

## Problem 1

You can solve this problem by the BFS algorithm.

## Problem 2

You can solve this problem by dynamic programming. You have to fill a two dimensional array  $D[][]$ . Here  $D[n][i]$  represents the total number of different ways we can write  $n$  as the sum of powers of two which are less than or equal to  $2^i$ . Note that the second dimension is necessary. Also, note that the total size of  $D$  is  $n \times \log n$ .

## Problem 3

You can solve this problem by the Dijkstra's algorithm.