# Relational Database Project Design

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# Contents

## Introduction

- The Company is a Local Hospital called Ocean Medical Clinic. It is located in Cork City and was founded in 1996 and has 14 employees.

- The aims of the Database are to store and retrieve hospital information in an efficient and safe way. We hope to store patient and staff information, diagnosis, inpatient, outpatient, billing information and ward information. We hope to reduce human error and keep the data safer.

- Some of the user needs are for the admin to register a patient and their information to the hospital. Doctors need to be able to quickly look up information about a patient and for the managing staff to easily look up information on the staff and wards and to edit and delete it.

- Tables: Patient, doctor, ward, treatments,treatmentspatients

- Attributes: (Doctor id, doctor name, email address, staff phone num, staff role, staff salary, patient id, patient name, patient date of admission, patient gender, patient date of birth, patient diagnosis, patient address, patient phone num, patient height, patient weight, patient room number, ward occupancy, ward id, ward name, treatment id, treatment name, treatment result, treatment cost )

## Normalization

1NF

**Patient** (PatientID, PatientName, Gender, DateOfBirth, Address, MobileNum, height, weight, , DoctorID, DoctorName, Salary, PhoneNum, Speciality, WardID, WardName, Occupancy)

**Treatment** (TreatmentID, PatientID, DateOfAdmission , RoomNumber ,Diagnosis, TreatmentName, TreatmentResult, TreatmentCost)

2NF

**Patient ,Doctor And Wards** (PatientID, PatientName, Gender, DateOfBirth, Address, MobileNum, height, weight, DoctorID, DoctorName, Salary, PhoneNum, Speciality, WardID, WardName, Occupancy)

**Treatment** (TreatmentID, TreatmentName, TreatmentCost,)

**TreatmentPatients**(TreatmentID, Patient ID, TreatmentResult, DateOfAdmission, Diagnosis, RoomNo)

3NF

**Patient** (PatientID, PatientName, DateOfAdmission, Gender, DateOfBirth, Diagnosis, Address, MobileNum, height, weight, , DoctorID)

**Doctors** (DoctorID, DoctorName, Salary, PhoneNum, Speciality, WardID, WardName, Occupancy)

**Treatment** (TreatmentID, TreatmentName, TreatmentCost)

**TreatmentPatients**(TreatmentID, Patient ID, TreatmentResult, DateOfAdmission, Diagnosis, RoomNo)

4NF

**Patient** (PatientID, PatientName, DateOfAdmission, Gender, DateOfBirth, Address, MobileNum, Height, Weight, , DoctorID)

