CIS 340 Project

E-R Model (50 Points)

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1.Identify entity types with brief description

Wards: Wards Number of a Hospital.

             Wards Name: Name of the wards Name (Primary Key)

             Wards Number: Number of the wards in the hospital

             Ward’s location: Location of wards inside the hospital.

             Beds: No of beds

             Contact number: phone number (Extn 11454)

Staff: Staff within each section

             Staff: No of staff

             Staff FName: First Name of the employee.

             Staff LName: Last Name of staff

             Staff Address: The location of staff

             Contact information: Phone number/telephone number of Staff.

             Date of Birth: Date of birth of each employee.

             Sex: Male/Female/Other.

             National Insurance Number: Number of National Insurance of each staff

             Salary: Salary of staff

             Position: Position of Staff

             Qualification: Qualification of staff

Patients:

Patients Name: Name of the patients in the hospital

PatientNumber: ID of each patient.(Primary key)

PatientFirstName: First Name of the patients

PatientLastName: LastName of the patients.

Patient Address: Location of patient where they live.

Patient Date of Birth: Birthdate of the patient

Sex: Male/Female/Other.

Marital Status: To find whether patients have Marital status in the case of emergency.

Date Registered: Date Registered with the hospital.

DetailofKin: Full detail about the patient's next kin.

Patient Appointments:

Patient ID: unique ID of the patient for the appointment.

 Appointment \_ ID:  for the appointment made which is unique.

Doctor \_ID: unique doctor id for each appointment that is booked.

Date\_Boooked: Date attribute for the appointment.

Patient\_Fname: outpatients first name that is stored in the table.

Patient\_Lname: outpatients last name that is stored in the table.

Patient\_Adress: outpatients address that is stored

Paitient\_Phone number: phone number that is stored

Patient\_DOB : outpatients date of birth that is stored in the table

Dateof\_Appointment: date and time of appointment at the outpatient clinic.

Inpatients:

PatientFirst\_Name: First name of inpatients who are in the waiting list

Patient Last\_Name:  Last name of inpatients who are in the waiting list

Waiting list\_number: Unique waiting list number for each patient

PatientBed\_number: bed number of the patient

Patientnext-to-kin\_name:the name of the patients next-to-kin

PatientWard\_number: ward number of the patient

Patient Medications:

Patient\_Name:  Name of the Patient under who the medications are linked to.

Patient\_PhoneNumber: phone number of patients

PatientMedication\_Name: Name of the medication of the patient

PatientMedication\_doses: instructions regarding doses of each medication and method of each dose.

FullName: Full Name of Patient’s Next of Kin

Relationship: Relationship between patient and patient’s kin

Address: Address of patient’s kin

Phone Number: Kin’s personal phone number /telephone.

Local Doctors:

DoctorName: First and last name of the doctor who refer to the hospital

DoctorClinic ID: Unique Clinic Id number to locate the Clinic.

Clinic Address: Full Address of the clinic

Clinic Phone Number: telephone number of the clinic

Suppliers

supplier’s name: The company’s name and what the public calls them

Supplier type: surgical, non-surgical, and pharmaceutical

number: This the primary key, the ID for each unique supplier.

address: Address tells the location from which supplies come from.

telephone: Phone number to contact them.

fax numbers: How to send over an image through a fax.

Ward Requisitions

requisition number: Unique number to for each request

Request name: The nurse asking for supplies using her name to track it.

Ward Name: The name to identify the ward

Ward number: The ID for the ward number

DrugID: Used to identify the drugs separately

Drug Name: The name of the drugs given by companies.

Desc. Drug: Small explanation of what the drug is for.

 Dosage: It explains the safe usage of said drug though the amount given.

Administration: Tells if it's a pill, an injection or whatever reason needed.

Cost: For every dosage given to someone it explains the amount that dosage costs.

Quantity: Measurement of how much is requested.

Date: when did they ask for the drugs.

Charge Nurse: Sign in the name of the nurse asking for the drugs.

Pharmaceutical supplies

drug number: Unique number to be used for Identification

 Name: Title that the drugs

Description:  describe the drug

Dosage: measurement of right use

method of administration: Injection of pills or liquid it tells you how to use it.

quantity in stock: How much of it that it has in total

reorder level: When getting more how much of it they are getting is going to be placed here.

Cost: Cost of buying the drug.

Surgical and Nonsurgical Supplies

Surgical item: Items used during surgery.

Nonsurgical items: items and tools that aren’t used in the surgery.

Itemed: To ID items separate from other.

Name: Title for said tools and items

Description:  describe the supplies

quantity in stock: How much of it that it has in total

reorder level: When getting more how much of it they are getting is going to be placed here.

