

Министерство науки и высшего образования Российской Федерации
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ АВТОНОМНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
«НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ ИТМО»

Факультет: **Инфокоммуникационных технологий**
Образовательная программа: **Интеллектуальные системы в гуманитарной сфере**
Направление подготовки: **45.03.04 Интеллектуальные системы в гуманитарной сфере**

Лабораторная работа №1
**«СОЗДАНИЕ ТАБЛИЦ БАЗЫ ДАННЫХ PostgreSQL. ЗАПОЛНЕНИЕ ТАБЛИЦ РАБОЧИМИ
ДАНЫМИ»**

по дисциплине:
«Базы данных»

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

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.

Индивидуальное задание:

Используя данные предыдущей лабораторной работы (Вариант 6 «Пассажир»), создать базу данных с использованием pgAdmin 4

Выполнение:

Ход выполнения работы может быть передан с помощью dump-версии созданной БД:

```
--  
-- PostgreSQL database dump  
--  
  
-- Dumped from database version 15.3  
-- Dumped by pg_dump version 15.2  
  
-- Started on 2023-05-17 22:34:07 MSK
```

```
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 4 (class 2615 OID 2200)
-- Name: public; Type: SCHEMA; Schema: -; Owner: pg_database_owner
--

CREATE SCHEMA public;


ALTER SCHEMA public OWNER TO pg_database_owner;


--
-- TOC entry 3699 (class 0 OID 0)
-- Dependencies: 4
-- Name: SCHEMA public; Type: COMMENT; Schema: -; Owner: pg_database_owner
--

COMMENT ON SCHEMA public IS 'standard public schema';


SET default_tablespace = '';

SET default_table_access_method = heap;


--
-- TOC entry 214 (class 1259 OID 24584)
-- Name: Rider; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public."Rider" (

