Министерство образования и науки Российской Федерации

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

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Дата: «\_\_\_\_» \_\_\_\_\_\_\_\_\_\_\_\_ 2020г.

Оценка \_\_\_\_\_\_\_\_\_\_\_

Санкт-Петербург 2020

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: postgres

--

COPY public."Cabinet" (number\_of\_cabinet, id\_teacher, id\_class, cabinet\_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: postgres

--

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, whether\_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: postgres

--

COPY public."Student" (id\_student, class\_number, id\_teacher, gender, academic\_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: postgres

--

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: postgres

--

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: postgres

--

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) REFERENCES public."Teacher"(id\_teacher);

--

-- Name: Lesson subject\_name; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Lesson"

ADD CONSTRAINT subject\_name FOREIGN KEY (subject\_name) REFERENCES 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) REFERENCES 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.