AE1PGA Lab 3

Below are some tasks that will give you an opportunity to practice using the features and concepts we've discussed in the last few lectures. Often these tasks have some unexpected complications, so don't skip them just because they look easy when you read them.

Textbook 3.32

Rectangle of plus symbols. Loop practice.

Textbook 3.33

Hollow rectangle of plus symbols. Loop and if statement practice.

Textbook 3.18

Sales commission calculator. The calculation itself is pretty simple; we are more concerned with getting the overall program structure and looping correctly.

Textbook 3.34, 3.35, 3.48

These are a good selection of the different classes of mathematical programs you might write. 3.34 is about checking for palindromes. 3.35 is a converter between two different representations (hint, compare with how you did 2.30 in the last lab). 3.48 is a much more in-depth investigation of secret messages that you might find interesting.

Exercise: menu driven calculator

Write a program which displays a text-based menu to the user, allowing them to choose between 3 mathematical operations on numbers.

Option 1 should ask for 2 numbers and add them;
Option 2 should ask for 2 numbers and multiply them;
Option 3 should ask for 2 numbers and calculate the modulus.
Option 4 should exit the program.

After the operation is complete, the menu show be shown again to allow the user to select another option. The input numbers should be integers but the results should be real numbers if necessary.

Exercise: Sorting an array of numbers

Create a program which reads in a sequence of numbers, sorts them into decending order, and prints the numbers in that order.

The program should read an integer from the user which is the number of numbers that the program will then read in and sort.
The program then reads in that number of integers into an array of the appropriate size.
The program should then sort the array into decending numerical order.
Finally, the program should print out these numbers from the array in decending order.

See section 6.8 of the textbook for a simple sorting algorithm (Bubblesort) that you can modify for your program and use to sort an array of numbers.

An example of the program running:

```
zlizpd3$ ./array-sort-nums
Enter number of marks: 5
Enter mark 1: 34
Enter mark 2: -16
Enter mark 3: 4
Enter mark 4: 870
Enter mark 5: 77
870
77
34
4
-16
```

End