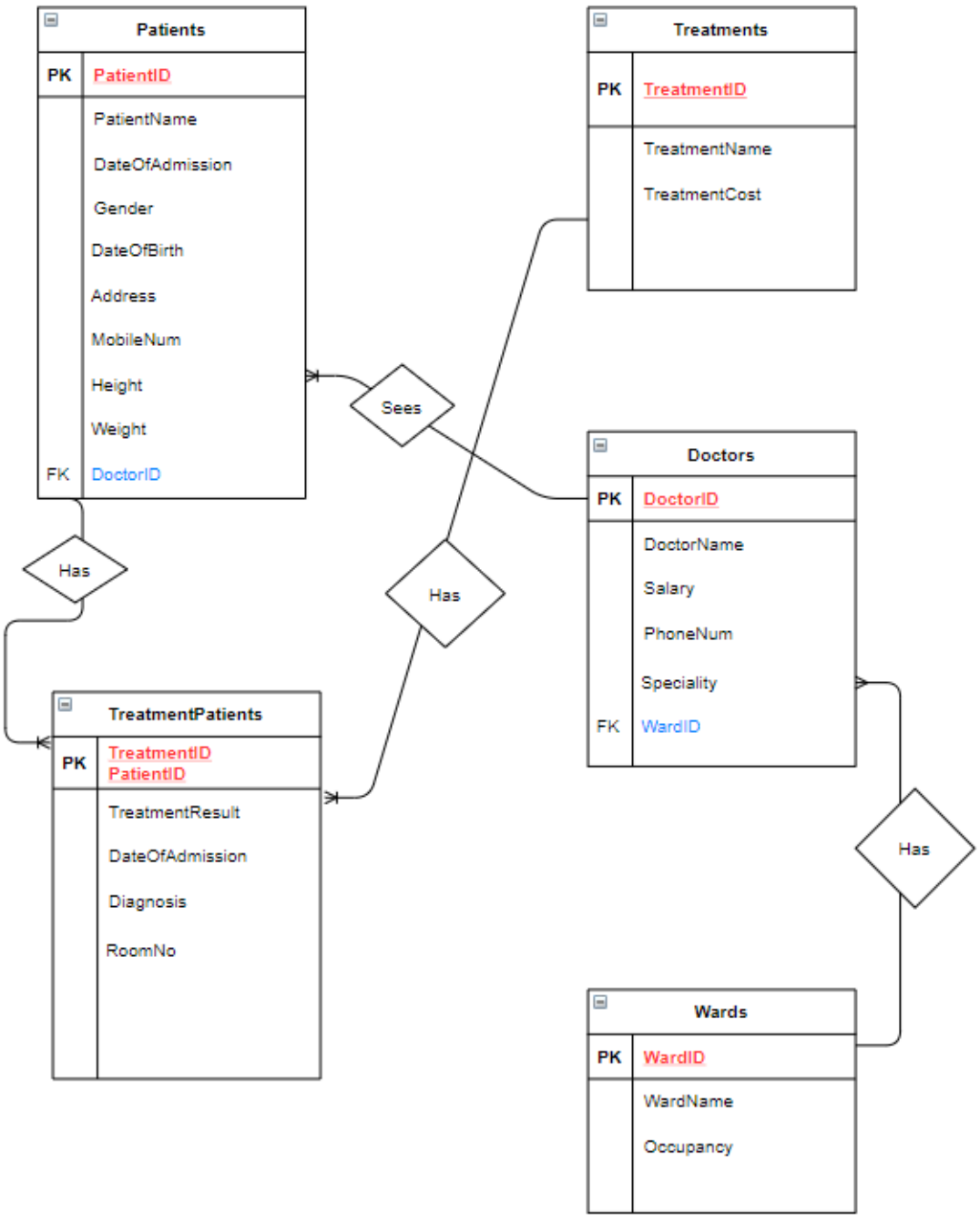
**Doctors** (DoctorID, DoctorName, Salary, PhoneNum, Speciality, WardID)

**Wards** (WardID, WardName, Occupancy)

**Treatment** (TreatmentID ,TreatmentName, TreatmentCost)

**TreatmentPatients**(TreatmentID, Patient ID, TreatmentResult, DateOfAdmission, Diagnosis, RoomNo)

## Entity Relationship Diagram



## Entity Entity Matrix

| | Patients | Doctor | Treatment | Ward | TreatmentPatients |
|---|---|---|---|---|---|
| Patients | | 1:M | | | M:1 |
| Doctor | M:1 | | | 1:M | |
| Treatment | | | | | M:1 |
| Ward | | M:1 | | | |
| TreatmentPatients | 1:M | | 1:M | | |

# Data Dictionary

## Patient Table

| Field Name | Description | Key | Data Type | Validation | Attribute Size | Default Value |
|---|---|---|---|---|---|---|
| PatientID | Patients ID number | Primary | Char | 5 numbers | 5 | |
| PatientName | Full name | | VarChar | | 30 | |
| DateOfAdmission | Date admitted | | DATE | dd/mm/yyyy | Short Date | 01/01/2021 |
| Gender | gender | | Char | M/F | 1 | M |
| DateOfBirth | Date of birth | | DATE | dd/mm/yyyy | Short Date | |
| Address | Address | | varCHar | | 50 | |
| MobileNum | Mobile Number | | varChar | | 12 | |
| Height | height | | SMALLINT | | 3 | |
| Weight | weight | | SMALLINT | | 3 | |
| DoctorID | Doctor's ID | Foreign | Char | Must match record in the Doctor table | 5 | |

