Google Interview Questions (Set 1)

1) Given an index k, return the kth row of the 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

Example:

Input: k = 3

Output: [1,3,3,1]

2) 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.

Example:

If the array is

[[1, 2], [3, 4]]

Then the rotated array becomes:

[[3, 1], [4, 2]]

3) Given a set of non-overlapping intervals, insert a new interval into the intervals (merge if necessary).

You may assume that the intervals were initially sorted according to their start times.

Example 1:

Given intervals [1,3], [6,9] insert and merge [2,5] would result in [1,5], [6,9].

Example 2:

Given [1,2], [3,5], [6,7], [8,10], [12,16], insert and merge [4,9] would result in [1,2], [3,10], [12,16].

This is because the new interval [4,9] overlaps with [3,5], [6,7], [8,10].

Make sure the returned intervals are also sorted.

4) Given a non-negative number represented as an array of digits,

add 1 to the number (increment the number represented by the digits).

The digits are stored such that the most significant digit is at the head of the list.

Example:

If the vector has [1, 2, 3]

the returned vector should be [1, 2, 4]

as 123 + 1 = 124

5) Given 2 non negative integers m and n, find gcd(m, n)

GCD of 2 integers m and n is defined as the greatest integer g such that g is a divisor of both m and n.

Both m and n fit in a 32-bit signed integer.

Example:

m: 6 n: 9 GCD (m, n): 3

Note: No use of library functions is allowed.

6) Given an array of words and a length L, format the text such that each line has exactly L characters and is fully (left and right) justified.

You should pack your words in a greedy approach; that is, pack as many words as you can in each line.

Pad extra spaces ‘ ‘ when necessary so that each line has exactly L characters.

Extra spaces between words should be distributed as evenly as possible.

If the number of spaces on a line do not divide evenly between words, the empty slots on the left will be assigned more spaces than the slots on the right.

For the last line of text, it should be left justified and no extra space is inserted between words.

Your program should return a list of strings, where each string represents a single line.

Example:

words: ["This", "is", "an", "example", "of", "text", "justification."]

L: 16.

Return the formatted lines as:

[

"This is an",

"example of text",

"justification. "

]

7) Merge k sorted linked lists and return it as one sorted list.

Example:

1 -> 10 -> 20

4 -> 11 -> 13

3 -> 8 -> 9

will result in

1 -> 3 -> 4 -> 8 -> 9 -> 10 -> 11 -> 13 -> 20

8) You are given the following:

A positive number N

Heights: A list of heights of N persons standing in a queue

Infront: A list of numbers corresponding to each person (P) that gives the number of persons who are taller than P and standing in front of P

You need to return list of actual order of person's height.

Consider that heights will be unique.

Example:

Input:

Heights: 5 3 2 6 1 4

Infront: 0 1 2 0 3 2

Output:

actual order is: 5 3 2 1 6 4

So, you can see that for the person with height 5, there is no one taller than him who is in front of him, and hence Infront has 0 for him.

For person with height 3, there is 1 person (Height: 5) in front of him who is taller than him.

You can do similar inference for other people in the list.