W 11. Write a call of `memset` that replaces the last `n` characters in a null-terminated string `s` with `!` characters.

12. Many versions of `<string.h>` provide additional (nonstandard) functions, such as those listed below. Write each function using only the features of the C standard.

(a) `strdup(s)` — Returns a pointer to a copy of `s` stored in memory obtained by calling `malloc`. Returns a null pointer if enough memory couldn't be allocated.
(b) `stricmp(s1, s2)` — Similar to `strcmp`, but ignores the case of letters.
(c) `strlwr(s)` — Converts upper-case letters in `s` to lower case, leaving other characters unchanged; returns `s`.
(d) `strrev(s)` — Reverses the characters in `s` (except the null character); returns `s`.
(e) `strset(s, ch)` — Fills `s` with copies of the character `ch`; returns `s`.

If you test any of these functions, you may need to alter its name. Functions whose names begin with `str` are reserved by the C standard.

13. Use `strtok` to write the following function:

```
int count_words(char *sentence);
```

`count_words` returns the number of words in the string `sentence`, where a "word" is any sequence of non-white-space characters. `count_words` is allowed to modify the string.

# Programming Projects

1. Write a program that finds the roots of the equation $ax^2 + bx + c = 0$ using the formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Have the program prompt for the values of $a$, $b$, and $c$, then print both values of $x$. (If $b^2 - 4ac$ is negative, the program should instead print a message to the effect that the roots are complex.)

W 2. Write a program that copies a text file from standard input to standard output, removing all white-space characters from the beginning of each line. A line consisting entirely of white-space characters will not be copied.

3. Write a program that copies a text file from standard input to standard output, capitalizing the first letter in each word.

4. Write a program that prompts the user to enter a series of words separated by single spaces, then prints the words in reverse order. Read the input as a string, and then use `strtok` to break it into words.

5. Suppose that money is deposited into a savings account and left for $t$ years. Assume that the annual interest rate is $r$ and that interest is compounded continuously. The formula $A(t) = Pe^{rt}$ can be used to calculate the final value of the account, where $P$ is the original amount deposited. For example, \$1000 left on deposit for 10 years at 6% interest would be worth $\$1000 \times e^{.06 \times 10} = \$1000 \times e^{.6} = \$1000 \times 1.8221188 = \$1,822.12$. Write a program that displays the result of this calculation after prompting the user to enter the original amount deposited, the interest rate, and the number of years.