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

Проверила:
Говорова М.М. _____
Дата: «__» _____ 2021 г.
Оценка _____

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Санкт-Петербург 2020/2021

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.

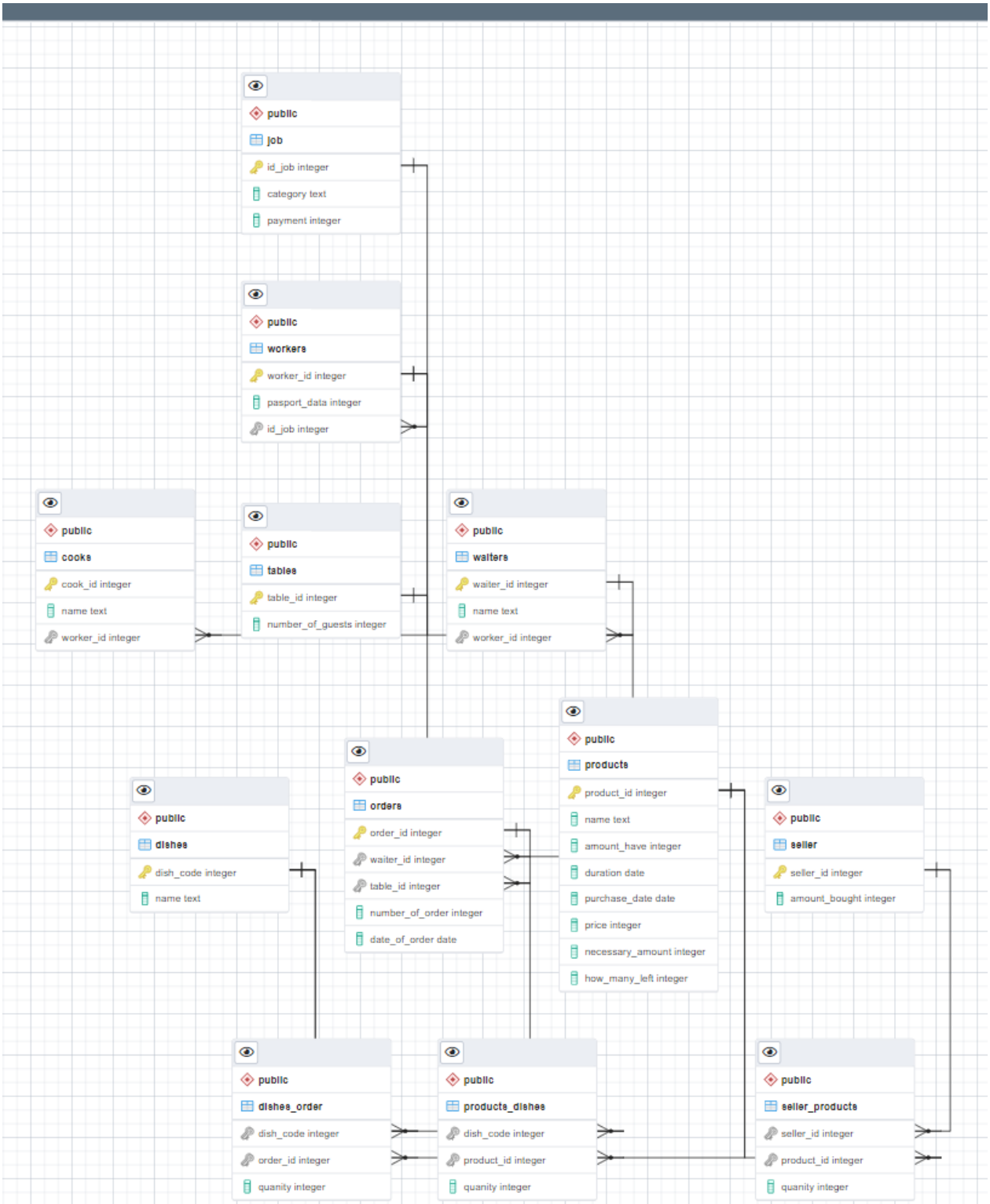
7. Восстановить БД.

