CS 121 **Lab Assignment #13**
Bruce Bolden 10 points
April 23, 2015 **Due:** April 30, 2015

1 Introduction

The use of function pointers is very powerful programming technique. It allows programmers to use a single function to accomplish a task on multiple types of data or link to a specific function when necessary (*callback* functions).

Function pointers are pointers that point to the address of a function. **Note:** A function pointer points to a function with a specific *signature*. Consequently all functions you want to use with a specific function pointer must have the same return-type and parameter list (the signature)!

1.1 Objective

Examine/explore the usage of *function pointers*.

1.2 Activities

1. Examine/Study the code for a simple expression evaluator closely. What is new to you?
2. Download the source (`calcFP.cpp`) and compile it. Run the program. Note: A more complicated version is defined in `calcFP2.cpp`.
3. Instrument/Modify the code if desired.
4. Examine/Study the code for sorting lines of text (`sortLines.cpp`) closely. What is new to you?
   Note: `sortLines.c` was the original C program. Comparing the C and C++ versions of the program may be interesting.
5. Download the source (`sortLines.cpp`) and compile it. You may receive a warning about type conversion—ignore it. Run the program on both of the test files (and some of your own).

1.3 Deliverables

1. Modify your *filtering* code (as previous written for the filtering lab, Lab #8) to use function pointers to filter out (remove) all values:
   - above some specified value.
   - below some specified value.
2. Annotate your `script` sessions to demonstrate that your code works properly.
3. Document any issues/problems as you find them (Programming Log).

1.4 References

The C Programming Language, Second edition, Brian Kernighan and Dennis Ritchie, Prentice-Hall, 1988

Recursion Using Trampoline Functions
http://coliveira.net/software/recursion-using-trampoline-functions/

Sample code:
http://www.cs.uidaho.edu/~bruceb/cs121/Labs/FunctionPointers/