Heap Questions

Question 1 :

K'th largest element in a stream

We have an infinite stream of integers, find the k'th largest element at any point of time.

Input : stream[] = {10, 20, 11, 70, 50, 40, 100, 5, ...} k = 3
Output : {_, _, 10, 11, 20, 40, 50, 50, ...}

Question 2 :

Minimum time required to fill given N slots

We have an integer N which denotes the number of slots, and an array arr[] consisting of K integers in the range [1, N] repreand. Each element of the array are in the range [1, N] which represents the indices of the filled slots. At each unit of time, the index with filled slot fills the adjacent empty slots. The task is to find the minimum time taken to fill all the N slots..

Sample Input 1 : N = 5, K = 5, arr[] = {1, 2, 3, 4, 5}
Sample Output 1 : 1

Sample Input 1 : N = 6, K = 2, arr[] = {2, 6}
Sample Output 1 : 2

Question 3 :

Path With Minimum Effort

We have a two-dimensional grid, each cell of which contains an integer cost which represents a cost to traverse through that cell, we need to find a path from the top left cell to the bottom right cell by which the total cost incurred is minimum.

Sample Input 1 :
          { { 31, 100, 65, 12, 18 },
          { 10, 13, 47, 157, 6 },
          { 100, 113, 174, 11, 33 },
          { 88, 124, 41, 20, 140 },
          { 99, 32, 111, 41, 20 } }

Sample Output 1 : 327 (= 31 + 10 + 13 + 47 + 65 + 12 + 18 + 6 + 33 + 11 + 20 + 41 + 20)

Question 4 :

Minimum Operations to Halve Array Sum

We have an array Arr[], the task is to find out the minimum number of operations to make the sum of array elements lesser or equal to half of its initial value. In one such operation, it is allowed to half the value of any array element.

Sample Input 1 : `[1, 5, 8, 19]`

Sample Output 1 : 3

Question 5 :

Merge K Sorted Linked List

We have K linked lists each of size N and each list is sorted in non-decreasing order, merge them into a single sorted (non-decreasing order) linked list and print the sorted linked list as output.

Sample Input 1 :

```
K=3, N=3
list1=1->3->7->NULL
list2=2->4->8->NULL
list3=9->10->11->NULL
```

Sample Output 1 : 1->2->3->4->7->8->9->10->11