CIS 36A – 18th In Class / Lab Assignment – **10 Points**

Student Name _____ **Student ID** _____ **Point Total**

Section 1: Define / Answer:

http://en.wikipedia.org/wiki/Linear_search

Linear Search (explain)-

In computer science, linear search or sequential search is a method for finding a particular value in a list that checks each element in sequence until the desired element is found or the list is exhausted.[1] The list need not be ordered.

Linear search, also known as sequential search, is a process that checks every element in the list sequentially until the desired element is found. The computational complexity for linear search is O(n), making it generally much less efficient than binary search (O(log n)). But when list items can be arranged in order from greatest to least and the probabilities appear as geometric distribution (f (x)=(1-p) x-1p, x=1,2), then linear search can have the potential to be notably faster than binary search.

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Traverse- like searching in data structure, move on nodes and check them

Iterate- Iteration is the repetition of a process in a computer program, usually done with the help of loops.

An example of an iteration programming language is as follows:

Programming Assignment

Task 1- Write a program that generates 100 random integers between 0 and 9 and stores them in an Array[]. Use Linear Search to count the time each value is matched in the Array[]. Values will appear multiple times so Linear Search needs to traverse all the elements in the Array[]

Use method (int)(Math.random() * 10) to generate the random integers between 0 and 9.

Attach Snipping photos of source code and output.

Sample output

0 appears 8 times in random integer array

1 appears 15 times in random integer array

Etc…

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```
1
2   package javaapplication2;
3
4   public class JavaApplication1 {
5
6       public static void main(String[] args) {
7
8           int[] ary = new int[100];
9           int[] count = new int[10];
10
11          for(int i = 0;i < 100;i++) {
12              ary[i] = (int)(Math.random() * 10);
13          }
14
15          for(int i = 0;i < 10;i++) {
16              for(int j = 0;j < 100;j++) {
17                  if(i == ary[j]) {
18                      count[i]++;
19                  }
20              }
21          }
22
23          for(int i = 0;i < 10;i++){
24              System.out.println( i + " appears " +
25                      count[i] +" times in random integer array");
26          }
27
28
29      }
30  }
31
```

Output - JavaApplication2 (run)

```
run:
0 appears 9 times in random integer array
1 appears 6 times in random integer array
2 appears 5 times in random integer array
3 appears 5 times in random integer array
4 appears 7 times in random integer array
5 appears 8 times in random integer array
6 appears 16 times in random integer array
7 appears 13 times in random integer array
8 appears 13 times in random integer array
9 appears 18 times in random integer array
BUILD SUCCESSFUL (total time: 0 seconds)
```