Name:_____

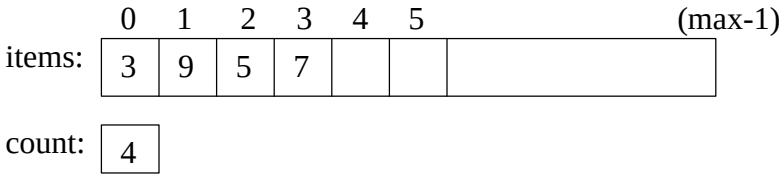
1. For homework programming assignments, you should be practicing *top-down design* (*stepwise refinement/molular programming*). In top-down design you split the original problem into easier/smaller subproblems (steps). Then, you look at each of the smaller subproblems to see if it is simple enough to solve with a relatively few number of programming statements. If not, further split the subproblem into yet smaller substeps.

A subproblem is small enough if all of its steps are trival with Python statements, and the all of the steps are directed toward solving just one problem (this is called functional cohesion).

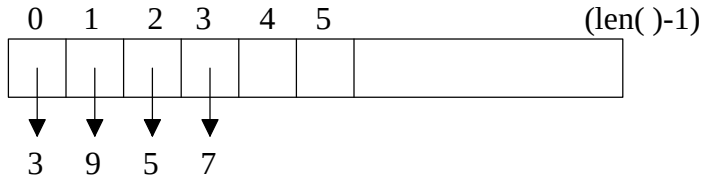
Today in class lets practice top-down design on homework #3.

Name:_____

2. Most programming languages have a built-in *array* data structure to store a collection of elements of the same type. Usually, the array is declared to hold a large number of element with the "front" part of the array being used to store the actual elements. For example, we could store the integers 3, 9, 5, 7 using an array:



Since Python does not have a (directly accessable) built-in array, we used a list.
I think that Python probably uses an array of references (pointers) to list items in their implementation of a list.



a) How efficient is it to append an item to the end of the list?

b) How efficient is it to insert a new item at index 0 of the list?

c) What would the code look like to search for an item value in a list?