**1. Time Management Software**

A company needs to develop a time management system for its executives. The software should let the executives register their daily appointment schedules. The information to be stored includes the names of person(s) with whom meeting is arranged, venue(s), the time, duration, and the purpose of each meeting. When a meeting involving many executives needs to be organized, the system should automatically find a common slot in the diaries of the concerned executives, and arrange a meeting (i.e. make relevant entries in the diaries of all the concerned executives) at that time. It should also inform the concerned executives about the schedules meetings through e-mail. If no common slot is available, TMS should help the secretary to rearrange the appointments of the executives in consultation with the concerned executives for making room for a common slot. To help the executives check their schedules for a particular day the system should have a very easy-to-use graphical interface. Since the executives and the secretaries have their own desktop computers, the time management software should be able to serve several remote requests simultaneously. Many of the executives are relative novices in computer usage. Everyday in the morning the time management software should e-mail all executives their appointments for the day. Besides registering their appointments and meetings, the executives might mark periods for which they plan to be on leave. Also, executives might plan out the important jobs they need to do on any day at different hours and post them in their daily list of engagements. Other features to be supported by the TMS are the following: TMS should be able to provide several types of statistics such as which executive spent how much time on meetings. For which project how many meetings were organized and for what duration and how many man-hours were devoted to such meetings. Also, it should be able to display for any given period of time the fraction of time that on the average each executive spent on meetings.

1. **Design and develop a Dashboard which displays the time spent by each executives on meetings(example in a week or in a day).**
2. **Create the use case diagram for the module in which the secretary can able to rearrange appointments for the executives in the common slot.**

**2. Hotel Automation Software (HAS)**

A hotel has a certain number of rooms. The rooms have different rates depending on whether they are single or double. AC or non-AC. The room tariffs however may vary during different parts of the year depending upon the occupancy rate. For this, the computer can display the average occupancy rate for a given month, so that the manager can receive the room tariffs for the next month either upwards or downwards by a certain percentage.

Visitors can reserve rooms in advance or can reserve rooms on the spot depending upon the availability of rooms. The receptionist enters data pertaining to visitors such as their arrival time; advance paid, approximate duration of stay, and the type of room required. Depending on this data and subject the availability of a suitable room, the computer allots a room number and unique token number to the visitor. If the visitor cannot be accommodated, the computer generates an apology message. The hotel catering services manager inputs the quantity and type of food items as and when consumed by the visitor, the token number of the visitor, and the corresponding date and time. When a visitor prepares to check-out, the hotel automation software generates the entire bill for the visitor and also prints the balance amount payable by him. During check-out, visitor can opt to register themselves for a ‘frequent guests’ program. Frequent guests are issued an identity number which helps them to get special discounts on their bills.

1. **Identify the functional requirements for the above scenario along with its description**
2. **Design and develop a signup form with mandatory details along with its database for the visitors to reserve rooms**

**3. Bookshop Automation Software (BAS)**

BAS should help the customers query whether a book is in stock. The users can query the availability of a book either by using the book title or by using the name of the author. If the book is not currently being sold by the bookshop, then the customer is asked to enter the full details of the book for procurement of the book by the bookshop. The customer can also provide his e-mail address, so that he can be intimated automatically, by the software as and when the book copies are received. If a book is in stock, the exact number of copies available and the rack number in which the book is located should be displayed. If a book is not in stock, the query for the book is used to increment a request field for the book. The manager can periodically view the request field of the books to arrive at a rough estimate regarding the current demand for different books. BAS should maintain the price of various books. As soon as a customer selects his books for purchase, the sales clerk would enter the ISBN numbers of the books. BAS should update the stock, and generate the sales receipt for the book. BAS should allow employees to update the inventory whenever new supply arrives. Also upon request by the owner of the bookshop BAS should generate sales statistics (viz, book name, publisher, ISBN number, number of copies sold, and the sales revenue) for any period. The sales statistics will help the owner to know the exact business done over any period of time and also to determine the inventory level required for various books. The inventory level required for a book is equal to the number of copies of the book sold over a period of one week multiplied by the average number of weeks it takes to procure the book from its publisher. Everyday the bookshop owner would give a command for the BAS to print the books which have fallen below the threshold and the number of copies to be procured along with the full address of the publisher.

