Heaps Questions

Question 1 :

Last Stone Weight

You are given an array of integers stones where stones[i] is the weight of the ith stone.

We are playing a game with the stones. On each turn, we choose the heaviest two stones and smash them together. Suppose the heaviest two stones have weights x and y with x <= y. The result of this smash is:

If x == y, both stones are destroyed, and
If x != y, the stone of weight x is destroyed, and the stone of weight y has new weight y - x.
At the end of the game, there is at most one stone left.

Return the weight of the last remaining stone. If there are no stones left, return 0. [Go to Qs]

Question 2 :

Kth Largest Element in Array

Given an integer array nums and an integer k, return the kth largest element in the array.
Note that it is the kth largest element in the sorted order, not the kth distinct element.
Can you solve it without sorting? [Go to Qs]

Question 3 :

Task Scheduler

You are given an array of CPU tasks, each represented by letters A to Z, and a cooling time, n. Each cycle or interval allows the completion of one task. Tasks can be completed in any order, but there's a constraint: identical tasks must be separated by at least n intervals due to cooling time.

Return the minimum number of intervals required to complete all tasks. [Go to Qs]

Question 4 :

Design Twitter

Design a simplified version of Twitter where users can post tweets, follow/unfollow another user, and is able to see the 10 most recent tweets in the user's news feed.

Implement the Twitter class:

Twitter() Initializes your twitter object.
- ***void postTweet(int userId, int tweetId)*** : Composes a new tweet with ID tweetId by the user userId. Each call to this function will be made with a unique tweetId.
- ***List<Integer> getNewsFeed(int userId)*** : Retrieves the 10 most recent tweet IDs in the user's news feed. Each item in the news feed must be posted by users who the user followed or by the user themself. Tweets must be ordered from most recent to least recent.
- ***void follow(int followerId, int followeeId)*** : The user with ID followerId started following the user with ID followeeId.
- ***void unfollow(int followerId, int followeeId)*** : The user with ID followerId started unfollowing the user with ID followeeId.

[Go to Qs]

Question 5 :

Find Median from Data Stream

The median is the middle value in an ordered integer list. If the size of the list is even, there is no middle value, and the median is the mean of the two middle values.

For example, for arr = [2,3,4], the median is 3.
For example, for arr = [2,3], the median is (2 + 3) / 2 = 2.5.
Implement the MedianFinder class:

MedianFinder() initializes the MedianFinder object.

void addNum(int num) adds the integer num from the data stream to the data structure.

double findMedian() returns the median of all elements so far. Answers within 10-5 of the actual answer will be accepted. [Go to Qs]