

**Removing Comments from a Source File**

Even though comments are essential for human readers, the compiler simply ignores them. If you are writing a compiler, you therefore need to be able to recognize and eliminate comments that occur in a source file.

Write a C++ program that copies characters from the input stream `is` to the output stream `os`, except the characters that appear inside C++ comments. Your implementation should recognize both comment conventions.

- Any text beginning with `/*` and ending with `*/`, possibly many lines later.
- Any text beginning with `//` and ending through the end of the line.

Do not worry about making the layout of the output of your program look nice, and do not worry about incorrect programs, but beware of `//`, `/*` and `*/` in comments, strings and character constants.

To compile and link your program with the system library routines, execute: `Make N=4`. To test your program, execute: `Make execute N=4`. This command (1) executes your program `prog4.exe` with the input source file `prog4-in.cc` and generates the output source file `prog4-out.cc`; (2) compiles and links the output source file; (3) executes the output program `prog4-out.exe` with the input file `prog4-out.d`; and (4) displays the output of the output program both on the terminal screen and in `prog4-out.out`. You can find all related files for this computer assignment in directory: `~cs689/progs/17f/p4`.

The main ( ) routine in your program simply calls the following routines for each subtask:

- `void open_files ( ifstream& is, ofstream& os )`: This routine opens the source file `prog4-in.cc` for the input stream `is` and the source file `prog4-out.cc` for the output stream `os`. If either file cannot be opened, it prints an error message on `stderr` and exits the program with the exit value `EXIT_FAILURE`.
- `void process_data ( ifstream& is, ofstream& os )`: This routine gets the data from the input stream `is`, character by character, and it inserts an individual character in the output stream `os` if the character is not part of a C++ comment.
- `void close_files ( ifstream& is, ofstream& os )`: This routine closes both the input and output source files associated with the streams `is` and `os` at the end of the program.

When your program is ready, mail its source and header files to your TA by executing the following command: `mail_prog.689 prog4.cc prog4.h`