1)Railway System (Please refer IRCTC)

The railway network of our country is one of the most complex public establishments. You can design a database solution for this network and make the management of the same more natural. Your system should have the following pieces of information:

- Station names
- Tracks that connect those stations (to keep things simple, you can assume that only one track runs between two stations)
- Train IDs with names
- Schedules of the trains

The train schedules should have information on the stations from where the train starts and by when it reaches the destination. It should also include information on which stations it passes through during its journey.

To keep things simple, you can assume that every train completes its journey within a day, and they run daily. However, you'll also need to store information on the sequence of the stations a train passes through. For example, if a train starts from Delhi and goes to Kolkata through Lucknow, then you'll need to add the arrival and departure times of the train for all these stations. Keeping the stations in sequence will allow easy management of trains and their data.

Till here, the project is rather easy. You can make it more challenging by adding the passenger information of every train such as its coaches, seat numbers, types of coaches, passenger names, and so on. This project might take some time to complete, but it'll help you showcase your knowledge of database management solutions while solving a significant issue of a public authority.

India has a very big network of railways, not only that but the metros also have become a very significant part of commutation over the country. Both these types of railways have a wide network and people's daily commutes depend upon them. Keeping a track of the train's arrival, departure, first time of arrival at a particular station and last train departure also have a big role to play as people plan their schedules accordingly. Keeping a track of these is really important. Not only that but also keeping the tracks safe from collisions and any haphazard also is important for the smooth operation of the network. This brings another factor which is revenue, the need for revenue generation arises because of the large number of users. Keeping a track of tickets, and distance travelled is necessary in order to track the overall revenue which eventually helps in the country's GDP.

2)Hospital Management Software (Please refer the website of any renowned hospital)

Hospitals have unique data requirements. Not only do they have to maintain the medical records of their patients, but they also have to manage their staff and its multiple departments. You can solve the data-related problems of hospitals by creating a DBMS solution.

First, you should assign unique IDs to the patients and store the relevant information under the same. You'll have to add the patient's name, personal details, contact number, disease name, and the treatment the patient is going through. You'll also have to mention under which hospital department the patient is (such as cardiac, gastro, etc.).

After that, you should add information about the hospital's doctors. A doctor can treat multiple patients, and he/she would have a unique ID as well. Doctors would also be classified into different departments.

Patients would get admitted into rooms, so you'll need to add that information to your database too. Apart from that, there would be distinct rooms (ICUs and Operation Theaters) in the hospital. Then, you'd have to add the information of ward boys and nurses working in the hospital and assigned to different rooms.
You can start with a small hospital and expand it as you move on. Make sure that the data is easily understandable and accessible.
Also, the hospitals have a lot of information with them such as the patient's history, pharmacy, test results, number of beds, information about the helping staff, etc. All of this data needs to be managed as they are crucial to the hospital's operations and helps in its smooth functioning. This database management helps in routine or emergency visits as well.

3)Blood Donation Managing Software

You can create a database project for a blood donation clinic. You should start by adding donor names and assigning them unique IDs. Add their details and relevant information such as blood type, medical report, and contact number. Similarly, add patient names with unique IDs, details on their medical conditions, and blood types.
After you've created a database of patients and donors, you can work on a database for the blood bank. There, you'll have to add the name of the blood bank, its staff details, operating hours, and address.
DBMS is helpful in the blood donation industry by keeping the track of the acceptors and donations. This helps the hospital in keeping a record of the blood donors as well in case of any emergency. And also to help them keep track of the storage.

4)Gas Booking Management System

Anila Gas Company is an Indian company supplying LPG cooking gas for consumers all over India. It supplies the gas through distributors. The company has office in each state which manages all the area offices under it. The area offices manage all distributors in that district. The company has various types of gas cylinders like 5kg, 14.5 kg etc.

Each state office maintains the details about area offices such as unique area number, name, address, manager. State office has a unique name, address and stores the total no of area offices, total distributors under each area office and total sales in each area. The area office has unique area number, name, and total sales and also maintains the distributor details such as unique distributor number, name, address, and proprietor. It also stores the total sales in that area and sales by each distributor.

The distributor maintains the details about all the consumers such as unique consumer no, name, address, pin code, contact no, email id, distributor, no of cylinders, Date of Connection. To get the new connection the consumer should give his details and submit the documents for address proof. On payment of requisite deposit the consumer will be issued a Subscription Voucher [SV]. SV contains consumer no, consumer name, address, date of

connection distributor name, deposit amount, type of cylinder, no. of cylinders and distributor name and address.

