

Министерство науки и высшего образования Российской Федерации
Федеральное государственное автономное образовательное учреждение
высшего образования
«НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ ИТМО»
Факультет инфокоммуникационных технологий

ОТЧЕТ
О ЛАБОРАТОРНОЙ РАБОТЕ № 3

по теме: Создание таблиц базы данных POSTGRESQL. Заполнение таблиц рабочими
данными

по дисциплине: Проектирование и реализация баз данных

Специальность:

45.03.04 Интеллектуальные системы в гуманитарной сфере

Проверил:

Говорова М.М. _____

Дата: «__» мая 2021 г.

Оценка _____

Выполнил:

студент группы К3243

Бондаренко Г.В.

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Лабораторная работа 3

Цель работы

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

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:

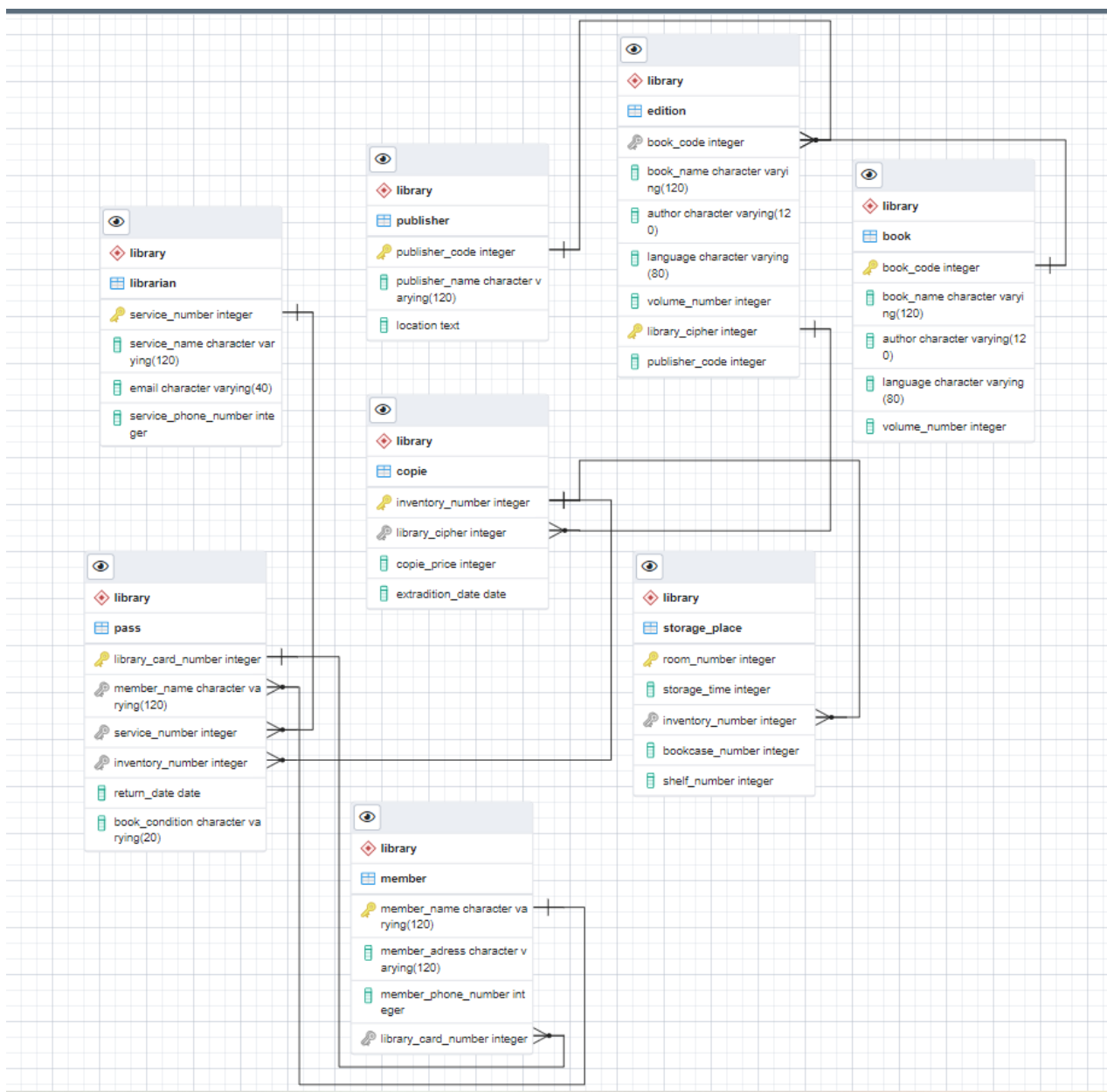
- с расширением *CUSTOM* для восстановления БД;
- с расширением *PLAIN* для листинга (в отчете);
- при создании резервных копий БД настроить параметры *Dump options* для *Type of objects* и *Queries*.

