

## CSE 2320 Lab Assignment 3

Due October 23

### Goals:

1. Understanding of dynamic programming.
2. Understanding of subset sums.

### Requirements:

1. Design, code, and test a C program to compute subset sums for *all possible cardinalities*.

The input is to be read from standard input (which will be one of: a. keyboard typing, b. a shell redirect (<) from a file, or c. cut-and-paste. Do NOT prompt for a file name!). The first input line will have  $n$ , the number of positive integer values appearing on the subsequent lines, and  $m$ , the target value. Each of the remaining input lines will include one of the  $m$  sequence values (unordered).

The output is to include: a. the input, appropriately labeled, b. the dynamic programming table, and c. backtrack for a computed solution for every subset cardinality that has a solution.

2. Submit your program on Blackboard by 10:45 am (section 004) or 1:45 pm (section 003) on October 23. One of the comment lines should indicate the compilation command used on OMEGA.

### Getting Started:

1. Suppose the input is:

```
7 25
1
3
4
6
7
10
25
```

There would be solutions of cardinality 1: { 25 } and 5: { 1 3 4 7 10 }.

2. You may modify existing code (e.g. <http://ranger.uta.edu/~weems/NOTES2320/subsetSum.c>).
3. The cost function must include the cardinality as a parameter, but the ordering concepts in Notes 07.F are still useful.
4. Arrays are to be dynamically allocated.
5. Your solution must use dynamic programming.