The University of Lahore, CS&IT Department

**Database System**

**Lab Project**

**Start Date:** 21/04/2021 **Section:**  D **Total Marks:** 7

**Due Date:** 05/05/2021 **Program:** BSCS

**Instructions**

1. Understanding of the problems is part of the assignments. So no query please.
2. You will get Zero marks if found any type of cheating.
3. 25 % deduction of over marks on the one day late submission after due date

**Requirements you should be completed**

1. Understand given case study for hospital management system and make Entity Relationship Diagrams (ERD). (**Marks 2**)
2. Write relational Database Schema for Case Study also tables creation SQL quires for all tables given. (**Marks 1**)
3. There will be two forms interact with hospital management system. One inserts all patient information in all patient related tables and second inserts doctors detail in all doctors related tables through web interface. (**Marks 2**)
4. Retrieve all patients details from all patients related tables and display in single view at page “Patient Record” . Retrieve all doctors details from all doctors related tables and display in single view at page “Doctors Record”. (**Marks 2**)

**Hospital Management System Case Study**

**Aim:**  The University of Lahore Teaching Hospital is a multi-specialty advance hospital that have number of medical departments, doctors, rooms, nurses, compounders, and other non –medical staff working in the hospital. Patients having different kinds of disorders come toward the hospital and get treatment from their concerned doctors. If mandatory get admitted in the hospital and discharged after the completion of treatment procedure.

The purpose of given case study that the student will design and develop a database for the University of Lahore Teaching hospital to maintain the records of various medical departments ,doctors, nurses and rooms in the hospital. Database maintains track history of the regular patients, patients get admitted in the hospital and checkup of patients done by the doctors, the patients that have been operated, and patients discharged from the hospital.

**Description**: Consider The University of Lahore Teaching has the number of medical departments such as Optometry, Cardiology, Emergency, Gynecology, Dental, Anesthetics, I.C.U. etc. There is an reception for out patient department at entrance of hospital where patients come and get a token or card (that is, entry token of the patient) for checkup or treatment procedure from the concerned doctor. After the checkup concerned doctor prescribe any medicine or admits the patient in the concerned department. The patient can choose either private or general room according to his/her need. But before getting admission in the hospital, the patient has to fulfill certain formalities of the hospital like room charges, etc. After the treatment is completed, the doctor discharges the patient. Before discharging from the hospital, the patient again has to complete certain formalities of the hospital like balance charges, test charges, operation charges (if any), blood charges, doctors’ charges, etc. Next we talk about the doctors of the hospital. There are two types of the doctors in the hospital, namely, *regular doctors* and *call on doctors*. Regular doctors are those doctors who come to the hospital daily. Calls on doctors are those doctors who are called by the hospital if the concerned doctor is not available.

**Table Descriptions:**

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

1. **DEPARTMENT:** This table having of explanation about the various medical departments in University of Lahore Teaching hospital. The information will store in this table includes department name, department location, and facilities available in that department.

***Constraint***: Department name will be unique for each department.

1. **ALL\_DOCTORS:** This table stores details about all the doctors working in University of Lahore Teaching hospital and the departments they are associated with. Each doctor is allotted an identity ID starting with DR or DC prefixes only.

***Constraint***: Identity number is unique for each doctor and the corresponding department should exist in DEPARTMENT table.

1. **DOC\_REG:** This table stores information of regular doctors working in University of Lahore Teaching hospital. Doctors are referred to by their doctor ID. This table also stores personal information of doctors like doctor 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.

1. **DOC\_ON\_CALL:** This table stores information about doctors called by hospital when any additional doctors are required. Doctors are referred to by their doctor ID. Important personal information also stored like doctor name, qualification, fees per call, payment due, address, phone number, etc.

***Constraint***: Doctor’s number entered should contain DC only as a prefix and must exist in ALL\_DOCTORS table.

1. **PAT\_ENTRY:** This table has record of any patient arrives in university hospital for a checkup or any other treatment procedure. When patient arrives, a patient number or patient token is generated which acts as a primary key. Patient information like patient 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 checkup.

***Constraint***: Patient number should begin with prefix PT. Sex should be *M* or *F* only. Doctor’s name and department referred must exist.

1. **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.

1. **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.

1. **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.

1. **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.

1. **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.

1. **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*