CSCI 689 **Computer Assignment 1** **Spring 2016**
(10 points)

Sum of Odd Integers

For this computer assignment, write a C++ program to read a positive integer N ≥ 1 and then calculate and display the sum of the first N odd integers. For example, if N is 4, your program should display the value 16, which is 1 + 3 + 5 + 7. Your program should prompt and get the value N from stdin and display its value and the sum on stdout.

You can name your source file anything you want but make it sure that it has the extension .cc. In addition to the source file, you also need to have a header file. Guard the statements in your header file using the following format. This is necessary because you don't want the statements in the header file is processed more than once.

```
#ifndef A-CONSTANT-VALUE  // which is not defined any place else
#define A-CONSTANT-VALUE // same const value for ifndef directive
// put all statements for your header file here
#endif
```

Include all system header files (that you need in your program) in your header file. For example, to gain access to the iostream library, which defines a set of simple I/O operations, insert the line #include <iostream> in your header file, and at the top of your source file, insert your header file by the following statement: #include "header-file.h". You can give your source and header file any names you like, but make it sure that the source file has the extension .cc and the header file has the extension .h.

To compile your source file and link its object file with the system library routines, you need to create a makefile. Insert the statements in this file in the following format, where the first line defines a macro that includes several options we use for the C++ compiler, and in the rest each entry consists of a line containing a colon (the dependency line), and one/more command lines beginning with a tab. To the left of the colon on the dependency line is a target (an executable file); to the right of the colon are the target's prerequisites. For target, you can choose any valid name, and the advantages of using a makefile will be discussed in class. After creating this file, simply execute the UNIX make command without any arguments.

```
OPT = -std=c++11 -c -g -Wall -Wextra

executable-file: object-file.o
        g++ -o executable-file object-file.o

object-file.o: source-file.cc header-file.h
        g++ ${OPT} source-file.cc
```

For a final test of your program, first make a link to the data file of this assignment by executing: ln -s ~cs689/progs/16s/p1/prog1.d, where prog1.d contains the test value N = 100. Then, execute it as: executable-file < prog1.d > output-file. When the execution is

successful, the output file output-file will contain the value of the summation. You can find the correct output in file prog1.out, which is in the same directory with prog1.d.

Submit your source and header files to your TA by executing: mail_prog source-file.cc header-file.h.