Program Purpose
Practice designing and implementing programs in C++. Debugging, classes.

Mandatory Instructions
Write a C++ program solution for Programming Challenge 16, "Freezing and Boiling Points" on p. 807 in your Gaddis textbook with the modifications shown below.

Temperature Class
Design a *Temperature* class with one *private* data member to store a *temperature* in Fahrenheit (*int*). Include *public* member functions in your class to allow the *temperature* to be set and retrieved (*setTemp*, *getTemp*). Also declare a default constructor that sets the *temperature* to zero and another constructor that accepts a value for the *temperature*. These functions should all be defined as in-line functions. Type the class declaration with the *temperature* data member and these functions into a file called *prog5.h*. This file should also include prototypes for the other functions described in the textbook to check whether substances freeze or boil at the *temperature* stored in the class data member. These functions will be defined as out-of-line functions.

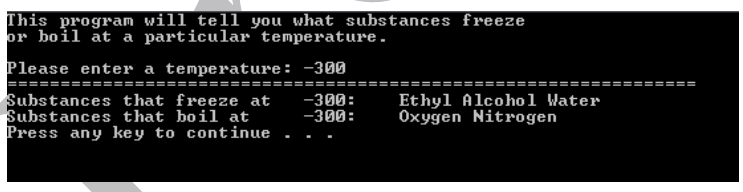
In a separate file called *prog5.cpp* type in the function definitions (i.e., implementations) for the out-of-line functions. Be sure to qualify each function name in this file with the class name and scope resolution operator.

Create a third file named *prog5client.cpp* to demonstrate the *Temperature* class. The program should ask the user to enter a temperature and then display a list of the substances that will freeze at that temperature and those that will boil at that temperature. Sample output is shown below. You will need to add two more functions to handle Nitrogen.

Substance	Freezes	Boils
Oxygen	-362F	-300F
Ethyl Alcohol	-173F	173F
Water	32F	212F
Nitrogen	-346F	-320F

```
This program will tell you what substances freeze
or boil at a particular temperature.

Please enter a temperature: -300
============================================================
Substances that freeze at   -300:    Ethyl Alcohol
Substances that boil at     -300:    Oxygen
```



Program Documentation
Provide documentation header for your program and for each function other than main().

```
// Program        5
// Description:   Program description
// Programmer:    Your name
// Class:         CS 2020, spring/fall 20xx
```

```
// Function:       Function name
// Description:    Function purpose
// Programmer:     Your name
// Class:          CS 2020, spring/fall 20xx
// Parameters:     list and describe
// Returns:        describe
```

What to turn in?

Make sure you have completed your program according to the specifications given.

Make a photo of your program by typing in the following commands at the prompt:

```
$ photo prog5.log                    ( to start the photo utility)
$ pwd                                ( to identify your current directory)
$ ls  -l                             ( to list all files in your directory – lower case Ls not ones)
$                                    ( to leave a few blank lines press the Enter key )
$
$ cat prog5.h                        ( to show your C++ source code)
$ cat prog5.cpp
$ cat prog5client.cpp
$ g++ prog5.cpp prog5client.cpp      ( to compile your program - creates a.out file)
$ .\a.out                                  ( enter -300 )
$ .\a.out                                  ( enter -20 )
$ .\a.out                                  ( enter 250 )
$ .\a.out                             ( enter -350)

$ exit                               ( or press the two keys  [Ctrl]-d  together to end the photo session)
```