Cost: Cost of buying the Supplies.

2.Identify relationship types with brief description. You must include the multiplicity and attributes if any.

* One patient can have multiple kins.
* One kin’s can have only one patient.
* One ward can have multiple beds.
* One hospital can have multiple wards.
* One ward can have multiple staff.
* One patient can have multiple wards.
* One ward can have multiple patients.
* One appointment can include only one patient.
* One appointment can include only one staff member.
* One requisition can include only one staff member.
* One supplier can have multiple items.
* One item can have multiple supplies.
* One patient can have multiple medications.
* One staff member can have multiple appointments.
* Multiple patients can have multiple doctors.
* One medication can have multiple patients.
* One patient can have multiple appointments.
* One staff member can have multiple requisitions.

3.Describe each entity type in detail

**Ward:**

WardNo: int (PK)

WardName: Varchar (20)

WardLocation: Varchar (50)

NoOfBed=int

PhoneExt=int

**Patients**

PatientId=int (PK)

FirstName=Varchar (20)

LastName=Varchar (20)

Address=Varchar (50)

PhoneNo=VarChar(12)

DateOfBirth=Date

Sex=Char (4)

MaritalStatus=Char (3)

RegDate=Date

**kins**

NextOfKin=Varchar (200)

RelationShip=Varchar (20)

KinAddress=Varchar (200)

KinPhoneNo=Varchar (20)

**Local doctor**

DoctorName=Varchar (20)

ClinicNo=Varchar (5)

ClinicPhoneNo=Varchar (12)

Clinic Address=Varchar (30)

**Staff**

StaffId=int (Pk)

FirstName=Varchar (20)

LastName=Varchar (20)

Address=Varchar (50)

PhoneNo=Varchar (12)

DateOfBirth=Date

Sex=Char (4)

StaffType=Char (4)

National Insurance Number=Varchar (5)

Position=Varchar (30)

Salary=Float

SalaryScale=Varchar (30)

InstitutionName=Varchar (30)

OrgName=Varchar (30)

PositionHeld=Varchar (20)

StartDate=Date

EndDate=Date

NoOfHours=Int

ContractType=Char (5)

TypeOfSalary=char (5)

Shift=Char (4)

DateOfQua=Date

TypeOfQUA=Varchar (40)

Suppliers

suppname: Varchar(30)

Suptype:Varchar(30)

SupNum:int

address:Varchar(30)

phone:Varchar(20)

faxnum:Varchar(20)

Primary Key:SupNum

Ward Requisitions

ReqNum: int Unique

Reqname: Varchar(30)

WardName:Varchar(30)

Wardnum: int

DrugID:int

DrugName:Varchar(30)

Desc. Drug:Varchar(30)

 Dosage:Varchar(30)

Administration:Varchar(30)

Cost:decimal(8,2)

Quantity:int

Date: Date

ChargeNurse:Varchar(30)

ReqNum: Primary Key

Pharmaceutical supplies

drugnum: Int Unique

 Name:Varchar(30)

Desc.:Varchar(30)

Dosage:Varchar(30)

administration:Varchar(30)

quantitystock: int

reorder: int

Cost: decimal (8,4)

DrugNum:primary key

Surgical and Nonsurgical Supplies

Surgitem:Varchar(30)

Nonsurgitems:Varchar(30)

ItemId:int

Name:Varchar(30)

Desc.:Varchar(30)

quantitystock: int

reorder level: int

Cost:decimal(8,4)

ItemId: Primary Key

4.Draw the E-R diagram

Consider the following case study, you are to build a relational database for Wellmeadows Hospital. This case study describes a small hospital called Wellmeadows, which is located in Edinburgh. The Wellmeadows Hospital specializes in the provision of healthcare for elderly people. Listed below is a description of the data recorded, maintained, and accessed by the hospital staff to support the management and day to day operations of the hospital.

**Wards**

The Wellmeadows Hospital has 17 wards with a total of 240 beds available for short and long stay patients, and an outpatient clinic. Each ward is uniquely identified by a number (i.e. - ward 11) and also a ward name (i.e. - Orthopedic), location (i.e. - E block), total number of beds, and a telephone extension number (i.e. - Extn 7711).

