ER Modelling Exercise – Hospital

Consider the following requirements for inpatients at a hospital:

All **patient**s admitted to the hospital are given a unique **patient number**. The patient's **name**, **address**, **age**, and **sex** are recorded. Private patients are allocated a **private room**, identified by the **room number**. Private rooms are of different **types**, e.g., standard, deluxe, palatial, etc. NHS patients are allocated a bed in a **ward**, beds being identified by the **ward name** and **bed number**. Wards are of different **types**, e.g., pediatric, cancer, etc, with a **named sister** in charge of each one. Each patient is allocated to a **name**d **consultant** who supervises the medical care of the patient. The consultant decides on the **treatment**s to be given to the patient. A treatment is any medical procedure performed on the patient. Each treatment is given a unique **treatment number**, and a **description** of the treatment and the **date** it is performed are recorded.

Design an E-R diagram for the above database. Derive a corresponding relational scheme from your E-R diagram. The E-R diagram must show attributes, keys, cardinalities, and constraints.

The relational scheme must be in third-normal form, with primary and foreign keys clearly indicated.

Entities are shown in RED

Attributes are shown in GREEN

Keys are shown in BLUE

Patients (Entity) –

Patient Number (Key)

Name

Address

Age

Sex

Private Rooms (Entity) –

Room Number (Key)

Room Type

Wards (Entity) –

Ward Name (Key)

Bed Number (Key)

Ward Type

Named Sister

Consultants (Entity) –

Consultant ID (Key)

Name

Treatments (Entity) –

Treatment Number (Key)

Description

Date

Patient

🔑	**Patient Number**	**integer(10)**
📄	Name	varchar(35)
📄	Address	varchar(50)
📄	Age	integer(10)
📄	Sex	varchar(255)
🔑	*ConsultantConsultant ID*	*integer(15)*
🔑	*ConsultantPatientPatient Number*	*integer(10)*

Private Room

🔑	**Room Number**	**integer(10)**
📄	Room Type	varchar(15) N
🔑	*PatientPatient Number*	*integer(10)*
🔑	*PatientConsultantConsultant ID*	*integer(15)*
🔑	*PatientConsultantPatientPatient Number*	*integer(10)*

Treatment

🔑	**Treatment Number**	**integer(10)**
📄	Description	varchar(255)
📄	Date	date
🔑	*PatientPatient Number*	*integer(10)*
🔑	*PatientConsultantConsultant ID*	*integer(15)*
🔑	*PatientConsultantPatientPatient Number*	*integer(10)*

Ward

🔑	**Ward Name**	**varchar(25)**
🔑	**Bed Number**	**integer(10)**
📄	Ward Type	varchar(15) N
📄	Named Sister	varchar(25)
🔑	*PatientPatient Number*	*integer(10)*
🔑	*PatientConsultantConsultant ID*	*integer(15)*
🔑	*PatientConsultantPatientPatient Number*	*integer(10)*

Consultant

🔑	**Consultant ID**	**integer(15)**
📄	Name	varchar(25)
🔑	**PatientPatient Number**	**integer(10)**