```
*********************
 2
       PROGRAMMED BY : Andrew Gharios
 3
       STUDENT ID
                    : 1449366
       CLASS
                    : M-Th 5-7:20p
       ASSIGNMENT #1: Functions and Arrays
  ***********************
  What input file would you like to use?
   What output file would you like to use? OFile.txt
9 MENU OPTIONS
10
11 1 - Find the larger balance
12 2 - Find the smaller balance
13 3 - Obtain the sum of all balances
14 4 - Obtain the average of all balances
15 5 - Find person
16 0 - Exit
17 Enter an option (0 to exit): 1
18
19 Finding the larger balance...
20
21 <redisplay menu>
22 Enter an option (0 to exit): 2
23
24 Finding the smaller balance...
25
26 <redisplay menu>
27 Enter an option (0 to exit): 3
28
29 Obtaining the sum of all balances...
30
31 <redisplay menu>
32 Enter an option (0 to exit): 4
33
34 Obtaining the average of all balances...
35
36 <redisplay menu>
37 Enter an option (0 to exit): 5
38
39 What do you want to search for (enter done to exit): Steve Woolston
40 Found.
41
42 <redisplay menu>
43 Enter an option (0 to exit): 5
45 What do you want to search for (enter done to exit): Jacques Rousseau
46 Jacques Rousseau was not found.
47
48 <redisplay menu>
49 Enter an option (0 to exit): 5
```

75 Thank you for using my program.

```
50
51 What do you want to search for (enter done to exit): Chris Carroll
52 Found.
53
54 <redisplay menu>
55 Enter an option (0 to exit): 5
57 What do you want to search for (enter done to exit): Pete McBride
58 Found.
59
60 <redisplay menu>
61 Enter an option (0 to exit): 5
63 What do you want to search for (enter done to exit): Jean Rousseau
64 Found.
65
66 <redisplay menu>
67 Enter an option (0 to exit): 5
68
69 What do you want to search for (enter done to exit): Florence Cyr
70 Florence Cyr was not found.
71
72 <redisplay menu>
73 Enter an option (0 to exit): 0
```

```
1 *********************
2 *
     PROGRAMMED BY : Andrew Gharios
3 * STUDENT ID : 1449366
4 * CLASS
              : M-Th 5-7:20p
5 *
     ASSIGNMENT #1 : Functions and Arrays
6 ************************
7 Larger Balance:
8 ID #
      NAME
                         BALANCE DUE
9 ----
        -----
                          -----
        Steve Woolston
10 1002
                           $ 1423.20
11
12 Smaller Balance:
13 ID # NAME
                          BALANCE DUE
                          -----
        -----
14 ----
15 1003 Don McBride
                          $ 12.32
16
17 Sum of Balance for all persons:
18 $ 4080.48
19
20 Average of Balance for all persons:
21 $ 408.05
22
23 Search Name:
24 ID # NAME
                          BALANCE DUE
        -----
25 ----
                          -----
26 1002
       Steve Woolston
                          $ 1423.20
27
28 Search Name:
29 ID # NAME
                          BALANCE DUE
        -----
30 ----
                          -----
31 1008 Chris Carroll
                           $ 32.35
32
33 Search Name:
34 ID # NAME
                           BALANCE DUE
        -----
35 ----
36 1007 Pete McBride
                           $ 500.32
37
38 Search Name:
39 ID # NAME
                           BALANCE DUE
40 ----
        -----
                          -----
41 1001 Jean Rousseau
                         $ 15.50
42
43
```

```
C:\Users\smgne\source\repos\AS 1\AS 1\Header.h
```

```
2 * AUTHOR
           : Andrew Gharios
3 * STUDENT ID : 1449366
4 * AS #1
          : Functions and Arrays
5 * CLASS
           : CS1B
6 * SECTION
            : M-TH: 5-7:20p
           : 6/15/21
7 * DUE DATE
9 #ifndef HEADER_H_
10 #define HEADER H
11
12 #include <iostream> // cin, cout.
13 #include <string> // string datatype variables.
14 #include <fstream> // Fstream files.
15 #include <iomanip> // fixed, setw, setprecision.
16 #include <ostream> // Ostream data type.
17 using namespace std;
18
19 /
    *************************
    ****
  * File To Array
   * This function will take all the data from the Input file and place them
   * into their respective Array with the corresponding datatype.
   * ==> returns nothing
23
24
25
   26 void FileToArray(ifstream& InFile,
27
               const int AR_SIZE,
28
                      ArrayName[], // IN & OUT - Array of the names.
               string
29
               int ArrayID[], // IN & OUT - Array of the Ids.
                      ArrayBal[]); // IN & OUT - Array of the balances.
30
               float
31
32 /
    *************************
  * Search Balance
  * This function will search for the smaller or the larger balance in the
  * balances Array based on user selection. Then output the person and all >
    their
   * information with the smaller or larger balance.
36
37
   * ==> returns nothing
38
39
   *******************************
40 void SearchBalance(ofstream& OFile,
41
                 const int AR_SIZE,
```

```
C:\Users\smgne\source\repos\AS 1\AS 1\Header.h
42
                 const float
                             ArrayBal[],
43
                 const int
                             ArrayIds[],
                             ArrayName[], // IN & OUT - Array of the
44
                 const string
                 balances.
45
                 bool
                         larger);
46
47 /
    *************************
48
   * Search Name
   * This function will search for a name within the names Array and then
    output
50
     the all the information of that found name to an output file.
   * ==> returns nothing
51
52
   ***************************
54 void SearchName(ofstream& OFile,
55
               const int AR SIZE,
56
               string ArrayName[],
57
               int ArrayID[],
               float ArrayBal[]); // IN & OUT - Array of the balances.
58
59
60 /
    *********************
61
   * Sum Avg.
62
   * This function will calculate the sum or the average of all the balances >
   * passed array.
63
   * ==> returns nothing
64
65
66
   void SumAvg(ofstream& OFile,
68
            const int AR SIZE,
69
            float
                  ArrayBal[], // IN & OUT - Array of the balances.
70
            bool
71
72 /
    *************************
73
   * PrintHeaderFile
      This function will output the header information
74
75
76
   77 void PrintHeaderFile(ostream& output, // IN - output datatype.
                  ofstream& OFile,
string asName.
78
                                   // IN - Output to File variable.
79
                   string asName,
                                   // IN - assignment name
```

```
C:\Users\smgne\source\repos\AS 1\AS 1\Header.h
```

```
C:\Users\smgne\source\repos\AS 1\AS 1\Source.cpp
```

```
1 /
   2 * AUTHOR : Andrew Gharios
3 * STUDENT ID : 1449366
4 * AS #1 : Functions and Arrays
5 * CLASS : CS1B
6 * SECTION : M-TH: 5-7:20p
7 * DUE DATE : 6/15/21
 ***************************
9 #include "Header.h"
10
11 /
   12 * Functions and Arrays
13 *-----
14 * This program will take in which files user wants to use and then prompt a
15 * series of option for the user to be able to use the data in the file for
16 * specific tasks. The options include searching for a name within the list,
17 * comparing the balances and determining the largest or smallest, calculating
18 * the total and average of all balances. The program outputs a list at to the
19 * OFile with all request information.
21 * INPUT:
22 * UserIfFile - User's selected InFile.
23 * UserOfFile - User's selected OFile.
24 * option - User's selection of options.
*/
26 int main()
27 {
28
29
    * CONSTANTS
30
         ٠-----
31
    * OUTPUT - USED FOR CLASS HEADING
32
      -----
33
    * PROGRAMMER : Programmer's Name
    * CLASS : Student's Course
34
35
    * SECTION : Class Days and Times
```

```
C:\Users\smgne\source\repos\AS 1\AS 1\Source.cpp
```

```
2
```

```
: Lab Number (specific to this lab)
       * LAB NUM
37
       * LAB NAME
                    : Title of the Lab
38
39
       * INPUT COL : Setw size for prompt column.
       * AR_SIZE : Array standard size.
40
       41
42
43
       const string AS_NAME = "Functions and Arrays";
44
       const int AS NUM = 1;
45
       const string STUDENT NAME = "Andrew Gharios";
       const string CLASS INFO = "M-Th 5-7:20p";
46
47
       const char AS_TYPE = 'A';
48
       const long long STUDENT ID = 1449366;
49
50
       const int AR_SIZE
                         = 10;
51
       const int INPUT COL = 41;
52
53
       string ArNames[AR SIZE]; // IN & CALC - Array of the names.
54
              ArIds[AR SIZE]; // IN & CALC - Array of the ids.
55
       float ArBal[AR SIZE]; // IN & CALC - Array of the balances.
                          // IN & CALC - Input File variable.
56
       ifstream InFile;
57
       ofstream OFile;
                               // IN & CALC - Output File variable.
58
       string
                userIfile;
                               // IN & CALC - Input File selection from user.
59
       string
                userOfile;
                               // IN & CALC - Output File selection from user.
                               // IN & CALC - User selection of what to do with >
60
       int
                option;
         data.
61
       bool
                larger;
                               // IN & CALC - If user wants to find the larger
         or smaller balance.
62
       bool
                average;
                               // IN & CALC - If user wwants to calculate sum or >
          average.
63
64
       option = 999;
65
66
       PrintHeaderFile(cout, OFile, AS_NAME, AS_NUM, STUDENT_NAME, CLASS_INFO,
67
                       AS TYPE, STUDENT ID);
68
69
       cout << left;</pre>
70
       cout << setw(INPUT COL) << "What input file would you like to use?";</pre>
71
       getline(cin, userIfile);
72
       cout << setw(INPUT COL) << "What output file would you like to use?";</pre>
73
       getline(cin, userOfile);
74
75
       InFile.open(userIfile);
76
       OFile.open(userOfile);
77
78
       PrintHeaderFile(OFile, OFile, AS_NAME, AS_NUM, STUDENT_NAME, CLASS_INFO,
79
           AS TYPE, STUDENT ID);
80
```

```
FileToArray(InFile, AR SIZE, ArNames, ArIds, ArBal);
 82
 83
 84
         cout << "MENU OPTIONS" << endl << endl;</pre>
 85
         cout << "1 - Find the larger balance" << endl;</pre>
 86
         cout << "2 - Find the smaller balance" << endl;</pre>
         cout << "3 - Obtain the sum of all balances" << endl;</pre>
 87
         cout << "4 - Obtain the average of all balances" << endl;</pre>
 88
 89
         cout << "5 - Find person" << endl;</pre>
 90
         cout << "0 - Exit" << endl;</pre>
 91
         while (option != 0)
 92
 93
 94
              cout << "Enter an option (0 to exit): ";</pre>
 95
              cin >> option;
 96
              cin.ignore(10000, '\n');
 97
 98
              if (option == 1)
 99
              {
100
                  cout << endl << "Finding the larger balance...";</pre>
101
                  cout << endl << endl;</pre>
102
                  larger = true;
103
                  SearchBalance(OFile, AR SIZE, ArBal, ArIds, ArNames, larger);
104
              }
105
              else if (option == 2)
106
              {
                  cout << endl << "Finding the smaller balance...";</pre>
107
108
                  cout << endl << endl;</pre>
109
                  larger = false;
110
                  SearchBalance(OFile, AR SIZE, ArBal, ArIds, ArNames, larger);
111
              else if (option == 3)
112
113
114
                  cout << endl << "Obtaining the sum of all balances...";</pre>
115
                  cout << endl << endl;</pre>
116
                  average = false;
117
                  SumAvg(OFile, AR_SIZE, ArBal, average);
118
              else if (option == 4)
119
120
              {
121
                  cout << endl << "Obtaining the average of all balances...";</pre>
122
                  cout << endl << endl;</pre>
123
                  average = true;
124
                  SumAvg(OFile, AR_SIZE, ArBal, average);
125
              }
126
              else if (option == 5)
127
              {
128
                  cout << endl;</pre>
129
                  SearchName(OFile, AR SIZE, ArNames, ArIds, ArBal);
```

```
C:\Users\smgne\source\repos\AS 1\AS 1\Source.cpp
```

```
4
130
131
132
             if (option != 0)
133
             {
134
                 cout << "<redisplay menu>" << endl;</pre>
135
             }
136
         }
137
138
