

DBMS MINI PROJECT

TITLE: PRISON

MANAGEMENT SYSTEM

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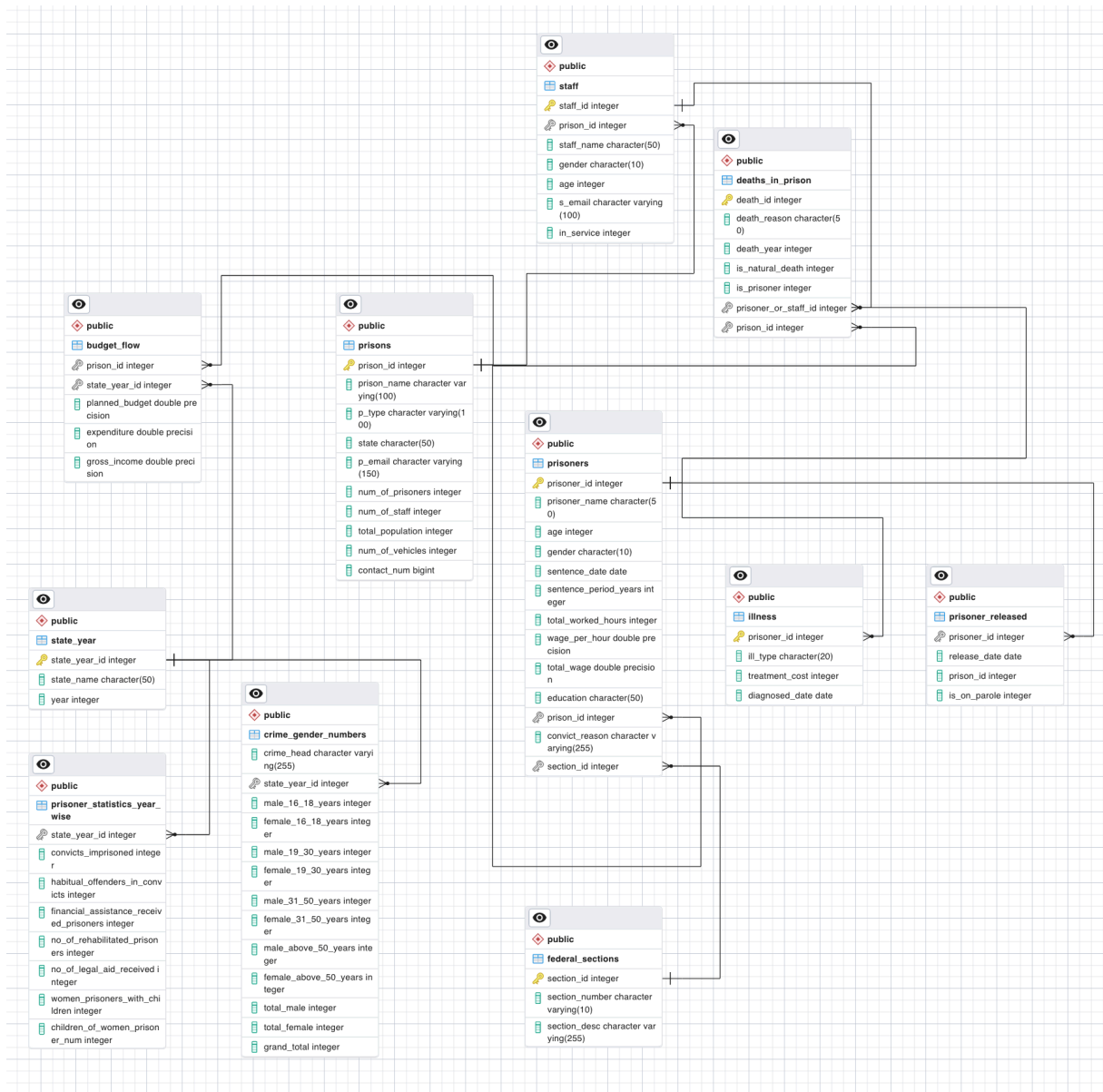
Short description and Scope of the project:

Digital technologies are transforming the prison system as we know it. The prison of the future will better meet the needs of inmates during their sentences. It will prepare prisoners more effectively for life after incarceration. And it will be run with all the efficiency of a for-profit business. At the same time, these technologies will also help keep more low-level, nonviolent offenders out of prison in the first place.

