Data Engineer Take Home Assessment – Part 1

Assessment Instructions:

- Please use a Python Jupyter Notebook to complete the coding tasks.

- Ensure that the code and corresponding outputs are clearly visible in the notebook.

- Share the notebook showing both the code and the results of its execution for each question.

- Focus on clean, readable code, and optimize where appropriate.

- Please write a descriptive answer as an explanation in sentence for each solution wherever possible.

Q1. Reverse the sentence without using an inbuilt function.
    Input : "ExamRoom.AI is bringing revolution in proctoring industry"
    Output : ""

Q2. Write a program which takes a string as inputs and removes all the vowels from it.

Sample Input	Expected Output
I love Python	I lv Pythn
MSD says I love cricket and tennis too	MSD sys I lv crckt nd tnns t
I will not repeat mistakes	I wll nt rpt mstk

Q3. Write a python program to count the occurrence of a letter in a string and store it in a dictionary

Sample Input	Expected Output
AAAABBBBCCCCCCCC	{ A : 4, B : 4 , C: 8}
AABCCA	{ A:2 , B: 1, C : 2, A: 1 }

Q4. Left rotate a string by k values
    input :
        string : "hello"
        k   : 3
    Output :
        lohel

So for the given string hello, the 3 characters on the left are rotated and placed in the end of the string.

Q5: Working with APIs

Task:

Write a Python script that calls a public API (e.g., OpenWeather API) to retrieve weather data for a list of cities. Then, create a summary report showing the city name, temperature, and weather description.

Input (example cities):

cities = ["New York", "Los Angeles", "Chicago", "Houston", "Phoenix"]

Expected Output (DataFrame):

	city	temperature	weather_description
0	New York	15	clear sky
1	Los Angeles	20	broken clouds
2	Chicago	10	light rain
3	Houston	25	sunny
4	Phoenix	30	sunny