Наименование БД

Вариант 13. БД «Ресторан»

Наименование: Exams

Схема логической модели базы данных, сгенерированная в Generate ERD



Dump, содержащий скрипты работы с БД

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


-- Dumped from database version 11.12
-- Dumped by pg_dump version 11.12

-- Started on 2021-06-28 03:25:12

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_with_oids = false;

--
-- TOC entry 198 (class 1259 OID 16410)
-- Name: cooks; Type: TABLE; Schema: public; Owner: postgres
--
```

```
CREATE TABLE public.cooks (
    cook_id integer NOT NULL,
    name text NOT NULL,
    worker_id integer NOT NULL
);


ALTER TABLE public.cooks OWNER TO postgres;

--
-- TOC entry 200 (class 1259 OID 16420)
-- Name: dishes; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public.dishes (
    dish_code integer NOT NULL,
    name text NOT NULL
);


ALTER TABLE public.dishes OWNER TO postgres;

--
-- TOC entry 205 (class 1259 OID 16485)
-- Name: dishes_order; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public.dishes_order (
    dish_code integer NOT NULL,
    order_id integer NOT NULL,
```

```
    quanity integer NOT NULL
);


ALTER TABLE public.dishes_order OWNER TO postgres;

--
-- TOC entry 196 (class 1259 OID 16400)
-- Name: job; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public.job (
    id_job integer NOT NULL,
    category text NOT NULL,
    payment integer NOT NULL
);


ALTER TABLE public.job OWNER TO postgres;

--
-- TOC entry 206 (class 1259 OID 16488)
-- Name: orders; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public.orders (
    order_id integer NOT NULL,
    waiter_id integer NOT NULL,
    table_id integer NOT NULL,
    number_of_order integer NOT NULL,
```

```
    date_of_order date NOT NULL
);


ALTER TABLE public.orders OWNER TO postgres;

--
-- TOC entry 201 (class 1259 OID 16425)
-- Name: products; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public.products (
    product_id integer NOT NULL,
    name text NOT NULL,
    amount_have integer NOT NULL,
    duration date NOT NULL,
    purchase_date date NOT NULL,
    price integer NOT NULL,
    necessary_amount integer NOT NULL,
    how_many_left integer NOT NULL
);


ALTER TABLE public.products OWNER TO postgres;

--
-- TOC entry 203 (class 1259 OID 16479)
-- Name: products_dishes; Type: TABLE; Schema: public; Owner: postgres
--
```

```
CREATE TABLE public.products_dishes (
    dish_code integer NOT NULL,
    product_id integer NOT NULL,
    quanity integer NOT NULL
);


ALTER TABLE public.products_dishes OWNER TO postgres;

--
-- TOC entry 202 (class 1259 OID 16473)
-- Name: seller; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public.seller (
    seller_id integer NOT NULL,
    amount_bought integer NOT NULL
);


ALTER TABLE public.seller OWNER TO postgres;

--
-- TOC entry 204 (class 1259 OID 16482)
-- Name: seller_products; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public.seller_products (
    seller_id integer NOT NULL,
    product_id integer NOT NULL,
```

```
    quanity integer NOT NULL
);


ALTER TABLE public.seller_products OWNER TO postgres;

--
-- TOC entry 207 (class 1259 OID 16493)
-- Name: tables; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public.tables (
    table_id integer NOT NULL,
    number_of_guests integer NOT NULL
);


ALTER TABLE public.tables OWNER TO postgres;

--
-- TOC entry 199 (class 1259 OID 16415)
-- Name: waiters; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public.waiters (
    waiter_id integer NOT NULL,
    name text NOT NULL,
    worker_id integer NOT NULL
);
```

```
ALTER TABLE public.waiters OWNER TO postgres;

--
-- TOC entry 197 (class 1259 OID 16405)
-- Name: workers; Type: TABLE; Schema: public; Owner: postgres
--

CREATE TABLE public.workers (
    worker_id integer NOT NULL,
    pasport_data integer NOT NULL,
    id_job integer NOT NULL
);


ALTER TABLE public.workers OWNER TO postgres;

--
-- TOC entry 2897 (class 0 OID 16410)
-- Dependencies: 198
-- Data for Name: cooks; Type: TABLE DATA; Schema: public; Owner:
postgres
--

COPY public.cooks (cook_id, name, worker_id) FROM stdin;
0       Vitaliy         0
1       Vasiliy         1
2       Dmitriy         2
\.
```

```
--
-- TOC entry 2899 (class 0 OID 16420)
-- Dependencies: 200
-- Data for Name: dishes; Type: TABLE DATA; Schema: public; Owner:
postgres
--

COPY public.dishes (dish_code, name) FROM stdin;
0	Borch
1	Fried Potato
2	Caesar Salad
3	Fried fish
4	Steak
\.