1. **Design and develop a request form with mandatory details along with its database through which the users can request a new book which is currently unavailable in stock.**
2. **Create the component diagram for any one of the module identified in the SRS**

**4. Road Repair and Tracking System (RRTS)**

A city corporation has branch offices at different suburbs of the city. Residents raise repair requests for different roads of the city. These would be entered into the computer system by a clerk. Soon after a repair request is raised, a supervisor visits the road and studies the severity of the road condition. Depending on the severity of the road condition and the type of the locality (e.g. commercial area, busy area, relatively deserted area, etc.), he determines the priority for carrying out this repair work. The supervisor also estimates the raw material requirement for carrying out the repair work, the types and the number of machines required, and the number and types of personnel required. Based on this data, the computer system should schedule the repair of the road depending upon the priority of the repair work and subject to the availability of raw materials, machines, and personnel. This schedule report is used by the supervisor to direct different repair work. The manpower and machines that are available are entered by the city corporation administrator. He can change these data any time. Of course, any change to the available manpower and machines would require a reschedule of the projects. The major of the city can request for various road repair statistics such as the number and type of repairs carried out over a period of time and the repair work outstanding at any point of time and the utilization statistics of the repair manpower and machines over any given period of time.

1. **Design and develop an issue raising form with mandatory details along with its database through which the residents can raise road repair requests**
2. **Create the deployment diagram for any one of the module identified in the SRS**

**5. Restaurant Automation System (RAS)**

A restaurant owner wants to computerize his order processing, billing and accounting activities. He also expects the computer to generate statistical reports about sales of different items. A major goal of this computerization is to make supply ordering more accurate so that the problem of excess inventory is avoided as well as the problem of non-availability of ingredients required to satisfy orders for some popular items is minimized. The computer should maintain the prices of all the items and also support changing the prices by the manager. Whenever any item is sold, the sales clerk would enter the item code and the quantity sold. The computer should generate bills whenever food items are sold. Whenever ingredients are issued for preparation of food items, the data is to be entered into the computer. Purchase orders are generated on a daily basis, whenever the stock for any ingredient falls below a threshold value. The computer should calculate the threshold value for each item based on the average consumption of the item during the past three days and assuming that a minimum of two days stock must be maintained for all ingredients. Whenever the ordered ingredients arrive, the invoice data regarding the quantity and price is entered. If sufficient cash balance is available, the computer should print cheques immediately against the invoice. Monthly sales receipt and expenses data should be negated whenever the manager wished to see these reports.

1. **Identify the functional requirements for the above scenario along with its description**
2. **Design and develop a module in which manager can able to login and see the prices of all the items as per the available current stock**

**6. Judiciary Information System (JIS)**

The attorney general’s office wants to develop a Judiciary Information System, to help handle courts cases and also to make the past court cases easily accessible to the lawyers and judges. For each court case, the name of the defendant, defendant’s address, the crime type (e.g. theft, arson, etc), when committed (date), where committed (location), name of the arresting officer, and the date of the arrest are entered by the court registrar. Each court case is identified by a unique case identification number (CIN) which is generated by the computer. The registrar assigns a date of hearing for each case. For this the registrar expects the computer to display the vacant slots on any working day during which the case can be scheduled. Each time a case is adjourned, the reason for adjournment is entered by the registrar and he assigns a new hearing date. If hearing takes place on any day for a case, the registrar enters the summary of the court proceedings and he assigns a new hearing date. Also, on completion of a court case, the summary of the judgment is recorded and the case is closed but the details of the case are maintained for future reference. Other data maintained about a case include the name of the presiding judge, the public prosecutor, the starting date, and the expected completion date of a trial. The judges should be able to browse through the old cases for guidance on their judgment. The layers should also be permitted to browse old cases, but should be charged for each old case they browse. Using the JIS software, the registrar of the court should be able to query the following:

***(i)*** ***The currently pending court cases***

In response to this query, the computer should print out the pending cases sorted by CIN. For each pending case, the following data should be listed: the date on which the case started, the defendant’s name, address, crime details, the lawyer’s name, the public prosecutor’s name, and the attending judge’s name.

***(ii)*** ***The cases that have been resolved over any given period***

The output in this case should chronologically list the starting date of the case, the CIN, the date on which the judgment was delivered, the name of the attending judge, and the judgment summary.

