**4. Power Set Algorithm**.

Given a set X, the power set of X, denoted P(X), is the set of all subsets of X. Below, you are given an algorithm for computing the power set of a given set.

public static List<Set<Integer>> powerSet(List<Integer> list){  
 List<Set<Integer>> p=new ArrayList<Set<Integer>>();  
 Set<Integer> set=new HashSet();  
 p.add(set);  
  
 for(Integer item:list){  
 List<Set<Integer>> powerSet=new ArrayList<Set<Integer>>();  
 for(Set<Integer> subset: p){  
 powerSet.add(subset);  
 Set<Integer> new\_subset=new HashSet<>(subset);  
 new\_subset.add(item);  
 powerSet.add(new\_subset);  
  
 }  
 p=powerSet;  
  
 }  
 return p;  
  
}