Introduction to Programming 1 – Worksheet 9

Part 1 – Constants and Characters

This part will have you write a basic Caesar cipher encoder for encoding basic text communication. The Caesar cipher is a basic shift cipher. This means that the letters are all substituted with other letters a fixed distance down the alphabet. For example if we were using a shift value of 3, then the word "Sean" would become "Vhdq". 'V' is 3 letters after 'S', 'h' is 3 letters after 'e' and so on.

Question 1

Write a program named Q1.c. The program should define an array of 200 characters. All elements of the array should be initialised with the value 0 (or '\0'). The number of characters should be stored as a **constant**.

Question 2

Modify the code in Q1.c so that user is asked to enter some text. Read the text using the getchar function so the user cannot enter too much text.

Question 3

Modify the code in Q1.c so that for every letter character in the array, the value is changed by some shift (see the example above). This shift should be stored as a **constant**.

Question 4

Modify the code in Q1.c so that when a letter is shifted past the end of the alphabet, it is given a value of a letter at the start of the alphabet. For example, if using a shift of 3, and given the text "wxyz" we would get the result "zabc".
Hint, a clever solution to this problem would use the modulus operator.

Question 5

Modify the code in Q1.c so that the result of the transformation is printed using the putchar function.

Question 6

Write a program named Q6.c. This program should be able to decode the output of the previous question. This means that it should try all possible shift values and print the result each time.
Example: Input marked in Yellow

```
Pdub kdg d olwwoh odpe
Qevc leh e pmxxpi peqf
Sgxe ngj g rozzrk rgsh
...
Mary had a little lamb
Esjq zsv s dalldw dset
...
```