         InFile.close();
139
         OFile.close();
140
141
         cout << endl << "Thank you for using my program.";</pre>
142
143
         return 0;
144
145 }
146
```

```
1 #include "Header.h"
2
3 /
    ****
   * File To Array
4
5
   * This function will take all the data from the Input file and place them
      into their respective Array with the corresponding datatype.
6
   * INPUTS:
8
   * InFile
            - Input File.
9
   * AR_SIZE - Array size
10
11
   * ArrayName - Array for all the names.
   * ArrayID - Array for all the Ids.
12
   * ArrayBal - Array for all the balances.
13
14
15
   * No Outputs.
   ******************************
  17
                const int AR_SIZE, // IN - Array sizes.
18
                        ArrayName[], // IN - Array for Names.
19
20
                int ArrayID[], // IN - Array for Ids.
21
                float
                        ArrayBal[]) // IN - Array for Balances.
22 {
            index; // CALC - Index to manipulate Arrays.
23
      int
24
      index = 0;
25
      while (InFile && index < AR_SIZE)</pre>
26
27
         getline(InFile, ArrayName[index]);
28
         InFile >> ArrayID[index];
         InFile >> ArrayBal[index];
30
31
         InFile.ignore(10000, '\n');
         index++;
32
33
      }
34 }
```

```
1 #include "Header.h"
 2
3 /
     *************************
    * Search Balance
 4
   * This function will search for the smaller or the larger balance in the
    * balances Array based on user selection. Then output the person and all ➤
 7
    * information with the smaller or larger balance.
8 *
9 * INPUTS:
10 * OFile
               - Output File.
11 * AR SIZE - Array size
12 * ArrayBal - Array for all the balances.
13 * ArrayName - Array for all the names.
14 * ArrayID - Array for all the Ids.
15 * average - Bool to calculate avg or sum.
16 *
17 * No Outputs.
18 ****************************
19 void SearchBalance(ofstream& OFile,
                                                // IN - Output File
     variable.
                     const int AR_SIZE,
20
                                               // IN - Array sizes.
                     const float          ArrayBal[], // IN - Array for Balances.
21
                                  ArrayIds[], // IN - Array for Ids.
22
                     const int
23
                     const string ArrayName[], // IN - Array for Names.
24
                             larger)
                                        // IN - bool to calculate
                     larger or smaller bal.
25 {
26
       const int ID COL = 9;
                              // CALC - Setw size for ID column.
27
       const int NAME_COL = 25; // CALC - Setw size for Name column.
       const int BAL_COL = 10;  // CALC - Setw size for Balance column.
28
29
       int
             index;
                        // CALC - Index to manipulate Arrays.
30
31
       float largerBal; // CALC - Largest balance storage.
       float smallerBal; // CALC - Smallest balance storage.
32
33
       int
             location; // CALC - Location to store index for output.
34
35
       index
                 = 0;
36
       largerBal = 0;
37
       location
                 = 0;
       smallerBal = 10000;
38
39
40
41
       while (index < AR_SIZE)</pre>
42
          if (larger)
43
44
          {
              if (largerBal < ArrayBal[index])</pre>
45
46
47
                  largerBal = ArrayBal[index];
```

```
C:\Users\smgne\source\repos\AS 1\AS 1\SearchBalance.cpp
```

```
48
                    location = index;
49
                }
50
            }
51
            else
52
            {
53
54
                if (smallerBal > ArrayBal[index])
55
                {
                    smallerBal = ArrayBal[index];
56
57
                    location = index;
58
                }
59
            }
60
            index++;
61
        }
62
        OFile << left;
63
        OFile << fixed;
64
65
        OFile << setprecision(2);
66
67
        if (larger)
68
            OFile << "Larger Balance:" << endl;
69
                                     << "ID #" << setw(NAME_COL);</pre>
70
            OFile << setw(ID_COL)
            OFile << "NAME"
                                       << "BALANCE DUE" << endl;</pre>
71
72
73
            OFile << setw(ID_COL)
                                       << "---";
                                       << "----";
74
            OFile << setw(NAME COL)
75
            OFile << "----"
                                       << endl;
76
77
            OFile << setw(ID_COL) << ArrayIds[location];
78
            OFile << setw(NAME COL) << ArrayName[location];
            OFile << "$"
                          << right << setw(BAL_COL) << ArrayBal[location];</pre>
79
80
            OFile << endl << endl;
81
            OFile << setprecision(6);
82
        }
        else
83
84
        {
            OFile << "Smaller Balance:" << endl;
85
                                      << "ID #" << setw(NAME_COL);</pre>
            OFile << setw(ID_COL)
86
            OFile << "NAME"
87
                                        << "BALANCE DUE" << endl;</pre>
88
89
            OFile << setw(ID_COL) << "----";
            OFile << setw(NAME COL) << "----";
90
            OFile << "----" << endl;
91
92
            OFile << setw(ID_COL) << ArrayIds[location];
93
            OFile << setw(NAME_COL) << ArrayName[location];
94
95
            OFile << "$" << right << setw(BAL_COL) << ArrayBal[location];
            OFile << endl << endl;
96
97
            OFile << setprecision(6);</pre>
98
        }
99 }
100
```

