Active Learning (Date: 24th March, 2025)

System Description:

Design an application for a hospital management system. The system registers patients, schedules appointments with doctors, maintains patient information about diagnostics tests and treatments administered, maintains information about doctors/healthcare professionals, stores admit/discharge information about the patients.
(*You can use additional entities, attributes and relations as per the requirement.*)
Intended users are:
Front Desk Operators: *registers/admits/discharges patients*
Data Entry Operators: *enters patient data about tests and treatments*
Doctors: *query patient information*
Database Administrators: *add/delete users*

The system is required to support the following workflow:
1. ***Patient registration/discharge and doctor appointment/test scheduling –*** information about new patients need to be registered, appointments based on availability and priority should be scheduled, doctors should be notified about the appointments in a dashboard. For admitted patients a room should be assigned based on available room capacity. For discharged patients information should be preserved but room occupancy should be updated. The workflow should also support scheduling tests and treatments prescribed by doctors.
2. ***Patient data entry –*** All the health information of a patient including test results and treatments administered should be recorded.
3. ***Doctor dashboard –*** all the records of the patients treated by a doctor should be displayed to her as a dashboard. Doctors may also query for any patient information. Doctors should be able to record drugs/treatments prescribed to a patient. (bonus point: sending automated email reports to a doctor about the health information of patients treated by her on a weekly basis, high priority events may be emailed in an emergency manner)
4. ***Database administration –*** should be able to add/delete new users.

Deliverables (Deadline: 21st April):
1. Report on the design
2. A demonstration of the application

Today's task:
1) Draw an Entity-Relationship Diagram for the above system.
2) Convert the Entity-Relationship Diagram to Relational schemes.
3) Insert proper data in the relational database and mention appropriate functional dependencies and candidate keys.
4) Normalize the tables till BCNF. (Your decomposition should be lossless and it is desired to be dependency preserving.) Mention Each and every step of normalization in detail.