316 Data Structures

Assignment #2

(Due: Feb. 27, 2015)

Objective: To practice the implementation skills with recursive functions.

The Teddy Bear Game

- Here are the rules: Your friend is going to give you a certain number of bears. The number of bears is called ***initial***, and your goal is to end up with a particular number of bears, called the ***goal*** number.
- There are two other integer parameters to the game: ***increment*** and ***n***. At any point in the game, you have two choices: (a) You can ask for (and receive) ***increment*** more bears, or (b) If you have an even number of bears, then you can give half of them back to your friend. Each time you do a (a) or (b), that is called a ***step*** in the game, and the goal must be reached in ***n*** steps or fewer.
- For example, if *initial* is 99, *increment* is 53, and *n* is at least 4, then the following sequence of steps will reach the *goal* of 91:

  99 -> 152 -> 76 -> 38 -> 91
  step a step b step b step a

- Design and implement a recursive function that determines whether it is possible to reach a *goal* starting with some *initial* and *increment* numbers (allowing no more than *n* steps).

- You are **required** to provide **a recursive solution** to this problem. Non-recursive solutions will be rejected. A recursive solution will still be required to complete the program for course credit.
- No "cooperative" effort will be tolerated.

Submission

Put all files related to the assignment to a directory named A#- FN-LN (where A# the assignment number, FN your first name and LN your last name). And zip the directory. Then, submit your assignment using SpringBoard.
