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IIIT Vadodara
B.Tech. (CSE/IT): Semester II
Data Structures (CS102)
Mid-Semester Exam (Marks: 20)

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Time: 80 Minutes

Note: All questions are compulsory. Answers must be written to the point and in minimum number of words.

Questions

Q 1: Implement binary search function using recursion (not iteration). The function should return the index (or position) of the found element and should return -1 if the element is not present. Use the following function prototype:

int rec_bin_search(int my_arr[], int left, int right, int element)

where my_arr[] is the input array to be searched for element, left is the leftmost index (or position) in input array, right is the rightmost index/position in the input array, and element is to be searched in the input array.

Q 2: *Differentiate* between the Stack data structures implemented using Array and Linked representations (without using any existing list data structure classes).

Q 3: Write a Class in Java (or Python) that implements the Linked List data structure.

Q 4: Give pros and cons of the following data structures (in a table): ArrayList, LinkedList, Ordered ArrayList.

Q 5: Write a program to add two polynomials where each polynomial is implemented using an Array List. The Polynomial 4x^3 + 6 x^2 + 7 x + 9 should be stored in the following way: