Danh sách các bài thuật toán

Bài tập 5 :

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| Largest Number | Given a list of non negative integers, arrange them such that they form the largest number. | Input: [3, 30, 34, 5, 9] Output: 9534330  Input: [9, 99, 98, 998, 9997] Output: 999999799898 |
| Merge Sort | Implement merge sort | <https://www.geeksforgeeks.org/merge-sort/> |
| Quick Sort | Implement quick sort | <https://www.geeksforgeeks.org/quick-sort/> |
| Hotel Bookings Possible | A hotel manager has to process N advance bookings of rooms for the next season. His hotel has Krooms. Bookings contain an arrival date and a departure date. He wants to find out whether there are enough rooms in the hotel to satisfy the demand. Write a program that solves this problem in time O(N log N) .  Input: First list for arrival time of booking. Second list for departure time of booking. Third is K which denotes count of rooms.  Output: A boolean which tells whether its possible to make a booking. | Input:          Arrivals:   [1, 3, 5]         Departures: [2, 6, 8]         K: 1  Output: false At day = 5, there are 2 guests in the hotel. But We have only one room |
| Rotate Matrix | You are given an n x n 2D matrix representing an image.  Rotate the image by 90 degrees (clockwise).  You need to do this in place.  Note that if you end up using an additional array, you will only receive partial score. | Input: [     [1, 2],     [3, 4] ]  Output: [     [3, 1],     [4, 2] ] |
| Set Matrix Zeros | Given an m x n matrix of 0s and 1s, if an element is 0, set its entire row and column to 0.  Do it in place. | Input: [ 1 0 1 1 1 1  1 1 1 ]  Output: [ 0 0 0 1 0 1 1 0 1 ] |

Bài tập 6 :

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| Power Of Two Integers | Given a positive integer which fits in a 32 bit signed integer, find if it can be expressed as A^P where P > 1 and A > 0. A and P both should be integers. | Input: 4 Output: true as 2 ^ 2 = 4 |
| Verify Prime | Given a number N, verify if N is prime or not. | Input: 7 Output: true  Input: 4 Output: false |
| Prime Numbers | Given a number N, find all prime numbers upto N ( N included ). Make sure the returned array is sorted. | Input: N = 7 Ouput: [2, 3, 5, 7] |

Bài tập 8 :

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| Binary Representation | Given a number N >= 0, find its representation in binary. | Input: N = 6 Output: 110 |
| Excel Column Number | Given a column title as appears in an Excel sheet, return its corresponding column number. | A -> 1          B -> 2          C -> 3          ...          Z -> 26          AA -> 27          AB -> 28 |
| Trailing Zeros in Factorial | Given an integer n, return the number of trailing zeroes in n!. Note: Your solution should be in O(log(n)) time complexity. | n = 5 n! = 120  Number of trailing zeros = 1 So, return 1 |

Bài tập 4 :

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| Anti Diagonals | Give a N\*N square matrix, return an array of its anti-diagonals. Look at the example for more details. | Input:  [ [1, 2, 3]    [4, 5, 6]    [7, 8, 9] ]  Output: [    [1],   [2, 4],   [3, 5, 7],   [6, 8],   [9] ] |
| Insertion Sort | Implement Insertion sort. See link for details | <https://www.geeksforgeeks.org/insertion-sort/> |

Bài tập 3 :

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| Spiral Order Matrix | Given an integer n, generate a square matrix filled with elements from 1 to n2 in spiral order. | Input: n = 3; Output: [    [1, 2, 3],   [8, 9, 4],   [7, 6, 5] ] |
| Pascal Triangle | Given numRows, generate the first numRows of Pascal’s triangle. Pascal’s triangle : To generate A[C] in row R, sum up A’[C] and A’[C-1] from previous row R - 1. | Input: numRows = 5 Output: [      [1],      [1,1],      [1,2,1],      [1,3,3,1],      [1,4,6,4,1] ] |