**CSC 250 – Program Design Document**

**Structure Chart**

ReadData

Main

read\_first\_number

sortParallelArrays

showResult

binarySearch

ReadID

**Function Design (give the prototype and a short description for each function)**

// Read the first element in costs2.txt file and return its value.

int read\_first\_number(void);

// Read data from the file costs2.txt and store student IDs and their associated costs in parallel arrays.

void readData(int\* &ID, double\* &cost, int size);

// Sort the arrays in parallel ordering the IDs in ascending order and keeping the right cost.

void sortParallelArraysg(int\* mat\_ID[], double\* mat\_cost[], int size);

// Prompt the user to input a student ID and return the entered value.

int readID(void);

// Use the binary search algorithm to locate a student ID within the array. Return the index of the found ID or -1 if not found.

int binarySearch(const int array[], int num\_element, int search\_elem);

// Display the results, showing the student's ID and associated cost or print ID was not found.

void showResult(int id[], double cost[], int index, int search\_value);

**Time Estimate**

|  |  |  |
| --- | --- | --- |
|  | **Estimated Time** | **Actual Time** |
| Program Design | **35** |  |
| (list each function name and the time required to code each) |  |  |
| read\_first\_number | **10** |  |
| readData | **20** |  |
| sortParallelArrays | **15** |  |
| readID | **5** |  |
| binarySearch | **15** |  |
| showResult | **20** |  |
| Program Test | **20** |  |
| **Total Time** | **140** |  |