**ОТЧЕТ**

**О ЛАБОРАТОРНОЙ 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»

УНИВЕРСИТЕТ ИТМО

ФАКУЛЬТЕТ СРЕДНЕГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ

Санкт-Петербург 2020

Преподаватель:

\_\_\_\_\_\_\_\_Говоров А.И.

Дата: «\_\_» \_\_\_\_\_\_\_ 20\_\_г.

Оценка \_\_\_\_\_\_\_

Выполнил:

Студент группы № Y2339

\_\_\_\_\_\_\_\_\_Быковская А. М.

**Цель работы:** овладеть практическими навыками создания таблиц базы данных PostgreSQL 10 (11), заполнения их рабочими данными, резервного копирования и восстановления БД.

**Оборудование:** лаборатория управления проектной деятельностью, оснащенная компьютерами с доступом в Интернет, предназначенными для работы студентов в электронной образовательной среде выполнения лабораторных заданий.

**Программное обеспечение**: СУБД PostgreSQL 10 (11), 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. Заполнить таблицы БД рабочими данными.
5. Создать резервную копию БД.
6. Восстановить БД на другом ПК.

**Выполнение задания:**

Dump, содержащий скрипты работы БД, представлен ниже:

CREATE DATABASE "Biblioteka" WITH TEMPLATE = template0 ENCODING = 'UTF8' LC\_COLLATE = 'Russian\_Russia.1251' LC\_CTYPE = 'Russian\_Russia.1251';

ALTER DATABASE "Biblioteka" OWNER TO postgres;

\connect "Biblioteka"

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;

SET default\_tablespace = '';

SET default\_table\_access\_method = heap;

--

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

--

CREATE TABLE public."Accounting" (

"Shifr\_knigi" integer NOT NULL,

"Name" text NOT NULL,

"Name\_new\_book" text NOT NULL,

"Number\_of\_new\_instances" integer NOT NULL,

"Number\_of\_copies\_written\_off" integer NOT NULL,

"Name\_of\_the\_books\_written\_off" text NOT NULL

);

ALTER TABLE public."Accounting" OWNER TO postgres;

--

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

--

CREATE TABLE public."Book" (

"Shifr\_knigi" integer NOT NULL,

"Name" text NOT NULL,

"Author" text NOT NULL,

"Publishing\_house" text NOT NULL,

"Year\_publishing" date NOT NULL,

"Section" text NOT NULL,

"Chislo\_exempl\_v\_kajdom\_zale" integer NOT NULL

);

ALTER TABLE public."Book" OWNER TO postgres;

--

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

--

CREATE TABLE public."Fastening" (

"Nomer\_chit\_bileta" integer NOT NULL,

"Room\_number" integer NOT NULL,

"Date\_assigned\_to\_a\_particular\_room" date NOT NULL,

"Date\_of\_transfer\_to\_another\_room" date NOT NULL

);

ALTER TABLE public."Fastening" OWNER TO postgres;

--

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

--

CREATE TABLE public."Library" (

"Name" text NOT NULL,

"Year\_of\_foundation" date NOT NULL,

"Address" text NOT NULL,

"Schedule" text NOT NULL,

"Phone\_number" numeric NOT NULL

);

ALTER TABLE public."Library" OWNER TO postgres;

--

-- Name: Library\_worker; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public."Library\_worker" (

"Id\_worker" integer NOT NULL,

"Name" text NOT NULL,

"Employment\_date" date NOT NULL,

"FIO" text NOT NULL,

"Schedule" text NOT NULL

);

ALTER TABLE public."Library\_worker" OWNER TO postgres;

--

-- Name: Poluchenie\_exemplyara\_knigi; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public."Poluchenie\_exemplyara\_knigi" (

"Shifr\_exemplyara\_knigi" integer NOT NULL,

"Shifr\_knigi" integer NOT NULL,

"Sostoyanie" text NOT NULL

);

ALTER TABLE public."Poluchenie\_exemplyara\_knigi" OWNER TO postgres;

--

-- Name: Poluchenie\_knigi; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public."Poluchenie\_knigi" (

