Producer and Consumer Threads

The producer thread will alternate between sleeping for a random period of time and inserting a random integer into the buffer. Random numbers will be produced using the rand() function, which produces random numbers between RAND_MIN and RAND_MAX. The consumer will also sleep for a random period of time and, upon awakening, will attempt to remove an item from the buffer. An outline of the producer and consumer threads appears in Figure 6.29.

In the following sections, we first cover details specific to Pthreads and then describe details of the Win32 API.

Pthreads Thread Creation

Creating threads using the Pthreads API is discussed in Chapter 4. Please refer to that chapter for specific instructions regarding creation of the producer and consumer using Pthreads.

```
#include <stdlib.h>  /* required for rand() */
#include "buffer.h"

void *producer(void *param) {
    buffer_item item;

    while (TRUE) {
        /* sleep for a random period of time */
        sleep(...);
        /* generate a random number */
        item = rand();
        if (insert_item(item))
            fprintf("report error condition");
        else
            printf("producer produced %d\n", item);
    }

    void *consumer(void *param) {
        buffer_item item;

        while (TRUE) {
            /* sleep for a random period of time */
            sleep(...);
            if (remove_item(&item))
                fprintf("report error condition");
            else
                printf("consumer consumed %d\n", item);
        }
```

Figure 6.29 An outline of the producer and consumer threads.