**Course No :** CSE 204

**Course Name:** Data Structure and Algorithm Sessional

**Offline No:**  2

**Problem No:** 2

**Problem Name:**

Given a set S, generate all distinct subsets of it i.e., find distinct power set of set S. Print all distinct Subsets of a given Set.

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Section : A2

Level : 2, Term : 1

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**Power Set Time Complexity Analysis:**

**Power Set**Power set P(S) of a set S is the set of all subsets of S. For example S = {a, b, c} then P(s) = {{}, {a}, {b}, {c}, {a,b}, {a, c}, {b, c}, {a, b, c}}.

If S has n elements in it then P(s) will have 2^n elements

Algorithm:

Input: Set[ ], set\_size

1. Get the size of power set

Power\_set\_size = pow(2, set\_size)

2. Loop fir couter from 0 to pow\_set\_size

(a) Loop for I = 0 to set\_size

(i)If ith bit in counter is set

Print ith element from set for this subset

(b) Print separator for subsets i.e., newline

Time Complexity : O(n2^n)

**Machine Configuration:**

Processor : Intel Core i7-8550U CPU @1.80GHz 1.99GHz

RAM : 8.00 GB

System Type : Windows 10 (Home) 64Bit

**Data Table and Graph of Generating Powerset:**

