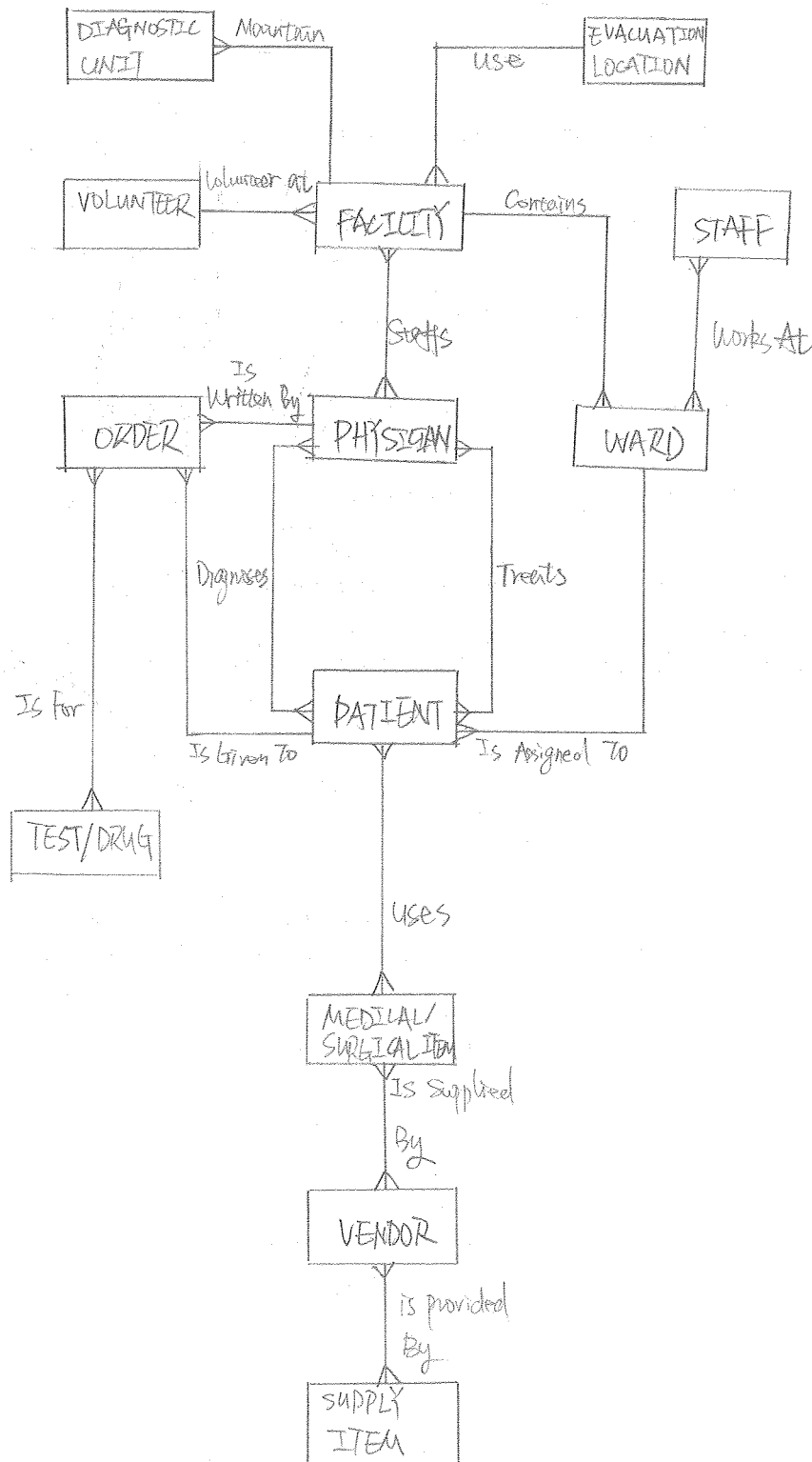P8b

P2. User views of interest in the hospital might include:

