

Name1: _____

Name2: _____

Class Day / Time: _____

Due Date: _____

Sample Code: OUTPUT – Daily Highs & Lows

This program will obtain from the user 3 sets of data including a date, the high temperature and a low temperature for that date. Calculate, store, and output the input and the average temperature in a table (see next page for the example output).

Create the pseudocode of your algorithm (don't need to type it). Then convert it into c++ code. Run the code above twice to produce the following output. The class heading only needs to be printed 1 time.

Additional Requirements:

- Use appropriate data types and variable names throughout the code.
- Do not use spaces or tabs for formatting --- use the manipulators discussed in class
- The point of this lab is to demonstrate the use of output manipulators so be sure to stick to the output format specified below.

Make sure it conforms to the style detailed in the lecture notes → including line numbers) – **printed out directly from main.cpp**

EXPECTED INPUT/OUTPUT

```

1 *****
2 *   PROGRAMMED BY : Michele Rousseau & Someone Else
3 *   CLASS          : CS1A
4 *   SECTION        : MW - 6p-7:30p
5 *   LAB #0         : Output - Daily Highs & Lows
6 *****
7
8 Please enter the date (MM/DD/YY): 08/04/65
9 Please enter the low temperature: 37
10 Please enter the high temperature: 80
11
12 Please enter the date (MM/DD/YY): 12/20/26
13 Please enter the low temperature: 45
14 Please enter the high temperature: 73
15
16
17 DATE          LOW          HIGH          AVERAGE
18 -----
19 08/04/65      37           80           58.5
20 12/20/26      43           73           59.0
21

```

Include the class heading for all assignments & labs. (use your name and etc)

This should be output from your code (see the eclipse lab)

Double Space

1 Space

Triple Space

4 spaces between each column

CODE - SOLUTION

```

1  /*****
2  * AUTHOR      : Michele Rousseau & Someone Else
3  * STUDENT ID  : 123456          & 789101
4  * LAB #00    : Output - Daily Highs & Lows
5  * CLASS      : CS1A
6  * SECTION    : MW: 7:30a
7  * DUE DATE   : 12/20/26
8  *****/
9
10 #include <iostream>
11 #include <iomanip>
12 #include <math.h>
13 using namespace std;
14
15 /*****
16 * OUTPUT - Daily Highs and Lows
17 *
18 * This program reads in two sets of data including a:
19 *     date,
20 *     high temperature, and
21 *     low temperature
22 *
23 * It calculates the average temperature for each set and will output a
24 * table including the input data and the average temperatures.
25 *
26 * INPUT:
27 *     Two sets of data will be input
28 *     ****
29 *     *** set 1 ***
30 *     ****
31 *     date1      : Date the temperatures occurred
32 *     lowTemp1   : Lowest temperature (as a whole number) for date1
33 *     highTemp1  : Highest temperature (as a whole number) for date1
34 *
35 *     ****
36 *     *** set 2 ***
37 *     ****
38 *     date2      : Date the temperatures occurred
39 *     lowTemp2   : Lowest temperature (as a whole number) for date2
40 *     highTemp2  : Highest temperature (as a whole number) for date2
41 *
42 * OUTPUT:
43 *     This program will output a table including the input described above
44 *     along with:
45 *     averageTemp1 : The average temperature for date1
46 *     averageTemp2 : The average temperature for date2
47 *
48 *****/

