(a) `atoi(str)`
(b) `atol(str)`
(c) `atoll(str)`

11. Although the `bsearch` function is normally used with a sorted array, it will sometimes work correctly with an array that is only partially sorted. What condition must an array satisfy to guarantee that `bsearch` works properly for a particular key? *Hint:* The answer appears in the C standard.

Section 26.3

12. Write a function that, when passed a year, returns a `time_t` value representing 12:00 a.m. on the first day of that year.

13. Section 26.3 described some of the ISO 8601 date and time formats. Here are a few more:
    (a) Year followed by day of year: *YYYY–DDD*, where *DDD* is a number between 001 and 366
    (b) Year, week, and day of week: *YYYY*–W*ww*–*D*, where *ww* is a number between 01 and 53, and *D* is a digit between 1 through 7, beginning with Monday and ending with Sunday
    (c) Combined date and time: *YYYY–MM–DD*T*hh:mm:ss*

    Give `strftime` strings that correspond to each of these formats.

Programming Projects

W 1. (a) Write a program that calls the `rand` function 1000 times, printing the low-order bit of each value it returns (0 if the return value is even, 1 if it's odd). Do you see any patterns? (Often, the last few bits of `rand`'s return value aren't especially random.)

(b) How can we improve the randomness of `rand` for generating numbers within a small range?

2. Write a program that tests the `atexit` function. The program should have two functions (in addition to `main`), one of which prints `That's all,` and the other `folks!`. Use the `atexit` function to register both to be called at program termination. Make sure they're called in the proper order, so that we see the message `That's all, folks!` on the screen.

W 3. Write a program that uses the `clock` function to measure how long it takes `qsort` to sort an array of 1000 integers that are originally in reverse order. Run the program for arrays of 10000 and 100000 integers as well.

W 4. Write a program that prompts the user for a date (month, day, and year) and an integer `n`, then prints the date that's `n` days later.

5. Write a program that prompts the user to enter two dates, then prints the difference between them, measured in days. *Hint:* Use the `mktime` and `difftime` functions.

W 6. Write programs that display the current date and time in each of the following formats. Use `strftime` to do all or most of the formatting.

```
(a) Sunday, June 3, 2007  05:48p
(b) Sun, 3 Jun 07  17:48
(c) 06/03/07  5:48:34 PM
```