一、题目说明

题目347. Top K Frequent Elements，从数组中找出现频度最高的k个数。难度是Medium！

二、我的解答

求出现频度最高的数，首先用hash计算各个数出现的频度，然后找出前k个。

```
class Solution{
    public:
        vector<int> topKFrequent(vector<int>& nums,int k){
            ump.clear();
            for(int i=0;i<nums.size();i++){
                ump[nums[i]]++;
            }

            vector<int> res;
            int minFre=INT_MAX,minFreIndex=-1;
            for(auto u: ump){
                if(res.size()<k){
                    res.push_back(u.first);
                    if(minFre > u.second){
                        minFre = u.second;
                        minFreIndex = res.size()-1;
                    }
                }else if(u.second > minFre){
                    res[minFreIndex] = u.first;

                    minFre = INT_MAX;
                    for(int j=res.size()-1;j>=0;j--){
                        if(minFre > ump[res[j]]){
                            minFre = ump[res[j]];
                            minFreIndex = j;
                        }
                    }
                }
            }
            return res;
        }
    private:
        unordered_map<int,int> ump;
};
```

性能如下：

```
Runtime: 40 ms, faster than 5.85% of C++ online submissions for Top K Frequent
Elements.
Memory Usage: 11.4 MB, less than 96.77% of C++ online submissions for Top K
Frequent Elements.
```

三、优化措施

用大根堆进行优化：

```
class Solution{
    public:
        vector<int> topKFrequent(vector<int>& nums,int k){
            unordered_map<int,int> ump;
            priority_queue<pair<int,int>> pq;

            for(int i=0;i<nums.size();i++){
                ump[nums[i]]++;
            }
            for(auto u: ump){
                pq.push(make_pair(u.second,u.first));
            }
            vector<int> res;
            for(int i=0;i<k;i++){
                res.push_back(pq.top().second);
                pq.pop();
            }

            return res;
        }
};
```

性能如下:

```
Runtime: 16 ms, faster than 96.21% of C++ online submissions for Top K Frequent Elements.
Memory Usage: 11.5 MB, less than 67.74% of C++ online submissions for Top K Frequent Elements.
```