```

```
"Passport_data" integer NOT NULL,  
"Full_name" character varying NOT NULL,  
"Phone_number" character varying NOT NULL,  
"Email_adress" character varying NOT NULL,  
"Rider_ID" character varying NOT NULL  
);
```

```
ALTER TABLE public."Rider" OWNER TO postgres;
```

```
--  
-- TOC entry 215 (class 1259 OID 24596)  
-- Name: Route; Type: TABLE; Schema: public; Owner: postgres  
--
```

```
CREATE TABLE public."Route" (  
"Stop_point_ID" character varying NOT NULL,  
"Duration_of_stop" interval NOT NULL,  
"Departue" time without time zone NOT NULL,  
"Arrival" time without time zone NOT NULL,  
"Train_number" character varying,  
"Station" character varying  
);
```

```
ALTER TABLE public."Route" OWNER TO postgres;
```

```
--  
-- TOC entry 218 (class 1259 OID 24629)  
-- Name: Sales_office; Type: TABLE; Schema: public; Owner: postgres  
--
```

```
CREATE TABLE public."Sales_office" (  
"Sales_office_ID" integer NOT NULL,  
"Status" character varying NOT NULL,  
"Location" character varying(40) NOT NULL,  
"Adress" character varying(80) NOT NULL,
```

```
CONSTRAINT "Status_check" CHECK (((("Status")::text = ANY
((ARRAY['открыта'::character varying, 'закрыта'::character varying, 'не работает'::character
varying, 'другое'::character varying]))::text[])))
);
```

```
ALTER TABLE public."Sales_office" OWNER TO postgres;
```

```
--
-- TOC entry 217 (class 1259 OID 24621)
-- Name: Seat; Type: TABLE; Schema: public; Owner: postgres
--
```

```
CREATE TABLE public."Seat" (
    "Seat_ID" character varying NOT NULL,
    "Type" character varying NOT NULL,
    "Status" character varying NOT NULL,
    "Wagon_ID" character varying NOT NULL,
    CONSTRAINT "Status_check" CHECK (((("Status")::text = ANY
((ARRAY['забронировано'::character varying, 'выкуплено'::character varying,
'свободно'::character varying, 'другое'::character varying]))::text[])))
);
```

```
ALTER TABLE public."Seat" OWNER TO postgres;
```

```
--
-- TOC entry 223 (class 1259 OID 24774)
-- Name: Specification; Type: TABLE; Schema: public; Owner: postgres
--
```

```
CREATE TABLE public."Specification" (
    "Production_series" character varying NOT NULL,
    "Wagon_ID" character varying NOT NULL,
    "Start_of_use" timestamp without time zone NOT NULL,
    "Last_maintenance" timestamp without time zone NOT NULL
);
```

```
ALTER TABLE public."Specification" OWNER TO postgres;
```

```
--  
-- TOC entry 216 (class 1259 OID 24615)  
-- Name: Station; Type: TABLE; Schema: public; Owner: postgres  
--
```

```
CREATE TABLE public."Station" (  
    "Name" character varying NOT NULL,  
    "Type" character varying NOT NULL,  
    "Location" character varying NOT NULL,  
    CONSTRAINT "Type_check" CHECK (((("Type")::text = ANY  
((ARRAY['город'::character varying, 'поселок'::character varying, 'станция'::character  
varying, 'село'::character varying, 'другое'::character varying])::text[])))  
);
```

```
ALTER TABLE public."Station" OWNER TO postgres;
```

```
--  
-- TOC entry 219 (class 1259 OID 24637)  
-- Name: Ticket; Type: TABLE; Schema: public; Owner: postgres  
--
```

```
CREATE TABLE public."Ticket" (  
    "Ticket_ID" integer NOT NULL,  
    "Departue_point" character varying NOT NULL,  
    "Arrival_point" character varying NOT NULL,  
    "Purchase_office_ID" integer NOT NULL,  
    "Purchase_status" character varying NOT NULL,  
    "Purchase_type" character varying NOT NULL,  
    "Price" numeric NOT NULL,  
    "Rider_ID" character varying NOT NULL,  
    "Seat_ID" character varying NOT NULL,  
    CONSTRAINT "Price_check" CHECK (("Price" >= (0)::numeric))
```

```
);
```

```
ALTER TABLE public."Ticket" OWNER TO postgres;
```

```
--  
-- TOC entry 222 (class 1259 OID 24698)  
-- Name: Time_table; Type: TABLE; Schema: public; Owner: postgres  
--
```

```
CREATE TABLE public."Time_table" (  
    "Train_number" character varying NOT NULL,  
    "Departue_point" character varying NOT NULL,  
    "Arrival_point" character varying NOT NULL,  
    "Destination_point" character varying NOT NULL,  
    "Departure" timestamp without time zone NOT NULL,  
    "Arrival" timestamp without time zone NOT NULL,  
    "Train_schedule" character varying NOT NULL,  
    "Factual_departue" timestamp without time zone NOT NULL,  
    "Factual_arrival" timestamp without time zone NOT NULL,  
    "Status" character varying NOT NULL,  
    CONSTRAINT "Status" CHECK (((("Status")::text = ANY  
(ARRAY[('прибывает'::character varying)::text, ('задерживается'::character varying)::text,  
('посадка'::character varying)::text, ('отправляется'::character varying)::text,  
('отменен'::character varying)::text, ('другое'::character varying)::text])))  
);
```

```
ALTER TABLE public."Time_table" OWNER TO postgres;
```

```
--  
-- TOC entry 220 (class 1259 OID 24659)  
-- Name: Train; Type: TABLE; Schema: public; Owner: postgres  
--
```

```
CREATE TABLE public."Train" (  
    "Train_ID" character varying NOT NULL,
```



```

"Train_number" character varying NOT NULL,
"Number_of_seats" integer NOT NULL,
"Date_of_departue" timestamp without time zone NOT NULL,
"Date_of_arrival" timestamp without time zone NOT NULL,
CONSTRAINT "Number_of_seats_check" CHECK (("Number_of_seats" >= 0))
);

```

```

ALTER TABLE public."Train" OWNER TO postgres;

```

```

--
-- TOC entry 221 (class 1259 OID 24667)
-- Name: Wagon; Type: TABLE; Schema: public; Owner: postgres
--

```

```

CREATE TABLE public."Wagon" (
    "Wagon_ID" character varying NOT NULL,
    "Type" character varying NOT NULL,
    "Train_ID" character varying NOT NULL,
    "Number_of_seats" integer NOT NULL,
    CONSTRAINT "Type_check" CHECK (((("Type")::text = ANY
((ARRAY['сидячий'::character varying, 'спальный'::character varying, 'эконом'::character
varying, 'бизнес'::character varying, 'грузовой'::character varying, 'другое'::character
varying]))::text[])))
);

```

```

ALTER TABLE public."Wagon" OWNER TO postgres;

```

```

--
-- TOC entry 3684 (class 0 OID 24584)
-- Dependencies: 214
-- Data for Name: Rider; Type: TABLE DATA; Schema: public; Owner: postgres
--

