X of a Kind in a Deck of Cards

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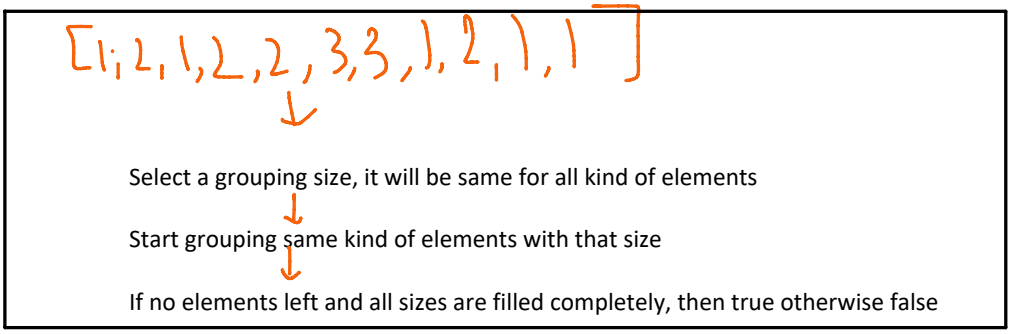
14th april - ss

https://leetcode.com/problems/x-of-a-kind-in-a-deck-of-cards/

We have different kinds of people in a society. We have to tell is their any particular way, so, that grouping can be done with particular no. only For every kind of people. Such that after grouping, no one can left alone.



Approach - 1. Make a frequency hashmap. Fill all the frequencies of each kind of elements

2. Take the gcd/hcf of all frequencies. So, that we can get to know what will be the maximum size for Grouping.
3. If gcd is greater than equal to2, it means their is no number remains. If it is one, it means we can't group the number.

```
#include<bits/stdc++.h>
using namespace std;

int gcd(int n1,int n2)
{
   while(n1%n2!=0)
   {
      int rem = n1%n2;
      n1=n2;
      n2=rem;

   }
   return n2;
}

int main()
{
   int n;
   cin>>n;
   vector<int>v ;
   unordered_map<int,int>map;
   for(int i=0;i<n;i++)
   {
      int a;
      cin>>a;
      v.push_back(a);
      if(map.count(a)>0)
```

Find gcd of two numbers.

- Starting from top to 2, till we get two no. Remainder as 0.
- Take the remainder, make it as divisor and make the Previous divisor as dividend for next... Same as HCF

Hash map to store frequencies of each element

```
        cin>>a;
        v.push_back(a);
        if(map.count(a)>0)
        {
           map[a]++;
        }
        else
        {
           pair<int,int>p(a,1);
           map.insert(p);
        }
     }
     int counter=0;
     int gcd1=1;
     for(auto m : map)
     {
        if(counter==0)
        {
           gcd1=m.second;
        }
        else
        {
           int gcd2 = m.second;
           gcd1=gcd(gcd1,gcd2);
        }
        counter++;
     }

     if(gcd1>=2)
     {
        cout<<"true"<<endl;
     }
     else
     {
        cout<<"false"<<endl;
     }
  }
```

take gcd of all elements

If gcd is greater than 1, it means we can make a group
Otherwise if gcd is 1, it means every element has to written seperately,
That is not called as grouping.