

## **PROJECT ABSTRACTS**

1. An entrepreneur starts a group of hotels in important cities of different states. Each hotel has name, start\_date, revenue\_planned, expenditure\_expected, city and state. The chefs in the hotel are identified by a social security number (ssn), and are also described by a name, date of join and a cuisine in which he/she specializes. The chefs may be asked to work in more than one branch if shortage demands. There is a specific menu card for each hotel. Each food item in this list is then assigned to a chef based on his specialization. He wants an automation software that can manage all these requirements.
2. 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.
3. 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.
4. A blood bank has branches in all the important cities of the state whose date of inauguration is maintained. It can accept blood of different types. There are different donors whose information is to be maintained. Each donor can donate blood to different people. Each receiver can take blood from different donors. The receivers information is also maintained which include the amount of blood taken and payment details. A good database system is to be designed so as to enable management of blood bank efficiently and conveniently.
5. 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.
6. 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.

7. 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.
8. 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.
9. Income tax office maintains records of the tax payers and the tax paid by each individual every year. Each tax payer is identified by his `adhaar_no`, `pan_no`, name, address and phone number. Every year, each Tax payer provides the details of his income such as income from job, income from other business, income from property. Various investments such as provident fund, policy amount such as LIC policy or hdfc policy, housing loan, house rent, etc. is also to be provided. Taxable income per year is calculated as `annual_total_income` – `annual_total_investments`. Tax slab is fixed by the income tax office to know the amount of tax each individual has to pay.  
If the net income after appropriate deductions is less than 2,50,000 then the tax rate is NIL  
If the net income is between 2,50,000 and 5,00,000 then 10% of the amount by which taxable income exceeds Rs. 2,50,000.  
Between 5,00,000 and 10,00,000 then 20% of the amount by which taxable income exceeds Rs.5,00,000  
More than 10,00,000 then 30% of the amount by which taxable income exceeds Rs.10,00,000  
Based on this slab, the individual pays the tax.
10. 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.

11. 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.

12. 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.

13. 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.

14. 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.

15. Leave tracking system

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 based on different criteria including uploading proofs like conference brochure, certificates etc.

#### 16. Board Exams

The CBSE conducts examinations for 10<sup>th</sup> 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.

#### 17. Houseboat Management

An agency keeps track of house boats, its owners and the customers who rented it. An owner identified by owner number, name and city can have many house boats and a houseboat is owned by only 1 person. A houseboat is identified by an id, name and capacity (number of people it can hold). A customer can rent many house boats and a houseboat can be rented by many customers on different dates. Design a database system for the Agency to maintain all the data conveniently and efficiently.

#### 18. Census Duty

Teachers of government schools are assigned census duty during their vacation period. A teacher is assigned census duty to a set of locations. A location is assigned to a teacher. A location has many houses. A house is present in a particular location. A Teacher is identified by his/her school id, name, and designation. A location is identified by an id, name, city, and district. A house is identified by a number, name, name of owner of the house, number of members in the house. Design a database system for duty tracking to maintain all the data conveniently and efficiently.