## Doctor Table

| Field Name | Description | Key | Data Type | Validation | Attribute Size | Default Value |
|---|---|---|---|---|---|---|
| DoctorID | Doctors ID number | Primary | Char | 5 numbers | 5 | |
| DoctorName | Full name | | varChar | | 30 | |
| Salary | Date admitted | | smallmoney | Monetary Value | | €40000 |
| PhoneNum | Work Phone Number | | varchar | | 12 | |
| Speciality | Job Role | | VarChar | | 30 | Paediatrician |
| WardID | Ward ID Number | Foreign | Char | Must match record in ward table | 1 | 1 |

## Wards Table

| Field Name | Description | Key | Data Type | Validation | Attribute Size | Default Value |
|---|---|---|---|---|---|---|
| WardID | Ward ID number | Primary | Char | 1 number | 1 | 1 |
| WardName | Full name | | VarChar | | 30 | |
| Occupancy | Occupancy size | | tinyInt | | 3 | |

## Treatments Table

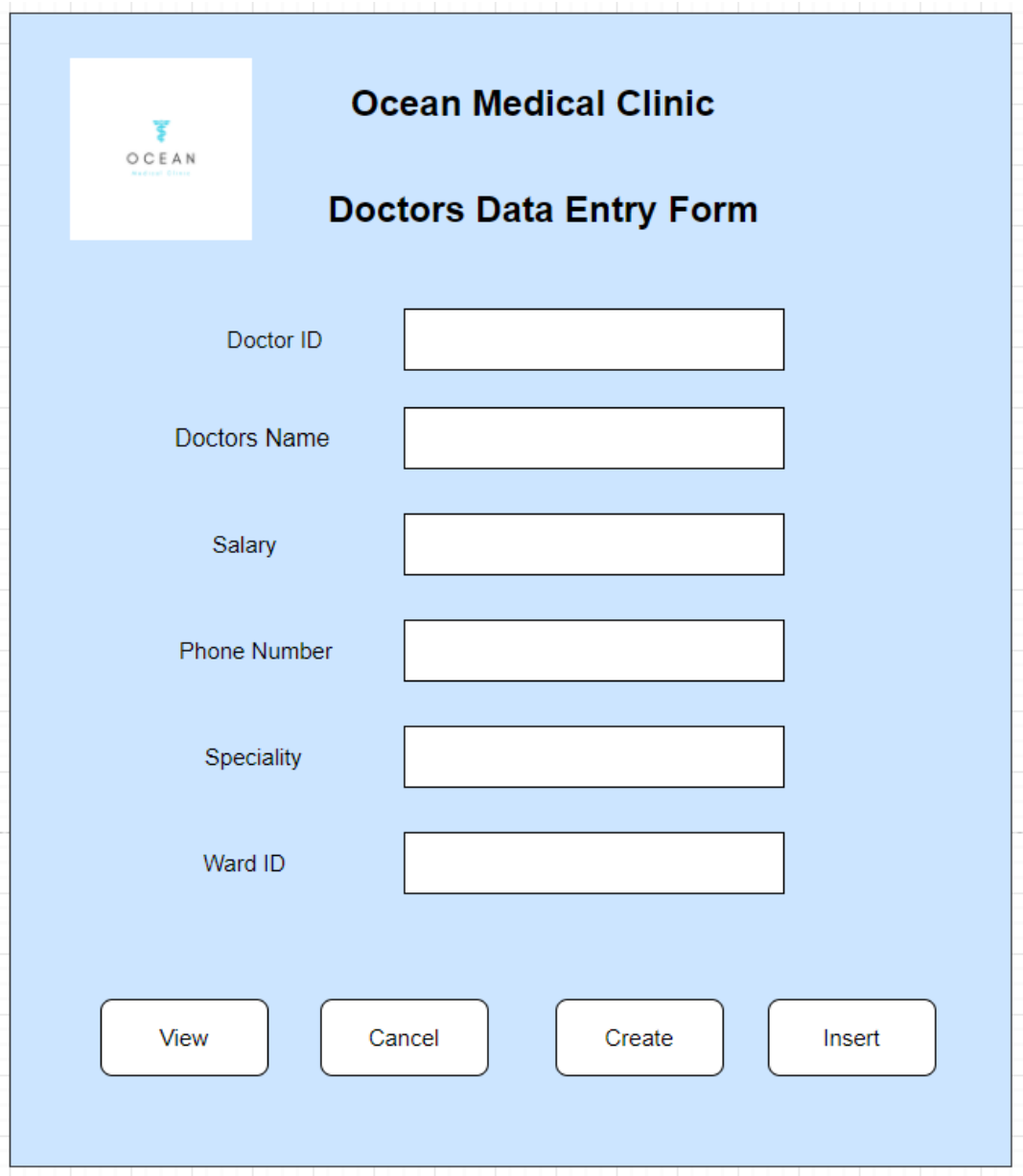
| Field Name | Description | Key | Data Type | Validation | Attribute Size | Default Value |
|---|---|---|---|---|---|---|
| TreatmentID | Treatment ID number | Primary | Char | 5 numbers | 5 | |
| TreatmentName | Full name | | VarChar | | 30 | |
| TreatmentCost | Treatment Cost | | smallMoney | | Monetary Value | |