45

46

47

48

OFile << left;

OFile << fixed;

OFile << setprecision(2);

```
C:\Users\smgne\source\repos\AS 1\AS 1\SearchName.cpp
 1 #include "Header.h"
 2
 3 /
     ****
 4 * Search Name
     This function will search for a name within the names Array and then
     output
      the all the information of that found name to an output file.
7 *
 8 * INPUTS:
 9 * OFile - Output File.
10 * AR_SIZE - Array size
11 * ArrayBal - Array for all the balances.
12 * ArrayName - Array for all the names.
13 * ArrayID - Array for all the Ids.
14 * average - Bool to calculate avg or sum.
15 *
16 *No Outputs.
17 *
     **************************
     ***/
18 void SearchName(ofstream& OFile, // IN - Output File variable.
                  const int AR_SIZE, // IN - Array sizes.
19
20
                  string ArrayName[], // IN - Array for Names.
                  int ArrayID[],  // IN - Array for Ids.
21
                                    // IN - Array for Balances.
22
                  float ArrayBal[])
23 {
24
      const int ID COL = 9;
                             // CALC - Setw size for ID column.
      const int NAME_COL = 25; // CALC - Setw size for Name column.
25
      const int BAL COL = 10; // CALC - Setw size for Balance column.
27
                      // CALC
                                  - Index to manipulate Arrays.
28
              index;
       string userPick; // IN & CALC - User's pick for which name to search.
29
30
      boolfound; // CALC
                             - If name was found or not.
31
32
      found = false;
33
       index = 0;
34
35
      cout << "What do you want to search for (enter done to exit): ";</pre>
      getline(cin, userPick);
36
37
38
      while (index < AR SIZE && !found)</pre>
39
40
          if (userPick == ArrayName[index])
41
          {
42
              found = true;
43
              cout << "Found." << endl << endl;</pre>
44
```

```
C:\Users\smgne\source\repos\AS 1\AS 1\SearchName.cpp
```