```

```

INSERT INTO public."Rider" ("Passport_data", "Full_name", "Phone_number",
"Email_adress", "Rider_ID") VALUES (123456789, 'Иванов Иван Иванович',
'+123456789', 'ivan@example.com', 'Rider1');
INSERT INTO public."Rider" ("Passport_data", "Full_name", "Phone_number",
"Email_adress", "Rider_ID") VALUES (987654321, 'Петров Петр Петрович', '+987654321',
'petr@example.com', 'Rider2');
INSERT INTO public."Rider" ("Passport_data", "Full_name", "Phone_number",
"Email_adress", "Rider_ID") VALUES (456789123, 'Сидоров Сидор Сидорович',
'+456789123', 'sidor@example.com', 'Rider3');
INSERT INTO public."Rider" ("Passport_data", "Full_name", "Phone_number",
"Email_adress", "Rider_ID") VALUES (1234567890, 'Иванов Иван Иванович',
'1234567890', 'ivanov@example.com', 'Rider4');

```

```

--
-- TOC entry 3685 (class 0 OID 24596)
-- Dependencies: 215
-- Data for Name: Route; Type: TABLE DATA; Schema: public; Owner: postgres
--

```

```

INSERT INTO public."Route" ("Stop_point_ID", "Duration_of_stop", "Departue", "Arrival",
"Train_number", "Station") VALUES ('1', '01:15:00', '07:30:00', '08:45:00', '123',
'Екатеринбург Главный');
INSERT INTO public."Route" ("Stop_point_ID", "Duration_of_stop", "Departue", "Arrival",
"Train_number", "Station") VALUES ('2', '01:30:00', '13:00:00', '14:30:00', '456', 'Москва
Ленинградский');
INSERT INTO public."Route" ("Stop_point_ID", "Duration_of_stop", "Departue", "Arrival",
"Train_number", "Station") VALUES ('3', '01:00:00', '09:00:00', '10:00:00', '654', 'Санкт-
Петербург Московский');

```

```

--
-- TOC entry 3688 (class 0 OID 24629)
-- Dependencies: 218
-- Data for Name: Sales_office; Type: TABLE DATA; Schema: public; Owner: postgres
--

```

```

INSERT INTO public."Sales_office" ("Sales_office_ID", "Status", "Location", "Adress")
VALUES (2, 'закрыта', 'Санкт-Петербург', 'ул. Улицевая, 2');
INSERT INTO public."Sales_office" ("Sales_office_ID", "Status", "Location", "Adress")
VALUES (3, 'открыта', 'Екатеринбург', 'ул. Проездная, 3');
INSERT INTO public."Sales_office" ("Sales_office_ID", "Status", "Location", "Adress")
VALUES (4, 'открыта', 'Тверь', 'ул. Тверская, 3');
INSERT INTO public."Sales_office" ("Sales_office_ID", "Status", "Location", "Adress")
VALUES (5, 'другое', 'Ярославль', 'ул. Славы, 15');
INSERT INTO public."Sales_office" ("Sales_office_ID", "Status", "Location", "Adress")
VALUES (1, 'другое', 'Москва', 'ул. Примерная, 1');

```

```

--
-- TOC entry 3687 (class 0 OID 24621)
-- Dependencies: 217
-- Data for Name: Seat; Type: TABLE DATA; Schema: public; Owner: postgres
--

```

```

INSERT INTO public."Seat" ("Seat_ID", "Type", "Status", "Wagon_ID") VALUES ('1A',
'сидячее', 'свободно', '1');
INSERT INTO public."Seat" ("Seat_ID", "Type", "Status", "Wagon_ID") VALUES ('2B',
'сидячее', 'свободно', '2');
INSERT INTO public."Seat" ("Seat_ID", "Type", "Status", "Wagon_ID") VALUES ('3C',
'спальное', 'свободно', '3');

```

```

--
-- TOC entry 3693 (class 0 OID 24774)
-- Dependencies: 223
-- Data for Name: Specification; Type: TABLE DATA; Schema: public; Owner: postgres
--

```

```

INSERT INTO public."Specification" ("Production_series", "Wagon_ID", "Start_of_use",
"Last_maintenance") VALUES ('PS123', '1', '2023-01-01 00:00:00', '2023-03-15 10:00:00');
INSERT INTO public."Specification" ("Production_series", "Wagon_ID", "Start_of_use",
"Last_maintenance") VALUES ('PS456', '2', '2023-02-01 00:00:00', '2023-04-20 14:30:00');

