# Computer Science 1

# Programming Assignment 6

# Functions & File I/O

# 75 Points

Tornado data for Oklahoma, 2022, is stored in a file named tornado.txt. A copy of the data file is posted in D2L under the Course Materials for Unit 6. The data is stored with no column headings, a space between each data item and a return after the path width data for each tornado.

Ref: <https://www.weather.gov/oun/tornadodata-ok-2022>

|  |  |  |
| --- | --- | --- |
| **Fujita Scale**  **(EF rating)** | **Path Length (miles)** | **Path Width (yards)** |
| 1 | 7.0 | 50 |
| 2 | 5.0 | 200 |
| 1 | 10.0 | 200 |
| 1 | 6.7 | 700 |
| 1 | 0.5 | 240 |
| 1 | 5.6 | 1400 |
| 1 | 7.0 | 500 |
| 2 | 12.0 | 1760 |
| 1 | 14.0 | 1350 |
| 1 | 0.4 | 150 |

* Write a program to read the tornado.txt file and create a report.
* Store the tornado report into a file named report.txt.
* The report should contain the following data for each part, printed in columns:
  + EF rating
  + Path Length (miles)
  + Path Width (yards)
  + Affected Area (sq miles)
* Below the part table, print the total area affected.
* You should have separate functions to:
  + Read a line of data.
  + Calculate the area affected for one tornado and keep a running total of the areas.
  + Print one line in the report.
* Your program should work with files containing fewer or more records (lines) than those shown in the table above.

\*\*\* A similar example program, labelled “Student Grades” is posted under Content for Unit 6.

Design your program by completing the CS 150 Program Design Document. Be sure to include a structure chart for the program, the prototype for each function, and a brief description of each function’s purpose. Save the design in a file named Tornado\_xxx.doc where xxx are your initials and submit it in the Program 6 Design drop box by the date shown in the calendar – this is before the program due date.

Code your program. Save it in a file named tornado\_xxx.cpp where xxx are your initials.

Compile, run and test your program.

Submit your working .c file in the Program 6 drop box by the due date shown in the calendar.