Exercises

18.1 Write an I/O function call to handle the following tasks. All can be handled by a single call.

a. Print out an integer followed by a string followed by a floating point number.

b. Print out a phone number in (XXX)-XXX-XXXX format. Internally, the phone number is stored as three integers.

c. Print out a student ID number in XXX-XX-XXXX format. Internally, the ID number is stored as three character strings.

d. Read a student ID number in XXX-XX-XXXX format. The number is to be stored internally as three integers.

e. Read in a line of input containing last name, First name, Middle initial age sex. The name fields are separated by commas. The middle initial and sex should be stored as characters. Age is an integer.

18.2 What does the value returned by scanf represent?

18.3 Why is buffering of the keyboard input stream useful?

18.4 What must happen when a program tries to read from the input stream but the stream is empty?

18.5 Why does the following code print out a strange value (such as 1073741824)?

```c
float x = 192.27163;
printf("The value of x is %d\n", x);
```

18.6 What is the value of `input` for the following function call:

```c
scanf("%d", &input);
```

if the input stream contains

```
This is not the input you are looking for.
```
18.7 Consider the following program:

#include <stdio.h>

int main()
{
    int x = 0;
    int y = 0;
    char label[10];

    scanf("%d %d", &x, &y);
    scanf("%s", label);

    printf("%d %d %s\n", x, y, label);
}

a. What gets printed out if the input stream is 46 29 BlueMoon?
b. What gets printed out if the input stream is 46 BlueMoon?
c. What gets printed out if the input stream is 111 999 888?

18.8 Write a program to read in a C source file and write it back to a file called "condensed_program" with all white space removed.

18.9 Write a program to read in a text file and provide a count of

a. The number of strings in the file, where a string begins with a non-white space character and ends with a white space character.
b. The number of words in the file, where a word begins with an alphabetic character (e.g., a-z or A-Z) and ends with a nonalphabetic character.
c. The number of unique words in the file. Words are as defined in Part b. The set of unique words has no duplicates.
d. The frequency of words in order of most frequent to least frequent. In other words, analyze the text file, count the number of times each word occurs, and display these counts from most frequent word to least frequent.