--
-- TOC entry 2904 (class 0 OID 16485)
-- Dependencies: 205
-- Data for Name: dishes_order; Type: TABLE DATA; Schema: public;
Owner: postgres
--

COPY public.dishes_order (dish_code, order_id, quanity) FROM stdin;
0	0	1
1	1	2
0	2	3
2	3	2
4	4	2
```

```
0	0	1
1	1	2
0	2	3
2	3	2
4	4	2
\.



--
-- TOC entry 2895 (class 0 OID 16400)
-- Dependencies: 196
-- Data for Name: job; Type: TABLE DATA; Schema: public; Owner: postgres
--

COPY public.job (id_job, category, payment) FROM stdin;
0	Chef	30000
1	Su-Chef	25000
2	Waiter	20000
\.



--
-- TOC entry 2905 (class 0 OID 16488)
-- Dependencies: 206
-- Data for Name: orders; Type: TABLE DATA; Schema: public; Owner: postgres
--
```

COPY public.orders (order_id, waiter_id, table_id, number_of_order, date_of_order) FROM stdin;

0	0	0	1	2021-06-25

1	0	1	2	2021-06-24

2	1	1	3	2021-06-25

3	1	2	4	2021-06-24

4	0	3	2	2021-06-23

\.

--

-- TOC entry 2900 (class 0 OID 16425)

-- Dependencies: 201

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

--

COPY public.products (product_id, name, amount_have, duration, purchase_date, price, necessary_amount, how_many_left) FROM stdin;

0	meat	10	2021-10-26	2021-06-26	300	5	3

1	potato	30	2021-10-26	2021-06-26	60	15	10

2	fish	10	2021-10-26	2021-06-26	300	5	3

3	bread	30	2021-07-01	2021-06-26	50	15	5

4	salad	30	2021-07-01	2021-06-26	30	15	5

\.

--

-- TOC entry 2902 (class 0 OID 16479)

-- Dependencies: 203

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

COPY public.products_dishes (dish_code, product_id, quanity) FROM stdin;
0	0	1
1	1	3
2	4	2
3	2	1
3	0	2
0	0	1
1	1	3
2	4	2
3	2	1
3	0	2
\.

--
-- TOC entry 2901 (class 0 OID 16473)
-- Dependencies: 202
-- Data for Name: seller; Type: TABLE DATA; Schema: public; Owner: postgres
--

COPY public.seller (seller_id, amount_bought) FROM stdin;
0	10
1	20
2	10

```
3	30
\.


--
-- TOC entry 2903 (class 0 OID 16482)
-- Dependencies: 204
-- Data for Name: seller_products; Type: TABLE DATA; Schema: public; Owner: postgres
--

COPY public.seller_products (seller_id, product_id, quanity) FROM stdin;
0	0	10
0	2	10
1	1	20
2	3	10
3	4	30
0	0	10
0	2	10
1	1	20
2	3	10
3	4	30
\.


--
-- TOC entry 2906 (class 0 OID 16493)
-- Dependencies: 207
-- Data for Name: tables; Type: TABLE DATA; Schema: public; Owner: postgres
```

--

COPY public.tables (table_id, number_of_guests) FROM stdin;
0	2
1	4
2	4
3	2
\.

--
-- TOC entry 2898 (class 0 OID 16415)
-- Dependencies: 199
-- Data for Name: waiters; Type: TABLE DATA; Schema: public; Owner: postgres
--

COPY public.waiters (waiter_id, name, worker_id) FROM stdin;
0	Anton3
1	Andrey	3
\.

--
-- TOC entry 2896 (class 0 OID 16405)
-- Dependencies: 197
-- Data for Name: workers; Type: TABLE DATA; Schema: public; Owner: postgres
--

```
COPY public.workers (worker_id, pasport_data, id_job) FROM stdin;
0	123456	0
1	135790	1
2	246810	1
3	132435	2
4	241353	2
\.


