Assignment #5

Most operating systems provide data-compression utilities that reduce the size of text files so they take up less room on the disk. These utilities work both ways; compressed files can be uncompressed later. Write a **crunch** program that reduces the size of C++ source files. Your program should remove all extraneous white space including new line characters. (You will have to research the meaning of extraneous, e.g., is a single blank required between tokens?) In addition, any comments should be discarded.

Your program should prompt the user for the name of the file to be crunched, and should produce an output file that contains your crunched program.

For example, if your program is called *pgm.cpp* the **crunch** program should produce a file called *try_me.cpp*.

The code in *try_me.cpp* should compile with the same effects as *pgm.cpp*. Does it? Try your program on a number of your .cpp files.

You should also report the reduction in space achieved by **crunch,** expressed as a percent. To accomplish this, write a simple function *cntchr* that counts the number of characters in the original and output files. This function should write its results to a file called *summary.txt*.

Submit your source code for crunch.cpp and run the program using the program you submitted for Assignment #1. Submit a copy of both the crunched and un-crunched version of Assignment1 as well as a sample output of the crunched Assignment #1.

```cpp
 1   /*
 2       Name: FilenameProcessing
 3       Description: How to pass filenames to a function
 4   */
 5
 6
 7   #include <iostream>
 8   #include <cstdlib>
 9   #include <fstream>
10   #include <string>        //include string library for string methods
11
12   using namespace std;
13
14   void processFiles(const char *, const char *);   //"const char *" denotes
15                                                    //a constant "C String"
16
17   int main()
18   {
19       string inputFile, outputFile;
20       cout << "Enter the name of the input file: ";
21       cin >> inputFile;
22       cout << "Enter the name of the output file: ";
23       cin >> outputFile;
24
25       //Call the file processing function converting the "C++ String" objects
26       //into "C Strings" using the c_str() method
27       processFiles(inputFile.c_str(), outputFile.c_str());
28
29       return 0;
30   } //end main
31
32
33   //This function accepts two "C string" arguments
34   void processFiles(const char *infile, const char *outfile)
35   {
36       int c;
37
38       ifstream input;
39       ofstream output;
40
41       input.open(infile);
42       output.open(outfile);
43
44       if (!input.is_open()) {
45           cout << "\nERROR: could not find the input file: " << infile << endl;
46           exit(1);
47       }
48
49       if (!output.is_open()) {
50           cout << "\nERROR: could not find the output file: " << outfile << endl;
51           exit(1);
52       }
53
54       // Character by character copy from input to output until End of File
55       while (!input.eof()) {
56           c = input.get();
57           output.put(c);
58       }
59
60       input.close();
61       output.close();
62   } //end processFiles
```