1.Given an array and a number k. Find number of pairs in the array having sum equal to k.

2. Given a number N. We can divide the number into N/2,N/3 and N/4 at a time rounding all these to integer value. Now you can repeat above procedure for newly generated numbers.

Get the maximum number that you can generate from a given number.

Example – Given Number = 12

12 –> 6 + 4 + 3

6 –> 3 + 2 + 1

4 –> 2 + 1 + 1

3 – > 1 + 1 + 0

So max number generated = 13 (6+4+3).

3. Various dates are given to us in a specific format. Find the least date among them.

example – Given-

13 Jan 2014

24 Dec 1994

08 Feb 2000

Ans – 24 Dec 1994

4.There are N stops and each stop had a gas station. You need to travel from stop 1 to Nth stop such that you should make minimum number of stops. Constraints: Your car has a capacity of M units to travel and you can fill only M units in your car from any gas station.  
Input: N and M where N is the number of stops and each stop value is the distance from the source stop. e.g: 0 1 3 5 7 8 (so it was in increasing order). M is the capacity of the fuel tank. (8 marks)  
  
5. Given a month and a year. You need to find the date of first Monday of given month and year. (12 marks)  
  
6. Given an n X m matrix ‘M’ of alphabets and a string ‘S’. You need to find the starting index of ‘S’ in ‘M’. The string can be found horizontally or vertically. (Alphabets are case insensitive). (10 marks)  
eg: 4 X 5 matrix

7.Give maximum subarray product in a given input array which can contain integers (including negative and zero).

8. Given a set of n coins of some denominations (may be repeating, in random order), and a number k. A game is being played by a single player in following manner: Player can choose to pick 0 to k coins contiguously but will have to leave one next coin from picking. In this manner give the highest sum of coins he/she can collect.

9. A file of encoded message contains only numbers. Original message contains only lowercase letters and spaces. So character ‘a’ is mapped to 1 ‘b’ to 2 and so on till ‘z’ is mapped to 26. Given an input of numbers find out the number of ways you can decode it in original message. Eg. 123 can be decoded in 3 ways as ‘abc’, ‘lc’ or ‘aw’