## TreatmentsPatient Table

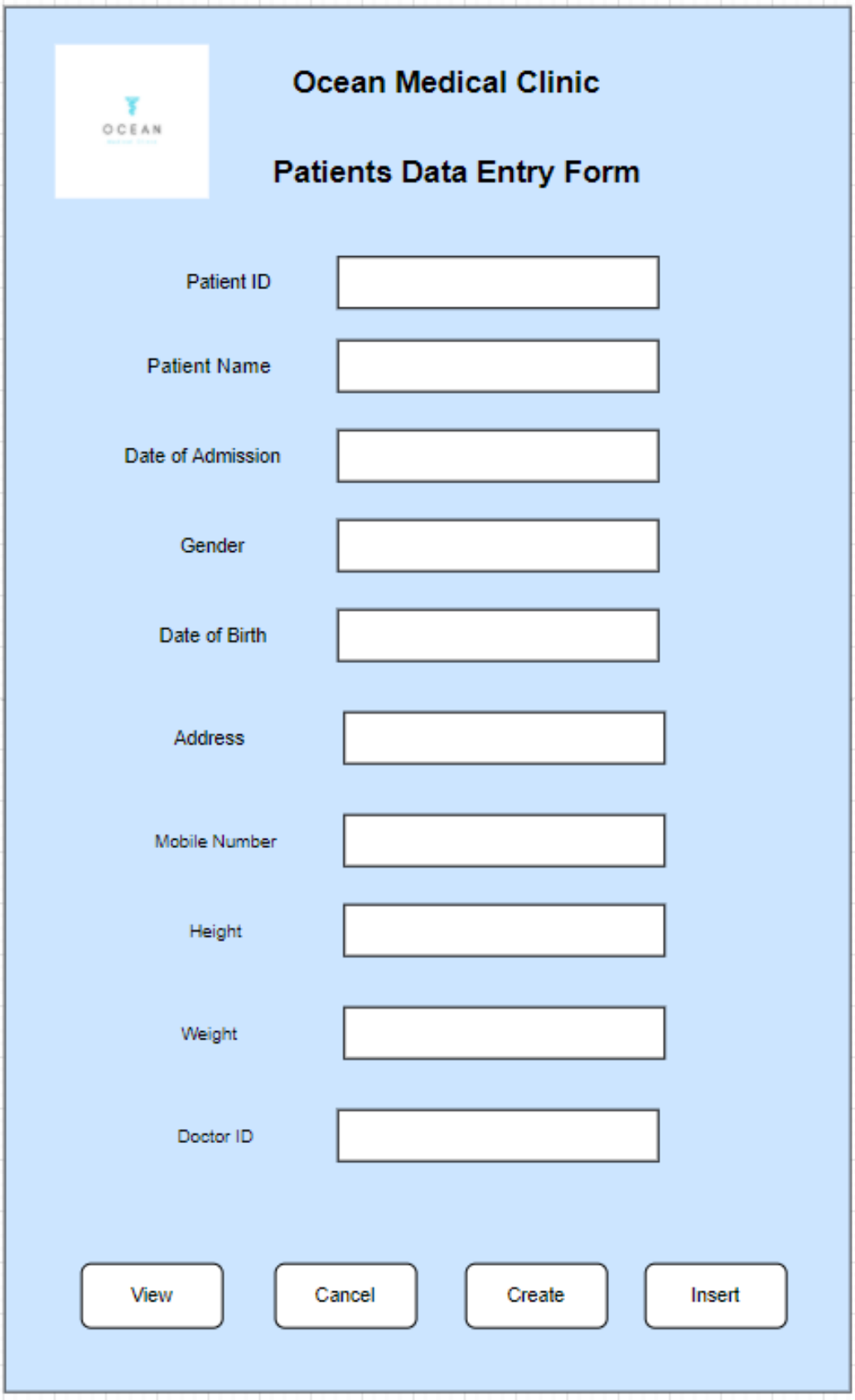
| Field Name | Description | Key | Data Type | Validation | Attribute Size | Default Value |
|---|---|---|---|---|---|---|
| TreatmentID | Treatment ID number | Primary | Char | 5 numbers | 5 | |
| PatientID | Patients ID number | Foreign | Char | Must match records in patients table | 5 | |
| TreatmentResult | Treatment result | | varChar | | 40 | Successful |
| DateOfAdmission | Date admitted | | DATE | dd/mm/yyyy | Short Date | 01/01/2021 |
| Diagnosis | Diagnosis | | varChar | | 40 | Negative |
| roomNO | Room Number | | tinyInt | | 4 | |
| | | | | | | |