Patient Room : Patient, room No, location, type
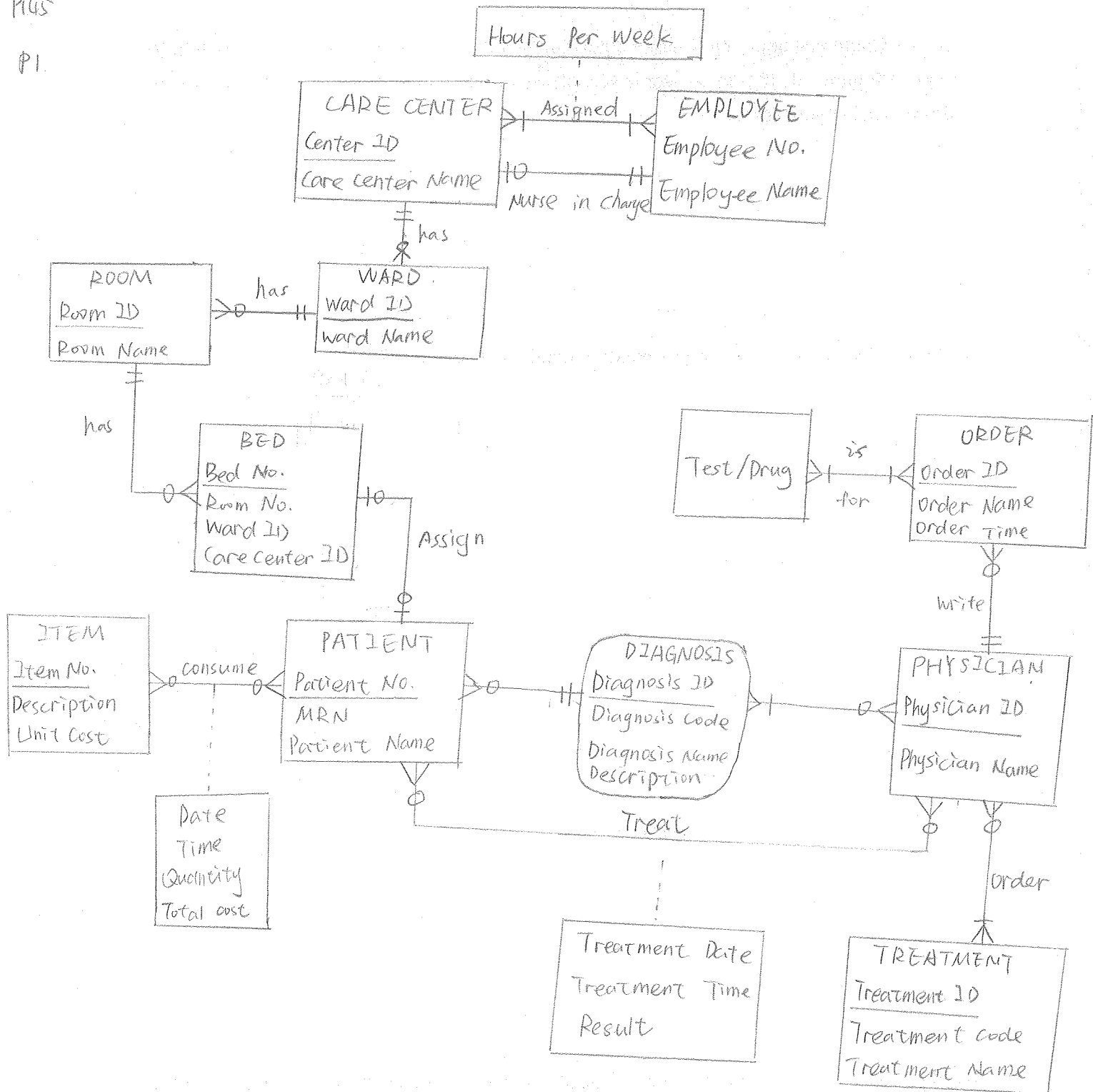
