1. Given an array arr of distinct elements of size n, the task is to rearrange the elements of the array in a zig-zag fashion so that the converted array should be in the below form:
arr[0] < arr[1] > arr[2] < arr[3] > arr[4] < . . . . >arr[n-2] < arr[n-1] > arr[n].

   Input: n = 7, arr[] = {4, 3, 7, 8, 6, 2, 1}
   Output: 3 < 7 > 4 < 8 > 2 < 6 > 1 or any arrangement satisfying the condition.

   Input: n = 5, arr[] = {4, 3, 7, 8, 2}
   Output: 3 < 7 > 4 < 8 > 2 or any arrangement satisfying the condition.

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2. Given an array A[ ] of positive integers of size N, where each value represents the number of chocolates in a packet. Each packet can have a variable number of chocolates. There are M students, the task is to distribute chocolate packets among M students such that Each student gets exactly one packet and the difference between maximum number of chocolates given to a student and minimum number of chocolates given to a student is minimum.

   Input: N = 8, M = 5 A = {3, 4, 1, 9, 56, 7, 9, 12}
   Output: Packets: {3, 4, 9, 7, 9}, Difference=6
   Explanation: The minimum difference between maximum chocolates and minimum chocolates is 9 - 3 = 6 by choosing above M packets

   Input: N = 7, M = 3, A = {7, 3, 2, 4, 9, 12, 56}
   Output: Packets: {3,2,4}, Difference: 2

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3. You are given an array arr of size n. The elements of the array represent n coin of values v1, v2, ...vn. You play against an opponent in an alternating way. In each turn, a player selects either the first or last coin from the row, removes it from the row permanently, and receives the value of the coin. You need to determine the maximum possible amount of money you can win if you go first.
Note: Both the players are playing optimally.

   Input: n = 4, arr[] = {5, 3, 7, 10}
   Output: 15
   Explanation: The user collects maximum value as 15(10 + 5). It is guaranteed that we cannot get more than 15 by any possible moves.

   Input: n = 4, arr[] = {8, 15, 3, 7}
   Output: 22

Explanation: The user collects maximum value as 22(7 + 15). It is guaranteed that we cannot get more than 22 by any possible moves.

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