```

```
INSERT INTO public."Specification" ("Production_series", "Wagon_ID", "Start_of_use",  
"Last_maintenance") VALUES ('PS789', '3', '2023-03-01 00:00:00', '2023-05-05 08:45:00');
```

```
--  
-- TOC entry 3686 (class 0 OID 24615)  
-- Dependencies: 216  
-- Data for Name: Station; Type: TABLE DATA; Schema: public; Owner: postgres  
--
```

```
INSERT INTO public."Station" ("Name", "Type", "Location") VALUES ('Имеретинский  
курорт', 'город', 'Сочи');
```

```
INSERT INTO public."Station" ("Name", "Type", "Location") VALUES ('Екатеринбург  
Главный', 'город', 'Екатеринбург');
```

```
INSERT INTO public."Station" ("Name", "Type", "Location") VALUES ('Москва  
Ленинградский', 'город', 'Москва');
```

```
INSERT INTO public."Station" ("Name", "Type", "Location") VALUES ('Санкт-Петербург  
Московский', 'город', 'Санкт-Петербург');
```

```
--  
-- TOC entry 3689 (class 0 OID 24637)  
-- Dependencies: 219  
-- Data for Name: Ticket; Type: TABLE DATA; Schema: public; Owner: postgres  
--
```

```
INSERT INTO public."Ticket" ("Ticket_ID", "Departue_point", "Arrival_point",  
"Purchase_office_ID", "Purchase_status", "Purchase_type", "Price", "Rider_ID", "Seat_ID")  
VALUES (1, 'Москва Ленинградский', 'Санкт-Петербург Московский', 1,  
'забронировано', 'онлайн', 1000, 'Rider1', '1A');
```

```
INSERT INTO public."Ticket" ("Ticket_ID", "Departue_point", "Arrival_point",  
"Purchase_office_ID", "Purchase_status", "Purchase_type", "Price", "Rider_ID", "Seat_ID")  
VALUES (2, 'Санкт-Петербург Московский', 'Москва Ленинградский', 2, 'выкуплено',  
'касса', 1500, 'Rider2', '2B');
```

```
INSERT INTO public."Ticket" ("Ticket_ID", "Departue_point", "Arrival_point",  
"Purchase_office_ID", "Purchase_status", "Purchase_type", "Price", "Rider_ID", "Seat_ID")
```

```
VALUES (3, 'Москва Ленинградский', 'Имеретинский курорт', 3, 'забронировано',  
'онлайн', 2000, 'Rider3', '3C');  
INSERT INTO public."Ticket" ("Ticket_ID", "Departue_point", "Arrival_point",  
"Purchase_office_ID", "Purchase_status", "Purchase_type", "Price", "Rider_ID", "Seat_ID")  
VALUES (4, 'Москва Ленинградский', 'Имеретинский курорт', 5, 'status', 'онлайн',  
3000.50, 'Rider4', '2B');
```

```
--  
-- TOC entry 3692 (class 0 OID 24698)  
-- Dependencies: 222  
-- Data for Name: Time_table; Type: TABLE DATA; Schema: public; Owner: postgres  
--
```

```
INSERT INTO public."Time_table" ("Train_number", "Departue_point", "Arrival_point",  
"Destination_point", "Departure", "Arrival", "Train_schedule", "Factual_departue",  
"Factual_arrival", "Status") VALUES ('789', 'Москва Ленинградский', 'Екатеринбург  
Главный', 'Екатеринбург', '2023-05-17 17:00:00', '2023-05-17 21:00:00', 'ежедневно', '2023-  
05-17 17:00:00', '2023-05-17 21:00:00', 'прибывает');
```

```
INSERT INTO public."Time_table" ("Train_number", "Departue_point", "Arrival_point",  
"Destination_point", "Departure", "Arrival", "Train_schedule", "Factual_departue",  
"Factual_arrival", "Status") VALUES ('123', 'Москва Ленинградский', 'Санкт-Петербург  
Московский', 'Санкт-Петербург', '2023-05-17 09:00:00', '2023-05-17 12:00:00',  
'ежедневно', '2023-05-17 09:00:00', '2023-05-17 12:00:00', 'прибывает');
```

```
INSERT INTO public."Time_table" ("Train_number", "Departue_point", "Arrival_point",  
"Destination_point", "Departure", "Arrival", "Train_schedule", "Factual_departue",  
"Factual_arrival", "Status") VALUES ('654', 'Москва Ленинградский', 'Санкт-Петербург  
Московский', 'Санкт-Петербург', '2023-12-11 21:00:00', '2023-12-12 01:00:00',  
'ежедневно', '2023-12-11 21:00:00', '2023-12-12 01:00:00', 'прибывает');
```

```
INSERT INTO public."Time_table" ("Train_number", "Departue_point", "Arrival_point",  
"Destination_point", "Departure", "Arrival", "Train_schedule", "Factual_departue",  
"Factual_arrival", "Status") VALUES ('345', 'Санкт-Петербург Московский',  
'Имеретинский курорт', 'Санкт-Петербург', '2024-01-02 15:30:00', '2024-01-07 15:30:00',  
'ежедневно', '2024-01-02 15:30:00', '2024-01-07 15:30:00', 'прибывает');
```

```
INSERT INTO public."Time_table" ("Train_number", "Departue_point", "Arrival_point",  
"Destination_point", "Departure", "Arrival", "Train_schedule", "Factual_departue",  
"Factual_arrival", "Status") VALUES ('456', 'Санкт-Петербург Московский', 'Москва
```