Patient Medication : Patient, medication name, dosage, start, stop
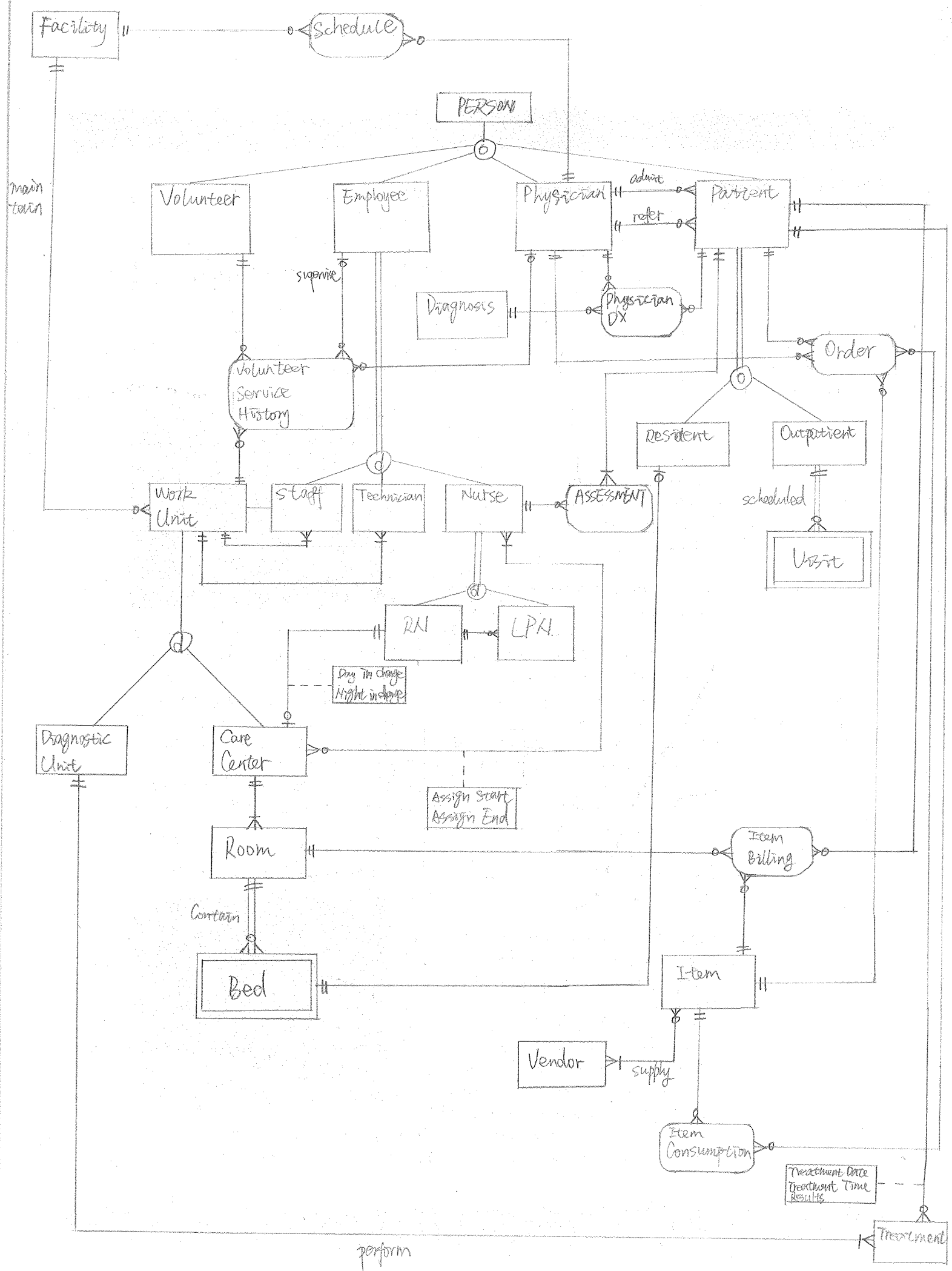
B(a).

