

UNIVERSITY of MARYLAND

UNIVERSITY COLLEGE - *Asian Division*

Project 2: Temperature Conversion Program

Objective:

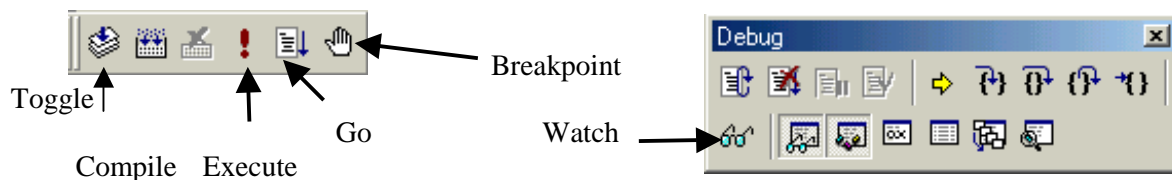
In this lab you will write a C++ language program that utilizes output, input, and arithmetic operations. The Lab Report is due on the last class of the 4th week.

Program Requirements:

Write a program that will convert any entered degrees Celsius temperature expressed as a real number to degrees Fahrenheit. The output should be displayed to one tenth of a degree. You will need to display an introduction, prompt for input, and display the results.

Debugging Tools:

Debugging tools are available as part of the Visual C++ Development Environment. Breakpoint toggling is accessible on the toolbar as shown in the illustration below. Breakpoints allow you to halt program execution at specific spots in the source code and examine the value of variables. Set a breakpoint by clicking on a specific line in your program just after the variable declarations. Then click the breakpoint toggle on the tool bar. Note that a red dot appears at this line of the program.



Compile the program. Run the program up to this breakpoint by clicking on the Go button of the toolbar. Examine the context menu at the bottom of the screen. Notice that the data values stored in each declared variable is displayed on the screen. Note that garbage is in each location until some value is assigned.

Once a breakpoint is encountered a debug menu appears. Clicking on it results in several possibilities for stepping through the program. The debug *Step Over* [F10] allows you to run the source code program one statement at a time. It will stay within your source code and not step into external functions. Note the value of the variables as you step through the program using *Step Over* [F10].

You may create a variable watch by clicking the cursor on the variable identifier in the source code and then clicking on the eye glass icon on the toolbar. A watch allows you to examine the value of a specific variable as you step through the program similar to the context menu.

These debugging tools are valuable in locating logic errors in a program. Get practice using them during the implementation phase of this project. You will need how to utilize them as programs become more difficult.

Project Report:

Submit a project report with the following items: cover sheet, program specifications section, algorithm specifications section (include equations and flow chart), known test data section, source code, and sample output for several runs with known test data.. Also provide an explanation of the purpose of the debugging tools available for Visual C++ that can aid in debugging logic errors.

Note as specified on the Syllabus a grade of 80% will be awarded for minimally fulfilling all project specifications. To exceed an 80% grade you must exceed the requirements and neatness does count. You may for example write a second program to convert from Fahrenheit to Celsius temperatures. The program is due at the beginning of class and late reports will be reduced 25% for each class period late.