Ленинградский', 'Москва', '2023-05-17 13:00:00', '2023-05-17 16:00:00', 'ежедневно',
'2023-05-17 13:00:00', '2023-05-17 16:00:00', 'прибывает');

--
-- TOC entry 3690 (class 0 OID 24659)
-- Dependencies: 220
-- Data for Name: Train; Type: TABLE DATA; Schema: public; Owner: postgres
--

INSERT INTO public."Train" ("Train_ID", "Train_number", "Number_of_seats",
"Date_of_departue", "Date_of_arrival") VALUES (1, '123', 100, '2023-05-17 09:00:00',
'2023-05-17 12:00:00');

INSERT INTO public."Train" ("Train_ID", "Train_number", "Number_of_seats",
"Date_of_departue", "Date_of_arrival") VALUES (2, '456', 150, '2023-05-17 13:00:00',
'2023-05-17 16:00:00');

INSERT INTO public."Train" ("Train_ID", "Train_number", "Number_of_seats",
"Date_of_departue", "Date_of_arrival") VALUES (3, '789', 200, '2023-05-17 17:00:00',
'2023-05-17 21:00:00');

INSERT INTO public."Train" ("Train_ID", "Train_number", "Number_of_seats",
"Date_of_departue", "Date_of_arrival") VALUES (5, '123', 500, '2023-12-17 12:45:00',
'2023-12-30 12:00:00');

INSERT INTO public."Train" ("Train_ID", "Train_number", "Number_of_seats",
"Date_of_departue", "Date_of_arrival") VALUES (4, '456', 100, '2023-11-15 15:00:00',
'2023-12-17 21:30:00');

INSERT INTO public."Train" ("Train_ID", "Train_number", "Number_of_seats",
"Date_of_departue", "Date_of_arrival") VALUES (6, '123', 80, '2024-05-17 09:00:00', '2024-
05-17 12:00:00');

--
-- TOC entry 3691 (class 0 OID 24667)
-- Dependencies: 221
-- Data for Name: Wagon; Type: TABLE DATA; Schema: public; Owner: postgres
--

```
INSERT INTO public."Wagon" ("Wagon_ID", "Type", "Train_ID", "Number_of_seats")
VALUES ('1', 'сидячий', '1', 50);
INSERT INTO public."Wagon" ("Wagon_ID", "Type", "Train_ID", "Number_of_seats")
VALUES ('2', 'эконом', '4', 100);
INSERT INTO public."Wagon" ("Wagon_ID", "Type", "Train_ID", "Number_of_seats")
VALUES ('3', 'спальный', '3', 100);
INSERT INTO public."Wagon" ("Wagon_ID", "Type", "Train_ID", "Number_of_seats")
VALUES ('4', 'спальный', '2', 100);
INSERT INTO public."Wagon" ("Wagon_ID", "Type", "Train_ID", "Number_of_seats")
VALUES ('5', 'бизнес', '2', 75);
```

```
--
-- TOC entry 3508 (class 2606 OID 24730)
-- Name: Station Destination_point_pkey; Type: CONSTRAINT; Schema: public; Owner:
postgres
```

```
ALTER TABLE ONLY public."Station"
    ADD CONSTRAINT "Destination_point_pkey" PRIMARY KEY ("Name");
```

```
--
-- TOC entry 3504 (class 2606 OID 24738)
-- Name: Rider Rider_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres
```

```
ALTER TABLE ONLY public."Rider"
    ADD CONSTRAINT "Rider_pkey" PRIMARY KEY ("Rider_ID");
```

```
--
-- TOC entry 3506 (class 2606 OID 24602)
-- Name: Route Route_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres
```

```
ALTER TABLE ONLY public."Route"
```

```

ADD CONSTRAINT "Route_pkey" PRIMARY KEY ("Stop_point_ID");

--
-- TOC entry 3510 (class 2606 OID 24628)
-- Name: Seat Seat_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Seat"
    ADD CONSTRAINT "Seat_pkey" PRIMARY KEY ("Seat_ID");

--
-- TOC entry 3529 (class 2606 OID 24780)
-- Name: Specification Specification_pkey; Type: CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public."Specification"
    ADD CONSTRAINT "Specification_pkey" PRIMARY KEY ("Production_series");

--
-- TOC entry 3512 (class 2606 OID 24636)
-- Name: Sales_office Ticket_office_pkey; Type: CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public."Sales_office"
    ADD CONSTRAINT "Ticket_office_pkey" PRIMARY KEY ("Sales_office_ID");

--
-- TOC entry 3514 (class 2606 OID 24643)
-- Name: Ticket Ticket_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres
--