P145

P1.

P2. 1. Each Care Center has one or more Wards. Each Ward has one or more rooms. Each room has one or more beds. A resident patient is assigned to one bed in one room in one ward in one care center. A bed may have zero or one patient assigned.

2. Each Care Center has one charge nurse. Each charge nurse is a hospital employee.

3. Each hospital employee is assigned to one or more care centers. Each care center will have one or more hospital employee assigned.

4. Each Physician writes one or more orders or not write order. Each order was writed by one physician.

5. Each Patient was diagnosised by one or more physician. Each physician diagnosis one or more patient

Entity-Relationship Diagram (hand-drawn):

- Facility — Schedule — PERSON
- maintain (Facility to Work Unit)
- PERSON subtypes: Volunteer, Employee, Physician, Patient
- Physician — admit — Patient
- Physician — refer — Patient
- Physician — Diagnosis — Physician DX
- Employee — supervise
- Volunteer — Volunteer Service History
- Employee subtypes: Staff, Technician, Nurse
- Nurse subtypes: RN, LPN
- Day In Charge / Night in charge
- Nurse — ASSESSMENT — Resident
- Patient subtypes: Resident, Outpatient
- Outpatient — scheduled — Visit
- Patient — Order
- Work Unit subtypes: Diagnostic Unit, Care Center
- Care Center — Room — Bed (Contain)
- Assign Start / Assign End
- Room — Item Billing — Item
- Item — Item Consumption
- Vendor — supply — Item
- Treatment Date / Treatment Time / Results
- Diagnostic Unit / perform — Treatment

PERSON

Person ID	Person Name	Person Street Address	Person City	Person State	Person Zip	Person Home Phone	Person Work Phone	Person DOB	Person Email	Person type

VOLUNTEER

Volunteer ID	VEC Last Name	VEC First Name	VEC Relationship	VEC Address	VEC Phone	V Employer	V Employ Address	V Employ Position	V Employ Start Date

V Employ End Date	Had MVCH Service	Had Vol Experience	Why Volunteer

VOL EXPERIENCE

VE ID	Vol ID	Vol Exp Info

VOL MVCH SERVICE

VMS ID	MVCH Service Info	Vol ID

VOL LANGUAGE

VL ID	Vol ID	Language

VOL SKILL

VS ID	Vol ID	Skill

VOL INTEREST

VI ID	Vol ID	Interest

VOL AVAILABILITY

VA ID	Vol ID	Day of week	Portion of Day

VOL REF INFO

VRI ID	Vol ID	VRI Last Name	VRI First Name	VRI Relationship	VRI Phone	VRI Address	VRI City	VRI State	VRI Zip

VOL SERV HISTORY

Emp ID PK in EMPLOYEE
Unit Name PK in WORK UNIT

VSH ID	Vol ID	Physician ID	Emp ID	Service Begin Date	Service End Date	Service Hrs Worked	Unit Name

PHYSICIAN

Physician ID	DEA No	Pager No	Specialty

Facility ID PK in FACILITY

SCHEDULE

Schedule ID	Physician ID	Facility ID	Sched Begin	Sched End

DIAGNOSIS

Diagnosis Code	Diagnosis Name

PHYSICIAN DX

PD ID	Physician ID	Patient ID	Diagnosis Code	Diagnosis Date	Diagnosis Tiem

PATIENT

Patient ID	Contact Date	EC Last Name	EC First Name	EC Relationship	EC Address	EC Phone	Company Name	Policy No	Group No

Company Phone	Sub Last Name	Sub First Name	Sub Relationship	Sub Address	Sub Phone	Admit Phys	Refer Phys	Patient type

OUTPATIEN

O Patient ID

VISIT

Visit No	O Patient ID	Visit Date	Visit Time	Visit Reason

RESIDENT

R Patient ID	Bed No	Room No	Date Admitted	Date Discharged

BED

Bed No	Room No

ROOM

Room No	CC Unit Name

CARE CENTER

CC Unit Name	Day in Charge	Night in Charge

CC ASSIGNMENT

CCA ID	Nurse ID	CC Unit Name	Assign Start	Assign End	Hrs Worked

NURSE

Nurse ID	Cert Degree	State License No	Nurse Specialty	Nurse Type

RN

RN ID

LPN

LPN ID	Supervisor

ASSESSMENT

Assessment ID	Patient ID	Nurse ID	Assessment Date	Assessment Time	Comments Patient Weight	Patient BP	Patient pulse	Patient temperature