"Nomer\_chit\_bileta" integer NOT NULL,

"Shifr\_exemplyara\_knigi" integer NOT NULL,

"Shifr\_knigi" integer NOT NULL,

"Data\_zakrepl\_knigi\_za\_chitatelem" date NOT NULL,

"Data\_vozvrata\_knigi" date NOT NULL,

"Kolichestvo\_poluch\_knig" integer NOT NULL,

"Kolichestvo\_vozvrash\_knig" integer NOT NULL

);

ALTER TABLE public."Poluchenie\_knigi" OWNER TO postgres;

--

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

--

CREATE TABLE public."Reader" (

"Nomer\_chit\_bileta" integer NOT NULL,

"FIO" text NOT NULL,

"Nomer\_passporta" integer NOT NULL,

"Adress" text NOT NULL,

"Phone\_number" numeric NOT NULL,

"Education" text NOT NULL,

"Nalichie\_ychenoy\_stepeni" text NOT NULL,

"Date\_of\_birth" date NOT NULL

);

ALTER TABLE public."Reader" OWNER TO postgres;

--

-- Name: Reading\_room; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public."Reading\_room" (

"Room\_number" integer NOT NULL,

"Name" text NOT NULL,

"Capacity" integer NOT NULL

);

ALTER TABLE public."Reading\_room" OWNER TO postgres;

--

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

--

CREATE TABLE public."Registration" (

"Nomer\_chit\_bileta" integer NOT NULL,

"Name" text NOT NULL,

"Date\_recorded\_to\_the\_library" date NOT NULL,

"Date\_of\_discharge\_from\_the\_library" date NOT NULL

);

ALTER TABLE public."Registration" OWNER TO postgres;

--

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

--

CREATE TABLE public."Visit" (

"Nomer\_chit\_bileta" integer NOT NULL,

"Room\_number" integer NOT NULL,

"Number\_visited" integer[] NOT NULL

);

ALTER TABLE public."Visit" OWNER TO postgres;

--

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

--

COPY public."Accounting" ("Shifr\_knigi", "Name", "Name\_new\_book", "Number\_of\_new\_instances", "Number\_of\_copies\_written\_off", "Name\_of\_the\_books\_written\_off") FROM stdin;

\.

COPY public."Accounting" ("Shifr\_knigi", "Name", "Name\_new\_book", "Number\_of\_new\_instances", "Number\_of\_copies\_written\_off", "Name\_of\_the\_books\_written\_off") FROM '$$PATH$$/2898.dat';

--

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

--

COPY public."Book" ("Shifr\_knigi", "Name", "Author", "Publishing\_house", "Year\_publishing", "Section", "Chislo\_exempl\_v\_kajdom\_zale") FROM stdin;

\.

COPY public."Book" ("Shifr\_knigi", "Name", "Author", "Publishing\_house", "Year\_publishing", "Section", "Chislo\_exempl\_v\_kajdom\_zale") FROM '$$PATH$$/2895.dat';

--

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

--

COPY public."Fastening" ("Nomer\_chit\_bileta", "Room\_number", "Date\_assigned\_to\_a\_particular\_room", "Date\_of\_transfer\_to\_another\_room") FROM stdin;

\.

COPY public."Fastening" ("Nomer\_chit\_bileta", "Room\_number", "Date\_assigned\_to\_a\_particular\_room", "Date\_of\_transfer\_to\_another\_room") FROM '$$PATH$$/2902.dat';

--

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

--

COPY public."Library" ("Name", "Year\_of\_foundation", "Address", "Schedule", "Phone\_number") FROM stdin;

\.

COPY public."Library" ("Name", "Year\_of\_foundation", "Address", "Schedule", "Phone\_number") FROM '$$PATH$$/2897.dat';

--

-- Data for Name: Library\_worker; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public."Library\_worker" ("Id\_worker", "Name", "Employment\_date", "FIO", "Schedule") FROM stdin;

\.