The application's frontend is created using Streamlit and the backend database is created using PostgreSQL.

The application allows for viewing and adding of data in eleven different tables. The User can add new data of prisoners, prisons, staff etc. and can also view year wise statistics of the prisoners. They can also allocate budget flow to each prison and add different federal sections to the application.

ER diagram:



DDL Statement(Building the database)

```
CREATE TABLE public.budget_flow (  
    prison_id integer,  
    state_year_id integer,  
    planned_budget double precision,  
    expenditure double precision,  
    gross_income double precision  
);
```

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

```
--
```

```
-- Name: crime_gender_numbers;  
Type: TABLE; Schema: public; Owner:  
postgres
```

```
--
```

```
CREATE TABLE  
public.crime_gender_numbers (  
    crime_head character varying(255),  
    state_year_id integer,  
    male_16_18_years integer,  
    female_16_18_years integer,  
    male_19_30_years integer,  
    female_19_30_years integer,  
    male_31_50_years integer,
```

```
female_31_50_years integer,  
male_above_50_years integer,  
female_above_50_years integer,  
total_male integer,  
total_female integer,  
grand_total integer  
);
```

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

```
--  
-- Name: deaths_in_prison; Type:  
TABLE; Schema: public; Owner:  
postgres  
--
```

```
CREATE TABLE  
public.deaths_in_prison (  
    death_id integer NOT NULL,  
    death_reason character(50),  
    death_year integer,  
    is_natural_death integer,  
    is_prisoner integer,  
    prisoner_or_staff_id integer,  
    prison_id integer  
);
```

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

```
--
```

```
-- Name: federal_sections; Type:  
TABLE; Schema: public; Owner:  
postgres
```

```
--
```

```
CREATE TABLE  
public.federal_sections (  
    section_id integer NOT NULL,  
    section_number character  
varying(10),  
    section_desc character varying(255)  
);
```

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

```
--
```

```
-- Name: illness; Type: TABLE;  
Schema: public; Owner: postgres
```

```
--
```

```
CREATE TABLE public.illness (  
    prisoner_id integer NOT NULL,  
    ill_type character(20),  
    treatment_cost integer,  
    diagnosed_date date
```

```
);
```

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

```
--
```

```
-- Name: prisoner_released; Type:  
TABLE; Schema: public; Owner:  
postgres
```

```
--
```

```
CREATE TABLE  
public.prisoner_released (  
    prisoner_id integer,  
    release_date date,  
    prison_id integer,  
    is_on_parole integer  
);
```

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

```
--
```

```
-- Name: prisoner_statistics_year_wise;  
Type: TABLE; Schema: public; Owner:  
postgres
```

```
--
```

```
CREATE TABLE
public.prisoner_statistics_year_wise (
    state_year_id integer,
    convicts_imprisoned integer,
    habitual_offenders_in_convicts
integer,

financial_assistance_received_prisoner
s integer,
    no_of_rehabilitated_prisoners
integer,
    no_of_legal_aid_received integer,
    women_prisoners_with_children
integer,
    children_of_women_prisoner_num
integer
);
```

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

```
--
```

```
-- Name: prisoners; Type: TABLE;
Schema: public; Owner: postgres
```

```
--
```

```
CREATE TABLE public.prisoners (
    prisoner_id integer NOT NULL,
    prisoner_name character(50),
    age integer,
```



```
gender character(10),
sentence_date date,
sentence_period_years integer,
total_worked_hours integer,
wage_per_hour double precision,
total_wage double precision,
education character(50),
prison_id integer,
convict_reason character
varying(255),
section_id integer
);
```

