



Summer School 2019

Coding Boot Camp

Exercises 3

1. Complete this truth table and from it determine a Boolean expression for the condition “barefoot”.

|  |  |  |  |
| --- | --- | --- | --- |
| Socks | Shoes | Barefoot |  |
| False | False |  |  |
| False | True |  |  |
| True | False |  |  |
| True | True |  |  |

1. Write a function to determine if a list of words are in alphabetical order. Use the program issorted.py as your template.
2. Cast your mind back to the earlier exercise where you swapped the contents of two variables. Can you write a program that will sort the list of words?
3. Write a program to calculate the frequency of each of the letters A to Z in the file message.txt. The file contains only upper case letters, and begins FSVFUJQYCXBVSSCKFIOXIISVYCAKYAQFSVOCTXML
4. Present the frequency data as a sorted histogram like this

R \*\*\*\*\*\*\*\*\*\*\*\* 22

O \*\*\*\*\*\*\*\*\*\*\*\*\* 23

X \*\*\*\*\*\*\*\*\*\*\*\*\*\* 26

T \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 29

V \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 31

K \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 36

U \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 47

A \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 50

C \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 51

I \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 51

F \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 62

W \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 83

S \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 86

Y \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 106

1. Use your histogram data to attempt to decipher the text in message.txt.  
   Use these expected letter frequency rankings to help with the decoding.

["E", "T", "A", "I", "R", "O", "S", "N", "L", "C", "D", "H", "M",

"U", "F", "P", "G", "Y", "B", "V", "W", "K", "X", "J", "Q", "Z"]

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