1. ***The cases that are coming up for hearing on a particular date.***
2. ***The status of any particular case (case are identified by CIN)***
3. **Design and develop a login form with mandatory details along with its database for the admin to login.**
4. **Create the component diagram for any one of the module identified in the SRS**

**7. Library Information System (LIS)**

Different activities of the library pertaining to the issue and return of the books by the members of the library and various queries regarding books as listed below are automated.

* The library has 10,000 books. Each book is assigned a unique identification number (called ISBN number). The Library clerk should be able to enter the details of the book into the LIS through a suitable interface.
* There are four categories of members of the library: undergraduate students, postgraduate students, research scholars, and faculty members.
* Each library member is assigned a unique library membership code number.
* Each undergraduate student can be issued up to two books for one month duration. Each postgraduate student can be issued up to four books for one month duration. Each research scholar can be issued up to six books for three months duration.
* Each faculty member can be issued up to ten books for six months duration.
* The LIS should answer user queries regarding whether a particular book is available. If the book is available, the LIS should display the rack number in which the book is available and the number of copies available.
* The LIS registers each book issued to a number. When a member returns a book, the LIS deletes the book from the member’s account and makes the book available for future issue.
* Members should be allowed to reserve books which have been issued out. When such a reserved book is returned, the LIS should print a slip for the concerned member to get the book issued and should disallow issue of the book to any other member for a period of seven days or until the member who has reserved the books gets it issued.

1. **Identify the functional requirements for the above scenario along with its description**
2. **Design and develop a module in which if the student is searching for a book and if the book is available, the LIS should display the rack number in which the book is available and the number of copies available**

**8. Supermarket Automation Software (SAS)**

The manager of a supermarket wants an automation software to be developed. The supermarket stocks a set of items. Customers pick up their desired items from the different counters in required quantities. The customers present these items to the sales clerk. The sales clerk enters the code numbers of these items along with their respective quantities/units.

SAS should at the end of a sales transaction print the bill containing the serial number of the sales transaction, the name of each item, code number, quantity, unit price, and item price. The bill should indicate the total amount payable.

SAS should maintain the inventory of the various items of the supermarket. The manager upon query should be able to see the inventory details. In order to support inventory management, the inventory of an item should be decreased whenever an item is sold. SAS should also support an option by which an employee can update the inventory whenever new supply arrives.

SAS should support printing the sales statistics for every item the supermarket deals with for any particular day or for any particular period. The sales statistics should indicate the quantity of an item sold, the price realized, and the profit accrued.

The manager of the supermarket should be able to change the price at which an item is sold as the prices of the different items may vary on a day-to-day basis.

1. **Design and develop a login form with mandatory details along with its database for the admin to login.**
2. **Create the use case diagram for any one of the module /application identified in the SRS**

**9. Transport Company Computerization (TCC) Software**

A transport company wishes to computerize the various bookkeeping activities associated with its operations:

The transport company owns a number of trucks.

* + - The transport company has its head office located at the capital and has branch offices at several other cities.
    - The transport company receives consignments of various sizes at (measured in cubic meters) its different offices to be forwarded to different branch offices across the country.
    - Once the consignment arrives at the office of the transport company, the details of the volume, destination address, sender’s address, etc. are entered into the computer. The computer is to compute the transport charge depending upon the volume of the consignment and its destination and then issue a bill for the consignment.
    - Once the volume of any particular destination becomes 500 cubic meters, the computerization system should automatically allot the next available truck.
    - A truck stays with the branch office until the branch office has enough cargo to load the truck fully.
    - The manager should be able to view the status of different trucks at any time. The manager should be able to view truck usage over a given period of time.
    - When a truck is available and the required consignment also becomes available for dispatch, the computer system should print the details of the consignment number, volume, sender’s name and address, and the receiver’s name and address to be forwarded along with the consignment.
    - The manager can query the status of any particular consignment and the details of volume of consignments handled to any particular destination and the corresponding revenue generated.
    - The manager should also be able to view the average waiting period for different consignments. This statistics is important for him since he normally orders new trucks when the average waiting period for consignments becomes high due to non-availability of trucks. Also, the managers would like to know the average idle time of the truck in the branch for a given period for future planning.