Person ID PK
in PERSON

FIELD CERTIFICATION

Nurse ID PK
in NURSE

FC ID	Nurse ID	FC Description

EMPLOYEE

Emp ID	Date Hired	Emp Type

STAFF

Staff ID	Job Class	Unit Name

TECHNICIAN

Technician ID	Unit Name

TECHNICIAN SKILL

TS ID	Technician ID	TS Skill

WORK UNIT

Unit Name	Facility ID	Floor	Unit Type

FACILITY

Facility ID	Facility Name

DIAGNOSTIC UNIT

DX Unit Name

TREATMENT

Trt Code	Tre Name	DX Unit Name

TREATMENT ORDER

TO ID	Order ID	Trt Date	Trt Time	Trt Code	Results

ORDER

Patient ID PK
in PATIENT

Physician ID PK
in PHYSICIAN

Order ID	Patient ID	Physician ID	Item No	Order Date	Order Time

ITEM

Item No	Item Desc	Item Unit Cost

INVENTORY

Inv ID	Vendor ID	Item No

VENDOR

Vendor ID	Vendor Name

ITEM BILLING

Patient ID
in PATIENT

Room No PK
in ROOM

IB ID	Patient ID	Room No	Item No	Start Date	End Date

ITEM CONSUMPTION

Patient ID PK
in PATIENT

Item No PK
in ITEM

IC ID	Patient ID	Consume Qty	Item No	Consume Date	Consume Time

```sql
CREATE TABLE PERSON
(
PersonID                VARCHAR(10) PRIMARY KEY,
PersonName              VARCHAR(40),
PersonStrAddress        VARCHAR,
PersonCity              VARCHAR,
PersonState             CHAR,
PersonZip               VARCHAR,
PersonHomePhone         VARCHAR,
PersonWorkPhone         VARCHAR,
PersonDOB               Date,
PersonEMail             VARCHAR,
PersonType              VARCHAR
);

CREATE TABLE VOLUNTEER
(
VolID                   VARCHAR PRIMARY KEY
Constraint VOLUNTEER_VolID_FK REFERENCES PERSON(PersonID),
VECLastName             VARCHAR,
VECFirstName            VARCHAR,
VECRelationship         VARCHAR,
VECAddress              VARCHAR,
VECPhone                VARCHAR,
VEmployer               VARCHAR,
VEmpoyerAddress         VARCHAR,
VEmployPosition         VARCHAR,
VEmployStartDate        Date,
VEmployEndDate          Date,
HadMVCHSvc              CHAR,
HadVolExp               CHAR,
WhyVolunteer            VARCHAR
);

CREATE TABLE VOLEXPERIENCE
(
VEID                    VARCHAR PRIMARY KEY,
VolID                   VARCHAR
Constraint VOLEXPERIENCE_VolID_FK REFERENCES VOLUNTEER(VolID),
VolunteerExpInfo        VARCHAR
);

CREATE TABLE VOLMVCHSERVICE
(
```

```
VMSID                  VARCHAR PRIMARY KEY,
MVCHServiceInfo        VARCHAR,
VolID                  VARCHAR
Constraint VOLMVCHSERVICE_VolID_FK references Volunteer(VolID));

CREATE TABLE VOLLANGUAGE
(
VLID                   VARCHAR PRIMARY KEY,
Language               VARCHAR,
VolID                  VARCHAR
Constraint VL_VolID_FK references Volunteer(VolID));

CREATE TABLE VOLSKILL
(
VSID                   VARCHAR PRIMARY KEY,
Skill                  VARCHAR,
VolID                  VARCHAR
Constraint VS_VolID_FK references Volunteer(VolID));

CREATE TABLE VOLINTEREST
(
VIID                   VARCHAR PRIMARY KEY,
Interest               VARCHAR,
VolID                  VARCHAR
Constraint VI_VolID_FK references Volunteer(VolID));

CREATE TABLE VOLAVAILABILITY
(
VAID                   VARCHAR PRIMARY KEY,
DayofWeek              VARCHAR,
PortionofDay           VARCHAR,
VolID                  VARCHAR
CONSTRAINT VA_VolID_FK REFERENCES VOLUNTEER(VolID));


CREATE TABLE VOLREFINFO
(
VRIID                  VARCHAR PRIMARY KEY,
VRILastName            VARCHAR,
