Programming Exam 6

Date/Time: 2024.05.07 08:10 – 09:00
(程式檔命名學號_quiz6.py，上傳至 Moodle PE6 上傳區)

Problem: Guess Alphabet with Histogram Display

You are tasked with writing a Python program that plays the "Guess the Alphabet" game with the user. The program should generate a random lowercase alphabet character between 'a' and 'z', inclusive, using the *random* module. The program should prompt the user to guess the alphabet character and validate their input (ensure that the user's input is a lowercase alphabet character). You need to inform the user whether their guess is correct, too high, or too low. The program should allow the user to guess again and add their guess to a list of previous guesses until they guess the correct alphabet character. When the user guesses the correct alphabet character, the program should print a congratulatory message, the number of tries it took the user to guess the alphabet character, the list of previous guesses, and a histogram of the guesses. The histogram should display the frequency of each guess as a row of asterisks (*), grouped by four.

Sample Input/Output   (以下是你程式執行後須印出的結果)

```
c:\workspace>python pe6_extra.py
Guess the lowercase alphabet: u
The alphabet you are looking for is alphabetically lower.
Guess the lowercase alphabet: g
The alphabet you are looking for is alphabetically higher.
Guess the lowercase alphabet: j
The alphabet you are looking for is alphabetically higher.
Guess the lowercase alphabet: l
The alphabet you are looking for is alphabetically higher.
Guess the lowercase alphabet: m
The alphabet you are looking for is alphabetically higher.
Guess the lowercase alphabet: n
The alphabet you are looking for is alphabetically higher.
Guess the lowercase alphabet: o
The alphabet you are looking for is alphabetically higher.
Guess the lowercase alphabet: p
The alphabet you are looking for is alphabetically higher.
Guess the lowercase alphabet: q
The alphabet you are looking for is alphabetically higher.
Guess the lowercase alphabet: r
The alphabet you are looking for is alphabetically higher.
Guess the lowercase alphabet: s
The alphabet you are looking for is alphabetically higher.
Guess the lowercase alphabet: t
Congratulations! You guessed the alphabet "t" in 12 tries.

Guess Histogram:
a - d:
e - h: *
i - l: **
m - p: ****
q - t: ****
u - x: *
y - z:

c:\workspace>
```

```
c:\workspace>python pe6_extra.py
Guess the lowercase alphabet: k
The alphabet you are looking for is alphabetically lower.
Guess the lowercase alphabet: C
Please enter a lowercase alphabet.
Guess the lowercase alphabet: 5
Please enter a lowercase alphabet.
Guess the lowercase alphabet: e
The alphabet you are looking for is alphabetically lower.
Guess the lowercase alphabet: b
The alphabet you are looking for is alphabetically higher.
Guess the lowercase alphabet: c
Congratulations! You guessed the alphabet "c" in 4 tries.

Guess Histogram:
a - d: **
e - h: *
i - l: *
m - p:
q - t:
u - x:
y - z:

c:\workspace>
```

(繳交是交 pe6.py 檔，不是交截圖)

Note: You need to write comments (註解) for each part in your code.