CS 275	**Advanced Programming Techniques in C**	Test 2
Name:	Fall 1998	Max Pts: 37

Important: This is an open book test. You can use any books, notes, or paper. *Do not log into the computer during the test.* Any calculations and rough work can be done on the back side of the test pages. If there is a syntax error in any program segment, just write it down and you will get full credit for the problem. You will lose five points for not writing your name.

1. [4 pt] Given a directory containing the following files: `Abel`, `Cain`, `George`, `Gorth`, `Greg`, `Sam`, `Ted`, and `Trod`, give the `ls` command to list only those files:
   (a) consisting of three letters
   (b) consisting of four letters
   (c) that begin with a `G` followed by `e` or `o`
   (d) that begin with a `T` and end with `d`

2. [4 pt] Give one reason why `RCS` is superior to `SCCS`.

3. [5 pt] You have to search a file for a pattern. The obvious way to do this is to use the `grep` command. The problem is that `grep` puts the information on the `stdout`. Can you write a shellscript in Bourne Shell syntax that will allow me to search the file and echo a message to indicate whether the pattern was found or not. It is also possible that I misspell the file name and you must also be able to say whether the file name specified does not exist. Remember, there should be no other output on the `stdout`. The script takes two parameters – filename and pattern.

4. [5 pt] When I started programming, I used a compiler that required me to use the extension `.cpp` on all C program files. Since I got the new compiler, I have standardinzed on using the extension `.c` for my C programs. Can you give me the command to rename all the `.cpp` files to `.c` files (for example, `foo.cpp` will be renamed to `foo.c`. These files could be anywhere in my directory hierarchy.

5. [4 pt] Give an example of a situation where it is advantageous to use preprocessor macros rather than the inline functions in C++. Also, give an example of a situation where the reverse is true.

6. [10 pt] Create a class `book` which has attributes `author` and `title`. A third attribute is `book_number` which is its unique serial number. That is, whenever you create an object of class `book`, it should assign a unique serial number to that object. Write the constructor for doing so.

7. [5 pt] Write a function in C++ that can be used to increment an integer variable. For example, my main code may contain:

```
int x = 6;
increment ( x );
```

Your function should be such that after executing the above two lines, `x` should contain 7.