

## **Complexity Analysis:**

Finding power set:

The size of power set of a set with  $n$  elements is  $2^n$ . Inside the function, we are evaluating the bit pattern of every  $i$  from 0 to  $2^n$ . Inside the inner loop, we are checking whether  $j^{\text{th}}$  bit of  $i$  is set or not where  $j$  varies from 0 to  $n$ . If  $j^{\text{th}}$  element is set, we will include  $j^{\text{th}}$  element of the set in the  $i^{\text{th}}$  element of the power set. It is quite evident that the outer loop and inner loop will always run  $2^n$  times and  $n$  times respectively. So, the time complexity of the algorithm is  $O(n2^n)$ .

## **Machine Configuration:**

OS: Windows 10

Processor: Intel® Core™ i7-8565U CPU @ 1.80GHz 1.99 GHz

Installed memory (RAM): 8.00 GB (7.85 GB usable)

System type: 64-bit Operating System, x64-based processor

**Data:**

input size	running time (millisecond)
5	0.1496
10	0.6509
15	25.5815
18	206.553
20	913.261
22	3978.18
24	17500.8
25	36212.5

