William Purification
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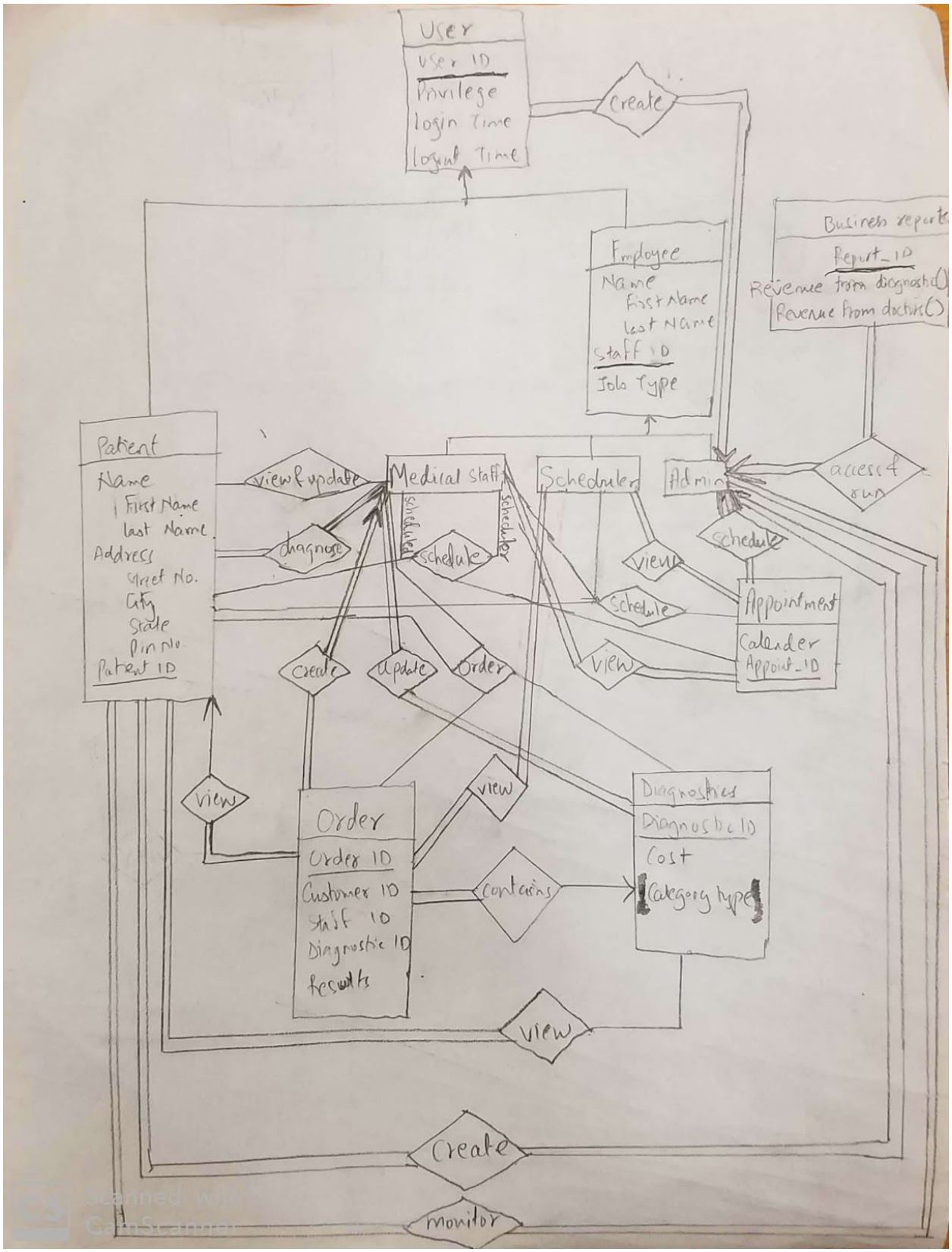

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Steps and Rules

User(user_id, Privilege, login Time, logout Time)
#Rule 1: Stong Entity

Patient(patient_id, First Name, Last Name, Street No., City, State, Zip Code)
#Rule 8: Speicialization (ISA) (patient_id is the foreign key to the User relation)

Employee(employee_id, First Name, Last Name, Job Type)
#Rule 8: Specialization (ISA) (employee_id is the foreign key to the User relation)

