

## **PROJECT ABSTRACTS**

1. A country has airports in different states or provinces. Each airport is identified by a number and is also described by a name, district, state, area, number of terminals etc. A list of airplanes are maintained by the officials including the company name, country\_origin, seating\_capacity, air\_plane type like jumbo, jet etc. Each airplane can take flights to different destinations as per the schedule which has the date and time. Each flight also has a group of crew members. This information is also required to be maintained. A Passenger can book a ticket in one of these flights. The ticket information is stored which include the passenger information. Design an appropriate database system so that required details can be stored and retrieved efficiently.
2. A state wants to improve its bus services by easing the process of ticket booking and maintaining the records of drivers, conductors, passengers. Bus is characterised by number of the bus, type of the bus, number of seats, bus owner, etc. Bus travels from one source to destination and in between has halts at various stands as per the schedule. Bus schedule is dynamic in the sense that it may have different source and destinations with varied routes on a given day. Each bus stand is characterised by location, terminals number, type of stand, etc. Thus the travel route and details of the passengers travelled needs to be maintained. A passenger can book a ticket apriori or on the spot by boarding the bus provided seat is available. The ticket information is also to be maintained for future requirements. Design an appropriate database system so that required details can be stored and retrieved efficiently.
3. A construction company constructs houses for a number of clients. A client can have a number of houses/offices built by the same company. Client information is also maintained by the company. Site information is separately maintained. Material information including name, amount available and reorder level is also to be maintained. Materials used for each construction are to be stored which include the name, model, type (like iron,steel, plastic etc.), quantity, company etc. Information of the retailer which provide these materials are also stored. Design a database system to enable the construction company to maintain all the data conveniently and efficiently.
4. A music recording company wants to design a database in order to maintain and organize the information appropriately that can facilitate storage and retrieval of data efficiently. There are many musicians whose details like id, name and address are to be maintained. Each album recorded has an id, title, copyright date and format. Each song has a title and an author. Each album has a number of songs and no song can appear in more than one album. Each song is performed by one or more musicians and a musician can perform a number of songs. Design a database system for the music company to maintain all the data conveniently and efficiently.

5. ICTS department has the provision of five printers to print five different files at a time. The staff member can request for printing the required file. The files which have been printed, the details of the person who requested the print, date and time of print is to be maintained. Each print job is assigned to a clerical staff to verify if the printout request is valid, the staff who requested it is eligible, whether the request is official or personal, etc. based on which he/she takes the printout. One delivery person is responsible to deliver the printouts to respective staff member after checking the personal details such as name, room no of the staff member, phone no. The print details such as type of paper used (A3, A4, etc.), single page print or double side print, color print or not, etc. is also to be maintained. At a time, a file can be printed only on one printer. The cost of each print is to be maintained, to know the printing expense at the end of each month.
6. E-hub is a software company that provides various types of software solutions to clients across India. It has recruited various programmers for software development. Each programmer is identified by the id, date of joining, experience, qualification, specialization, programming\_languages\_known. Specialization signifies the programming language for which he is most specialized in. The company may develop more than one software for one client. Each client is identified by his id, name, address, phone numbers. The details of software developed for the client such as date\_of\_commencement, date\_of\_release, status\_of\_software, etc. are also maintained. Each software may be developed by more than one programmer with one project leader.
7. Consider a Biological Database which stores details of different organisms. The DNA sequences corresponding to the different organisms are maintained. An organism can have different sequences. Each sequence is identified by an id, name, length, type, and chromosome. Each Organism is identified by species name and common name. Each DNA sequence has a number of genes identified by an id and gene name. A gene may be present in a number of DNA sequences. A gene can produce many proteins and a protein can be produced by many genes. Proteins are identified by protein\_id, name, length, components, functionality, and type.
8. A database is made to store the invention details like the name of the invention, inventors(s), category(like science, engineering etc), the year of invention, the story behind, awards/recognitions received, the year in which that was received etc. The inventors' details include name, country, and job type. Example, the chewing gum was invented by an accountant. An invention can get many awards. A database is maintained to store details about the different awards that exist world-wide in each category. Awards can also receive nominations for which the jury's verdict is final. The list of jury members can also be maintained.
9. An event management group needs a database to help them in managing the different events that they help organize. Each event managed has a description which includes

