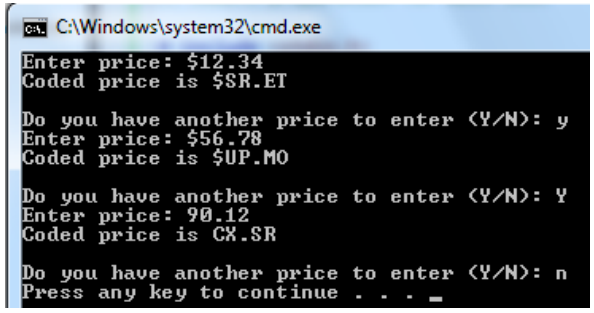
SM2-21st C Programming

Tutorial 4 15 Nov 2017

You have to treat these questions as test questions and should solve them under close-book condition.You should not seek help in any form.

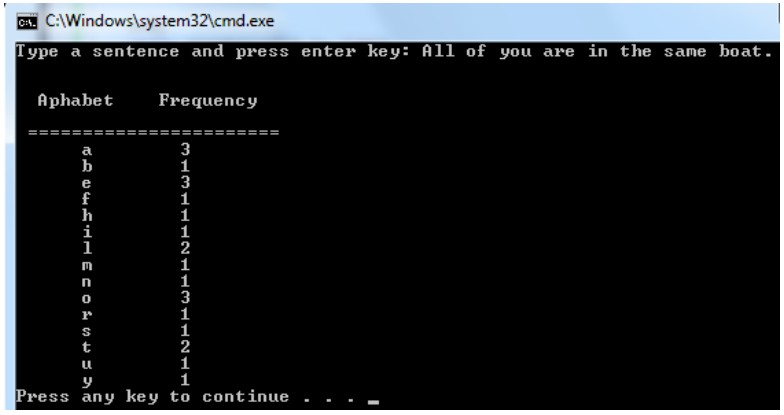
1. Write a complete C program to code a price tag by alphabets. The simulated labels displayed on the screen are as follows:



The mapping of the digits to alphabets is as follows:

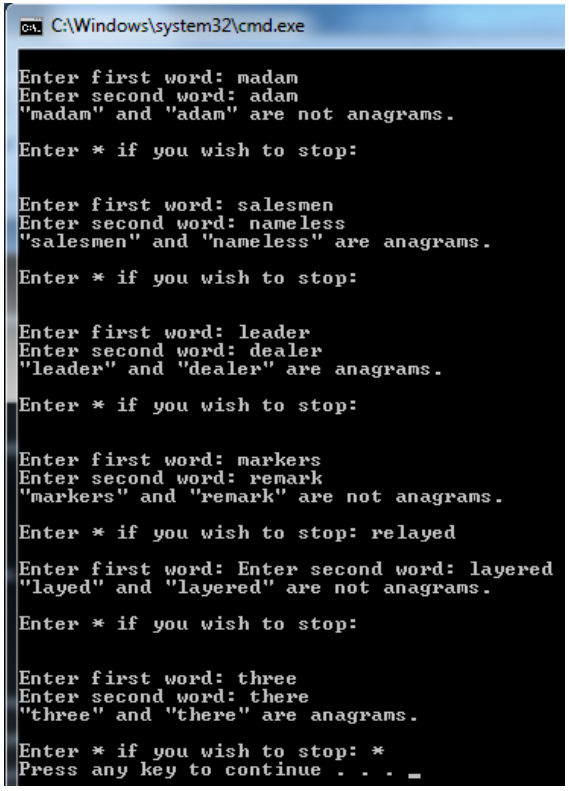
Digit	0	1	2	3	4	5	6	7	8	9
Alphabet	X	S	R	E	T	U	P	M	O	C

2. Write a complete C program to read a sentence of up to 200 characters from the keyboard and print on the screen the frequency of the small-letter alphabets in the string. For example:

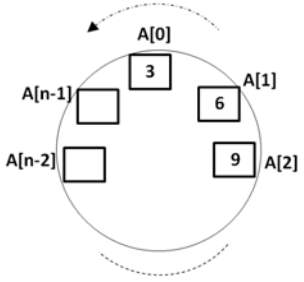


3. Two English words are anagram of each other if the letters from one word can be rearranged to form the other word. For examples, the following pairs of words are anagrams of each other: (dealer, leader), (there, three), (section, notices), (markers, remarks), (praised, despair), (teaching, cheating).

