Mini Project : Assume that your group is hired to develop a DBMS based application for one of the following scenarios. As the first step you are required to do an initial requirements analysis and documentation.

Your project would be the one you proposed and subsequently approved to go ahead by the instructor feedback.

Some of you are suggested to do a project from this list. For a problem with unclear or missing information in this list, you can make appropriate assumptions and clearly state your assumptions.

1 A coach tour operator wishes to maintain some of the company's records in a database.

The Scheduling Manager allocates drivers and coaches to tours, and ensures that proper records are kept. A driver can be allocated to a tour only if he is familiar with the route and if he is available for work. He is available if the average number of hours that he has driven per week in the current year is less than 40. Drivers are uniquely identified by a company code and their names. In addition their addresses and telephone numbers are recorded. Coaches are identified by their registration number and have a capacity of a number of persons. They may be allocated to a tour if by the end of the tour it does not require a service. Dates of last service and the mileage at that time are recorded. The service interval is fixed at 10,000 kilometers.

A route is a list of towns, duration in days and a length in kilometers. Some towns are overnight stops. A town may occur on more than one route, but an overnight stop may not. The booking Manager books individuals onto tours, which has a unique code, a start date, a route, a driver and a coach. Individuals are identified by name.

The Hotel Liaison clerk pays the hotel bills for the overnight stops. Only one hotel is used in each town and it submits bills giving the date of use, the number of individuals, the town and the tour code.

2 Design a database system for the 3Wheeler Association. The 3Wheeler association is planning to provide an online ride reservation system. Available drivers should be able to submit their service availability to the system. Clients should be able to request service on-line by submitting their request. The system should be able to prompt the next available driver to service the request. As a promotion to attract customers the system will allow clients to set a maximum price they are willing to pay and the drivers are allowed to set a minimum they are willing to agree to. The database should include information that will allow the system to communicate with each driver via SMS.

3 Design a database for the administration and reservation office of a bus company. Each passenger can book a seat on a given portion of the routes served by each bus. Routes have a starting station, an ending station, and several intermediate stations. Passengers can specify whether they want to be in the smoking or nonsmoking section. Some passengers can get in the bus even if they do not have a reservation,

when some seats are left empty. With each reservation, the last name, initials, and telephone number of the passenger is stored. Sometimes, trips are not made because of bad weather conditions; in this case passengers holding reservations are notified. At the end of a trip, the driver's assistant reports to the company the total amount of tickets purchased on the bus by passengers. This is done by reporting the amount to the administrative office of the branch at the route's destination.

4 You are asked to develop a database to manage course modules taught at a University. This database should contain information about course modules (e.g. course ID, name, lecturer etc), lecturers (employee ID, name, Dept etc) and students (ID, name, Dept etc), and the relationships between them. E.g. of relationships may include; student A is enrolled in module M, lecturer B teaches module M.

The following constraints must be met:

- A student is allowed to enroll for a maximum of 20 credits in a given term.
- A lecturer can teach a maximum of 3 courses per term.
- The class size for any course module should be no more than 40 students.

The database should assist in providing reports such as, courses enrolled by a given student, list of students taking a particular module, course modules taught by a given lecturer etc.

5 Design a database for a small online airline ticket reservation system. A passenger should be able to specify his/her intended travel dates and source and destination. Then the system will search and display available flights. Note that in some cases, passengers will have to take several connecting flights to get from their source to destination. The system should be able to search available flight schedules and display several options (routes) for the passenger. The passenger can then select the route of his/her choice and reserve seats for each flight. Passengers should also be able to specify the class in which they wish to fly (business or economy). With each reservation, the last name, initials, and telephone number of the passenger are stored. Sometimes, flights are not operated due to inclement weather or technical problems; in this case passengers holding reservations should be notified.

6 A large company is organized into several departments. Each department has a Dept ID, a manager and a location. Each employee has a unique ID, a Dept to which he/she belongs to, a supervisor and projects to work on. Each project is controlled by a department.

Design a database to hold information about these entities (Employees, Depts and projects) and to model the relationships between them. Examples of relationships may include, Employee A **works on** Project P, Dept D is **managed by** Employee B etc.

You should also include other basic information such as name, birthday, gender and hiring date for employees and project name, start and end dates (if complete) for projects.

7 Design a database application to manage private tuition classes offered by one single organization. System should be able to keep track of the classes offered (Grade1 to A/L), Instructors, and the student details. The system should also be able to keep track of the payments made by students and SMS alert students who do not pay fees on time. System should also be able to generate the amounts due to each instructor at the endo of each month based on the classes taught and a hourly rate. System should also have mechanism to alert parents when students repeatedly miss classes.

8 Design a database application that can manage volunteer work. The application should be able to allow volunteers to register with their capabilities and availability. And also organizations to register with their respective project requirements for volunteers. Both volunteers and organizations need to be validated by authorized person before they are made active to participate projects.

9 Design a embedded database application that will extract the personal information such as the calendar, contacts, location information, etc to assist the user to manage his time in an efficient manner. This application would attempt to be a virtual personal assistant to the user.

10 Design an embedded database application that can be used control taffica lights at a four way junction with 2 lanes of traffic. This application should be able to collect the data from traffic flow sensors and basic weather sensors etc and adapt to light signal time accordingly.