

1) Given an array of integers, find a peak element. A peak element is an element that is greater than its neighbors.

Example:

For the array [1, 2, 3, 1], the peak element is 3 because 3 is greater than its neighbors 2 and 1.

2) Find the contiguous subarray within an array (containing at least one number) which has the largest sum.

Sample Input:

number = [-2, 1, -3, 4, -1, 2, 1, -5, 4]

Output = 6

3) Given a connected, undirected graph, find a subset of the edges that connects all the vertices together without any cycles and with the minimum possible total edge weight.

input

graph = [[0, 2, 0, 6, 0], [2, 0, 3, 8, 5], [0, 3, 0, 0, 7], [6, 8, 0, 0, 9], [0, 5, 7, 9, 0]]

Output = 16

4) Given an array of integers, find all unique triplets in the array which gives the sum of zero.

Sample Input/Output:

- For nums = [-1, 0, 1, 2, -1, -4]:
 - **Input:** [-1, 0, 1, 2, -1, -4]
 - **Output:** [(-1, -1, 2), (-1, 0, 1)]

Explanation: The problem involves finding unique triplets in the array that sum up to zero, where each triplet should be unique and not repeated.

5) Given a set of points in the 2D plane, find the smallest convex polygon that can contain all the points.

Sample Input/Output:

- For points points = [(0, 3), (2, 2), (1, 1), (2, 1), (3, 0), (0, 0), (3, 3)]:

- **Input:** $[(0, 3), (2, 2), (1, 1), (2, 1), (3, 0), (0, 0), (3, 3)]$
- **Output:** $[(0, 3), (3, 0), (0, 0), (3, 3)]$

Explanation: The convex hull is the smallest convex polygon that encloses all the given points.