IT 340 Assignment2  
E-R Model (50 Points)  
Due Wednesday, April 21, by 11:59 PM

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You MUST do it in groups with both students in the same section.

Download the document from D2L and change the file name using your MNSU usernames. Keep the following instructions and type your work below.  
You must follow the given style. You could lose up to five points on the style.  
Upload your document to D2L by the due time.

Everyone is required to create GitHub repository for this course, but I need only one GitHub submission for this project. Add the link of GitHub in the D2L Dropbox description box.  
Each group is required to use Microsoft Teams for communication while working on the project.  
You must use the following style to do Phase I of the project.

1. Identify entity types with brief description
   * **Wards:** Wards for Well meadows Hospital patients. Each ward is identified by a number, ward name, location, total number of beds, and a telephone extension number.
   * **Staff:** The Wellmeadows Hospital have different ranks of staffs with their personal information, qualifications, work experience, and employee contract.
   * **Patients:** The patients of the Wellmeadows hospital are allocated a unique patient number when admitted. Their name (first and last), address, phone number, date of birth, sex, marital status, date registered with the hospital, and details of the patients next of kin.
   * **Local Doctors:** Patients are usually referred to the hospital by their local doctor. The details include full name, clinic number, clinic address, and clinic phone number.
   * **Patient Medication:** The details of a patient’s medication when prescribed are always recorded. This includes the patient’s name and number, drug number and name, units per day, method of administration.
   * **Supplies:** These include the surgical and nonsurgical supplies, and pharmaceutical supplies. The details for the surgical and non-surgical supplies include the item number and name, item description, quantity in stock, reorder level, and cost per unit. The details for pharmaceutical supplies include drug number and name, description, dosage, method of administration, quantity in stock, reorder level, and cost per unit.
   * **Ward Requisitions:** When Charge Nurses need supplies, they order supplies from the ward, using a requisition form. The information detailed on the form includes a unique requisition number, name of the member of the staff placing the requisition, the number and name of the ward, item or drug number, name, description, dosage, method of administration (for drugs), cost per unit, quantity required, and date ordered.
   * **Suppliers**: The information for suppliers include surgical, non-surgical, and pharmaceutical items are stored. The information includes the supplier’s name, number, address, telephone, and fax numbers.
2. Identify relationship types with brief description. You must include the multiplicity and attributes if any. Example

Staff has a relationship with requisitions, and supplies

Patient has a relationship with staff, appointments, local doctors, and requisition

Suppliers have a relationship with supplies

1. Describe each entity type in detail

Ward

* + Ward\_number
  + Ward\_location
  + Number\_of\_beds
  + Phone\_Ext

Staff

* + Staff\_ID: Primary key
  + First\_name
  + Last\_name
  + Address
  + Phone\_number
  + Date\_of\_birth
  + NIN: Alternate key
  + Gender
  + Type\_of\_staff
  + Position
  + Salary
  + Salary\_scale
  + Date\_of\_qualifcation
  + Institution\_name
  + Org\_name
  + Position\_held
  + Start\_date
  + End\_date
  + Number\_of\_hours
  + Contract\_type
  + Type\_of\_salary
  + Shift

Patients

* + Patients\_ID
  + First\_name
  + Last\_name
  + Address
  + Phone\_number
  + Date\_of\_birth
  + Gender
  + Marital Status
  + Registration\_date
  + Next\_of\_kin
  + Relationship
  + Kin\_address
  + Kin\_phone\_number
  + Doctor\_name
  + Clinic\_number
  + Clinic\_phone\_number
  + Clinic\_address

Patient’s Next of Kin

* + Kins full name
  + Relationship to patient
  + Address
  + Phone Number

Local Doctors

* + Doctors full name: Composite (firstName, lastName)
  + Clinic number
  + Clinic address
  + Clinic phone number

Appointments

* + App\_ID
  + Staff\_ID
  + Patients\_ID
  + Ward\_number
  + Date\_of\_app
  + Time\_of\_app
  + Room\_numer
  + Status
  + Type\_of\_app
  + Duration
  + Ward\_date
  + Leave\_date
  + Release\_date
  + Bed\_number

Medication

* + Medical\_number
  + Patients\_ID
  + Units\_per\_day
  + Method
  + Start\_Date
  + End\_date

Surgical/ non-surgical supplies

* + Item\_ID
  + Sup\_ID
  + Item\_name
  + Item\_desc
  + Quantity
  + Reorder\_level
  + Cost\_per\_unit

Pharmacy

* + Drug\_ID : Primary Key
  + Sup\_ID: Foreign key
  + Drug\_name
  + Drug\_desc
  + Dosage
  + Method
  + Quantity
  + Reorder\_level
  + Cost\_per\_unit

Ward Requisition

* + Reg\_ID: Primary key
  + Staff\_ID: Foreign key
  + Ward\_ID: Foreign key
  + Drug\_ID
  + Item\_ID
  + Reg\_type
  + Quantity
  + Order\_date
  + Delivery\_date

Supplier

* + Sup\_ID: Primary key
  + First\_name
  + Last\_name
  + Address
  + Phone\_number
  + Fax\_number

1. Draw the E-R diagram

<https://lucid.app/lucidchart/invitations/accept/inv_61225395-0276-4099-b3e9-2ced757aac89?viewport_loc=-315%2C-176%2C3185%2C1718%2C0_0>

Diagram, schematic

Description automatically generated

IT 340 – Project  
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.

Here are some helpful figures illustrating the tables:

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