Difficulties:

Considered for a second or third year competent CS student

Runtime not considered

1: trivial problem - super easy stuff

2 : easyish problems - not easy for the computer, still easy for a person

3 : really hard for the computer, solvable for a person pretty easily

4 : really really really hard for the computer, not easy for a person

5 : insanely hard, difficult even for a person

Simple Actions on Lists, Arrays, Collections (SALAC)

These problems involve elementary problems done on simpler data structures. These can involve just one or multiple structures

Data structures used:

* array
* list
* set
* collection
* natives like
  + int
  + byte
  + char
  + bool
  + number
  + etc.

Current Impediments:

declaring new things

binding from a quantifier

average/sum operators

Doesn't include fancy pointer operations, graphs/trees, fancy string operations, fancy math

|  |  |  |  |
| --- | --- | --- | --- |
| **Problem** | **Difficulty** | **Status** | **Date** |
| Finding an even child | 1 | done | 10/26/15 |
| Finding an even child of two lists | 2 | done | 10/26/15 |
| Finding the same element in two lists | 1 | done | 10/26/15 |
| Sorting | 4 |  |  |
| Finding largest element | 2 | done | 11/10/15 |
| Two-Sum problem | 3 | done | 11/17/15 |
| Three-sum problem | 3 | done | 12/3/15 |
| Sum of a list | 2 |  |  |
| Removing duplicates of a list | 3 |  |  |
| List index equality |  | done | 11/16/15 |
| List contains average of total list |  |  |  |
| Every list inside a given list contains an element y | 4 |  |  |

Graphs

* Trees

These problems involve different types of trees. Similar to graphs, but guaranteed to be ordered

* + Finding a value in a tree
  + Finding subtrees
  + Finding the deepest leaf in a tree
  + Finding the largest value in a tree
  + Finding the pre/con order traversal of a tree
  + Finding the lowest common ancestor of two nodes
  + Giving two tree, tell if that is equal
  + Converting a sorted list into binary search tree