Project Description

Each group chooses any one project from the following list.

P01: Campus Security Staffs Management System

University A has more than thousand security persons, who are instructed to give duties at different places within the campus. Additionally, they also maintain a routine, which contains all information, such as Date, Duty Start Time, Duty End Time, and Place. Most importantly, all the places are covered by at least one security person. If a security staff takes leave, manual entry is done against that person. Finally, at the end of a month, the security persons are paid for their duties, while considering the number of leaves as well. You can see that the manual calculation/operation is a heavy task for the security manager. Therefore, the objective is to build a security management system through which entire security system within the campus can be controlled in an efficient manner.

Database:

- User Information
  - Security – (Name, Identity Number, Password)
  - Total number of security persons
  - Manager – (Name, Identity, Password)
- Place Information
  - Number of places identified by unique numbers

Operations:

- Security staff
  - Log-In
  - View duty date, place, start time, end time (upcoming 7 days schedule can be viewed)
  - Request manager to take leave or to do over duties
  - Request approved/declined
  - Number of leaves taken/ number of allowed leaves remaining
    - ✓ Salary at the end of the month
    - ✓ View routine
  - Log-Out
- Manager
  - Log-In
  - Create routine for upcoming 7 days for all persons considering leave requests
  - Approve/decline leave requests
  - Monitoring
    - ✓ Salary at the end of the month
    - ✓ View routine
  - Log-Out

Constraints:

- All users MUST register themselves into the system.
- A security person can only check his/her own routine.
- Manager can check the status of all security persons.
- A fixed number of leaves are allowed. Beyond that, fixed amount will be deducted as fine.
- All security persons get same number of duties in a month.
- Adequate number of security persons are there to cover all places considering leave requests.
- A security person must not have duties in two different places at the same date and time.

P02: Institute Bus Service System

Institute A has a bus service for students. Can we make it more interesting?

There should be a central bus service system, through which different users can know the facility and avail the bus service. Required features of central bus service system are as follows:

1) HOME: User can enter the start location and end location to get the bus numbers, its entire route, timing etc.
Example: Suppose you a want to go to place A from place B. You have to enter the start location as place A and end location as place A. It will show you the bus availability.
2) BUS ROUTES: It will show the all the routes with their route number.
3) BUS STOP: User should able to enter the bus stop number. It will show the entire routes, which are associated with the bus stop.
4) ROUTE: User should able to enter the route no. It will show the bus stop names associated with the route.
5) BOOKING: Any dept. can book the bus services for special events for the participants like international conference.
6) AVAILABILITY: User can search for a particular date and get the information whether entire bus service (or a particular route) is available for that day or not.
7) PICKUP AND DROP FACILITY BETWEEN AIRPORT A AND THE INSTITUTE: There are Several occasions like Spring Fest when bus services are available from Institute. User can see the special events name, date, scheduled pickup and drop location for those days.
8) COMPLAIN: User may register complain to the Bus Service Authority.

P03: Expense Tracker

1 Problem Description
We need a system called "Expense Tracker" that will assist people or corporations in keeping track of their financial outlays. It enables users to track, classify, and record their expenditure, giving them useful information about their spending patterns and assisting them in creating effective budgets.
2 Actors

1. **User:** The primary actor, who interacts with the Expense Tracker system.
2. **Administrator:** A user with elevated privileges, responsible for managing accounts and system settings.

3 Use Cases for the Expense Tracker
3.1 User Expense:
The amount, date, and description of a financial cost can all be entered by the user. The system must keeps track of this data.
3.2 Categorize Expense:
By selecting from a list of predefined categories (such as food, utilities, and entertainment), the user may classify each spend.
3.3 Set Budget: Users can set monthly or category-specific spending limits to help manage their expenses and budget effectively.
3.4 Generate Expense Report:
Users may establish spending caps for each category or for the entire month to better control their spending and stick to their budget.
3.3 Edit/Delete Expense:
Users can update or remove reported costs to fix mistakes or implement changes.
3.4 Budget Alerts
Users are informed when their budget is about to be reached, exceeded, or when recurring expenses are due.
3.5 Manage Income:
Users can record sources of income (e.g., salary, freelance work) to maintain a complete financial overview.
3.6 Authenticate and Secure Data:
Through features like data encryption and two-factor authentication, the system guarantees the security of user data.
3.7 Administer Users
Administrators have access to functionalities like creating and managing user accounts and configuring system settings.
3 Additional Features:

• **Tax Deduction Tracking:** Especially useful for business users, this feature helps track expenses that can be deducted for tax purposes..
• **Expense Sharing:** Useful for households or businesses, this feature allows users to share expense data and collaborate on budgeting.
• **Export and Reporting:** Users can export expense data to formats like PDF or Excel and generate comprehensive financial reports for analysis.
• **Customization:** Users can often customize expense categories, labels, and account details to suit their specific financial management needs.

P04: Online Health Monitoring System

Online health monitoring or Online patient monitoring system (OHMS) is a promising technology to enable patient monitoring outside the conventional clinical system, i.e., the patient can be monitored remotely. Consequently, such system increases the access to care the patients and decreases the delivery cost related to healthcare.

Typically, in OHMS, two type of users are there – doctors and patients. Different physiological parameters of the patient are monitored (using sensors), and the monitored data is stored in a server.

The stored data is accessible from anywhere through user authentication. On the other hand, doctors can check the health status of a patient registered with the doctor. Therefore, the doctor can only access the physiological data of a patient if and only if he/she is registered with the doctor. Depending on the monitored values, adequate measures can be taken by the doctors. The patient can also view his/her health status. For authenticity, both the users need to login into the system.

Inputs:

• **User Information**
  • Doctor – (Name, Email Address, Password)
  • Patient – (Name, Email Address, Password, DOB)
  • Predefined Sensors (such as temperature, blood pressure and heart rate) Operations:

• **Patient's Functionalities**
  ◦ Log-In
  ◦ View health status
  ◦ Ask doctor(s) to consult
  ◦ Payment (Consultancy Fee)
  ◦ Log-Out

•**Doctor's Functionalities**
  ◦ Log-In
  ◦ Monitor health status of registered patients to him/her
  ◦ Ask patient(s) to consult
  ◦ Log-Out

Outputs:
  • Display health status
  • Consult with doctors/patients

Constraints:
  • All users MUST register themselves into the system.
  • Age of patients automatically calculated using DOB information.
  • Doctors can access the health information of patients registered to them only.
  • Nobody can modify the stored information.
  • A patient can only view his/her health status.