Sum of Subsets

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

bool findSubsetSum(vector<int>& nums,
int index, int k, int n, vector<int>& ans) {

    if(index >= n) {
        if(k == 0) {

            cout << "\n\nfound the solution
!!\n\n";
            return true;
        }
        return false;
    }

    ans.push_back(nums[index]);

    cout << "\nAdded the element : " <<
nums[index] << "\n\n";
    // take

    cout << "\n checking that the remaining
element : " << k - nums[index] <<  " can
be formed from the list : \n\n";
    if(findSubsetSum(nums, index+1, k -
nums[index], n, ans)) {

        return true;
    }

    cout << "\n\nRemoving the element : "
<< nums[index] << " from the list !!\n\n";
    // not take
    ans.pop_back();

    cout << "\n\nChecking if the required
number " << k << " can be formed from
the list  !!\n\n";
    if(findSubsetSum(nums, index+1, k, n,
ans)) {
        return true;
    }

    return false;
}

void findSubset(vector<int>& nums, int k)
{

    vector<int> ans;
    int n = nums.size();
    int index = 0;
    if(findSubsetSum(nums, index, k, n,
ans)) {
        cout << "\nThe required subset is : \n[
";
        for(int ele: ans) {
            cout << ele << " ";
        }
        cout << "]" << endl;
        return;
    }
    else {
        cout << "The subset does not exist !!"
<< endl;
        return;
    }
}

int main() {

    vector<int> nums = {1, 5, 4, 2, 3, 6, 8};
    findSubset(nums, 10);
    return 0;
}
```

Output:

Added the element : 1

 checking that the remaining element : 9
can be formed from the list :

Added the element : 5

 checking that the remaining element : 4
can be formed from the list :

Added the element : 4

 checking that the remaining element : 0
can be formed from the list :

Added the element : 2

 checking that the remaining element : -2
can be formed from the list :

Added the element : 3

 checking that the remaining element : -5
can be formed from the list :

Added the element : 6

 checking that the remaining element : -11
can be formed from the list :

Added the element : 8

 checking that the remaining element : -19
can be formed from the list :

Removing the element : 8 from the list !!

Checking if the required number -11 can
be formed from the list !!

Removing the element : 6 from the list !!

Checking if the required number -5 can be
formed from the list !!

Added the element : 8

 checking that the remaining element : -13
can be formed from the list :

Removing the element : 8 from the list !!

Checking if the required number -5 can be
formed from the list !!

Removing the element : 3 from the list !!

Checking if the required number -2 can be
formed from the list !!

Added the element : 6

Removing the element : 2 from the list !!

checking that the remaining element : -8
can be formed from the list :

Checking if the required number 0 can be
formed from the list !!

Added the element : 8

Added the element : 3

checking that the remaining element : -16
can be formed from the list :

checking that the remaining element : -3
can be formed from the list :

Removing the element : 8 from the list !!

Added the element : 6

Checking if the required number -8 can be
formed from the list !!

checking that the remaining element : -9
can be formed from the list :

Removing the element : 6 from the list !!

Added the element : 8

Checking if the required number -2 can be
formed from the list !!

checking that the remaining element : -17
can be formed from the list :

Added the element : 8

Removing the element : 8 from the list !!

checking that the remaining element : -10
can be formed from the list :

Checking if the required number -9 can be
formed from the list !!

Removing the element : 8 from the list !!

Removing the element : 6 from the list !!

Checking if the required number -2 can be
formed from the list !!

Checking if the required number -3 can be
formed from the list !!

Added the element : 8

checking that the remaining element : -11 can be formed from the list :

Removing the element : 8 from the list !!

Checking if the required number -3 can be formed from the list !!

Removing the element : 3 from the list !!

Checking if the required number 0 can be formed from the list !!

Added the element : 6

checking that the remaining element : -6 can be formed from the list :

Added the element : 8

checking that the remaining element : -14 can be formed from the list :

Removing the element : 8 from the list !!

Checking if the required number -6 can be formed from the list !!

Removing the element : 6 from the list !!

Checking if the required number 0 can be formed from the list !!

Added the element : 8

checking that the remaining element : -8 can be formed from the list :

Removing the element : 8 from the list !!

Checking if the required number 0 can be formed from the list !!

found the solution !!

The required subset is :
[1 5 4]