VRIFirstName           VARCHAR,
VRIRelationship        VARCHAR,
VRIPhone               VARCHAR,
VRIAddress             VARCHAR,
VRICity                VARCHAR,
```

```sql
VRIState               VARCHAR,
VRIZip                 VARCHAR,
VolID                  VARCHAR
CONSTRAINT VRI_VolID_FK REFERENCES VOLUNTEER(VolID));


CREATE TABLE VOLSERVHISTORY
(
VSHID                  VARCHAR PRIMARY KEY,
VolID                  VARCHAR
CONSTRAINT VSH_VolID_FK REFERENCES VOLUNTEER(VolID),
PhysicianID            VARCHAR
CONSTRAINT VSH_PhysicianID_FK REFERENCES PHYSICIAN(PhysicianID),
EmpID                  VARCHAR
CONSTRAINT VSH_EmpID_FK REFERENCES EMPLOYEE(EmpID),
ServiceBeginDate       Date,
ServiceEndDate         Date,
ServiceHrsWorked       VARCHAR,
UnitName               VARCHAR
CONSTRAINT VSH_UnitName_FK REFERENCES WORKUNIT(UnitName));


CREATE TABLE PHYSICIAN
(
PhysicianID            VARCHAR PRIMARY KEY
Constraint PHY_PhysicianID_FK references PERSON(PersonID),
DEANo                  VARCHAR,
PagerNo                VARCHAR,
Specialty              VARCHAR
);


CREATE TABLE SCHEDULE
(
ScheduleID             VARCHAR PRIMARY KEY,
PhysicianID            VARCHAR
Constraint SCH_PHYID_FK REFERENCES Physician(PhysicianID),
FacilityID             VARCHAR
Constraint SCH_FID_FK REFERENCES Facility(FacilityID),
SchedBegin             Date,
SchedEnd               Date
);


CREATE TABLE DIAGNOSIS
(
DiagnosisCode          VARCHAR PRIMARY KEY,
DiagnosisName          VARCHAR);
```

```
CREATE TABLE PHYSICIANDX
(
PDID                    VARCHAR PRIMARY KEY,
PhysicianID             VARCHAR
Constraint PDX_PHYID_FK references Physician(PhysicianID),
PatientID               VARCHAR
Constraint PDX_PATID_FK references Patient(PatientID),
DiagnosisCode           VARCHAR
Constraint PDX_DXCODE_FK references Diagnosis(DiagnosisCode),
DiagnosisDate           Date,
DiagnosisTime           Timestamp
);

CREATE TABLE PATIENT
(
PatientID               VARCHAR PRIMARY KEY
Constraint PAT_PATID_FK references PERSON(PersonID),
ContactDate             Date,
ECLastName              VARCHAR,
ECFirstName             VARCHAR,
ECRelationship          VARCHAR,
ECAddress               VARCHAR,
ECPhone                 VARCHAR,
CompanyName             VARCHAR,
PolicyNo                VARCHAR,
GroupNo                 VARCHAR,
CompanyPhone            VARCHAR,
SubLastName             VARCHAR,
SubFirstName            VARCHAR,
SubRelationship         VARCHAR,
SubAddress              VARCHAR,
SubPhone                VARCHAR,
AdmitPhys               VARCHAR
Constraint PAT_ADPHYS_FK references Physician(PhysicianID),
ReferPhys               VARCHAR
Constraint PAT_REFPHYS_FK references Physician(PhysicianID),
Patienttype             VARCHAR
);

CREATE TABLE OUTPATIENT
(
OPatientID              VARCHAR PRIMARY KEY
Constraint OP_OPID_FK references Patient(PatientID));
```

```
CREATE TABLE VISIT
(
VisitNo                 VARCHAR PRIMARY KEY,
OPatientID              VARCHAR
Constraint VIS_OPID_FK references OUTPATIENT(OPatientID),
VisitDate               Date,
VisitTime               Timestamp,
VisitReason             VARCHAR
);

CREATE TABLE RESIDENT
(
RPatientID              VARCHAR PRIMARY KEY
Constraint RES_RID_FK REFERENCES PATIENT(PatientID),
