Name1: _____

Name2: _____

Class Day / Time: _____

Due Date: _____
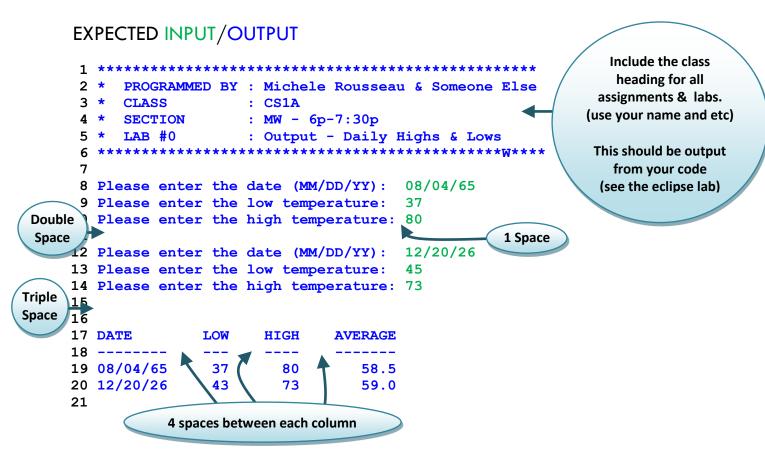
Sample Code: OUTPUT – Daily Highs & Lows

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  **********************************************W****
 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

```cpp
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 out put 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   ***********************************************************************/
```

```cpp
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    }
```