7. Восстановить БД.

Индивидуальное задание

Вариант 3. БД «Библиотека».

Выполнение:



```

--
-- PostgreSQL database dump
--

--
-- Dumped from database version 13.3
-- Dumped by pg_dump version 13.3

-- Started on 2021-05-24 14:16:10
  
```

```

SET statement_timeout = 0;
SET lock_timeout = 0;
SET idle_in_transaction_session_timeout = 0;
SET client_encoding = 'SQL_ASCII';
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 24586)
-- Name: library; Type: SCHEMA; Schema: -; Owner: postgres
--
```

```
CREATE SCHEMA library;
```

```
ALTER SCHEMA library 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 3045 (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 201 (class 1259 OID 32778)
-- Name: book; Type: TABLE; Schema: library; Owner: postgres
--
```

```
CREATE TABLE library.book (
    book_code integer NOT NULL,
    book_name character varying(120) NOT NULL,
    author character varying(120) NOT NULL,
    language character varying(80) NOT NULL,
    volume_number integer NOT NULL
);
```

```
ALTER TABLE library.book OWNER TO postgres;
```

```
--
```

```
-- TOC entry 204 (class 1259 OID 32806)
-- Name: copie; Type: TABLE; Schema: library; Owner: postgres
--
```

```
CREATE TABLE library.copie (
    inventory_number integer NOT NULL,
    library_cipher integer NOT NULL,
    copie_price integer NOT NULL,
    extradition_date date NOT NULL
);
```

```
ALTER TABLE library.copie OWNER TO postgres;
```

```
--
-- TOC entry 203 (class 1259 OID 32791)
-- Name: edition; Type: TABLE; Schema: library; Owner: postgres
--
```

```
CREATE TABLE library.edition (
    library_cipher integer NOT NULL,
    publisher_code integer NOT NULL
)
INHERITS (library.book);
```

```
ALTER TABLE library.edition OWNER TO postgres;
```

```
--
-- TOC entry 208 (class 1259 OID 32841)
-- Name: librarian; Type: TABLE; Schema: library; Owner: postgres
--
```

```
CREATE TABLE library.librarian (
    service_number integer NOT NULL,
    service_name character varying(120) NOT NULL,
    email character varying(40) NOT NULL,
    service_phone_number integer NOT NULL
);
```

```
ALTER TABLE library.librarian OWNER TO postgres;
```

```
--
-- TOC entry 207 (class 1259 OID 32831)
-- Name: member; Type: TABLE; Schema: library; Owner: postgres
--
```

```
CREATE TABLE library.member (
```

```
    member_name character varying(120) NOT NULL,  
    member_adress character varying(120) NOT NULL,  
    member_phone_number integer NOT NULL,  
    library_card_number integer NOT NULL  
);
```

```
ALTER TABLE library.member OWNER TO postgres;
```

```
--  
-- TOC entry 206 (class 1259 OID 32826)  
-- Name: pass; Type: TABLE; Schema: library; Owner: postgres  
--
```

```
CREATE TABLE library.pass (  
    library_card_number integer NOT NULL,  
    member_name character varying(120) NOT NULL,  
    service_number integer NOT NULL,  
    inventory_number integer NOT NULL,  
    return_date date,  
    book_condition character varying(20) NOT NULL  
);
```

```
ALTER TABLE library.pass OWNER TO postgres;
```

```
--  
-- TOC entry 202 (class 1259 OID 32783)  
-- Name: publisher; Type: TABLE; Schema: library; Owner: postgres  
--
```

```
CREATE TABLE library.publisher (  
    publisher_code integer NOT NULL,  
    publisher_name character varying(120) NOT NULL,  
    location text NOT NULL  
);
```

```
ALTER TABLE library.publisher OWNER TO postgres;
```

```
--  
-- TOC entry 205 (class 1259 OID 32816)  
-- Name: storage_place; Type: TABLE; Schema: library; Owner: postgres  
--
```

```
CREATE TABLE library.storage_place (  
    room_number integer NOT NULL,  
    storage_time integer NOT NULL,  
    inventory_number integer NOT NULL,
```

```
    bookcase_number integer NOT NULL,  
    shelf_number integer NOT NULL  
);
```

```
ALTER TABLE library.storage_place OWNER TO postgres;
```

```
--  
-- TOC entry 3032 (class 0 OID 32778)  
-- Dependencies: 201  
-- Data for Name: book; Type: TABLE DATA; Schema: library; Owner: postgres  
--
```

```
COPY library.book (book_code, book_name, author, language, volume_number) FROM  
stdin;  
\.
```

```
--  
-- TOC entry 3035 (class 0 OID 32806)  
-- Dependencies: 204  
-- Data for Name: copie; Type: TABLE DATA; Schema: library; Owner: postgres  
--
```

```
COPY library.copie (inventory_number, library_cipher, copie_price, extradition_date)  
FROM stdin;  
\.
```

```
--  
-- TOC entry 3034 (class 0 OID 32791)  
-- Dependencies: 203  
-- Data for Name: edition; Type: TABLE DATA; Schema: library; Owner: postgres  
--
```

```
COPY library.edition (book_code, book_name, author, language, volume_number,  
library_cipher, publisher_code) FROM stdin;  
\.
```

```
--  
-- TOC entry 3039 (class 0 OID 32841)  
-- Dependencies: 208  
-- Data for Name: librarian; Type: TABLE DATA; Schema: library; Owner: postgres  
--
```

```
COPY library.librarian (service_number, service_name, email, service_phone_number)  
FROM stdin;  
\.
```

```
--
-- TOC entry 3038 (class 0 OID 32831)
-- Dependencies: 207
-- Data for Name: member; Type: TABLE DATA; Schema: library; Owner: postgres
--
```

```
COPY library.member (member_name, member_adress, member_phone_number,
library_card_number) FROM stdin;
\.
```

```
--
-- TOC entry 3037 (class 0 OID 32826)
-- Dependencies: 206
-- Data for Name: pass; Type: TABLE DATA; Schema: library; Owner: postgres
--
```

```
COPY library.pass (library_card_number, member_name, service_number,
inventory_number, return_date, book_condition) FROM stdin;
\.
```

```
--
-- TOC entry 3033 (class 0 OID 32783)
-- Dependencies: 202
-- Data for Name: publisher; Type: TABLE DATA; Schema: library; Owner: postgres
--
```

```
COPY library.publisher (publisher_code, publisher_name, location) FROM stdin;
\.
```

```
--
-- TOC entry 3036 (class 0 OID 32816)
-- Dependencies: 205
-- Data for Name: storage_place; Type: TABLE DATA; Schema: library; Owner:
postgres
--
```

```
COPY library.storage_place (room_number, storage_time, inventory_number,
bookcase_number, shelf_number) FROM stdin;
\.
```

```
--
-- TOC entry 2879 (class 2606 OID 32782)
-- Name: book book_pkey; Type: CONSTRAINT; Schema: library; Owner: postgres
```