--
-- TOC entry 2737 (class 2606 OID 16554)
-- Name: seller amount_bought; Type: CHECK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE public.seller
    ADD CONSTRAINT amount_bought CHECK ((amount_bought > 0)) NOT VALID;


--
-- TOC entry 2733 (class 2606 OID 16557)
-- Name: products amount_have; Type: CHECK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE public.products
    ADD CONSTRAINT amount_have CHECK ((amount_have > 0)) NOT VALID;
```

```
--
-- TOC entry 2750 (class 2606 OID 16414)
-- Name: cooks cooks_pkey; Type: CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE ONLY public.cooks
    ADD CONSTRAINT cooks_pkey PRIMARY KEY (cook_id);



--
-- TOC entry 2754 (class 2606 OID 16424)
-- Name: dishes dishes_pkey; Type: CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE ONLY public.dishes
    ADD CONSTRAINT dishes_pkey PRIMARY KEY (dish_code);



--
-- TOC entry 2734 (class 2606 OID 16559)
-- Name: products how_many_left; Type: CHECK CONSTRAINT; Schema:
public; Owner: postgres
--

ALTER TABLE public.products
    ADD CONSTRAINT how_many_left CHECK ((how_many_left > 0))
NOT VALID;
```

```
--
-- TOC entry 2744 (class 2606 OID 16404)
-- Name: job job_pkey; Type: CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public.job
    ADD CONSTRAINT job_pkey PRIMARY KEY (id_job);



--
-- TOC entry 2735 (class 2606 OID 16556)
-- Name: products necessary_amount; Type: CHECK CONSTRAINT;
Schema: public; Owner: postgres
--

ALTER TABLE public.products
    ADD CONSTRAINT necessary_amount CHECK ((necessary_amount >
0)) NOT VALID;



--
-- TOC entry 2742 (class 2606 OID 16560)
-- Name: tables number_of_guests; Type: CHECK CONSTRAINT; Schema:
public; Owner: postgres
--

ALTER TABLE public.tables
```

```
    ADD CONSTRAINT number_of_guests CHECK ((number_of_guests >
0)) NOT VALID;



--
-- TOC entry 2741 (class 2606 OID 16555)
-- Name: orders number_of_order; Type: CHECK CONSTRAINT; Schema:
public; Owner: postgres
--

ALTER TABLE public.orders
    ADD CONSTRAINT number_of_order CHECK ((number_of_order > 0))
NOT VALID;



--
-- TOC entry 2760 (class 2606 OID 16492)
-- Name: orders orders_pkey; Type: CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE ONLY public.orders
    ADD CONSTRAINT orders_pkey PRIMARY KEY (order_id);



--
-- TOC entry 2746 (class 2606 OID 16565)
-- Name: workers paspotr_data; Type: CONSTRAINT; Schema: public;
Owner: postgres
--
```

```
ALTER TABLE ONLY public.workers
    ADD CONSTRAINT paspotr_data UNIQUE (pasport_data);



--
-- TOC entry 2732 (class 2606 OID 16553)
-- Name: job payment; Type: CHECK CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE public.job
    ADD CONSTRAINT payment CHECK ((payment > 0)) NOT VALID;



--
-- TOC entry 2736 (class 2606 OID 16558)
-- Name: products price; Type: CHECK CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE public.products
    ADD CONSTRAINT price CHECK ((price > 0)) NOT VALID;



--
-- TOC entry 2756 (class 2606 OID 16432)
-- Name: products products_pkey; Type: CONSTRAINT; Schema: public;
Owner: postgres
--
```

```
ALTER TABLE ONLY public.products
    ADD CONSTRAINT products_pkey PRIMARY KEY (product_id);


--
-- TOC entry 2740 (class 2606 OID 16561)
-- Name: dishes_order quanity; Type: CHECK CONSTRAINT; Schema:
public; Owner: postgres
--

ALTER TABLE public.dishes_order
    ADD CONSTRAINT quanity CHECK ((quanity > 0)) NOT VALID;


--
-- TOC entry 2739 (class 2606 OID 16562)
-- Name: seller_products quanity; Type: CHECK CONSTRAINT; Schema:
public; Owner: postgres
--

ALTER TABLE public.seller_products
    ADD CONSTRAINT quanity CHECK ((quanity > 0)) NOT VALID;


--
-- TOC entry 2738 (class 2606 OID 16563)
-- Name: products_dishes quanity; Type: CHECK CONSTRAINT; Schema:
public; Owner: postgres
--
```

```
ALTER TABLE public.products_dishes
    ADD CONSTRAINT quanity CHECK ((quanity > 0)) NOT VALID;


--
-- TOC entry 2758 (class 2606 OID 16477)
-- Name: seller seller_pkey; Type: CONSTRAINT; Schema: public; Owner:
postgres
--

ALTER TABLE ONLY public.seller
    ADD CONSTRAINT seller_pkey PRIMARY KEY (seller_id);


--
-- TOC entry 2762 (class 2606 OID 16497)
-- Name: tables tables_pkey; Type: CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE ONLY public.tables
    ADD CONSTRAINT tables_pkey PRIMARY KEY (table_id);


