Assignment 4: Jolly Jumpers

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Bridge

Description

A group of n people wish to cross a bridge at night. At most two people may cross at any time, and each group must have a flashlight. Only one flashlight is available among the n people, so some sort of shuttle arrangement must be arranged in order to return the flashlight so that more people may cross. Each person has a different crossing speed; the speed of a group is determined by the speed of the slower member. Your job is to determine a strategy that gets all n people across the bridge in the minimum time.

Input

The input begins with a single positive integer on a line by itself indicating the number of test cases, followed by a blank line. There is also a blank line between each two consecutive inputs. The first line of each case contains n, followed by n lines giving the crossing times for each of the people. There are not more than 1,000 people and nobody takes more than 100 seconds to cross the bridge.

Output

For each test case, the first line of output must report the total number of seconds required for all n people to cross the bridge. Subsequent lines give a strategy for achieving this time. Each line contains either one or two integers, indicating which person or people form the next group to cross. Each person is indicated by the crossing time specified in the input. Although many people may have the same crossing time, this ambiguity is of no consequence. Note that the crossings alternate directions, as it is necessary to return the flashlight so that more may cross. If more than one strategy yields the minimal time, any one will do. The output of two consecutive cases must be separated by a blank line.

Sample

Sample Input	Sample Output
1	17
	1 2
4	1
1	5 10
2	2
5	1 2
10	

Restrictions

- Your solution must be written in java.

- Your solution must be uploaded to github.