The consumer can book the gas by calling or personally visiting by giving the consumer number. He will be informed about the booking no and the date he will receive the gas. The receiving date of gas will be 5 days after booking date.

The distributor office will maintain the stock registry of gas which includes the details of cylinder i.e. type, price and quantity. It will be updated after supplying the gas to the consumer. The area officer transfers cylinders from distributor to another based on the demand.

The consumer can transfer his connection to another place. On behalf of consumer's request the distributor at the current location will issue Termination Voucher (TV) and will refund the deposit amount mentioned in the SV, on surrender of existing equipments (cylinder/s and regulator). The TV is valid for one year from the date of issue. The TV contains TV number, TV date, consumer no, SV number, SV date, Cylinder type, consumer name, address, distributor, transferee distributor, amount paid and remarks. Reconnection can be availed at the new place by payment of the same deposit amount mentioned in the TV. On receipt of TV and deposit amount the distributor sends the request to area officer for transfer of consumer details. Then new SV is issued to the consumer

5)Online Food Ordering System (Please refer any popular website like swiggy etc..)

The McDonald's Online Ordering System is a database system designed to facilitate the process of online food ordering. The system will provide a set of features to access unique menu items available in different branches of the aforementioned fast food chain in Delhi, and ordering. The database will include a set of all branches in the Delhi region, a set of menu items, a set of employee data to keep track of performance of employees along with their details, a set of existing customers, a set of menu items currently being selected by a customer (cart) and a set of all the invoices generated. Each customer will be identified by his/her phone number wherein customers with the same address but different phone numbers will be treated as different customers. Upon launching the application, the users will be prompted to enter their phone number where if a match is found, they will be directed to the menu of the closest branch (according to the customer's address). Otherwise, the customer will be treated as a first time customer and will enter his/her information and then proceed towards the menu. Once a customer has registered he/she need not register again. The customer can choose from a variety of food items, in different portion sizes. The customer will be notified with the status of his/her order and name of the delivery person. The customer is expected to rate his/her experience upon (notification of) delivery of the order.

6)Routine Management System: This is routine management for an Engineering College (for example HIT, IT department). The end users of this software would be routine committee members, faculty members. technical staffs, and students.

Routine committee members, according to the sem and year can fetch the subject list details, having credit points and number of lecture classes, etc. Electives will be fetched separately. Based on this the members reports can be downloaded. One for theory subject list, one for practical, and another for electives.

Students, are required to provide details about sem, year and fetch the elective list and provide preferences. (One may send notifications to students regarding when they have to provide the choice. This can be send by only the members).

Members are next going to fillup subject choice list and store it in the db, based on electives and non departmental subjects.

After this, Faculties and TA's are required to fetch the choice list and provide preferences. Next, members will fillup the 5 days time table, however in this phase collision has to be detected. Similarly, room matrix has to be filled up and collision detection should be there. Finally report of the time table, faculty matrix, room matrix has to be made available.

7)Departmental(IT) Alumni Management Systems

This system will maintain variety of aspects of pass out students. The different modules are a)Alumni Projects Maintenance, where the last 5 years final year projects undertaken, mentors allocated, domain of project etc. Make sub-modules such as category of projects, based on the category the projects will be placed.

b) Alumni placement details, where the placements of the students in different categories, like higher studies or Industry etc…

c) Alumni events (technical talks in the department…) scheduling

d) Sending notifications to alumni…

8) Departmental(IT) Library Management System

The department has all list of books and its details in excel files. The case study titled Library Management System is library management software for the purpose of monitoring and controlling the transactions in a library. This case study on the library

management system gives us the complete information about the library and the daily transactions done in a Library. We need to maintain the record of new s and retrieve the details of books available in the library which mainly focuses on basic operations in a library like adding new member, new books, and up new information, searching books and

members and facility to borrow and return books. It features a familiar and well thought-out, an attractive user interface, combined with strong searching, insertion and reporting capabilities. The report generation facility of library system helps to get a good idea of which are borrowed by the members, makes users possible to generate hard copy.

End-Users:

Librarian: To maintain and update the records and also to cater the needs of the users.

Faculty: Need books to read and can issue and return books.

Students: Need books to read and can issue and return books.