--
-- TOC entry 2752 (class 2606 OID 16419)
-- Name: waiters waiters_pkey; Type: CONSTRAINT; Schema: public;
Owner: postgres
--
```

```
ALTER TABLE ONLY public.waiters
    ADD CONSTRAINT waiters_pkey PRIMARY KEY (waiter_id);



--
-- TOC entry 2748 (class 2606 OID 16409)
-- Name: workers workers_pkey; Type: CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE ONLY public.workers
    ADD CONSTRAINT workers_pkey PRIMARY KEY (worker_id);



--
-- TOC entry 2766 (class 2606 OID 16508)
-- Name: products_dishes          product_id; Type: FK CONSTRAINT;
Schema: public; Owner: postgres
--

ALTER TABLE ONLY public.products_dishes
    ADD CONSTRAINT "          product_id" FOREIGN KEY (product_id)
REFERENCES public.products(product_id) NOT VALID;



--
-- TOC entry 2767 (class 2606 OID 16513)
-- Name: products_dishes dish_code; Type: FK CONSTRAINT; Schema:
public; Owner: postgres
```

--

ALTER TABLE ONLY public.products_dishes
    ADD CONSTRAINT dish_code FOREIGN KEY (dish_code) REFERENCES public.dishes(dish_code) NOT VALID;

--
-- TOC entry 2770 (class 2606 OID 16533)
-- Name: dishes_order dish_code; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public.dishes_order
    ADD CONSTRAINT dish_code FOREIGN KEY (dish_code) REFERENCES public.dishes(dish_code) NOT VALID;

--
-- TOC entry 2763 (class 2606 OID 16498)
-- Name: workers id_job; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--

ALTER TABLE ONLY public.workers
    ADD CONSTRAINT id_job FOREIGN KEY (id_job) REFERENCES public.job(id_job) NOT VALID;

--

```
-- TOC entry 2771 (class 2606 OID 16538)
-- Name: dishes_order order_id; Type: FK CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE ONLY public.dishes_order
    ADD CONSTRAINT order_id FOREIGN KEY (order_id)
REFERENCES public.orders(order_id) NOT VALID;



--
-- TOC entry 2769 (class 2606 OID 16523)
-- Name: seller_products product_id; Type: FK CONSTRAINT; Schema:
public; Owner: postgres
--

ALTER TABLE ONLY public.seller_products
    ADD CONSTRAINT product_id FOREIGN KEY (product_id)
REFERENCES public.products(product_id) NOT VALID;



--
-- TOC entry 2768 (class 2606 OID 16518)
-- Name: seller_products seller_id; Type: FK CONSTRAINT; Schema:
public; Owner: postgres
--

ALTER TABLE ONLY public.seller_products
    ADD CONSTRAINT seller_id FOREIGN KEY (seller_id)
REFERENCES public.seller(seller_id) NOT VALID;
```

```
--
-- TOC entry 2772 (class 2606 OID 16543)
-- Name: orders table_id; Type: FK CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE ONLY public.orders
    ADD CONSTRAINT table_id FOREIGN KEY (table_id) REFERENCES
public.tables(table_id) NOT VALID;



--
-- TOC entry 2773 (class 2606 OID 16548)
-- Name: orders waitaer_id; Type: FK CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE ONLY public.orders
    ADD CONSTRAINT waitaer_id FOREIGN KEY (waiter_id)
REFERENCES public.waiters(waiter_id) NOT VALID;



--
-- TOC entry 2764 (class 2606 OID 16503)
-- Name: cooks worker_id; Type: FK CONSTRAINT; Schema: public;
Owner: postgres
--
```

```
ALTER TABLE ONLY public.cooks
    ADD CONSTRAINT worker_id FOREIGN KEY (worker_id)
REFERENCES public.workers(worker_id) NOT VALID;


--
-- TOC entry 2765 (class 2606 OID 16528)
-- Name: waiters worker_id; Type: FK CONSTRAINT; Schema: public;
Owner: postgres
--

ALTER TABLE ONLY public.waiters
    ADD CONSTRAINT worker_id FOREIGN KEY (worker_id)
REFERENCES public.workers(worker_id) NOT VALID;


-- Completed on 2021-06-28 03:25:12

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

Выводы

В ходе данной лабораторной работы была создана база данных с использованием pgAdmin 4, схема в составе базы данных, таблицы базы данных, были установлены ограничения на данные, таблицы БД заполнены рабочими данными, создана резервная копия БД, восстановлена БД.