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

```
--
```

```
-- Name: prisons; Type: TABLE;
Schema: public; Owner: postgres
```

```
--
```

```
CREATE TABLE public.prisons (
    prison_id integer NOT NULL,
    prison_name character varying(100),
    p_type character varying(100),
    state character(50),
    p_email character varying(150),
    num_of_prisoners integer,
    num_of_staff integer,
    total_population integer,
```

```
        num_of_vehicles integer,
        contact_num bigint
    );

ALTER TABLE public.prisons OWNER
TO postgres;

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

CREATE TABLE public.staff (
    staff_id integer NOT NULL,
    prison_id integer,
    staff_name character(50),
    gender character(10),
    age integer,
    s_email character varying(100),
    in_service integer
);

ALTER TABLE public.staff OWNER TO
postgres;

--
-- Name: state_year; Type: TABLE;
Schema: public; Owner: postgres
--
```

```
CREATE TABLE public.state_year (  
    state_year_id integer NOT NULL,  
    state_name character(50),  
    year integer  
);
```

```
ALTER TABLE public.state_year  
OWNER TO postgres;  
ALTER TABLE ONLY  
public.deaths_in_prison  
    ADD CONSTRAINT  
deaths_in_prison_pkey PRIMARY KEY  
(death_id);
```

```
--
```

```
-- Name: federal_sections  
federal_sections_pkey; Type:  
CONSTRAINT; Schema: public; Owner:  
postgres
```

```
--
```

```
ALTER TABLE ONLY  
public.federal_sections  
    ADD CONSTRAINT  
federal_sections_pkey PRIMARY KEY  
(section_id);
```

```
--
```

```
-- Name: illness illness_pkey; Type:  
CONSTRAINT; Schema: public; Owner:  
postgres
```

```
--
```

```
ALTER TABLE ONLY public.illness  
    ADD CONSTRAINT illness_pkey  
PRIMARY KEY (prisoner_id);
```

```
--
```

```
-- Name: prisoners prisoners_pkey;  
Type: CONSTRAINT; Schema: public;  
Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY public.prisoners  
    ADD CONSTRAINT prisoners_pkey  
PRIMARY KEY (prisoner_id);
```

```
--
```

```
-- Name: prisons prisons_pkey; Type:  
CONSTRAINT; Schema: public; Owner:  
postgres
```

```
--
```

```
ALTER TABLE ONLY public.prisons  
    ADD CONSTRAINT prisons_pkey  
PRIMARY KEY (prison_id);
```

```
--  
-- Name: staff staff_pkey; Type:  
CONSTRAINT; Schema: public; Owner:  
postgres
```

```
--
```

```
ALTER TABLE ONLY public.staff  
    ADD CONSTRAINT staff_pkey  
PRIMARY KEY (staff_id);
```

```
--
```

```
-- Name: state_year state_year_pkey;  
Type: CONSTRAINT; Schema: public;  
Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY public.state_year  
    ADD CONSTRAINT state_year_pkey  
PRIMARY KEY (state_year_id);
```

```
--
```

```
-- Name: budget_flow  
budget_flow_prison_id_fkey; Type: FK  
CONSTRAINT; Schema: public; Owner:  
postgres
```

```
--
```

```
ALTER TABLE ONLY  
public.budget_flow  
    ADD CONSTRAINT
```

```
budget_flow_prison_id_fkey FOREIGN  
KEY (prison_id) REFERENCES  
public.prisons(prison_id) NOT VALID;
```

```
--
```

```
-- Name: budget_flow  
budget_flow_state_year_id_fkey; Type:  
FK CONSTRAINT; Schema: public;  
Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY  
public.budget_flow  
    ADD CONSTRAINT  
budget_flow_state_year_id_fkey  
FOREIGN KEY (state_year_id)  
REFERENCES  
public.state_year(state_year_id) NOT  
VALID;
```

```
--
```

```
-- Name: crime_gender_numbers  
crime_gender_numbers_state_year_id  
_fkey; Type: FK CONSTRAINT;  
Schema: public; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY  
public.crime_gender_numbers  
    ADD CONSTRAINT  
crime_gender_numbers_state_year_id
```

```
_fkey FOREIGN KEY (state_year_id)
REFERENCES
public.state_year(state_year_id) NOT
VALID;
```

```
--
```

```
-- Name: deaths_in_prison
deaths_in_prison_prison_id_fkey;
Type: FK CONSTRAINT; Schema:
public; Owner: postgres
```

```
--
```

```
ALTER TABLE ONLY
public.deaths_in_prison
    ADD CONSTRAINT
    deaths_in_prison_prison_id_fkey
    FOREIGN KEY (prison_id)
    REFERENCES
    public.prisons(prison_id) NOT VALID;
```

```
--
```

```
-- Name: illness
illness_prisoner_id_fkey; Type: FK
CONSTRAINT; Schema: public; Owner:
postgres
```

```
--
```

```
ALTER TABLE ONLY public.illness
    ADD CONSTRAINT
    illness_prisoner_id_fkey FOREIGN
    KEY (prisoner_id) REFERENCES
```

```
public.prisoners(prisoner_id) NOT  
VALID;
```

```
--
```

```
-- Name: prisoner_released  
prisoner_released_prisoner_id_fkey;  
Type: FK CONSTRAINT; Schema:  
public; Owner: postgres  
--
```

```
ALTER TABLE ONLY  
public.prisoner_released  
    ADD CONSTRAINT  
prisoner_released_prisoner_id_fkey  
FOREIGN KEY (prisoner_id)  
REFERENCES  
public.prisoners(prisoner_id) NOT  
VALID;
```

```
--
```

```
-- Name: prisoners  
prisoners_prison_id_fkey; Type: FK  
CONSTRAINT; Schema: public; Owner:  
postgres  
--
```

```
ALTER TABLE ONLY public.prisoners  
    ADD CONSTRAINT  
prisoners_prison_id_fkey FOREIGN  
KEY (prison_id) REFERENCES  
public.prisons(prison_id) NOT VALID;
```


