Designs 5-2 (Arrays 2)

Graded course work

Important Notes:

- **Write all the programs, from the designs in this handout**
- **Use the same program names, and variable names that I have specified**
- **Compile, run, and test your programs**
- **Submit a copy of these programs to me for grading**
- **If you don't know how to do any particular part, ask me -- I will show you how**

Program (`states4.c`)

Based on the program `states3.c` in the lecture handout, write a program that prompts the user for the name of a state capital, and searches for that state capital.

If the state capital is found, the program prints out the state name.

A not-found message is printed if the state capital is not found.

Program (`words1.c`)

Write a program based on the declarations:

```
unsigned int element_number = 0;

int character_counter = 0,
    space_counter = 0,
    period_counter = 0;

char a_character = ' ',
     a_paragraph[255] = {"This is some text. It is short. It only contains three sentences."};
```

the program will produce the output below.

Program output:

```
The text, contains:
          52 characters.
          11 words.
           3 sentences.

Press any key to continue_
```

Hints:
Use a `while()` loop, and the function `strlen()` to control it.

Ask yourself these questions:

How do I know how many characters are in the text?
How do I know how many sentences are in the text?
How do I know how many words are in the text?

Program (books1.c)

Based on the searching algorithm used in the program states3.c in the lecture handout, write a library database program using the declarations:

```
int book_number = 0;   // used as loop counter

char author_name[20] = "",
     book_title[25] = "";

struct books   // define the structure
{
  char author_name_field[20];
  char book_title_field[25];
  char status_field[5];
};

struct books array_of_books[10] = {"John Steinbeck", "Cannery row", "In",
                                   "Scott Fitzgerald", "Tender is the night", "In",
                                   "George Orwell", "Nineteen eighty four", "Out",
                                   "Owen Wister", "The virginian", "Out",
                                   "Somerset Maughum", "The razors edge", "Out",
                                   "George Orwell", "The road to wiggan pier", "In",
                                   "John Steinbeck", "The grapes of wrath", "In"};
```

The program will ask the user to type in the author's name, and will produce the output below:

```
          The Westwood library database

Please enter the author's name: John Steinbeck

The author: John Steinbeck wrote:
          Cannery row     Status: In
          The grapes of wrath     Status: In


 ** Exiting Program **

Press any key to continue_
```

Program (sort2.c)

Based on the sorting algorithm in program sort1.c, write a program that sorts the temperatures in the array in program temps1.c, and prints it out in order.

Program (sort3.c)

Based on the sorting algorithm in program sort1.c, write a program that sorts the prices in the array in program gold1.c, and prints it out in order.

Program (sort4.c)

Based on the sorting algorithm in program sort1.c, write a program that sorts the array:

```
char months[15][10] = {"January", "February", "March", "April",
                       "May", "June", July", "August", "September",
                       "October", "November", "December"};
```

and prints it out in order.

The 15 is the number of rows in the array, the 10 is the number of characters in each row.