the name, category-level (like high-class, middle-class). The amount charged, the options they provide including food, venue, sub-events, specialized employees etc. For example, a marriage may have a musical sub-event. For each of the options separate information need to be maintained like different type of food (including price), different venues (including address). The customers need to book for an event based on these available options. So the customer data is also stored. The management group has employees who are allotted separate duties for each event.

10. ICTS department provides various type of hardware, software, network, multimedia services to the people of our college. It has various service staff for this purpose. Each person (student or staff) can place the request for the service such as installation of a particular software, keyboard repair, network not available etc. after approval from the HoD of the respective department. However certain people do not require the approval. Based on the type of service requested, the ICTS staff is allotted the job. The personal details of the requester as well as the ICTS staff is maintained such as id, name, phone no. and department to know which person requested the service and who addressed the issue. A person can place one or more requests at a time.
11. Use of Information and Communication Technology in the field of governance is termed as E-governance. It has radically redefined the way government provides the service to the citizens, businesses and other arms of government. E-governance helps simplify processes and make access to government information easier. The other anticipated benefits of e-governance include efficiency in service, improvement in service delivery, standardization of services, better accessibility of services and more transparency and accountability. Customers can make use of the services like payment of electricity bills, water bills, telephone bills, tax payment etc. So a database for customers, services provided by the government, bill payment details etc can be maintained. The government's support to different business, to other governments (including the type of support) is stored. Government Employees' data is also maintained.
12. General Administration Department provides various types of assets such as furnitures, clothes, vessels, electric equipments, etc. in the staff room as well as individual cabin of the faculty members of our college. It has various service staff for this purpose. Each faculty member can place the request for the service such as requirement of chair, table cloth, fan, dustbin, etc. Based on the type of requested, the GAD staff is assigned the task of providing the materials. The personal details of the requester as well as the GAD staff is maintained such as id, name, phone no. and department to know which person requested the service and who addressed the issue. A person can place one or more requests at a time. The stock and cost of each asset is to be maintained, to know the availability of the materials and initiate the purchasing if required.

13. The leave details (considering different types of leave) of the faculty must be available. The faculty must be able to take any type of leave (casual, medical, sabbatical, maternity) as per the rules and this must be updated in the leave records. Students can also apply for leave (including duty leave), enter leave details and forwarded to class advisor for approval. The leave can also be extended on special request. The application for a type of leave can include the purpose of taking leave like official (attending the conferences/workshops etc) or personal (marriages). This application can be approved on the basis of different criteria including uploading proofs like conference brochure, certificates etc.
14. The CBSE conducts examinations for 10th Standard students. For this the board allocates examiners for answer sheet valuation. The details of the examiners such as examiner name, examiner's school, qualification, subject etc are maintained. An examiner evaluates many answer sheets each identified by answer book id, student\_roll\_number, mark assigned etc. An answer sheet is valued by only one examiner. An examiner is also allocated to a school for invigilation. A school has many examiners as invigilators. A school is identified by school id, school name and location. Design a database system for the Board to maintain all the data conveniently and efficiently.
15. The system must be able to keep track of the achievements of faculty and students. The faculty/ Students can update the profile when he/she attends a conference/workshop/other events like sports, go for internship, or publish a paper. The details of this must be entered including the date of attending, the travel allowance and registration allowance granted etc. This allowance has to be approved by the authority. The accounts details must also be stored. The proofs of the same including photographs, certificates, cash money information etc. can be shown. Based on this data, the students and faculty can be awarded on the achievers day.