CS 2123 Data Structures
Recitation
Due Friday January 29

Difficulty ★★★★ (out of 5)

1. (100 pts) Write a program to read an array of positive integers from the user and display how each positive integer can be formed as sum of subsets of numbers from the array. The program should stop when it finds the first number that can not be represented as sum of numbers from the array. Consider the following input as an example.

   ```
   2 1 8 3
   ```

   The output for this should be

   ```
   1: 1
   2: 2
   3: 3
   4: 3 + 1
   5: 3 + 2
   6: 3 + 2 + 1
   7: NA
   ```

   - You can work in groups of 2-3
   - You can work on this during two weeks of recitations
   - If there are multiple ways to represent a number, you can display just one
   - Each element can be used at most once in computing sum
   - Each number appears at most once in input array
   - Any number larger than sum of all the numbers can not be represented as a sum

   Test your program with the following arrays

   - In array (4 13 2 3 1), all numbers up to 11 can be represented as sum of elements
   - In array (1 5 2 8 11), all numbers up to 4 can be represented as sum of elements
   - In array (8 1 4 2 16), all numbers up to 32 can be represented as sum of elements

   Submit your program electronically using the blackboard system. Only one member of the group should send it. List the name of the group members on the top of your submission.