```
1 #include <iostream>
 2 #include <queue>
 3 #include <vector>
 4
 5 using namespace std;
 6
7 struct min heap{
8 public:
9
       int top(){
10
           return pq[0];
11
       }
12
13
       bool empty(){
14
           return pq.empty();
15
       }
16
17
       void max heapify(int i){
18
           while (2 * i + 1 < pq.size()) {
19
                int exch_idx = 2 * i + 1;
20
                if(exch idx + 1 < pq.size() && pq[exch idx] >
   pq[exch_idx + 1])
21
                    exch idx++;
22
                if(pq[i] < pq[exch idx]) break;</pre>
23
                swap(pq[i], pq[exch idx]);
24
                i = exch idx;
25
           }
26
       }
27
28
       void pop(){
29
           swap(pq[0], pq[pq.size() - 1]);
30
           pq.pop back();
31
           \max heapify(0);
32
       }
33
34
       void swim(int i){
35
           while(i > 0 \& pq[(i - 1) / 2] > pq[i]){
                int parent = (i - 1) / 2;
36
37
                swap(pq[parent], pq[i]);
38
                i = parent;
39
           }
40
       }
41
42
       void push(int e){
           pq.push_back(e);
43
44
           swim(pq.size() - 1);
45
       }
46
47 private:
48
       vector<int> pq;
49 };
```

```
File - /home/sergio/Desktop/EC4/main.cpp
50
51 void display array(const vector<int>& A){
        for(int e : A) cout << e << " ";
52
53
        cout << endl;</pre>
54 }
55
56 // 0(n * log(k))
57 void k index away(vector<int>& A, int k){
58
        min heap pq;
59
        for(int i = 0; i < k; i++)
60
            pq.push(A[i]);
61
        int idx = 0;
62
        for(int i = k;i < A.size();i++){</pre>
63
            pq.push(A[i]);
64
            A[idx++] = pq.top();
65
            pq.pop();
66
        }
67
        while(!pq.empty()){
68
            A[idx++] = pq.top();
69
            pq.pop();
70
        }
71 }
72
73 int main() {
74
        vector<int> A = \{2, 8, 0, 17, 5, 12\};
        k_index_away(A, 2);
75
76
        display_array(A);
77
        vector<int> B = {9, 8, 7, 6, 5, 4, 3, 2, 1};
78
        k index away(B, 8);
79
        display array(B);
80 }
```