(c) What's the advantage of using an array to implement these macros?

```
#define _UPPER    0x01    /* upper-case letter */
#define _LOWER    0x02    /* lower-case letter */
#define _DIGIT    0x04    /* decimal digit */
#define _CONTROL  0x08    /* control character */
#define _PUNCT    0x10    /* punctuation character */
#define _SPACE    0x20    /* white-space character */
#define _HEX      0x40    /* hexadecimal digit */
#define _BLANK    0x80    /* space character */

#define isalnum(c)   (_ctype[c] & (_UPPER|_LOWER|_DIGIT))
#define isalpha(c)   (_ctype[c] & (_UPPER|_LOWER))
#define iscntrl(c)   (_ctype[c] & _CONTROL)
#define isdigit(c)   (_ctype[c] & _DIGIT)
#define isgraph(c)   (_ctype[c] &
                        (_PUNCT|_UPPER|_LOWER|_DIGIT))
#define islower(c)   (_ctype[c] & _LOWER)
#define isprint(c)   ( ctype[c] &
                        (_BLANK|_PUNCT|_UPPER|_LOWER|_DIGIT))
#define ispunct(c)   (_ctype[c] & _PUNCT)
#define isspace(c)   (_ctype[c] & _SPACE)
#define isupper(c)   (_ctype[c] & _UPPER)
#define isxdigit(c)  (_ctype[c] & (_DIGIT|_HEX))
```

Section 21.2

W 7. In which standard header would you expect to find each of the following?

(a) A function that determines the current day of the week
(b) A function that tests whether a character is a digit
(c) A macro that gives the largest `unsigned int` value
(d) A function that rounds a floating-point number to the next higher integer
(e) A macro that specifies the number of bits in a character
(f) A macro that specifies the number of significant digits in a `double` value
(g) A function that searches a string for a particular character
(h) A function that opens a file for reading

Programming Projects

1. Write a program that declares the `s` structure (see Section 21.4) and prints the sizes and offsets of the `a`, `b`, and `c` members. (Use `sizeof` to find sizes; use `offsetof` to find offsets.) Have the program print the size of the entire structure as well. From this information, determine whether or not the structure has any holes. If it does, describe the location and size of each.