Assignment-47:   A Job Ready Bootcamp in c++,DSA and IOT

Pair and Tuple

1. Given an array of pairs arr[] of size N (N ≥ 3) where each element of pair is at most N and each pair is unique, the task is to determine the number of ways to select triplets from the given N pairs that satisfy at least one of the following conditions:
   1. The first value (a) of each pair should be distinct.
   2. The second value (b) of each pair should be distinct.
2. Sorting Vector of Pairs by 1st element in ascending and 2nd element in descending.
3. Create a C++ program to implement the deque of pairs.
4. Given an array of pairs A[][] of size N, the task is to find the longest subsequences where the first element is increasing and the second element is decreasing.
   Examples:
   Input: A[]={{1, 2}, {2, 2}, {3, 1}}, N = 3
   Output: 2
   Explanation: The longest subsequence satisfying the conditions is of length 2 and consists of {1, 2} and {3, 1};
   Input: A[] = {{1, 3}, {2, 5}, {3, 2}, {5, 2}, {4, 1}}, N = 5
   Output: 3
5. Given an array arr[] consisting of N integers and an integer X, the task is to perform integer division on the array elements by X and print the indices of the array in non-decreasing order of their quotients obtained.
   Examples:
   Input: N = 3, X = 3, order[] = {2, 7, 4}
   Output: 1 3 2
   Explanation:
   After dividing the array elements by 3, the array modifies to {0, 2, 1}. Therefore, the required order of output is 1 3 2.
   Input: N = 5, X = 6, order[] = {9, 10, 4, 7, 2}
   Output: 3 5 1 2 4
   Explanation:
   After dividing the array elements by 6, the array elements modify to 1 1 0 1 0. Therefore, the required sequence is 3 5 1 2 4.
6. Implementation of lower_bound() and upper_bound() in List of Pairs in C++
7. Implementation of lower_bound() and upper_bound() in Array of Pairs in C++
8. Priority queue of pairs in C++ with ordering by first and second element
9. Check if a given pair of Numbers are Betrothed numbers or not
10. Sort an Array of Points by their distance from a reference Point
11. create a tuple and demonstrate all the inbuilt functions of tuples
12. Create an unordered_map of tuples in C++?
13. Iterate over the elements of an std::tuple in C++
14. Sorting of Vector of Tuple in C++ (Descending Order)
15. Sorting of Vector of Tuple in C++ (Ascending Order)
16. Create a C++ program to demonstrate the working of forward list of tuples.
17. Create a C++ program to implement max-heap priority queues of tuples.