Final Exam Practice Problems

Here are some practice problems for the Final Exam.

Practice 1:

Write a function that takes an array and a size as parameters and returns a pointer to a new dynamically allocated array which has the same size but has the original elements reversed.

Practice 2:

Write a program which compares two strings given on the command line and prints the size of the largest prefix that the two strings have in common. For example, given `"this"` and `"that"`, the program should print `2` because the first two characters are the same.

Place the code that compares the two strings in a function that takes the two strings as parameters and returns the size of the common prefix.

Practice 3:

Write a program to draw an `x` out of asterisks, with a size specified by the user. Place the code that draws the `x` in a function which takes the size as a parameter.

```
* *
 **
 *
 **
* *
```

Add an option to the program so that it writes the `x` to a file instead of printing it if given a filename on the command line.

Practice 4:

Write a program that finds the length of a string using a recursive function. Do not use `strlen()`.

Practice 5:

Write a program that counts the number of words in a file.

Program 6:

Write a program to find the sum of the digits of a positive integer. Try this with both a loop and with recursion.

Hint: You can get the rightmost digit of a positive integer `n` using `n % 10`, and you can remove the rightmost digit of a positive integer using `n / 10`.