```



```

ALTER TABLE ONLY public."Ticket"
    ADD CONSTRAINT "Ticket_pkey" PRIMARY KEY ("Ticket_ID");

--
-- TOC entry 3525 (class 2606 OID 24705)
-- Name: Time_table Time_table_pkey; Type: CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public."Time_table"
    ADD CONSTRAINT "Time_table_pkey" PRIMARY KEY ("Train_number");

--
-- TOC entry 3519 (class 2606 OID 24666)
-- Name: Train Train_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Train"
    ADD CONSTRAINT "Train_pkey" PRIMARY KEY ("Train_ID");

--
-- TOC entry 3522 (class 2606 OID 24674)
-- Name: Wagon Wagon_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public."Wagon"
    ADD CONSTRAINT "Wagon_pkey" PRIMARY KEY ("Wagon_ID");

--
-- TOC entry 3526 (class 1259 OID 24857)
-- Name: fki_Arrival_point; Type: INDEX; Schema: public; Owner: postgres
--

```

```
CREATE INDEX "fki_Arrival_point" ON public."Time_table" USING btree
("Arrival_point");
```

```
--
-- TOC entry 3527 (class 1259 OID 24819)
-- Name: fki_Departure_point; Type: INDEX; Schema: public; Owner: postgres
--
```

```
CREATE INDEX "fki_Departure_point" ON public."Time_table" USING btree
("Departue_point");
```

```
--
-- TOC entry 3515 (class 1259 OID 24801)
-- Name: fki_Purchase_office_ID; Type: INDEX; Schema: public; Owner: postgres
--
```

```
CREATE INDEX "fki_Purchase_office_ID" ON public."Ticket" USING btree
("Purchase_office_ID");
```

```
--
-- TOC entry 3516 (class 1259 OID 24807)
-- Name: fki_Rider_ID; Type: INDEX; Schema: public; Owner: postgres
--
```

```
CREATE INDEX "fki_Rider_ID" ON public."Ticket" USING btree ("Rider_ID");
```

```
--
-- TOC entry 3517 (class 1259 OID 24813)
-- Name: fki_Seat_ID; Type: INDEX; Schema: public; Owner: postgres
--
```

```
CREATE INDEX "fki_Seat_ID" ON public."Ticket" USING btree ("Seat_ID");
```

```

--
-- TOC entry 3523 (class 1259 OID 24835)
-- Name: fki_Train_ID; Type: INDEX; Schema: public; Owner: postgres
--

CREATE INDEX "fki_Train_ID" ON public."Wagon" USING btree ("Train_ID");


--
-- TOC entry 3520 (class 1259 OID 24851)
-- Name: fki_Train_number; Type: INDEX; Schema: public; Owner: postgres
--

CREATE INDEX "fki_Train_number" ON public."Train" USING btree ("Train_number");


--
-- TOC entry 3530 (class 1259 OID 24873)
-- Name: fki_Wagon_ID; Type: INDEX; Schema: public; Owner: postgres
--

CREATE INDEX "fki_Wagon_ID" ON public."Specification" USING btree ("Wagon_ID");


--
-- TOC entry 3540 (class 2606 OID 25060)
-- Name: Time_table Arrival_point_fk; Type: FK CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public."Time_table"
  ADD CONSTRAINT "Arrival_point_fk" FOREIGN KEY ("Arrival_point")
REFERENCES public."Station"("Name") ON UPDATE CASCADE ON DELETE
CASCADE DEFERRABLE INITIALLY DEFERRED NOT VALID;