BedNo                   VARCHAR,
RoomNo                  VARCHAR,
Constraint RES_ROOMBED_FK FOREIGN KEY(BedNo, RoomNo) references Bed(BedNo, RoomNo),
DateAdmitted            Date,
DateDisCharged          Date
);

CREATE TABLE BED
(
BedNo                   VARCHAR,
RoomNo                  VARCHAR
Constraint BED_RNO_FK references ROOM(RoomNo)
);

CREATE TABLE ROOM
(
RoomNo                  VARCHAR PRIMARY KEY,
CCUnitName              VARCHAR
Constraint ROOM_CC_FK REFERENCES CARECENTER(CCUnitName)
);

CREATE TABLE CARECENTER
(
CCUnitName              VARCHAR PRIMARY KEY
Constraint CC_CCNAME_FK references WORKUNIT(UnitName),
DayinCharge             VARCHAR
Constraint CC_AMID_FK REFERENCES RN(RNID),
NightinCharge           VARCHAR
Constraint CC_PMID_FK REFERENCES RN(RNID));
```

```sql
CREATE TABLE CCASSIGNMENT
(
CCAID                   VARCHAR PRIMARY KEY,
NurseID                 VARCHAR
Constraint CCA_NID_FK references NURESE(NurseID),
CCUnitName              VARCHAR
Constraint CCA_CCNAME_FK references CARECENTER(CCUnitName),
AssignStart             Date,
AssignEnd               Date,
HrsWorked               Number
);

CREATE TABLE NURSE
(
NurseID                 VARCHAR PRIMARY KEY
Constraint NUR_NID_FK references EMPLOYEE(EmpID),
CertDegree              VARCHAR,
StateLicenseNo          VARCHAR,
NurseSpecialty          VARCHAR,
NurseType               CHAR
);

CREATE TABLE RN
(
RNID                    VARCHAR PRIMARY KEY
Constraint RN_RNID_FK references NURSE(NurseID));

CREATE TABLE LPN
(
LPNID                   VARCHAR PRIMARY KEY
Constraint LPN_LPNID_FK references NURSE(NurseID),
Supervisor              VARCHAR
Constraint LPN_RNID_FK references RN(RNID));

CREATE TABLE ASSESSMENT
(
AssessmentID            VARCHAR PRIMARY KEY,
AssessmentDate          Date,
AssessmentTime          Timestamp,
Comments                Varchar,
PatientWeight           Number,
PatientBP               Varchar,
Patientpulse            Number,
Patienttemperature      Number,
```

```
PatientID                  Varchar
Constraint AS_PATID_FK references PATIENT(PatientID),
NurseID                    Varchar
Constraint AS_NID_FK references NURSE(NurseID));

CREATE TABLE FIELDCERTIFICATION
(
FCID                       Varchar primary key,
FCDescription              Varchar,
NurseID                    Varchar
Constraint FC_NID_FK references NURSE(NurseID));

CREATE TABLE EMPLOYEE
(
EmpID                      Varchar primary key
Constraint EMP_EmpID_FK references PERSON(PersonID),
DateHired                  Date,
EmpType                    Char);

CREATE TABLE STAFF
(
StaffID                    Varchar primary key
Constraint STF_STID_FK references EMPLOYEE(EmpID),
JobClass                   Varchar,
UnitName                   Varchar
Constraint STF_UName_FK references WORKUNIT(UnitName));

CREATE TABLE TECHNICIAN
(
TechnicianID               Varchar primary key
Constraint T_TID_FK references EMPLOYEE(EmpID),
UnitName                   Varchar
Constraint T_UName_FK references WORKUNIT(UnitName));

CREATE TABLE TECHNICIANSKILL
(
TSID                       Varchar primary key,
TechnicianID               Varchar
Constraint TS_TID_FK references TECHNICIAN(TechnicianID),
