Hash Tables – Two Sum

**Purpose**

This lab was designed to teach you how to use an efficient data structure to solve a real-world problem.

**Description**

The file contains 1 million integers(not ints), both positive and negative (there might be some repetitions). Your task is to compute the number of unique target values t in the interval [-10000,10000] (inclusive) such that there are distinct numbers x,y in the input file that satisfy x+y=t. Submit your numeric answer (an integer between 0 and 20001). The data set is quite large so depending on how well you write your answer it could take a few minutes to 40 minutes to run.

**Sample Data:**

68037543430

-21123414637

***Algorithm Help:***

**Sort the data then for each item call binary search on t – x at a cost of n log n to sort and then n log n to check for each sum**

**Alternatively store the data in a hashtable and then for each element look up t – x. Cost of n to load the data and then a cost of n again to iterate thru and checking.**

56619844751

59688006695

82329471587

-60489726142

-32955448858

53645918962

….

**Program Shell**

Create your own

**Sample Execution**

187 // not the actual amount