71 } 72

```
49
               OFile << "Search Name:" << endl;
50
               OFile << setw(ID_COL) << "ID #" << setw(NAME_COL);
51
               OFile << "NAME"
                                << "BALANCE DUE" << endl;</pre>
52
53
               OFile << setw(ID_COL) << "----";
54
               OFile << setw(NAME_COL) << "----";
               OFile << "----" << endl;
56
               OFile << setw(ID_COL) << ArrayID[index];
57
               OFile << setw(NAME_COL) << ArrayName[index];
58
               OFile << "$" << right << setw(BAL_COL) << ArrayBal[index];
               OFile << endl << endl;
60
61
           }
62
           else
63
           {
64
               index++;
65
           }
       }
67
       if (!found)
68
       {
69
           cout << userPick << " was not found." << endl << endl;</pre>
70
       }
```

```
1 #include "Header.h"
 2
 3
4 /
     **********************
 5 * Sum Avg.
     This function will calculate the sum or the average of all the balances 🤝
 7 *
      passed array.
8 *
 9 * INPUTS:
10 * OFile
              - Output File.
11 * AR SIZE - Array size
12 * ArrayBal - Array for all the balances.
13 * average - Bool to calculate avg or sum.
14 *
15 * No Outputs.
16 *********************************
17 void SumAvg(ofstream& OFile, // IN - Output File variable.
              const int AR_SIZE, // IN - Array sizes.
18
                      ArrayBal[], // IN - Array for Balances.
19
              float
                       average) // IN - Bool to calculate avg or sum.
20
              bool
21 {
22
      int
            index; // CALC - Index to manipulate Arrays.
       float totalBal; // CALC & OUT - Sum of all balances.
23
24
                    // CALC & OUT - Avg of all balances.
      float avg;
25
      totalBal = 0;
26
27
      for (index = 0; index < AR SIZE; index++)</pre>
28
29
          totalBal += ArrayBal[index];
30
31
       }
32
      OFile << setprecision(2);
33
      OFile << fixed;
34
35
36
      if (average)
37
38
          avg = totalBal / AR_SIZE;
39
          OFile << "Average of Balance for all persons:" << endl;
40
          OFile << "$" << setw(9) << avg;
          OFile << endl << endl;
41
42
      }
43
      else
44
       {
45
46
          OFile << "Sum of Balance for all persons:" << endl;
          OFile << "$" << setw(9) << totalBal;
47
          OFile << endl << endl;
48
49
      }
```

```
C:\Users\smgne\source\repos\AS 1\AS 1\SumAvg.cpp

OFile << setprecision(6);</pre>
51 }
```

43

44

}

```
C:\Users\smgne\source\repos\AS 1\AS 1\PrintHeader.cpp
1 #include "Header.h"
2
3 /
     **************************
    ****
    * PrintHeaderFile
4
5
      This function will output the header information
6
                                                                     P
7
    * PRE-CONDITIONS
       The following parameters need to have a defined value prior to calling
8
9
       the function
10
             asName: The name of the assignment given in the course
11
             asNum: The number of the assignment given in the course
             studentName: The name of the student writing the code
12
             classInfo: The course name, date, and time of the class
13
14
             asType: Will either output as a lab or an assignment
15
             studentID: The Identification Number of the student
16
   17
18 void PrintHeaderFile(ostream& output, // IN - output datatype.
                     ofstream& OFile,
19
                                     // IN - Output to File variable.
                     string asName,
20
                                     // IN - assignment name
                                      // IN - assignment number
21
                     int asNum,
22
                     string studentName, // IN - student's name
23
                     string classInfo, // IN - class that is being taken
                                      // IN - assignment type
24
                     char asType,
                     long long studentID) // IN - student ID
25
26 {
      output << left;</pre>
27
28
      output <<
        PROGRAMMED BY : " << studentName << endl;</pre>
      output << "*
29
                  " << setw(14) << "STUDENT ID " << ": " << studentID << >
      output << "*
30
        endl;
                   output << "*
31
        endl;
      output << "*
32
33
34
      // PROCESSING - This will adjust setws and format appropriately based
                    on if this is a lab 'L' or assignment
35
36
      if (toupper(asType) == 'L')
37
38
         output << "LAB #" << setw(9);
39
40
      }
41
      else
42
      {
```

output << "ASSIGNMENT #" << setw(2);</pre>

- 1 Jean Rousseau
- 2 1001 15.50
- 3 Steve Woolston
- 4 1002 1423.20
- 5 Michele Rousseau
- 6 1005 52.75
- 7 Pete McBride
- 8 1007 500.32
- 9 Florence Rousseau
- 10 1010 1323.33
- 11 Lisa Covi
- 12 1009 332.35
- 13 Don McBride
- **14 1003 12.32**
- 15 Chris Carroll
- 16 1008 32.35
- 17 Yolanda Agredano
- 18 1004 356.00
- 19 Sally Sleeper
- 20 1006 32.36