1. **Identify the functional requirements for the above scenario along with its description**
2. **Create an use case diagram and component diagram for any one of the module identified in the SRS.**

**10.Student’s Academic Record Management Software**

* A university wants to automate its regular activities which are associated with students. The activities are
  + A set of courses are created. Each course consists of a unique course number, number of credits, and the syllabus.
  + Students are admitted to courses. Each student’s details include roll number, address, semester number, and the courses registered for the semester.
* The marks of a student for various units credited are keyed in.
  + Once the marks are keyed in, the SWA (semester weighted average) is calculated.
  + The recent marks of a student are added to his previous marks and a weighted average based on the credit points for various units is calculated.
  + The marks for the current semester are formatted and printed, The SWA appears on the report.
  + A check must be made to determine if a student should be placed on the Vice-Chancellor’s list. This is determined based on whether a student scores an SWA of 85 or higher.
* If the SWA is lower than 50, the student is placed on a conditional standing.

1. **Identify the functional requirements for the above scenario along with its description**
2. **Create an use case diagram and class diagram for any one of the module identified in the SRS.**

**11.Newspaper Agency Automation Software**

The local newspaper and magazine delivery agency wants to develop a software to automate the various clerical activities associated with its business. The summary of the requirements is as follows:

* + - This software is to be used by the manager of the news agency and his delivery persons.
    - For each delivery person, the system must print each day the publications to be delivered to each address.
    - The customers usually subscribe to one or more newspapers and magazines. They are allowed to change their subscription by giving one week’s advance notice.
    - The system should also print for the news-agent the information regarding who received what, and a summary information pertaining to the current month.
    - In the beginning of every month, bills are printed by the system to be delivered to the customers. These bills should be computed by the system automatically.
    - The customers may request to stop the delivers to them for certain periods when they go out of station.
    - Customers may request to subscribe to new newspapers/magazines; they may modify their subscription list, or stop their subscription altogether.
    - Customers usually pay their monthly dues either by cheques or cash. Once the cheques number of cash received is entered in the system, the receipt for the customer should be printed.
    - If any customer has any outstanding dues for one month, a polite reminder message is printed for him. His subscription is discontinued if the dues remain outstanding for periods of more than two months.

1. **Design and develop a feedback form with mandatory details along with its database for the subscribers to record their feedback**
2. **Identify the functional requirements for the above scenario along with its description**

**12.University Department Information System**

This software concerns automating the activities of the various department offices of the university. The department offices do a lot of bookkeeping activities; the software to be developed targets to automate these activities. The summary of the requirements is as follow:

* Various details regarding each student such as his name, address, course registered, etc. are entered at the time he takes admission.
* At the beginning of every semester, students do course registration. The information system should allow the department secretary to enter data regarding student course registrations. As the secretary enters the roll number of each student, the computer system should bring up a form for the corresponding student and keep track of courses already completed and those to be completed.
  + At the end of the semester, the instructors grading provide information to the office which the secretary enters in the computer. The information system should be able to compute the grade point average for the semester as well as the cumulative grade point average (CGPA) and print the grade sheet for each student.
  + The information system should also keep track of the inventory of the Department, such as office equipment, furniture etc.
  + The Department has an yearly grant which is spent on buying equipment, books, stationery tines, etc. Also, in addition to the annual grant that the Department gets from the university, it gets funds from different consultancy services it provides to different organizations. It is necessary that the Department’s information system keeps track of its accounts.
  + The information system should also keep track of the research projects of the Department, publications by the faculties, etc.

1. **Identify the functional requirements for the above scenario along with its description**
2. **Create an use case diagram and class diagram for any one of the module identified in the SRS.**

**13.Motor Parts Shop Software (MPSS)**

Develop a software to automate the activities of a small automobile spare parts shop. The shop sells the spare parts for vehicles of several makes and models. Also, each spare part is typically manufactured by several small industries. To streamline the sales and supply ordering, the shop owner wants to automate the whole process. The motor parts shop deals with a large number of motor parts of various manufacturers and different vehicle types. Some of the motor parts are very small and some are of reasonably large size. The shop owner stocks different parts in wall-mounted, numbered racks.

The shop owner maintains as small an inventory for each item as is reasonable, with a view to reducing inventory overheads.The one important problem that the shop owner faces is to be able to order an item as soon as quantity in the inventory falls below a threshold value. The shop owner wants to stock parts to be able to sustain selling for about one week. To calculate the threshold value for each item, the software must be able to calculate the average daily sale of each part for one week.

