1. .import java.util.;

public class TopKFrequentNumbers {

private static int[] nums;

public static void main(String[] args) {

int[] array1 = {3, 1, 4, 4, 5, 2, 6, 1};

int k1 = 2;

findTopKFrequentNumbers(array1, k1);

int[] array2 = {7, 10, 11, 5, 2, 5, 5, 7, 11, 8, 9};

int k2 = 4;

findTopKFrequentNumbers(array2, k2);

}

public static void findTopKFrequentNumbers(int[] array, int k) {

nums = array;

Map<Integer, Integer> frequencyMap = new HashMap<>();

for (int num : nums) {

frequencyMap.put(num, frequencyMap.getOrDefault(num, 0) + 1);

}

PriorityQueue<Integer> minHeap = new PriorityQueue<>((n1, n2) -> frequencyMap.get(n1) - frequencyMap.get(n2));

for (int num : frequencyMap.keySet()) {

minHeap.add(num);

if (minHeap.size() > k) {

minHeap.poll();

}

}

List<Integer> result = new ArrayList<>();

while (!minHeap.isEmpty()) {

result.add(minHeap.poll());

}

Collections.reverse(result);

for (int num : result) {

System.out.print(num + " ");

}

System.out.println();

}

}

Output:

1 4

5 7 11 8

2. public class ShareTrader {

private static int maxProfit;

public static void main(String[] args) {

int[] prices1 = {10, 22, 5, 75, 65, 80};

findMaxProfit(prices1);

int[] prices2 = {2, 30, 15, 10, 8, 25, 80};

findMaxProfit(prices2);

}

public static void findMaxProfit(int[] prices) {

int n = prices.length;

if (n < 2) {

maxProfit = 0;

System.out.println("Maximum Profit: " + maxProfit);

return;

}

int[] leftProfit = new int[n];

int[] rightProfit = new int[n];

int minPrice = prices[0];

for (int i = 1; i < n; i++) {

minPrice = Math.min(minPrice, prices[i]);

leftProfit[i] = Math.max(leftProfit[i - 1], prices[i] - minPrice);

}

int maxPrice = prices[n - 1];

for (int i = n - 2; i >= 0; i--) {

maxPrice = Math.max(maxPrice, prices[i]);

rightProfit[i] = Math.max(rightProfit[i + 1], maxPrice - prices[i]);

}

int maxProfit = 0;

for (int i = 0; i < n; i++) {

maxProfit = Math.max(maxProfit, leftProfit[i] + rightProfit[i]);

}

System.out.println("Maximum Profit: " + maxProfit);

}

}

Output:

Maximum Profit: 87

Maximum Profit: 100