## Forms Design

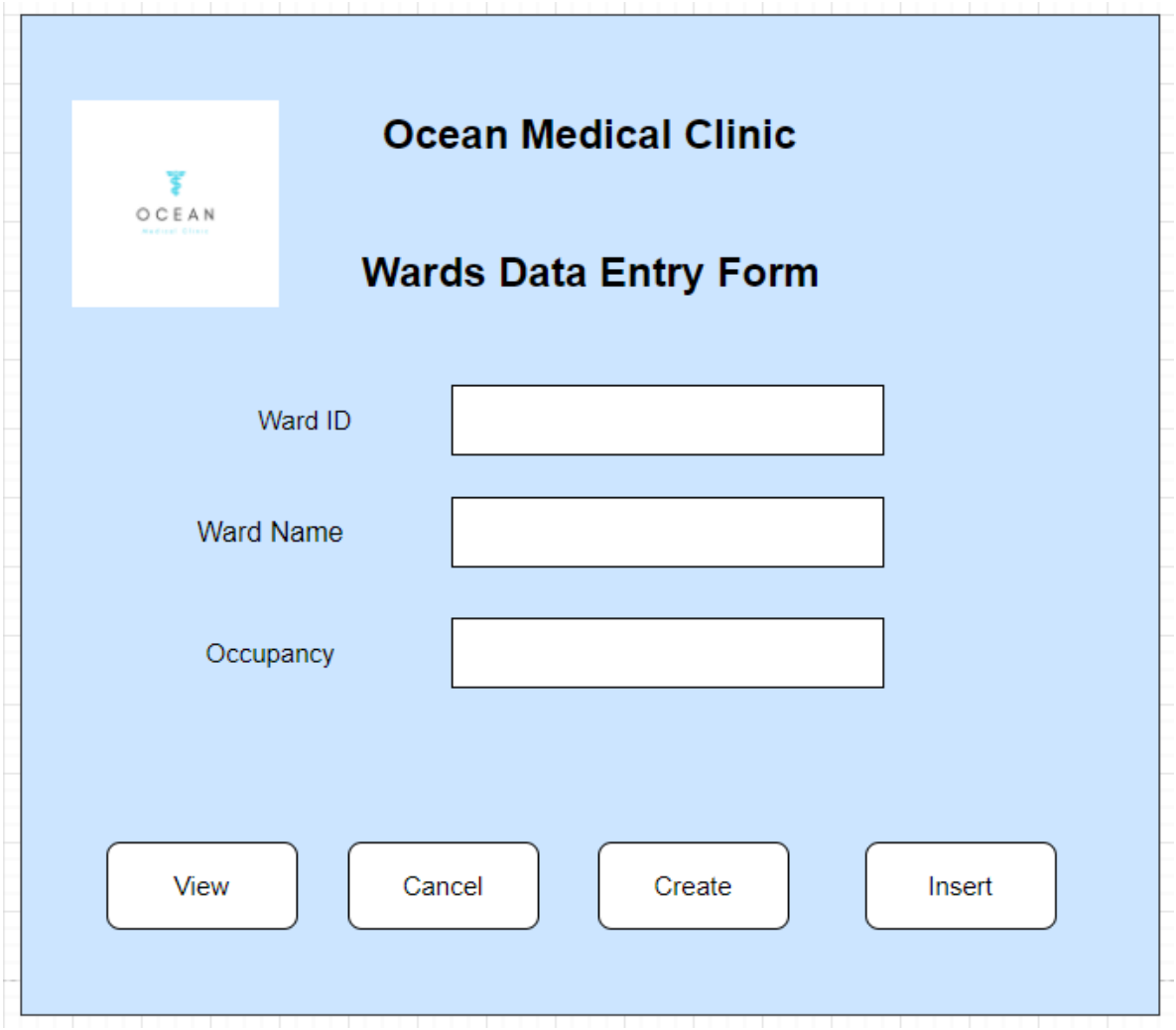
Doctors Table:



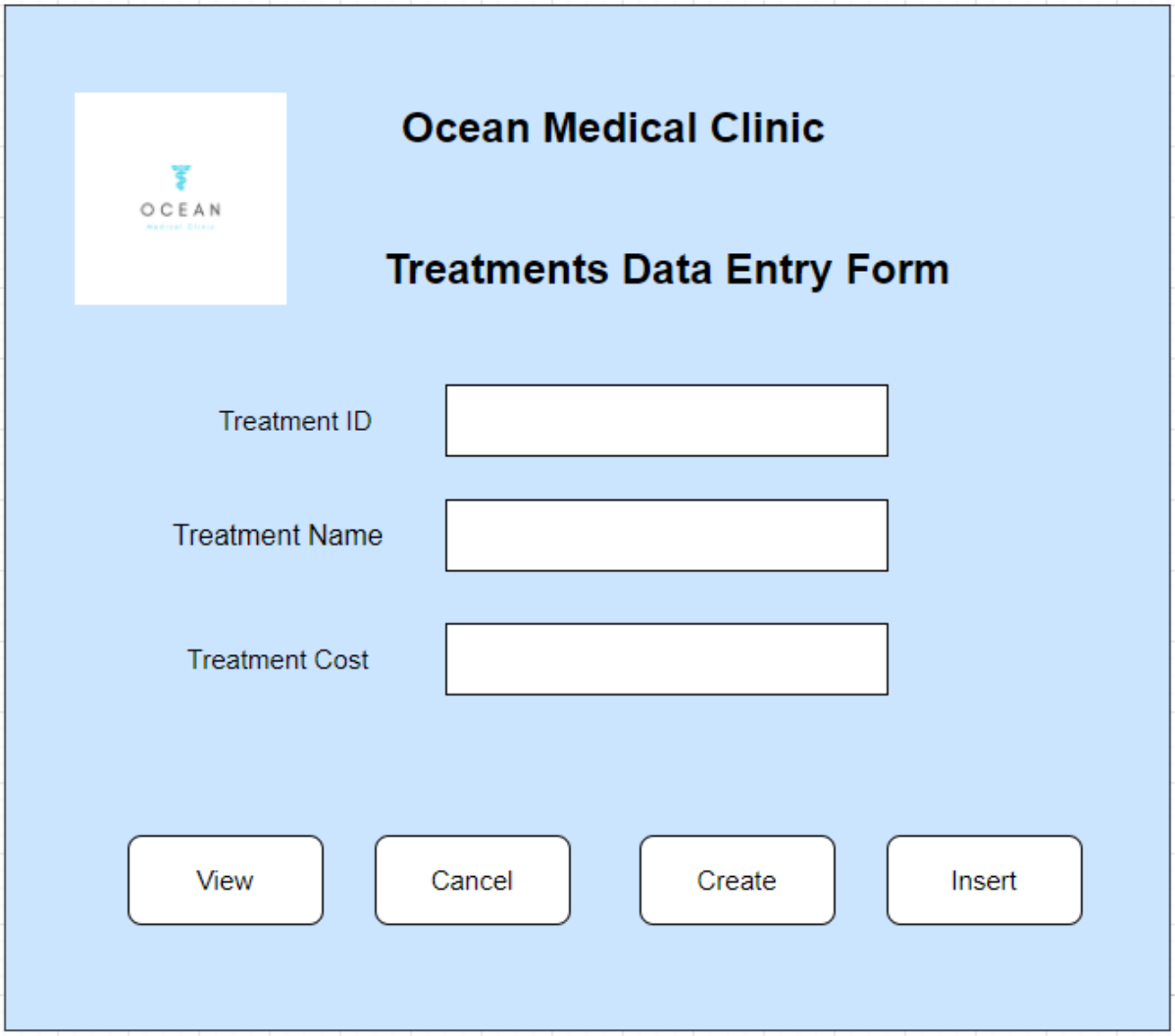
Patients Table:



