Programming Assignment #4: Number Triangles

Consider the number triangle shown below. Write a program that calculates the highest sum of numbers that can be passed on a route that starts at the top and ends somewhere on the base. Each step can go either diagonally down to the left or diagonally down to the right.

```
          7

        3   8

      8   1   0

    2   7   4   4

  4   5   2   6   5
```

In the sample above, the route from 7 to 3 to 8 to 7 to 5 produces the highest sum: 30.

INPUT AND LIBRARY

You are supplied with a P4Lib.lib and P4Lib.h, inside which you'll find a function that reads a number triangle from a text file. You are also supplied with a few text files for testing, though your program should be able to process any valid number triangle. The first line of each text file contains R (1 <= R <= 500), the number of rows. Each subsequent line contains the integers for that particular row of the triangle. All the supplied integers are non-negative and no larger than 100. More information on the library functions is provided in the header file.

SAMPLE TRIANGLE INPUT FROM FILE

```
5
7
3 8
8 1 0
2 7 4 4
4 5 2 6 5
```

OUTPUT FORMAT

A single line containing the largest sum using the traversal specified.

SAMPLE OUTPUT

```
30
```

IMPORTANT NOTES

As in the previous assignment, you will submit a single source file which contains only a single function:

```
int findMaxSum(int **triangle, rowCount);
```

Your function should not refer to any #define statements or produce any output to the display. It should return the maximum sum of integers on one of the paths from the top row of the triangle to the bottom row.

Other hints will be provided in class.