FOREIGN KEY (id_teacher) REFERENCES public."Teacher"(id_teacher);


--
-- Name: Lesson id_timetable; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Lesson"
    ADD CONSTRAINT id_timetable FOREIGN KEY (id_timetable) REFERENCES public."Timetable"(id_timetable);


--
-- Name: Timetable number_of_cabinet; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Timetable"
    ADD CONSTRAINT number_of_cabinet FOREIGN KEY (number_of_cabinet) REFERENCES public."Cabinet"(number_of_cabinet);


--
-- Name: Lesson number_of_cabinet; Type: FK CONSTRAINT; Schema: public; Owner: postgres
```

```
--

ALTER TABLE ONLY public."Lesson"
    ADD CONSTRAINT number_of_cabinet FOREIGN KEY (number_of_cabinet)
REFERENCES public."Cabinet"(number_of_cabinet);


--
-- Name: Replacement replacing_teacher; Type: FK CONSTRAINT; Schema:
public; Owner: postgres
--

ALTER TABLE ONLY public."Replacement"
    ADD CONSTRAINT replacing_teacher FOREIGN KEY (replacing_teacher)
REFERENCES public."Teacher"(id_teacher);


--
-- Name: Replacement sick_teacher; Type: FK CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE ONLY public."Replacement"
    ADD CONSTRAINT sick_teacher FOREIGN KEY (sick_teacher) REFER-
ENCES public."Teacher"(id_teacher);


--
-- Name: Lesson subject_name; Type: FK CONSTRAINT; Schema: public; Own-
er: postgres
--

ALTER TABLE ONLY public."Lesson"
    ADD CONSTRAINT subject_name FOREIGN KEY (subject_name) REFER-
ENCES public."Subject"(subject_name);


--
-- Name: Timetable subject_name; Type: FK CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE ONLY public."Timetable"
    ADD CONSTRAINT subject_name FOREIGN KEY (subject_name) REFER-
ENCES public."Subject"(subject_name);
```

--
-- PostgreSQL database dump complete
--

ВЫВОД

В практической работе №6 были получены практические навыки создания таблиц базы данных PostgreSQL 10 (11), заполнения их рабочими данными, резервного копирования и восстановления баз данных.