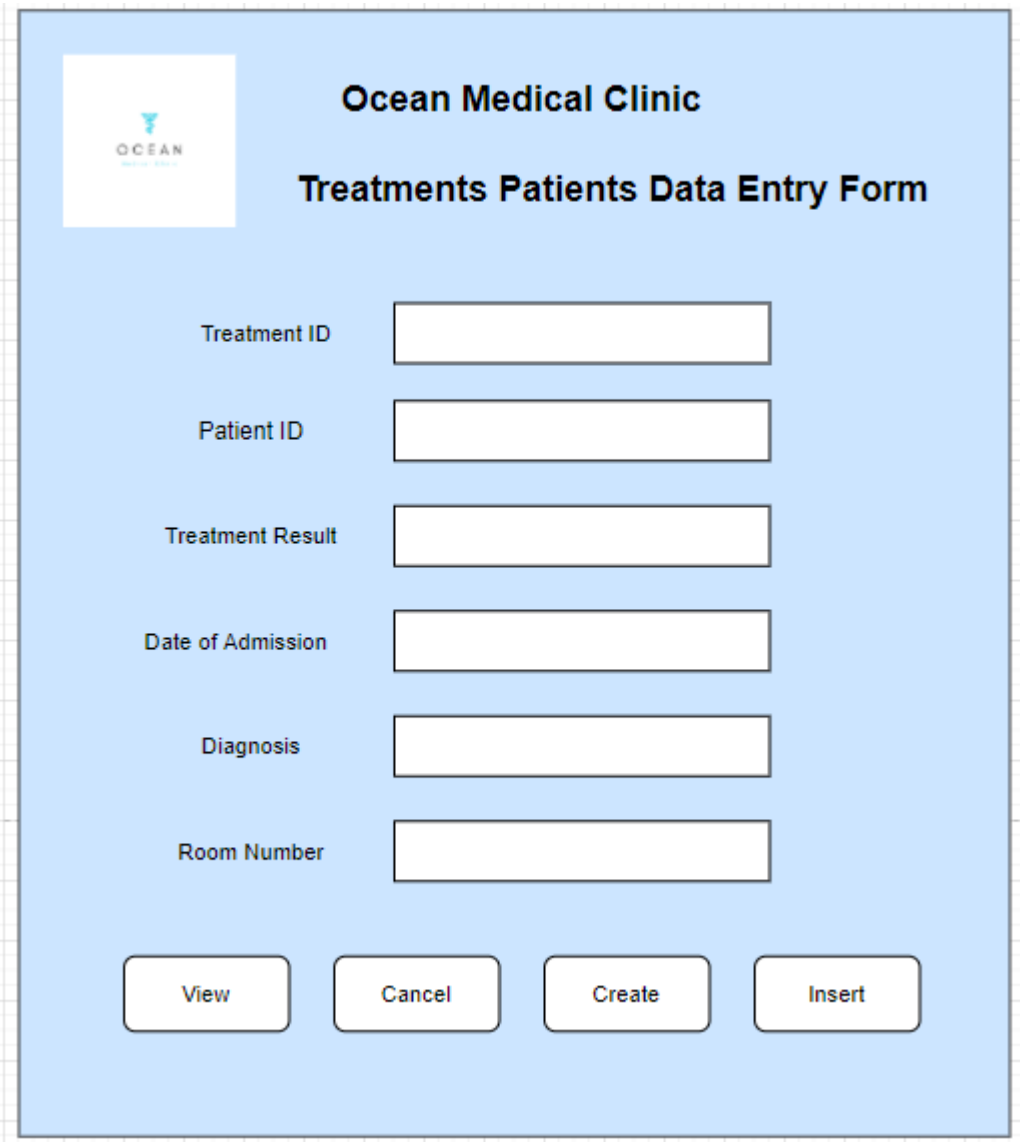
Wards Form:


OCEAN
Ocean Medical Clinic
Wards Data Entry Form
Ward ID
Ward Name
Occupancy
View
Cancel
Create
Insert

Treatments Form:



Treatments Patients Table:



# Queries

a) Find patients ages from their date of birth then find the number of patients over 65 currently in care
b) The average salary of all the doctors
c) The total occupancy of all wards
d) Number of Treatments costing more than 1000 euro
e) The number of patients who have stay more than 1 week
f) Calculate the ratio of men to women in the hospital
g) Percentage of patients between the ages of 18-35
h) The highest paying speciality
i) List the number of patients diagnosed with Covid-19
j) List number of patients who are under 18 and have been hospitalised between 4 and 6 weeks
k) List female patients over the age of 50 who have undergone surgery in the past year
l) List percentage of patients diagnosed with heart disease in the past year

## Reports

a) I'm going to do a report on how expensive the average Treatment is and what the average bill is for people aged under 18, between ages 18-65 and over 65.

b) I'm going to do a report on the average Doctor Salary of every speciality.

c) I'm going to do a report on the ratio of men to women patients and the average age and the average money owed.

d) I'm going to do a report of the total number of patients during the entire year admitted for all the major diseases such as heart disease.