Semester	T.E. Semester V – Computer Engineering
Subject	Microprocessor
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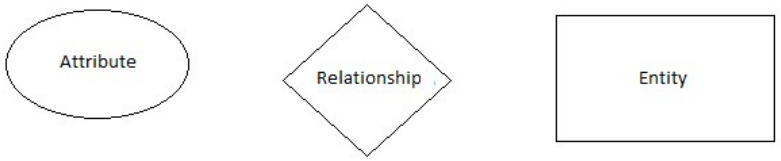
Experiment Number	1	
Experiment Title	Identify a case study, its detailed statement and design an ER diagram for the same.	
Resources / Apparatus Required	Hardware: Computer system	Software: Drawing tools (draw.io)
Description	**Entity – Relationship Diagram (ER)** An **entity–relationship model** (**ER model** for short) describes interrelated things of interest in a specific domain of knowledge. A basic ER model is composed of entity types (which classify the things of interest) and specifies relationships that can exist between instances of those entity types. The ER model becomes an abstract data model, that defines a data or information structure which can be implemented in a database, typically a relational database. In a simple relational database implementation, each row of a table represents one instance of an entity type, and each field in a table represents an attribute type. In a relational database a relationship between entities is implemented by storing the primary key of one entity as a pointer or "foreign key" in the table of another entity	

English grammar structure	ER structure
Common noun	Entity type
Proper noun	Entity
Transitive verb	Relationship type
Intransitive verb	Attribute type
Adjective	Attribute for entity
Adverb	Attribute for relationship



Convention for drawing ER diagram

TITLE: HOSPITAL MANAGEMENT SYSTEM

AIM:

The aim of this case study is to design and develop a database for the hospital to maintain the records of various departments, rooms, and doctors in the hospital. It also maintains records of the regular patients, patients admitted in the hospital, the check up of patients done by the doctors, the patients that have been operated, and patients discharged from the hospital.

Table Description(ENTITIES):

Following are the tables along with constraints used in Hospital Management database.

1. **DEPARTMENT:** This table consists of details about the various departments in the hospital. The information stored in this table includes department name, department location, and facilities available in that department.
Constraint: Department name will be unique for each department.

2. **ALL_DOCTORS:** This table stores information about all the doctors working for the hospital and the departments they are associated with. Each doctor is given an identity number starting with DR or DC prefixes only.
Constraint: Identity number is unique for each doctor and the corresponding department should exist in DEPARTMENT table.

	3. **DOC_REG:** This table stores details of regular doctors working in the hospital. Doctors are referred to by their doctor number. This table also stores personal details of doctors like name, qualification, address, phone number, salary, date of joining, etc. **Constraint**: Doctor's number entered should contain DR only as a prefix and must exist in ALL_DOCTORS table. 4. **DOC_ON_CALL:** This table stores details of doctors called by hospital when additional doctors are required. Doctors are referred to by their doctor number. Other personal details like name, qualification, fees per call, payment due, address, phone number, etc., are also stored. **Constraint**: Doctor's number entered should contain DC only as a prefix and must exist in ALL_DOCTORS table. 5. **PAT_ENTRY:** The record in this table is created when any patient arrives in the hospital for a check up. When patient arrives, a patient number is generated which acts as a primary key. Other details like name, age, sex, address, city, phone number, entry date, name of the doctor referred to, diagnosis, and department name are also stored. After storing the necessary details patient is sent to the doctor for check up. **Constraint**: Patient number should begin with prefix PT. Sex should be *M* or *F* only. Doctor's name and department referred must exist. 6. **PAT_CHKUP:** This table stores the details about the patients who get treatment from the doctor referred to. Details like patient number from patient entry table, doctor number, date of check up, diagnosis, and treatment are stored. One more field status is used to indicate whether patient is admitted, referred for operation or is a regular patient to the hospital. If patient is admitted, further details are stored in PAT_ADMIT table. If patient is referred for operation, the further details are stored in PAT_OPR table and if patient is a regular patient to the hospital, the further details are stored in PAT_REG table. **Constraint**: Patient number should exist in PAT_ENTRY table and it should be unique. 7. **PAT_ADMIT:** When patient is admitted, his/her related details are stored in this table. Information stored includes patient number, advance payment, mode of payment, room number, department, date of admission, initial condition, diagnosis, treatment, number of the doctor under whom treatment is done, attendant name, etc. **Constraint**: Patient number should exist in PAT_ENTRY table. Department, doctor number, room number must be valid.

	8. **PAT_DIS:** An entry is made in this table whenever a patient gets discharged from the hospital. Each entry includes details like patient number, treatment given, treatment advice, payment made, mode of payment, date of discharge, etc. **Constraint**: Patient number should exist in PAT_ENTRY table. 9. **PAT_REG:** Details of regular patients are stored in this table. Information stored includes date of visit, diagnosis, treatment, medicine recommended, status of treatment, etc. **Constraint**: Patient number should exist in patient entry table. There can be multiple entries of one patient as patient might be visiting hospital repeatedly for check up and there will be entry for patient's each visit. 10. **PAT_OPR:** If patient is operated in the hospital, his/her details are stored in this table. Information stored includes patient number, date of admission, date of operation, number of the doctor who conducted the operation, number of the operation theater in which operation was carried out, type of operation, patient's condition before and after operation, treatment advice, etc. **Constraint**: Patient number should exist in PAT_ENTRY table. Department, doctor number should exist or should be valid. 11. **ROOM_DETAILS:** It contains details of all rooms in the hospital. The details stored in this table include room number, room type (general or private), status (whether occupied or not), if occupied, then patient number, patient name, charges per day, etc. **Constraint**: Room number should be unique. Room type can only be *G* or *P* and status can only be *Y* or *N.*
Conclusion	ER diagram is a method to visually describe a relational database. It helps in designing the database and makes understanding relationships between entities much easier as compared to the table format.

ER DIAGRAM FOR HOSPITAL DATABASE MANAGEMENT SYSTEM: