Lab Assignment 2

Exercise 1 (40%): Write a C++ program that inputs a triangle with three vertices then determines if the given triangle is a right triangle (直角三角形). You should define the following struct in proper header files with header guard. You should then include these types in your client code and report the vertex with the right angle.

```
struct Vertex {
    double x;
    double y;
};

struct Triangle {
    Vertex A;
    Vertex B;
    Vertex C;
};
```

Two sample runs of the program are as follows:
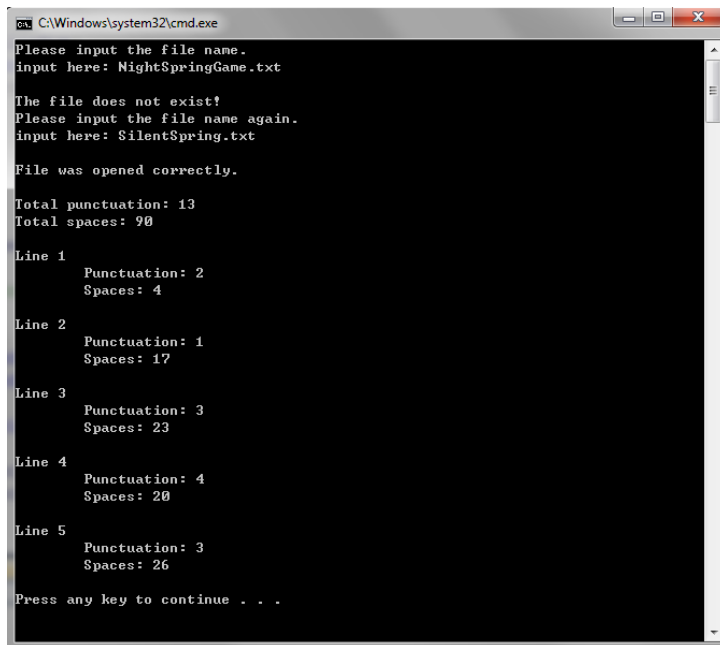
Exercise 2 (40%): Read a sequence of words from an input file `SilentSpring.txt` (given in the course website) and store the values in a `vector`. After you've read all the words, look for whitespace and punctuation. Print the total number of whitespace and punctuation as well as the number of whitespace and punctuation occurred in each line.

```
C:\Windows\system32\cmd.exe

Please input the file name.
input here: NightSpringGame.txt

The file does not exist!
Please input the file name again.
input here: SilentSpring.txt

File was opened correctly.

Total punctuation: 13
Total spaces: 90

Line 1
        Punctuation: 2
        Spaces: 4

Line 2
        Punctuation: 1
        Spaces: 17

Line 3
        Punctuation: 3
        Spaces: 23

Line 4
        Punctuation: 4
        Spaces: 20

Line 5
        Punctuation: 3
        Spaces: 26

Press any key to continue . . .
```