```

```

49  int main()
50  {
51      /*****
52      *  CONSTANTS
53      *  -----
54      *  USED FOR CLASS HEADING - ALL WILL BE OUTPUT
55      *  -----
56      *  PROGRAMMER : Programmer's Name
57      *  CLASS      : Student's Course
58      *  SECTION    : Class Days and Times
59      *  LAB_NUM    : Lab Number (specific to this lab)
60      *  LAB_NAME   : Title of the Lab
61      *
62      *  -----
63      *  USED FOR FORMATTING
64      *  -----
65      *  PROMPT_COL    : the set width for the prompts
66      *  DATE_COL      : the column for the area of the triangle
67      *  LOW_TEMP_COL  : the column for the area of the rectangle
68      *  HIGH_TEMP_COL : the column for the area of the circle
69      *  AVG_TEMP_COL  : the column for the area of the circle
70      *
71      *****/
72      const char PROGRAMMER[] = "Michele Rousseau & Someone Else";
73      const char CLASS[]      = "CS1A";
74      const char SECTION[]    = "MW: 7:30a - 5:00p";
75      const int  LAB_NUM      = 00;
76      const char LAB_NAME[]   = "Output - Daily Highs & Lows";
77
78      const int  PROMPT_COL    = 35;
79      const int  LOW_TEMP_COL  = 7;
80      const int  HIGH_TEMP_COL = 8;
81      const int  AVG_TEMP_COL  = 11;
82      const int  DATE_SIZE     = 9;
83
84      char date1[DATE_SIZE]; // IN & OUT - Set 1: Date for temperatures
85      int  lowTemp1;         // IN & OUT - Set 1: low temperature
86      int  highTemp1;        // IN & OUT - Set 1: high temperature
87      float averageTemp1;    // IN & CALC - Set 1: average temperature
88
89      char date2[DATE_SIZE]; // IN & OUT - Set 1: Date for temperatures
90      int  lowTemp2;         // IN & OUT - Set 1: low temperature
91      int  highTemp2;        // IN & OUT - Set 1: high temperature
92      float averageTemp2;    // IN & CALC - Set 1: average temperature
93
94
95      // OUTPUT - Class heading
96      cout << left;
97      cout << "*****\n";
98      cout << "* PROGRAMMED BY : " << PROGRAMMER << endl;
99      cout << "* " << setw(14) << "CLASS" << ": " << CLASS << endl;
100     cout << "* " << setw(14) << "SECTION" << ": " << SECTION << endl;
101     cout << "* LAB #" << setw(9) << LAB_NUM << ": " << LAB_NAME << endl;
102     cout << "*****\n\n";
103     cout << right;

```

```
104  /*****
105  * INPUT - read in two sets of data each containing a:
106  *         date,
107  *         low temperature, and a
108  *         high temperature
109  *****/
110  // INPUT - Set1: date, low temp and high temp
111  cout << left;
112  cout << setw(PROMPT_COL) << "Please enter the date (MM/DD/YY): ";
113  cin.getline(date1, DATE_SIZE);
114
115  cout << setw(PROMPT_COL) << "Please enter the low temperature: ";
116  cin >> lowTemp1;
117
118  cout << setw(PROMPT_COL) << "Please enter the high temperature: ";
119  cin >> highTemp1;
120  cin.ignore(1000, '\n');
121
122  cout << endl;
123
124  // INPUT - Set2: date, low temp and high temp
125  cout << setw(PROMPT_COL) << "Please enter the date (MM/DD/YY): ";
126  cin.getline(date2, DATE_SIZE);
127
128  cout << setw(PROMPT_COL) << "Please enter the low temperature: ";
129  cin >> lowTemp2;
130
131  cout << setw(PROMPT_COL) << "Please enter the high temperature: ";
132  cin >> highTemp2;
133  cin.ignore(1000, '\n');
134
135  cout << endl << endl;
136  cout << right;
137
138
139  /*****
140  * PROCESSING - calculate average temperatures for both sets of data
141  *****/
142  averageTemp1 = (lowTemp1 + highTemp1) / 2.0;
143  averageTemp2 = (lowTemp2 + highTemp2) / 2.0;
```

```

144  /*****
145  * OUTPUT - a table with the input data and the average temperature in
146  *          columns as follows:
147  *
148  *          DATE          LOW    HIGH    AVERAGE
149  *          -----      ---    ----    -
150  *          08/04/65      37     80     58.5
151  *          12/20/26      45     73     59.0
152  *****/
153
154  // OUTPUT - Headings for the table
155  cout << left << setw(DATE_SIZE-1) << "DATE"
156       << right << setw(LOW_TEMP_COL) << "LOW"
157       <<          << setw(HIGH_TEMP_COL) << "HIGH"
158       <<          << setw(AVG_TEMP_COL) << "AVERAGE"
159       << endl;
160
161  cout << left << setw(DATE_SIZE-1) << "-----"
162       << right << setw(LOW_TEMP_COL) << "----"
163       <<          << setw(HIGH_TEMP_COL) << "----"
164       <<          << setw(AVG_TEMP_COL) << "-----"
165       << endl;
166
167  // OUTPUT - two sets of data (date, low temp, high temp & average temp)
168  cout << setprecision(1) << fixed;
169  cout << left << setw(DATE_SIZE-1) << date1
170       << right << setw(LOW_TEMP_COL) << lowTemp1
171       <<          << setw(HIGH_TEMP_COL) << highTemp1
172       <<          << setw(AVG_TEMP_COL) << averageTemp1
173       << endl;
174
175  cout << left << setw(DATE_SIZE-1) << date2
176       << right << setw(LOW_TEMP_COL) << lowTemp2
177       <<          << setw(HIGH_TEMP_COL) << highTemp2
178       <<          << setw(AVG_TEMP_COL) << averageTemp2
179       << endl;
180
181  return 0;
182  }

```