Advanced DataStructures Lab Test-02

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01. Given an Array of n numbers, read numbers from the array and keep at-most K numbers from at the top according to their decreasing frequency every time a new number is read. Write a program using Hash Data structure to print top K numbers sorted by frequency when input stream has included K distinct elements, else need to print all distinct elements sorted by frequency.

```
#include <bits/stdc++.h>
using namespace std;
Void KTop(int A[], int n, int K)
{
```

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```
vector<int> top(K+1);
unordered_map<int, int> freq;
for (int m=0; m<n; m++)
{
    freq[A[m]]++;
    top[K] = A[m];
    auto it = find(top.begin(), top.end()-1,
                   A[m]);
    for(int i = distance(top.begin(), it)-1;
        i>=0; --i)
    {
        if (freq[top[i]] < freq[top[i+1]])
            swap(top[i], top[i+1]);
        else if ((freq[top[i]] == freq[top[i+1]])
        && top[i] > top[i+1])
```

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```
        swap(top[i], top[i+1]);
    else
        break;
}

for(int j=0; j<K && top[i] != 0; ++i)
        cout << top[i] << "  ";
}
    cout << endl;
}

int main()
{
    int n, K, Arr[10000];
    cout << "Enter the value of n: ";
    cin >> n;
    cout << "Enter the value of K: ";
```

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```
    cin >> K;
    cout << "Enter " << n << "Elements : ";
    for(int i=0; i<n; ++i)
    {
        cin >> Arr[i];
    }
    KTop(Arr, n, K);
    return 0;
}
```