TSSkill                    Varchar);

CREATE TABLE WORKUNIT
(
UnitName                   Varchar primary key,
```

```
Floor                   Varchar,
FacilityID              Varchar
Constraint WU_FID_FK references FACILITY(FacilityID),
UnitType                Char);

CREATE TABLE FACILITY
(
FacilityID              Varchar primary key,
FacilityName            Varchar);

CREATE TABLE DIAGNOSTICUNIT
(
DXUnitName              Varchar primary key
Constraint DU_DXName_FK references WORKUNIT(UnitName));

CREATE TABLE TREATMENT
(
TrtCode                 Varchar primary key,
TreatmentName           Varchar,
DXUnitName              Varchar
Constraint TRT_DXName_FK references DIAGNOSTICUNIT(DXUnitName));

CREATE TABLE TREATMENTORDER
(
TOID                    Varchar primary key,
TrtCode                 Varchar
Constraint TO_TCODE_FK references TREATMENT(TrtCode),
Results                 Varchar,
TrtDate                 Date,
TrtTime                 Timestamp,
OrderID                 Varchar
Constraint TO_ORID_FK references ORDER(OrderID));

CREATE TABLE ORDER
(
OrderID                 Varchar primary key,
PatientID               Varchar
Constraint OR_PATID_FK references PATIENT(PatientID),
PhysicianID             Varchar
Constraint OR_PHYID_FK references PHYSICIAN(PhysicianID),
ItemNO                  Varchar
Constraint OR_ITNO_FK references ITEM(ItemNo),
OrderDate               Date,
OrderTime               Timestamp);
```

```
CREATE TABLE ITEM
(
ItemNo                  Varchar primary key,
ItemDesc                Varchar,
UnitCost                Number);


CREATE TABLE INVENTORY
(
INVID                   Varchar primary key,
ItemNo                  Varchar
Constraint INV_ITNO_FK references ITEM(ItemNo),
VendorID                Varchar
Constraint INV_VID_FK references VENDOR(VendorID));

CREATE TABLE VENDOR
(
VendorID                Varchar primary key,
VendorName              Varchar);

CREATE TABLE ITEMBILLING
(
IBID                    Varchar primary key,
ItemNo                  Varchar(5)
Constraint IB_ITNO_FK references ITEM(ItemNo),
RoomNo                  Varchar(5)
Constraint IB_RNO_FK references ROOM(RoomNo),
PatientID               Varchar(5)
Constraint IB_PATID_FK references PATIENT(PatientID),
StartDate               Date,
EndDate                 Date,
Cost                    Number);


CREATE TABLE ITEM_CONSUMPTION (
ICID                    Varchar primary key,
OrderID                 Varchar references Orders(OrderID),
ItemNo                  Varchar
Constraint IC_ITNO_FK references ITEM(ItemNo),
PatientID               Varchar
Constraint IC_PATID_FK references PATIENT(PatientID),
ConsumeQty              Number,
ConsumeDate             Date,
ConsumeTime             Timestamp);
```

```
CREATE index Res_Date_Adm_Idx on RESIDENT(DateAdmitted);
CREATE index Res_Date_Dischg_Idx on RESIDENT(DateDischarged);
CREATE index Dr_Dx_Idx on PHYSICIANDX(PhysicianID);
CREATE index Dxcode_Idx on PHYSICIANDX(DiagnosisCode);
CREATE index Patient_Dx_Idx on PHYSICIANDX(PatientID);
CREATE index Item_Cost_Idx on ITEM(ItemUnitCost);
CREATE index Consume_Qty_Idx on ITEMCONSUMPTION(ConsumeQty);
CREATE index TrtOrder_Date_Idx on TREATMENTORDER(TrtDate);
CREATE index Odate_Index on ORDER(OrderDate);
```