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DATABASE DESIGN FOR CLINICAL INFORMATION SYSTEM

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CIS- 673 PRINCIPLES OF DATABASE DESIGN

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INTRODUCTION

A Clinical Information System (CIS) is a computer based system that is designed for collecting, storing, manipulating and making available clinical information important to the healthcare delivery process.

Clinical Information Systems provide a clinical data repository that stores clinical data such as the patient's history of illness and the interactions with care providers. The repository encodes information capable of helping physicians decide about the patient's condition, treatment options, and wellness activities as well as the status of decisions, actions undertaken and other relevant information that could help in performing those actions.

This database helps to store the interactions between physicians and patients especially. The scope of the patients is well maintained by holding the track of their prescriptions and the drug prescribed.

DATABASE REQUIREMENTS

Emp_Hospital – Employee has employee ID (unique), Name as First_name, Mid_Name, Last_Name and Address. Employee has two subtypes Physicians and nurse. Few physicians supervise other physicians and few nurses supervise other nurses. Both physicians and nurse perform their respective roles in the hospital.

Dept_Hospital-Department has its ID (unique) and department name, every employee works for one department and every department has one manager.

Physician – Physicians have employee ID, super ID and salary. Few physicians supervise other physicians.

Nurse – Degree, job assigned and salary are its attributes. Few nurses supervise other nurses.

Patient –Every patient visit hospital and are diagnosed by physicians. Patient table has ID, Disease, address and pin code as its attributes. Patient also has symptoms which is multivalued.

Medicine-Every physician prescribes medicines to patients where every medicine table has drug code and disease as attributes.

Schedule- Every physician has their own schedule, Schedule has schedule ID (weak key), start time, end time and surgery.

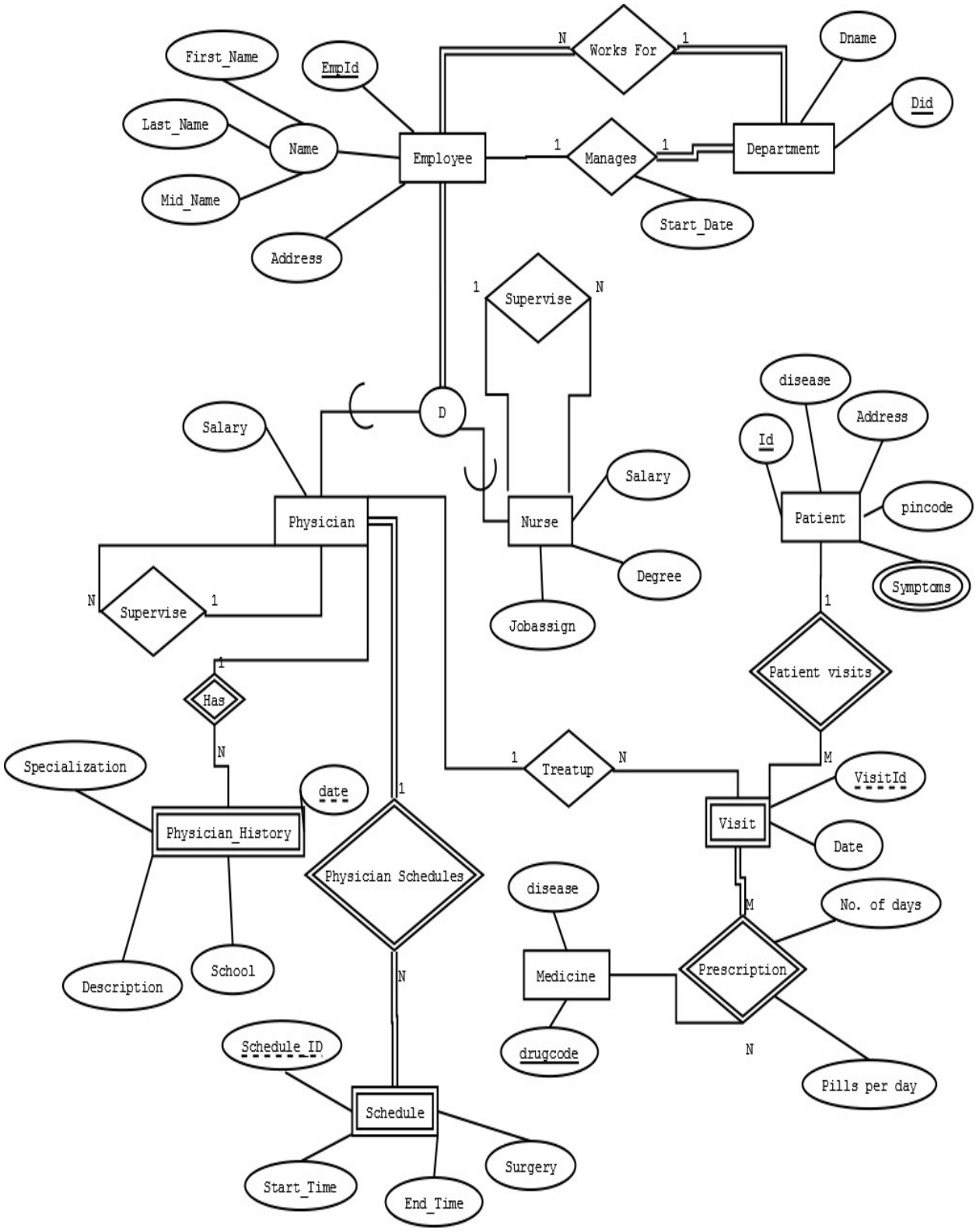
Visit (weak entity) - Every patient visits a physician on particular date and every physician has prescribed a prescription to every patient. It has visit ID (weak key) and Vdate.