--

```
ALTER TABLE ONLY library.book
  ADD CONSTRAINT book_pkey PRIMARY KEY (book_code);
```

--

```
-- TOC entry 2885 (class 2606 OID 32810)
-- Name: copie copie_pkey; Type: CONSTRAINT; Schema: library; Owner: postgres
```

--

```
ALTER TABLE ONLY library.copie
  ADD CONSTRAINT copie_pkey PRIMARY KEY (inventory_number);
```

--

```
-- TOC entry 2883 (class 2606 OID 32795)
-- Name: edition edition_pkey; Type: CONSTRAINT; Schema: library; Owner: postgres
```

--

```
ALTER TABLE ONLY library.edition
  ADD CONSTRAINT edition_pkey PRIMARY KEY (library_cipher);
```

--

```
-- TOC entry 2893 (class 2606 OID 32845)
-- Name: librarian librarian_pkey; Type: CONSTRAINT; Schema: library; Owner:
postgres
```

--

```
ALTER TABLE ONLY library.librarian
  ADD CONSTRAINT librarian_pkey PRIMARY KEY (service_number);
```

--

```
-- TOC entry 2891 (class 2606 OID 32835)
-- Name: member member_pkey; Type: CONSTRAINT; Schema: library; Owner:
postgres
```

--

```
ALTER TABLE ONLY library.member
  ADD CONSTRAINT member_pkey PRIMARY KEY (member_name);
```

--

```
-- TOC entry 2889 (class 2606 OID 32830)
-- Name: pass pass_pkey; Type: CONSTRAINT; Schema: library; Owner: postgres
```