COPY public."Library\_worker" ("Id\_worker", "Name", "Employment\_date", "FIO", "Schedule") FROM '$$PATH$$/2899.dat';

--

-- Data for Name: Poluchenie\_exemplyara\_knigi; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public."Poluchenie\_exemplyara\_knigi" ("Shifr\_exemplyara\_knigi", "Shifr\_knigi", "Sostoyanie") FROM stdin;

\.

COPY public."Poluchenie\_exemplyara\_knigi" ("Shifr\_exemplyara\_knigi", "Shifr\_knigi", "Sostoyanie") FROM '$$PATH$$/2894.dat';

--

-- Data for Name: Poluchenie\_knigi; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public."Poluchenie\_knigi" ("Nomer\_chit\_bileta", "Shifr\_exemplyara\_knigi", "Shifr\_knigi", "Data\_zakrepl\_knigi\_za\_chitatelem", "Data\_vozvrata\_knigi", "Kolichestvo\_poluch\_knig", "Kolichestvo\_vozvrash\_knig") FROM stdin;

\.

COPY public."Poluchenie\_knigi" ("Nomer\_chit\_bileta", "Shifr\_exemplyara\_knigi", "Shifr\_knigi", "Data\_zakrepl\_knigi\_za\_chitatelem", "Data\_vozvrata\_knigi", "Kolichestvo\_poluch\_knig", "Kolichestvo\_vozvrash\_knig") FROM '$$PATH$$/2893.dat';

--

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

--

COPY public."Reader" ("Nomer\_chit\_bileta", "FIO", "Nomer\_passporta", "Adress", "Phone\_number", "Education", "Nalichie\_ychenoy\_stepeni", "Date\_of\_birth") FROM stdin;

\.

COPY public."Reader" ("Nomer\_chit\_bileta", "FIO", "Nomer\_passporta", "Adress", "Phone\_number", "Education", "Nalichie\_ychenoy\_stepeni", "Date\_of\_birth") FROM '$$PATH$$/2892.dat';

--

-- Data for Name: Reading\_room; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public."Reading\_room" ("Room\_number", "Name", "Capacity") FROM stdin;

\.

COPY public."Reading\_room" ("Room\_number", "Name", "Capacity") FROM '$$PATH$$/2900.dat';

--

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

--

COPY public."Registration" ("Nomer\_chit\_bileta", "Name", "Date\_recorded\_to\_the\_library", "Date\_of\_discharge\_from\_the\_library") FROM stdin;

\.

COPY public."Registration" ("Nomer\_chit\_bileta", "Name", "Date\_recorded\_to\_the\_library", "Date\_of\_discharge\_from\_the\_library") FROM '$$PATH$$/2896.dat';

--

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

--

COPY public."Visit" ("Nomer\_chit\_bileta", "Room\_number", "Number\_visited") FROM stdin;

\.

COPY public."Visit" ("Nomer\_chit\_bileta", "Room\_number", "Number\_visited") FROM '$$PATH$$/2901.dat';

--

-- Name: Accounting Accounting\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Accounting"

ADD CONSTRAINT "Accounting\_pkey" PRIMARY KEY ("Shifr\_knigi");

--

-- Name: Fastening Fastening\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Fastening"

ADD CONSTRAINT "Fastening\_pkey" PRIMARY KEY ("Nomer\_chit\_bileta", "Room\_number");

--

-- Name: Library\_worker Library worker\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Library\_worker"

ADD CONSTRAINT "Library worker\_pkey" PRIMARY KEY ("Id\_worker", "Name");

--

-- Name: Library Name; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Library"

ADD CONSTRAINT "Name" PRIMARY KEY ("Name");

--

-- Name: Reader Nomer\_chit\_bileta; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Reader"

ADD CONSTRAINT "Nomer\_chit\_bileta" PRIMARY KEY ("Nomer\_chit\_bileta");

--

-- Name: Poluchenie\_knigi Poluchenie\_knigi\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Poluchenie\_knigi"

ADD CONSTRAINT "Poluchenie\_knigi\_pkey" PRIMARY KEY ("Nomer\_chit\_bileta");

--

-- Name: Reading\_room Reading\_room\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Reading\_room"

ADD CONSTRAINT "Reading\_room\_pkey" PRIMARY KEY ("Room\_number");

