1. **Cylic sort pattern**

**Problem matches this pattern**

* The input array has a cycle, that is, there are duplicate numbers
* The problem asks to find the missing number in the range [1-n]

**Problem doesn’t match this pattern**

* The problem is not based on integer numbers
* The input data is not originally in an array and can’t be mapped to an array
* The given data is not in the [1-n] range, where n is the size of the array

1. **K-way merge pattern**

* **Helps with problems that involve sorted lists**

**K way algorithm**

1. Insert the first element of each array in a min-heap.
2. Next, remove the smallest element from the heap and add it to the merged array.
3. Keep track of which array each element comes from.
4. Then, insert the next element of the same array into the heap.
5. Repeat steps 2 to 4 to fill the merged array in sorted order.

**Does my problem match this pattern?**

* Yes, if both these conditions are fulfilled:
  + The problem involves a set of sorted arrays, or a matrix of sorted rows or sorted columns that need to be merged, either for the final solution, or as an intermediate step.
  + The problem asks us to find the ��ℎ*kth* smallest or largest element in a set of sorted arrays or linked lists.
* No, if either of these conditions are fulfilled:
  + The input data structures are neither arrays, nor linked lists.
  + The data is not sorted, or it’s sorted but not according to the criteria relevant to solving the problem

1. **Two Heaps**

**Does my problem match this pattern?**

* Yes, if both of these conditions are fulfilled:
  + We need to repeatedly calculate two maxima, two minima, or one maximum and one minimum, based on a changing set of data.
  + The input data is not sorted.
* No, if any of these conditions are fulfilled:
  + We don’t need to track two extreme values (minima or maxima), but only one.
  + When we don’t need to repeatedly calculate the extreme values (minima or maxima), but only need to calculate it a fixed number of times.
  + The input data is already sorted—in which case, there is no benefit to using hea

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