--

```

ALTER TABLE ONLY library.pass
    ADD CONSTRAINT pass_pkey PRIMARY KEY (library_card_number);

--
-- TOC entry 2881 (class 2606 OID 32790)
-- Name: publisher publisher_pkey; Type: CONSTRAINT; Schema: library; Owner:
postgres
--

ALTER TABLE ONLY library.publisher
    ADD CONSTRAINT publisher_pkey PRIMARY KEY (publisher_code);

--
-- TOC entry 2887 (class 2606 OID 32820)
-- Name: storage_place storage_place_pkey; Type: CONSTRAINT; Schema: library;
Owner: postgres
--

ALTER TABLE ONLY library.storage_place
    ADD CONSTRAINT storage_place_pkey PRIMARY KEY (room_number);

--
-- TOC entry 2894 (class 2606 OID 32871)
-- Name: edition book_code; Type: FK CONSTRAINT; Schema: library; Owner:
postgres
--

ALTER TABLE ONLY library.edition
    ADD CONSTRAINT book_code FOREIGN KEY (book_code) REFERENCES
library.book(book_code) ON UPDATE RESTRICT ON DELETE RESTRICT
DEFERRABLE INITIALLY DEFERRED;

--
-- TOC entry 2901 (class 2606 OID 32866)
-- Name: member card_number; Type: FK CONSTRAINT; Schema: library; Owner:
postgres
--

ALTER TABLE ONLY library.member
    ADD CONSTRAINT card_number FOREIGN KEY (library_card_number)
REFERENCES library.pass(library_card_number) ON UPDATE RESTRICT ON
DELETE RESTRICT DEFERRABLE INITIALLY DEFERRED;

--

```

-- TOC entry 2899 (class 2606 OID 32891)
-- Name: pass inventory_number; Type: FK CONSTRAINT; Schema: library; Owner:
postgres
--

ALTER TABLE ONLY library.pass

ADD CONSTRAINT inventory_number FOREIGN KEY (inventory_number)
REFERENCES library.copie(inventory_number) ON UPDATE RESTRICT ON
DELETE RESTRICT DEFERRABLE INITIALLY DEFERRED;

--
-- TOC entry 2897 (class 2606 OID 32886)
-- Name: storage_place inventory_number; Type: FK CONSTRAINT; Schema: library;
Owner: postgres
--

ALTER TABLE ONLY library.storage_place

ADD CONSTRAINT inventory_number FOREIGN KEY (inventory_number)
REFERENCES library.copie(inventory_number) ON UPDATE RESTRICT ON
DELETE RESTRICT DEFERRABLE INITIALLY DEFERRED;

--
-- TOC entry 2896 (class 2606 OID 32881)
-- Name: copie library_cipher; Type: FK CONSTRAINT; Schema: library; Owner:
postgres
--

ALTER TABLE ONLY library.copie

ADD CONSTRAINT library_cipher FOREIGN KEY (library_cipher) REFERENCES
library.edition(library_cipher) ON UPDATE RESTRICT ON DELETE RESTRICT
DEFERRABLE INITIALLY DEFERRED;

--
-- TOC entry 2900 (class 2606 OID 32896)
-- Name: pass member_name; Type: FK CONSTRAINT; Schema: library; Owner:
postgres
--

ALTER TABLE ONLY library.pass

ADD CONSTRAINT member_name FOREIGN KEY (member_name)
REFERENCES library.member(member_name) ON UPDATE RESTRICT ON
DELETE RESTRICT DEFERRABLE INITIALLY DEFERRED;

--
-- TOC entry 2895 (class 2606 OID 32876)

```
-- Name: edition_publisher_code; Type: FK CONSTRAINT; Schema: library; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY library.edition
```

```
ADD CONSTRAINT publisher_code FOREIGN KEY (book_code) REFERENCES library.publisher(publisher_code) ON UPDATE RESTRICT ON DELETE RESTRICT DEFERRABLE INITIALLY DEFERRED;
```

```
--
```

```
-- TOC entry 2898 (class 2606 OID 32901)
```

```
-- Name: pass_service_number; Type: FK CONSTRAINT; Schema: library; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY library.pass
```

```
ADD CONSTRAINT service_number FOREIGN KEY (service_number) REFERENCES library.librarian(service_number) ON UPDATE RESTRICT ON DELETE RESTRICT DEFERRABLE INITIALLY DEFERRED;
```

```
-- Completed on 2021-05-24 14:16:10
```

```
--
```

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

```
--
```

Вывод: в ходе лабораторной работы были обретены навыки работы с приложением pgAdmin4. С помощью приложения создана база данных, имеющая в своём составе таблицы, ограничения и рабочие данные. Была создана резервная копия БД.