CS 135 -- Lab 5

The purpose of this lab is to practice what we learned in Chapter 5: Loops and Files.
In particular, we will implement `for` loops (§ 5.6), and writing to files (§ 5.11).

Part 1:

1) Create a new folder: `Desktop > code_2020-10-05`
2) Use EditPlus to create two C++ projects as follows:

   Programming Challenges from the textbook.

   Chap 3: p. 146-148 ***Be sure to read the instructions!***

	Project Folder Name	Source Code
12.	**Celsius_to_Fahrenheit**	*Celsius_to_Fahrenheit.cpp*

(Add an option "Fahrenheit or Celsius?" to do the other calculation as well.)

22.	**Angle_Calculator**	*Angle_Calculator.cpp*

(Add an option "Degrees or Radians?" to do the other calculation as well.)

Sample Outputs

Sample output for *Celsius_to_Fahrenheit.cpp*:

```
Fahrenheit or Celsius [F/C]:  f

Enter the temperature in Fahrenheit: 100

100.0° F. is:  37.8° C.
```

Sample output for *Angle_Calculator.cpp*:

```
Degrees or radians [d/r]:  d

Enter an angle in degrees: 60

   60°  =  1.0472  radians

Sine:      0.8660
Cosine:    0.5000
Tangent:   1.7321
```

Part 2:

1) Use previous folder: `Desktop > code_2020-10-05`
2) Use EditPlus to create three more C++ projects as follows:

   Programming Challenges from the textbook.

   Chap 5: p. 297-299 ***Be sure to read the instructions!***

	Project Folder Name	Source Code
2.	**ASCII_Codes**	*ASCII_Codes.cpp*

(Write the output to the screen and to a file: *ascii_codes.txt*)

12.	**Celsius_to_Fahrenheit_Table**	*Celsius_to_Fahrenheit_Table.cpp*

(Write the output to the screen and to a file: *degrees.txt*)

Angle_Calculator_Table *Angle_Calculator_Table.cpp*

Take your previous *Angle_Calculator* program and modify it to do a table of trig values.

The columns will be: `Deg.  Sine  Cosine  Tangent.`

And the rows will go from 0° to 90° in increments of 5°.

(Write the output to the screen and to a file: *trig_table.txt*)

Sample Outputs

Sample output for *ASCII_Codes*:

```
Characters for the ASCII Codes

 ^@ ^A ^B ^C ^D ^E ^F ^G ^H ^I ^J ^K ^L ^M ^N ^O
 ^P ^Q ^R ^S ^T ^U ^V ^W ^X ^Y ^Z ^[ ^\ ^] ^^ ^_
    !  "  #  $  %  &  '  (  )  *  +  ,  -  .  /
 0  1  2  3  4  5  6  7  8  9  :  ;  <  =  >  ?
 @  A  B  C  D  E  F  G  H  I  J  K  L  M  N  O
 P  Q  R  S  T  U  V  W  X  Y  Z  [  \  ]  ^  _
 `  a  b  c  d  e  f  g  h  i  j  k  l  m  n  o
 p  q  r  s  t  u  v  w  x  y  z  {  |  }  ~ ^?
```

Sample output for *Celsius_to_Fahrenheit_Table*:

```
Temperature Conversion Table
Celsius  Fahrenheit
   0°      32.0°
   1°      33.8°
   2°      35.6°
   3°      37.4°
   4°      39.2°
   5°      41.0°
  ...
```

Sample output for *Angle_Calculator_Table*:

```
 Angle  Sine   Cosine  Tangent
   0°  0.0000  1.0000  0.0000
   5°  0.0872  0.9962  0.0875
  10°  0.1736  0.9848  0.1763
  15°  0.2588  0.9659  0.2679
 ...
```

Coding Convention

- Each file shall have a file header.
- Each function shall have a function header.
- Your code shall be properly indented and commented.
- Your code shall include the lines in the *pgm_template.cpp* at the end of the main() function that will output your name and the date, and pause the program.

Submission Instructions

Compile and test your code in the MinGW environment we have at TMCC. That is how it will be graded.

The `code_2020-10-05` folder should contain the the following folders and contents:

Celsius_to_Fahrenheit, containing:

- *Celsius_to_Fahrenheit.cpp*
- *Celsius_to_Fahrenheit.exe*

Angle_Calculator, containing:

- *Angle_Calculator.cpp*
- *Angle_Calculator.exe*

ASCII_codes, containing:

- *ASCII_codes.cpp*
- *ASCII_codes.exe*
- *ascii_codes.txt*

Celsius_to_Fahrenheit_Table, containing:

- *Celsius_to_Fahrenheit_Table.cpp*
- *Celsius_to_Fahrenheit_Table.exe*
- *degrees.txt*

Angle_Calculator_Table, containing:

- *Angle_Calculator_Table.cpp*
- *Angle_Calculator_Table.exe*
- *trig_table.txt*

Zip up your folder and submit your ***code_2020-10-05.zip*** file to the Canvas Drop box.