Hashing in Data Structure - GeeksforGeeks

Courses Tutorials Practice Jobs DSA Tutorial Interview Questions Quizzes Must Do Advanced DSA System Design Aptitude Puzzles Interview Corner DSA Python Technical Scripter 2026 Explore DSA Fundamentals Logic Building Problems Analysis of Algorithms Data Structures Array Data Structure String in Data Structure Hashing in Data Structure Linked List Data Structure Stack Data Structure Queue Data Structure Tree Data Structure Graph Data Structure Trie Data Structure Algorithms Searching Algorithms Sorting Algorithms Introduction to Recursion Greedy Algorithms Tutorial Graph Algorithms Dynamic Programming or DP Bitwise Algorithms Advanced Segment Tree Binary Indexed Tree or Fenwick Tree Square Root (Sqrt) Decomposition Algorithm Binary Lifting Geometry Interview Preparation Interview Corner GfG160 Practice Problem GeeksforGeeks Practice - Leading Online Coding Platform Problem of The Day - Develop the Habit of Coding DSA Course 90% Refund Hashing in Data Structure Last Updated : 26 Jan, 2026 Hashing is a technique used in data structures that efficiently stores and retrieves data in a way that allows for quick access. Hashing involves mapping data to a specific index in a hash table (an array of items) using a hash function . It enables fast retrieval of information based on its key. The great thing about hashing is, we can achieve all three operations (search, insert and delete) in O(1) time on average. Hashing is mainly used to implement a set of distinct items (only keys) and dictionaries (key value pairs). Here's an example of hashing using the modulo method. The hash function $H(x) = x \% 10$ converts any large number into a smaller value between 0 and 9. Basics Introduction Applications Separate Chaining for Collision Handling Open Addressing for Collision Handling Easy Problems Check tor Subset Check for Disjoint Check for Equal Fizz Buzz Max distance between two occurrences Duplicate within K Distance Intersection of Two Arrays Union of Two Arrays Most Frequent Element 2 Sum - Find if there is any pair 2 Sum - Count Pairs Count Pairs with Given Diff Only repetitive element from 1 to n-1 Missing of a Range Missing from Min to Max of Array Minimum Subsets with distinct Minimum Removals for No Common Maximum points on the same line Medium Problems Pair Sums Divisible by k Subarray with sum divisible by k 3 Sum - Count all triplets with Given sum 3 Sum – Find All Triplets with Zero Sum Itinerary from a given list of tickets Longest Subarray with Majority Greater Than K Number of Employees Under every Employee Largest subarray with 0 sum Subarray with given sum Longest Consecutive subsequence Largest Fibonacci Subset Consecutive Subset Partitioning Distincts in every window of size k Insert, delete, search and getRandom Min insertions for a palindrome permutation Smallest subarray with k distinct numbers All pairs (a, b) in an array such that a % b = k Group words with same set of characters k-th distinct (or non-repeating) . Hard Problems Represent Fraction as String 4 Sum – Count quadruplets 4 Sum – Find all Quadruplets 4 Sum - From four sorted arrays Largest subarray with equal 0s and 1s Longest Common Sum Span Palindrome Substring Queries Subarrays having distinct count Maximum array from two arrays Sum of all unique sub-array sums. Recaman's sequence Longest strict bitonic subsequence Duplicate Subtrees Submatrix with corners as 1 Quick Links : 'Practice Problems' on Hashing Hashing Interview Questions 'Quizzes' on Hashing DSA Tutorial Comment Article Tags: Article Tags: Hash DSA