--

-- Name: prisoners

prisoners_section_id_fkey; Type: FK
CONSTRAINT; Schema: public; Owner:
postgres

--

ALTER TABLE ONLY public.prisoners
ADD CONSTRAINT
prisoners_section_id_fkey FOREIGN
KEY (section_id) REFERENCES
public.federal_sections(section_id)
NOT VALID;

--

-- Name: staff staff_prison_id_fkey;
Type: FK CONSTRAINT; Schema:
public; Owner: postgres

--

ALTER TABLE ONLY public.staff
ADD CONSTRAINT
staff_prison_id_fkey FOREIGN KEY
(prison_id) REFERENCES
public.prisons(prison_id) NOT VALID;

--

-- Name: year_wise_numbers

```
year_wise_numbers_state_year_id_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres
--
```

```
ALTER TABLE ONLY
public.year_wise_numbers
    ADD CONSTRAINT
year_wise_numbers_state_year_id_fkey FOREIGN KEY (state_year_id)
REFERENCES
public.state_year(state_year_id) NOT
VALID;
```

Populating the database:

Insert into prisoners

```
values(3451,'Jayce  
Cole',29,'Female','1995-02-05',20,4,50,  
200,'Middle  
School',1234,'Cheating',69);
```

Insert into prisoners

```
values(3452,'Myers  
Mike',56,'Male','2012-03-06',3,5,20,100  
, 'High School',1246,'Abetting a  
stepladder in crimes',201);
```

Insert into prisoners

```
values(3453,'Sanath',29,'Male','2012-0  
1-11',18,40,20,800,'High  
School',1246,'Random',201);
```

insert into

```
prisoner_released(3451,'2015-02-05',1  
234,1);
```

insert into

```
prisoner_released(3452,'2019-07-06',1  
246,1);
```

insert into prisons(1234,'Open Jail
Kumata','Open

```
Jail','Karnataka','kumataojail@gmail.co  
m',3,3,6,2,568492382398);
```

insert into

```
budget_flow(1234,1234,355432,65453  
4231,56453423);
```

Insert into

```
crime_gender_numbers('Arson',1345,0,  
1,2,0,0,0,3,2,4,4,8);
```