```

```
--  
-- TOC entry 3533 (class 2606 OID 25100)  
-- Name: Ticket Arrival_point_fk; Type: FK CONSTRAINT; Schema: public; Owner:  
postgres  
--
```

```
ALTER TABLE ONLY public."Ticket"  
  ADD CONSTRAINT "Arrival_point_fk" FOREIGN KEY ("Arrival_point")  
REFERENCES public."Station"("Name") ON UPDATE CASCADE ON DELETE  
CASCADE DEFERRABLE INITIALLY DEFERRED NOT VALID;
```

```
--  
-- TOC entry 3541 (class 2606 OID 25065)  
-- Name: Time_table Departue_point_fk; Type: FK CONSTRAINT; Schema: public; Owner:  
postgres  
--
```

```
ALTER TABLE ONLY public."Time_table"  
  ADD CONSTRAINT "Departue_point_fk" FOREIGN KEY ("Departue_point")  
REFERENCES public."Station"("Name") ON UPDATE CASCADE ON DELETE  
CASCADE DEFERRABLE INITIALLY DEFERRED NOT VALID;
```

```
--  
-- TOC entry 3534 (class 2606 OID 25105)  
-- Name: Ticket Departue_point_fk; Type: FK CONSTRAINT; Schema: public; Owner:  
postgres  
--
```

```
ALTER TABLE ONLY public."Ticket"  
  ADD CONSTRAINT "Departue_point_fk" FOREIGN KEY ("Departue_point")  
REFERENCES public."Station"("Name") ON UPDATE CASCADE ON DELETE  
CASCADE DEFERRABLE INITIALLY DEFERRED NOT VALID;
```

```
--
```

```
-- TOC entry 3535 (class 2606 OID 25025)
-- Name: Ticket Purchase_office_ID_fk; Type: FK CONSTRAINT; Schema: public; Owner:
postgres
--
```

```
ALTER TABLE ONLY public."Ticket"
```

```
    ADD CONSTRAINT "Purchase_office_ID_fk" FOREIGN KEY ("Purchase_office_ID")
REFERENCES public."Sales_office"("Sales_office_ID") ON UPDATE CASCADE ON
DELETE CASCADE DEFERRABLE INITIALLY DEFERRED NOT VALID;
```

```
--
-- TOC entry 3536 (class 2606 OID 25030)
-- Name: Ticket Rider_ID_fk; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--
```

```
ALTER TABLE ONLY public."Ticket"
```

```
    ADD CONSTRAINT "Rider_ID_fk" FOREIGN KEY ("Rider_ID") REFERENCES
public."Rider"("Rider_ID") ON UPDATE CASCADE ON DELETE CASCADE
DEFERRABLE INITIALLY DEFERRED NOT VALID;
```

```
--
-- TOC entry 3537 (class 2606 OID 25085)
-- Name: Ticket Seat_ID_fk; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--
```

```
ALTER TABLE ONLY public."Ticket"
```

```
    ADD CONSTRAINT "Seat_ID_fk" FOREIGN KEY ("Seat_ID") REFERENCES
public."Seat"("Seat_ID") ON UPDATE CASCADE ON DELETE CASCADE
DEFERRABLE INITIALLY DEFERRED NOT VALID;
```

```
--
-- TOC entry 3531 (class 2606 OID 25075)
-- Name: Route Station_fk; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--
```

```
ALTER TABLE ONLY public."Route"
```

```
  ADD CONSTRAINT "Station_fk" FOREIGN KEY ("Station") REFERENCES  
public."Station"("Name") ON UPDATE CASCADE ON DELETE CASCADE  
DEFERRABLE INITIALLY DEFERRED NOT VALID;
```

```
--
```

```
-- TOC entry 3539 (class 2606 OID 25070)
```

```
-- Name: Wagon Train_ID_fk; Type: FK CONSTRAINT; Schema: public; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY public."Wagon"
```

```
  ADD CONSTRAINT "Train_ID_fk" FOREIGN KEY ("Train_ID") REFERENCES  
public."Train"("Train_ID") ON UPDATE CASCADE ON DELETE CASCADE  
DEFERRABLE INITIALLY DEFERRED NOT VALID;
```

```
--
```

```
-- TOC entry 3538 (class 2606 OID 25045)
```

```
-- Name: Train Train_number_fk; Type: FK CONSTRAINT; Schema: public; Owner:  
postgres
```

```
--
```

```
ALTER TABLE ONLY public."Train"
```

```
  ADD CONSTRAINT "Train_number_fk" FOREIGN KEY ("Train_number")  
REFERENCES public."Time_table"("Train_number") ON UPDATE CASCADE ON  
DELETE CASCADE DEFERRABLE INITIALLY DEFERRED NOT VALID;
```

```
--
```

```
-- TOC entry 3532 (class 2606 OID 25080)
```

```
-- Name: Seat Wagon_ID_fk; Type: FK CONSTRAINT; Schema: public; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY public."Seat"
```

ADD CONSTRAINT "Wagon_ID_fk" FOREIGN KEY ("Wagon_ID") REFERENCES public."Wagon"("Wagon_ID") ON UPDATE CASCADE ON DELETE CASCADE DEFERRABLE INITIALLY DEFERRED NOT VALID;