**Staff**

The Wellmeadows Hospital has a Medical Director, who has overall responsibility for the management of the hospital. The Medical Director maintains control over the use of the hospital resources (including staff, beds, and supplies) in the provision of cost-effective treatment for all patients. The Wellmeadows Hospital has a Personnel Officer who is responsible for ensuring that the appropriate number and type of staff are allocated to each ward and the outpatient clinic. The information stored on each staff member includes a staff number, name (first and last), full address, telephone number, date of birth, sex, National Insurance Number (NIN), position held, current salary, and salary scale. It also includes each member’s qualifications (which includes date of qualification, type, and name of institution) and work experience details (which includes the name of the organization, position, and start and finish dates). The type of employment contract for each member of staff is also recorded, including the number of hours worked per week, whether the staff member is on a temporary or permanent contract, and the type of salary payment (weekly/monthly). Each ward and the outpatient clinic has a member of staff with the position of Charge Nurse. The Charge Nurse is responsible for overseeing the day to day operations of the ward/clinic. The Charge Nurse is allocated a budget to run the ward and must ensure that all resources are used effectively in the care of patients. The Medical Director works closely with the Charge Nurses to ensure the effective running of the hospital. A Charge Nurse is responsible for setting up a weekly staff rotation, and must ensure that the ward/clinic has the correct number and type of staff on duty at any time during the day or night. In a given week, each staff member is assigned to work an early, late, or night shift. As well as the Charge Nurse, each ward is allocated senior and junior nurses, doctors, and auxiliaries. Specialist staff (i.e. – consultants, physiotherapists) are allocated to several wards or the clinic.

**Patients**

When a patient is first referred to the hospital, he or she is allocated a unique patient number. At this time, additional details of the patient are also recorded including the name (first and last), address, phone number, date of birth, sex, marital status, date registered with the hospital, and the details of the patient’s next of kin.

**Patient’s Next of Kin** The details of a patient’s next of kin are recorded, which includes the next of kin’s full name, relationship to the patient, address, and phone number.

**Local Doctors** Patients are normally referred to the hospital by their local doctor. The details of local doctors are held, including their full name, clinic number, clinic address, and clinic phone number. The clinic number is unique throughout the U.K.

**Patient Appointments**

When a patient is referred to by his or her doctor, the patient is given an appointment for examination by a hospital consultant. Each appointment has a unique number. The details of each patient’s appointment are recorded and include the name and staff number of the consultant undertaking the examination, the date and time of the appointment, and the examination room.

As a result of the examination, the patient is either recommended to attend the outpatient clinic or is placed on a waiting list until a bed can be found in an appropriate ward.

**Outpatients**

The details of outpatients are stored and include the patient number, name (first and last), address, phone number, date of birth, sex, and the date and time of the appointment at the outpatient clinic.

**Inpatients**

The Charge Nurse and other senior medical staff are responsible for the allocation of beds to patients on the waiting list. The details of patients currently placed in a ward and those on the waiting list for a place on a ward are recorded. This includes the patient number, name (first and last name), address, telephone number, date of birth, sex, marital status, the details of the patient’s next-of-kin, the date placed on the waiting list, the ward required, expected duration of stay (in days), date placed in the ward, date expected to leave the ward, and the actual date the patient left the ward, when known. When a patient enters the ward, he or she is allocated a bed with a unique bed number.

**Patient Medication**

When a patient is prescribed medication, the details are recorded. This includes the patient’s name and number, drug number and name, units per day, method of administration (for example, oral, intravenous (IV)), start and finish date. The medication (pharmaceutical supplies) given to each patient is monitored.

**Surgical and Nonsurgical Supplies**

The Wellmeadows Hospital maintains a central stock of surgical (for example, syringes, sterile dressings) and non-surgical (for example, plastic bags, and aprons) supplies. The details of surgical and non-surgical supplies include the item number and name, item description, quantity in stock, reorder level, and cost per unit. The item number uniquely identifies each type of surgical or non-surgical supply. The supplies used by each ward are monitored.

**Pharmaceutical Supplies**

The hospital also maintains a stock of pharmaceutical supplies (for example, antibiotics, and painkillers). The details of pharmaceutical supplies include drug number and name, description, dosage, method of administration, quantity in stock, reorder level, and cost per unit. The drug number uniquely identifies each type of pharmaceutical supply. The pharmaceutical supplies used by each ward are monitored.

**Ward Requisitions**

When required, the Charge Nurse may obtain surgical, non-surgical, and pharmaceutical supplies from the central stock of supplies held by the hospital. This is achieved by ordering supplies for the ward using a requisition form. The information detailed on a requisition form includes a unique requisition number, the name of the member of staff placing the requisition, and the number and name of the ward. Also included is the item or drug number, name, description, dosage and method of administration (for drugs only), cost per unit, quantity required, and date ordered. When the requisitioned supplies are delivered to the ward, the form must be signed and dated by the Charge Nurse who initiated the order.

**Suppliers**

The details of the suppliers of the surgical, non-surgical, and pharmaceutical items are stored. This information includes the supplier’s name and number, address, telephone, and fax numbers. The supplier number is unique to each supplier.