Medical Staff(staff_id)
#Rule 8: Specialization (ISA) (staff_id is the foreign key to the Employee relation)

Scheduler(scheduler_id)
#Rule 8: Specialization (ISA) (scheduler_id is the foreign key to the Employee relation)

Admin(admin_id)
#Rule 8: Specialization (ISA) (scheduler_id is the foreign key to the Employee relation)

User(user_id, admin_id, Privilege, login Time, logout Time)
#Rule 4: One to Many Relationship (added admin_id to the User relation which is a foreign key to the Admin relation)

Patient(patient_id, admin_id, First Name, Last Name, Street No., City, State, Zip Code)
#Rule 4: One to Many Relationship (added admin_id to the Patient relation which is a foreign key to the Admin relation)

Diagnostics(Diagnostic_id, Cost, Category Type)
#Rule 1: Strong Entity

Appointment(Appoint_id, Calender)
#Rule 1: Strong Entity

Business reports(Report_id)
#Rule 1: Strong Entity

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Business reports(Report_id, admin_id)
#Rule 4: One to Many relationships (We added admin_id to the Business reports which is a foreign key to the Admin relation)

Schedule(staff_id, scheduled_for_id, appoint_id, scheduled_with_id)
#Rule 6: N-ary relationship (staff_id is the foreign key to the Medical Staff relation and the Scheduler relation, scheduled_for_id is the foreign key to the Patient relation, appoint_id is the foreign key to the Appointment relation, scheduled_with_id is the foreign key to the Medical Staff relation)

SQL Code--ER Diagram (PostgresSQL)

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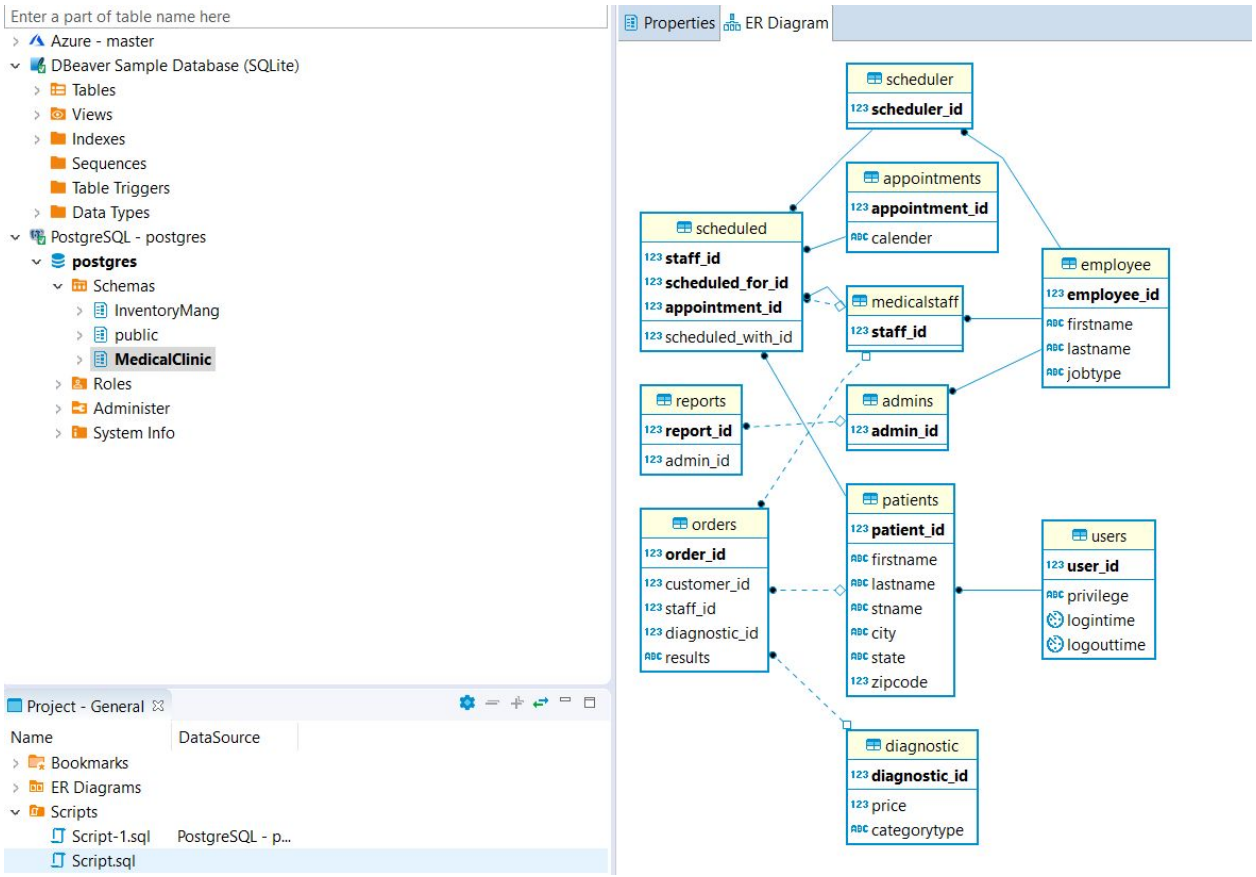

Code:

```
create table users (
        user_id int primary key,
        privilege varchar(20),
        loginTime timestamp default current_timestamp,
        logoutTime timestamp default current_timestamp
);

create table patients (
        patient_id int primary key,
        foreign key (patient_id) references users(user_id) on delete cascade on update cascade,
        firstName varchar(30)not null,
        lastName varchar(30) not null,
```

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```
        stName varchar(50),
        city varchar(30),
        state varchar(2),
        zipCode int
);

/*creating indices to allow easier/faster access to patient
 * by their city, state, or zip code.
 */
create index idx_city on patients(city);
create index idx_state on patients(state);
create index idx_zipCode on patients(zipCode);

create table employee (
        employee_id int primary key,
        firstName varchar(20) not null,
        lastName varchar(20) not null,
        jobType varchar(20)
);

/*creating an index to allow easier/faster access to
 * employee info by their job type.
 */
create index idx_jobType on employee(jobType);

create table medicalStaff (
        staff_id int primary key,
        foreign key (staff_id) references employee(employee_id) on delete cascade on update
cascade
);



create table admins (
        admin_id int primary key,
        foreign key (admin_id) references employee(employee_id) on delete cascade on update
cascade
);

create table scheduler (
        scheduler_id int primary key,
        foreign key (scheduler_id) references employee(employee_id) on delete cascade on update
cascade
);
```

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```
create table diagnostic (
        diagnostic_id int primary key,
        price numeric (8,2) check ("price" > 0),
        categoryType Varchar(30)
);

/*creating indices to allow easier/faster access to
 * diagnostics by their categoryType.
 */
create index idx_catgeoryType on diagnostic(categoryType);

create table orders (
        order_id int primary key,
        customer_id int,
        staff_id int,
        diagnostic_id int,
        foreign key (customer_id) references patients(patient_id) on delete set null on update
cascade,
        foreign key (staff_id) references medicalStaff(staff_id) on delete set null on update cascade,
        foreign key (diagnostic_id) references diagnostic(diagnostic_id) on delete set null on update
cascade,
        results varchar(40)
);

create table appointments (
        appointment_id int primary key,ioi
        calender varchar(20)
);

create table scheduled (
        staff_id int,
        scheduled_with_id int,
        scheduled_for_id int,
        appointment_id int,
        primary key(staff_id, scheduled_for_id, scheduled_with_id, appointment_id),
        foreign key (appointment_id) references appointments on delete cascade on update cascade,
        foreign key (staff_id) references medicalStaff(staff_id) on delete set null on update cascade,
        foreign key (staff_id) references scheduler(scheduler_id) on delete set null on update
cascade,
        foreign key (scheduled_for_id) references patients(patient_id) on delete cascade on update
cascade,
        foreign key (scheduled_with_id) references medicalStaff(staff_id) on delete cascade on
update cascade
);
```

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```
create table reports (
        report_id int primary key,
        admin_id int,
        foreign key (admin_id) references admins on update cascade on delete set null
);

alter table users (
                add admin_id int,
                foreign key(admin_id, user_id) references admins on delete set null on update
cascade
                );

alter table patients (
                add admin_id int,
                foreign key(admin_id, patient_id) references admins on delete set null on update
cascade
);
```