-- Completed on 2023-05-17 22:34:07 MSK

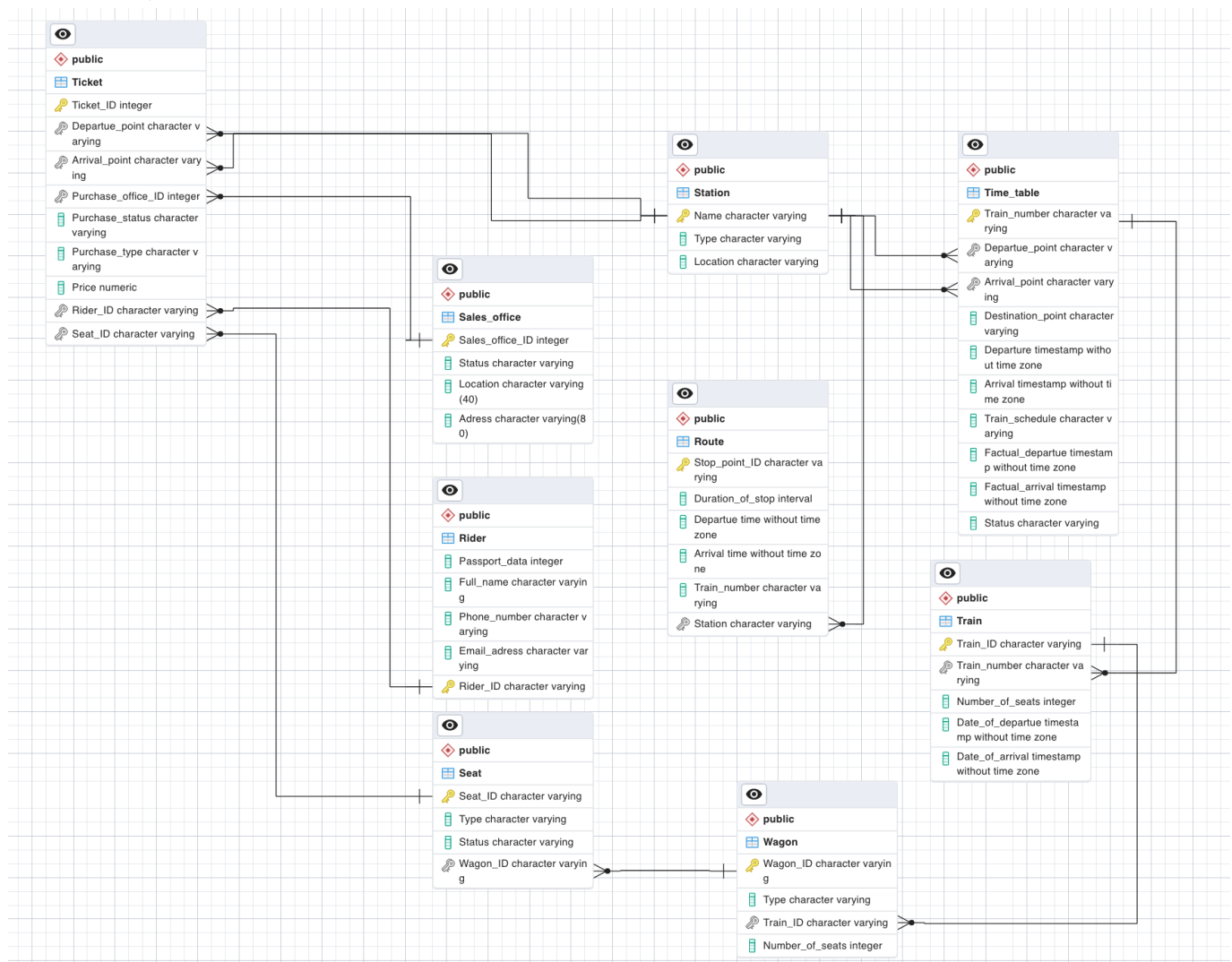
--

-- PostgreSQL database dump complete

--

Кроме того, работу можно представить в графическом виде с помощью ERD-tool:

Рис.1 Визуализация с помощью ERD-tool



ВЫВОДЫ:

В ходе данной лабораторной работы мною были приобретены практические навыки создания таблиц базы данных PostgreSQL 1X, заполнения их рабочими данными, резервного копирования и восстановления БД. Кроме того, мною было изучено создание ERD-диаграмм для графической визуализации данных.

Хочется отметить трудоёмкость данного задания, так как оно требовало большой внимательности при прописывании «логики» таблиц и их взаимосвязей, а также при выборе типа значений данных и их ограничений.