Physician History (weak entity) – It maintains study history of an individual physicians. It has specialization, school, description and date (weak key).

Symptoms – It is multivalued attribute of patient table.

Prescription- Patients get prescription from physicians. It has no.of days, pills per day as its attributes.

EER Diagram


First_Name
EmpId
Last_Name
Name
Mid_Name
Address
Employee
N
Works For
1
Dname
Did
Department
1
Manages
1
Start_Date
1
Supervise
N
D
Salary
Physician
Nurse
Salary
Degree
Jobassign
N
Supervise
1
1
Has
N
Specialization
date
Physician_History
Description
School
1
Physician Schedules
N
Schedule_ID
Schedule
Start_Time
End_Time
Surgery
1
Treatup
N
disease
Id
Address
Patient
pincode
Symptoms
1
Patient visits
M
VisitId
Visit
Date
M
No. of days
disease
Medicine
drugcode
Prescription
N
Pills per day

RELATIONAL SCHEMA

Emp_Hospital (EmpID, First_name, Mid_Name, Last_Name, Address, DepNO)

Dept_Hospital (DepID, DepName, MgrID, MgrStartdate)

Physician (EmpID, Super ID, Salary)

Nurse (EmpID, degree, Job_assigned, Salary, Super ID)

Patient (PID, disease, address, Pin Code)

Medicine (Drug Code, disease)

Schedule (EmpID, Schedule ID, Surgery, Start Time, End Time)

Visit (PID, Visit ID, Drug ID, EmpID, Vdate)

Symptoms (PID, Symptom)

Prescription (Drug ID, PID, Visit ID, presdays, pillsperday)

Physician History (EmpID, HDate, Specialization, School, Description)

INTEGRITY CONSTRAINT

IC Name **and Table**	**IC Type**	**Statement**	**Page # where implemented**	**Page #where tested**
`pIC1` **Employee**	**Key**	Employees are identified by empID	**A1**	**A 14**
Foreign key **Department**	**Foreign**	Department ID is associated with employee table.	**A 4**	**A 15**
`patIC2` **Patient**	**1 attribute**	Check if patient pin code must contain 5 digits	**A 6**	**A 15**
`nurIC2` **Nurse**	**2 attribute,1 row**	Check if JobAsigned= 'Forensic' salary should be greater than 100000	**A 6**	**A 15**
`IC_SALARY` **Nurse**	**2row, 1 table**	Upon updating the salary of a nurse, verify if the supervisee salary is less than supervisor	**A 6**	**A 15**
`dIC_TA` **Patient, Medicine**	**2 table, 1C**	Check whether the inserted or updated drug in the visit table is presented in Medicine Table	**A 6- A 7**	**A 15**

		disease of the patient.		