

- (a) Create a structure called **student** that can contain data given below:
Roll number, Name, Department, Course, Year of joining

Assume that there are not more than 450 students in the college.

- (1) Write a function to print names of all students who joined in a particular year.
- (2) Write a function to print the data of a student whose roll number is received by the function.

- (b) Create a structure that can contain data of customers in a bank. The data to be stored is Account number, Name, Balance in account. Assume maximum of 200 customers in the bank.

- (1) Write a function to print the Account number and name of each customer with balance below Rs. 100.
- (2) If a customer requests for withdrawal or deposit, the form contains the fields:

Acct. no, amount, code (1 for deposit, 0 for withdrawal)

Write a function that prints a message, "The balance is insufficient for the specified withdrawal", if on withdrawal the balance falls below Rs. 100.

- (c) An automobile company has serial number for engine parts starting from AA0 to FF9. The other characteristics of parts are year of manufacture, material and quantity manufactured.

- (1) Create a structure to store information corresponding to a part.

- (2) Write a program to retrieve information on parts with serial numbers between BB1 and CC6.
- (d) A record contains name of cricketer, his age, number of test matches that he has played and the average runs that he has scored in each test match. Create an array of structures to hold records of 20 such cricketers and then write a program to read these records and arrange them in ascending order by average runs. Use the `qsort()` standard library function.
- (e) There is a structure called **employee** that holds information like employee code, name and date of joining. Write a program to create an array of structures and enter some data into it. Then ask the user to enter current date. Display the names of those employees whose tenure is greater than equal to 3 years.
- (f) Create a structure called **library** to hold accession number, title of the book, author name, price of the book, and flag indicating whether book is issued or not. Write a menu-driven program that implements the working of a library. The menu options should be:
1. Add book information
 2. Display book information
 3. List all books of given author
 4. List the title of specified book
 5. List the count of books in the library
 6. List the books in the order of accession number
 7. Exit
- (g) Write a function that compares two given dates. To store a date use a structure that contains three members namely day, month and year. If the dates are equal the function should return 0, otherwise it should return 1.
- (h) Linked list is a very common data structure that is often used to store similar data in memory. The individual elements of a linked list are stored "somewhere" in memory. The order of the elements is maintained by explicit links between them. Thus, a linked list is a collection of elements called nodes, each of which stores two item of information—an element of the list, and a link, i.e., a pointer or an address that indicates explicitly the location of the node containing the successor of this list element.
- Write a program to build a linked list by adding new nodes at the beginning, at the end or in the middle of the linked list. Also write a

function **display()** which displays all the nodes present in the linked list.

- (i) A stack is a data structure in which addition of new element or deletion of existing element always takes place at the same end known as 'top' of stack. Write a program to implement a stack using a linked list.
- (j) In a data structure called queue the addition of new element takes place at the end (called 'rear' of queue), whereas deletion takes place at the other end (called 'front' of queue). Write a program to implement a queue using a linked list.
- (k) Write a program to implement an ascending order linked list. This means that any new element that is added to the linked list gets inserted at a place in the linked list such that its ascending order nature remains intact.
- (l) Write a program that receives wind speed as input and categorizes the hurricane as per the following table:

Wind speed in miles / hour	Hurricane Category
74 - 95	I
96 - 110	II
111 - 130	III
131 - 155	IV
> 155	V

- (m) There are five players from which the Most Valuable Player (MVP) is to be chosen. Each player is to be judged by 3 judges, who would assign a rank to each player. The player whose sum of ranks is highest is chosen as MVP. Write a program to implement this scheme.