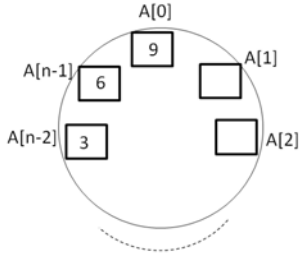
Write a complete C program to read two English words from the keyboard, and display on the screen whether the two words are anagrams. Assume that each word will not contain more than 15 alphabets and each alphabet in the word is small letter. The test run is as follows:



4. A 1-D array with n elements is linear, but it can be emulated by a cyclic structure as shown below:



Original Contents of Array

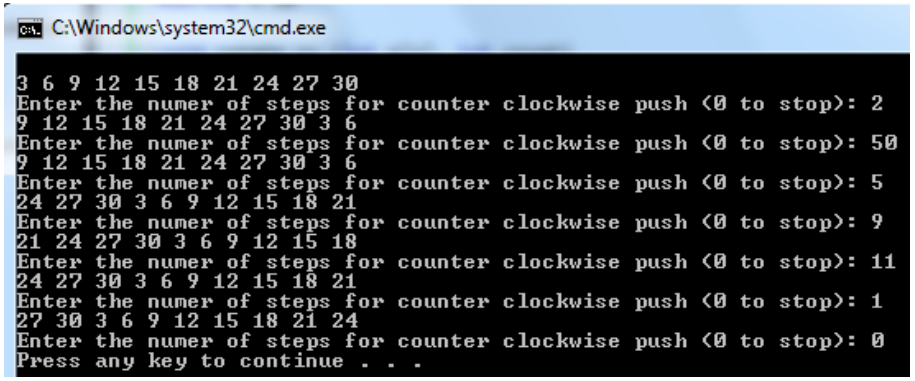


After 2 Steps of Counter Clockwise Push

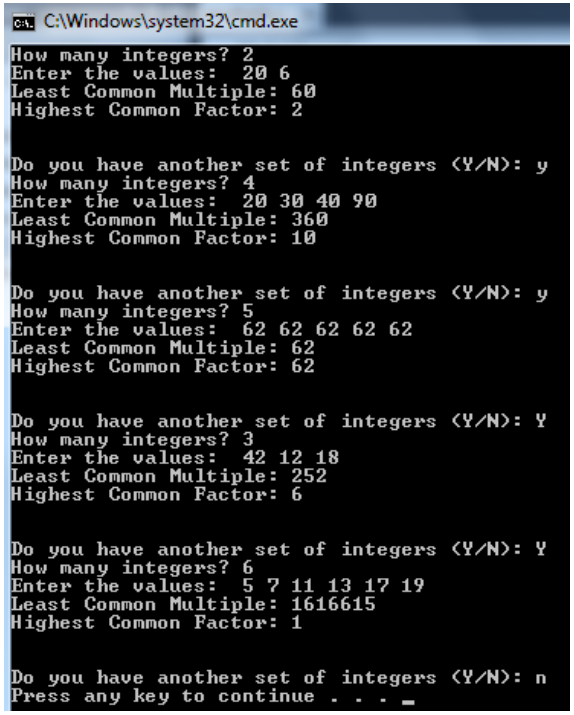
Complete the following program to carry out the cyclic counter-clockwise push on the contents of the array until 0 is entered from the keyboard.

```
// rotate_counter.c     preparation for mock test
// Rotate counter-clockwise for a number of steps

# include <stdio.h>
#define n 10

void rotate_cc (int p[n], int count)
{
   // rotate counter clockwise for count steps
     :
     :
}

int main()
{
   int a[n], i, step;

   for (i=0;i<n;i++) a[i] = 3*i + 3;

   printf ("\n");
   for (i=0;i<n;i++) printf ("%d ",a[i]);
     :
     :
   return 0;
}
```

A session of the program execution is as follows:



5. Write a complete C program to read up to 6 integers, and compute and print their least common multiple and highest common factor on the screen. The program runs continuously until there is no new set of integers to be processed. For examples:



Please solve the problems with your best effort.

\- A/Prof Tay