At the end of each day, the shop owner would request the computer to generate the items to be ordered. The computer should print out the part number, the quantity required and the address of the vendor supplying the part.

The computer should also give a printout of the revenue generated each day and at the end of the month, provide a graph showing the sales for each day of the month.

1. **Create the use case diagram and deployment diagram for any one of the module identified in the SRS**
2. **Identify the functional requirements for the above scenario along with its description**

**14.Medicine/Pharmacy Shop Automation**

A retail medicine shop deals with a large number of medicine procured from various manufacturers. The shop owner stocks different medicines in wall-mounted, numbered racks.

* + The shop owner maintains as small an inventory for each item as is reasonable from the point of view of reducing inventory overheads.
  + Thus, one important problem the shop owner faces is to be able to order an item as soon as its quantity reduces below a threshold value. The shop owner wants to stock medicines to be able to sustain selling for about one week. To calculate the threshold value for each item, the software must be able to calculate the average daily sale of each medicine for one week.
  + At the end of each day, the shop owner would request the computer to generate the items to be ordered. The computer should print out the medicine description, the quantity required, and the address of the vendor supplying the medicine. The shop owner should be able to store the name, address, and the code numbers of the medicines that each vendor deals with.
  + Whenever new supply arrives, the shop owner would enter the item code number, quantity, batch number, expiry date, and the vendor number. The software should print out a cheques in favour of the vendor for the items supplied.
  + When the shop owner procures new medicines (not dealt with earlier), he should be able to enter the details of each medicine such as the medicine trade name, generic name, vendors who can supply that medicine, unit selling and purchasing price. The computer should generate a code number for each new medicine which the shop owner would paste on the rack where it is to be generic name or the trade name and the software should display its ends number and the quantity held in stock.
  + At the end of everyday, the shop owner would give a command to generate the list of medicines whose shelf-lives have expired. It should also pre pare a vendor-wise list of the expired medicines so that the shop owner can ask the tremendous amount of labor on the part of the shop owner and is a major motivator for the automation endeavour.
  + Whenever any sale occurs, the shop owner would enter the code number and the quantity of each medicine sold. The MSA should print out the cash receipt.
  + The computer should also generate the printout of revenue and profit for any given period. It should also show the vendor-wise payments for the period.

1. **Create the component diagram and class diagram for any one of the module identified in the SRS**
2. **Identify the functional requirements for the above scenario along with its description**

**15.Railway Commodity Reservation System**

Rail communication is an old-age and proven to be the safest mode of transportation. Further, Indian railway is one of the largest railway network in India. We are aware that for the Indian railways, there is a number of passenger reservation system known to the rail passengers and out of which the IRCTC, is the most sophisticated one and the most popular among public. In parallel to public transportation, Indian railways is also very much effective for commodity transportation. However, Indian railways is yet to launch any reservation mechanism for commodity transportation. This project is to take up this limitation and propose to develop a commodity reservation system.

**Input:**

• A database stating the network of transportation connectivity by rail cargos.

• Different cargos and their rout of movements, schedule, cost of transportation, whether express or normal service etc.

**Functions:**

• Availability check

• Booking transportation

• Canceling a transportation

**Output:**

• Results on availability for a given date with capacity

• Booking confirmation

• Cancellation of an existing booking and confirmation

1. **Design and develop a commodity booking form with mandatory details along with its database**
2. **Create the component diagram for the availability check module**

**16.Online Campus Security Management System**

KCT has more than hundred 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 person takes leave, manual entry is done against that person. Finally, at the end of a month, the security persons get 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 an Online security management system through which entire security system within the campus can be controlled in an efficient manner.

**Inputs:**

• 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 Person

◦ 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 duty

◦ Request approved/declined

◦ Number of leaves taken/ number of allowed leaves remaining

◦ Log-Out

• Manager

◦ Log-In

◦ Create routine for upcoming 7 days for all persons considering leave requests

◦ Approve/decline leave request

◦ Monitoring

◦ Log-Out

**Outputs:**

• Salary at the end of the month

• View routine

**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.

1. **Identify the functional requirements for the above scenario along with its description.**
2. **Design and develop the “Manager” module including all its functionalities with relevant front end and back end**