Insert into

```
deaths_in_prison(1080,'suicide',2006,0  
,1,345864,1246);
```

```
insert into
federal_sections(69,420,'Cheating and
Deceivement');
insert into
illness(3453,'Mental',2678,'2012-06-13'
);
insert into
staff(69,5680,'Henry','Male',62,'henrz2
@gmail.com',1);
Insert into
state_year(1234,'Karnataka',2003);
insert into
prisoner_statistics_year_wise(1234,34,
2,5,22,1,2,5);
```

Functions:

To return total count of prisoners in the database

```
1 create or replace function p_total()  
2 returns integer as $$  
3 declare  
4 total integer;  
5 ▼ begin  
6 select count(*) into total from prisoners;  
7 return total;  
8 end;  
9 $$ language plpgsql
```

Data Output Messages Notifications

CREATE FUNCTION

Query returned successfully in 577 msec.

Triggers and Cursors:

Trigger which adds old prison id and new prison id to a table along with prisoner's name and id (Prison transfer)

```
1 create or replace function prison_change()
2 returns trigger as
3 $BODY$
4 begin
5 if new.prison_id<>old.prison_id then
6 insert into p_transfer values(old.prisoner_name,old.prison_id,new.prison_name,old.prisoner_id);
7 end if;
8 return new;
9 end;
10 $BODY$
11 language plpgsql
```

Cursor:

```
conn = connection.conn
cursor = conn.cursor()

def insert_date(table):
    if table == "prisoners":
        query = "SELECT prison_id, prison_name FROM prisons;"
        cursor.execute(query)
        prison_idlst = cursor.fetchall()
        query = "SELECT section_id, section_desc FROM federal_sections;"
        cursor.execute(query)
```

Developing a Frontend:

The screenshot shows a web application titled "Prisoner DataBase" running on localhost:8501. On the left, a sidebar labeled "Tables" contains a dropdown menu with "prisoner_statistics_year_wise" selected and a "Select Table" button. The main content area displays the data for this table. It includes a "Data: prisoner_statistics_year_wise" label, an "Order By Column" dropdown set to "state_year_id", and "Order By" and "Order ASC | DESC" buttons. Below these is a "Page 1 of 1" indicator and an "Order Rows" button. A table with 4 columns is shown: "habilitated", "legal_aid_received_num", "women_prisoners_with_children", and "children_of_women_prisoner_num". The table contains two rows of data. Below the table, there is a "State Year" dropdown menu with "(1234, 'Karnataka ')" selected, and a "Convicts Admitted" section with a text input field.

habilitated	legal_aid_received_num	women_prisoners_with_children	children_of_women_prisoner_num
0	22	1	2
1	5	1	4

This screenshot shows the same "Prisoner DataBase" application. The "Tables" sidebar dropdown menu is open, displaying a list of tables: "prisoner_statistics_year_wise", "prisoner_released", "prisoners", "prisons", "budget_flow", and "crime_gender_numbers". The main content area remains the same as the previous screenshot, showing the "prisoner_statistics_year_wise" table data and controls.

The screenshot shows the "Prisoner DataBase" application with the "Tables" sidebar dropdown menu open, displaying a list of tables: "federal_sections", "prisoner_statistics_year_wise", "prisoner_released", "prisoners", "prisons", "budget_flow", and "crime_gender_numbers". The "federal_sections" table is selected. The main content area displays the data for this table. It includes a "Data: prisoner_statistics_year_wise" label, an "Order By Column" dropdown set to "section_id", and "Order By" and "Order ASC | DESC" buttons. Below these is a "Page 1 of 1" indicator and an "Order Rows" button. A table with 3 columns is shown: "section_id", "section_number", and "section_desc". The table contains three rows of data. Below the table, there is a "Section Desc" text input field, a "Section Number" text input field, and a "submit this form" button.

section_id	section_number	section_desc
0	69	420
1	201	108
2	326	190

