Assignment 3-DSA

Hashing, Deadline: 15-08-2023 EOD

MM:100 (20 x 5) marks

Instructions:

1. Plagiarism is not allowed. Also copying code from the internet or any other source is not allowed. If found, you will be given zero marks.

2. Submit all code in a single zip file with your roll number as file name.

Example: MP19CS001.zip

3. Inside the zip, every file should be named as illustrated below:

a. <roll_number>_<question_number>.<file_type>

b. Example: If your roll number is MP19CS001 and the solution is for question 1, then file name will be : MP19CS001_Q1.py

4. Include a readme file.

5. You are only allowed to code in C, C++, and python.

Questions:

1. WAP to implement Hashing with **double hashing** as a collision resolution strategy. Your program should include – Insert, lookup, and delete operations.

2. WAP to implement Hashing with **chaining** as a collision resolution strategy. Your program should include – Insert, lookup, and delete operations.

3. Determine the length of the longest subsequence within an array of integers. This subsequence must consist of consecutive integers, and the order of these integers can be flexible. The goal is to find the maximum length of such a subsequence while ensuring that all distinct values are included.

Example:

Input: arr[] = {1, 9, 3, 10, 4, 20, 2}

Output: 4

Explanation: The subsequence 1, 3, 4, 2 is the longest subsequence of consecutive elements

4. Identify symmetric pairs within an array of pairs. Symmetric pairs consist of two pairs (a, b) and (c, d) where c equals b and a equals d. For instance, (1, 2) and (2, 1) represent a symmetric pair. This task involves finding all such symmetric pairs within the given array, with the assumption that the first elements of all pairs are distinct.

5. WAP to check whether there are any two distinct elements within an array A[] of n numbers whose sum is equal to a given number x.