Top k most frequent elements in the stream

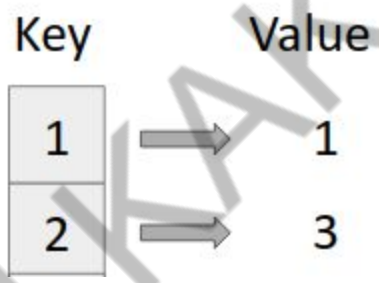
Problem

Given an array a[] of size n and value k. Our task is to output elements in decreasing frequency till we reach $(k+1)^{th}$ distinct element.

Example:

and k = 2

Output:



Approach

1. Create a map (say *freq*)

   map<int,int> freq;

2. While traversing the array keep track of elements and when we find $(k+1)^{th}$ distinct element, break from the loop.
3. Output the element and frequency using map traversal.

Code

```cpp
int main(){
    int n, k;
    cin >> n >> k;

    vector<int> a(n);

    for(int i=0; i<n; i++) {
        cin >> a[i];
    }
    map<int,int> freq;
    int cnt=0;
    for(int i=0; i<n; i++) {
        if(cnt == k && freq[a[i]] == 0){
            break;
        }
        if(freq[a[i]] == 0){
            cnt++;
        }
        freq[a[i]]++;
    }

    map<int,int> :: iterator it;
    for(it = freq.begin(); it≠freq.end(); it++)
    {
        if(it→second ≠ 0){
            cout << it→first <<" "<< it→second << endl;
        }
    }
    return 0;
}
```