--

-- Name: Poluchenie\_exemplyara\_knigi Shifr\_exemplyara\_knigi; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Poluchenie\_exemplyara\_knigi"

ADD CONSTRAINT "Shifr\_exemplyara\_knigi" PRIMARY KEY ("Shifr\_exemplyara\_knigi");

--

-- Name: Book Shifr\_knigi; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Book"

ADD CONSTRAINT "Shifr\_knigi" PRIMARY KEY ("Shifr\_knigi");

--

-- Name: Visit Visit\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Visit"

ADD CONSTRAINT "Visit\_pkey" PRIMARY KEY ("Nomer\_chit\_bileta", "Room\_number");

--

-- Name: Registration Name; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Registration"

ADD CONSTRAINT "Name" FOREIGN KEY ("Name") REFERENCES public."Library"("Name") NOT VALID;

--

-- Name: Library\_worker Name; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Library\_worker"

ADD CONSTRAINT "Name" FOREIGN KEY ("Name") REFERENCES public."Library"("Name");

--

-- Name: Poluchenie\_knigi Nomer\_chit\_bileta; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Poluchenie\_knigi"

ADD CONSTRAINT "Nomer\_chit\_bileta" FOREIGN KEY ("Nomer\_chit\_bileta") REFERENCES public."Reader"("Nomer\_chit\_bileta") NOT VALID;

--

-- Name: Registration Nomer\_chit\_bileta; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Registration"

ADD CONSTRAINT "Nomer\_chit\_bileta" FOREIGN KEY ("Nomer\_chit\_bileta") REFERENCES public."Reader"("Nomer\_chit\_bileta");

--

-- Name: Visit Nomer\_chit\_bileta; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Visit"

ADD CONSTRAINT "Nomer\_chit\_bileta" FOREIGN KEY ("Nomer\_chit\_bileta") REFERENCES public."Reader"("Nomer\_chit\_bileta");

--

-- Name: Fastening Nomer\_chit\_bileta; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Fastening"

ADD CONSTRAINT "Nomer\_chit\_bileta" FOREIGN KEY ("Nomer\_chit\_bileta") REFERENCES public."Reader"("Nomer\_chit\_bileta");

--

-- Name: Visit Room\_number; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Visit"

ADD CONSTRAINT "Room\_number" FOREIGN KEY ("Room\_number") REFERENCES public."Reading\_room"("Room\_number");

--

-- Name: Fastening Room\_number; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Fastening"

ADD CONSTRAINT "Room\_number" FOREIGN KEY ("Room\_number") REFERENCES public."Reading\_room"("Room\_number") NOT VALID;

--

-- Name: Poluchenie\_knigi Shifr\_exemplyara\_knig; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Poluchenie\_knigi"

ADD CONSTRAINT "Shifr\_exemplyara\_knig" FOREIGN KEY ("Shifr\_exemplyara\_knigi") REFERENCES public."Poluchenie\_exemplyara\_knigi"("Shifr\_exemplyara\_knigi") NOT VALID;

--

-- Name: Poluchenie\_knigi Shifr\_knig; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Poluchenie\_knigi"

ADD CONSTRAINT "Shifr\_knig" FOREIGN KEY ("Shifr\_knigi") REFERENCES public."Book"("Shifr\_knigi") NOT VALID;

--

-- Name: Poluchenie\_exemplyara\_knigi Shifr\_knigi; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Poluchenie\_exemplyara\_knigi"

ADD CONSTRAINT "Shifr\_knigi" FOREIGN KEY ("Shifr\_knigi") REFERENCES public."Book"("Shifr\_knigi") NOT VALID;

--

-- Name: Accounting Shifr\_knigi; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public."Accounting"

ADD CONSTRAINT "Shifr\_knigi" FOREIGN KEY ("Shifr\_knigi") REFERENCES public."Book"("Shifr\_knigi");

--

-- PostgreSQL database dump complete

--

**Вывод:** в ходе выполнения лабораторной работы №4 было получены практические навыки создания таблиц базы данных PostgreSQL 12, заполнения их рабочими данными, резервного копирования и восстановления баз данных.