Data Engineering – Initial Assessment

Please share the code of the assessment as attachment (ZIP File) in mail.
(Place all the .py files in a folder and zip it)

1. Question:

Write a program to compute the frequency of the words from the input. The output should output after sorting the key alphanumerically.

Suppose the following input is supplied to the program:
"New to Python or choosing between Python 2 and Python 3? Read Python 2 or Python 3."
Then, the output should be:
2:2
3.:1
3?:1
New:1
Python:5
Read:1
and:1
between:1
choosing:1
or:2
to:1

2. Question:

A website requires the users to input username and password to register. Write a program to check the validity of password input by users.
Following are the criteria for checking the password:
1. At least 1 letter between [a-z]
2. At least 1 number between [0-9]
1. At least 1 letter between [A-Z]
3. At least 1 character from [$#@]
4. Minimum length of transaction password: 6
5. Maximum length of transaction password: 12
Your program should accept a sequence of comma separated passwords and will check them according to the above criteria. Passwords that match the criteria are to be printed, each separated by a comma.
Example
If the following passwords are given as input to the program:
ABd1234@1,a F1#,2w3E*,2We3345
Then, the output of the program should be:
ABd1234@1

3. **Question:**

Write a program which takes 2 digits, X,Y as input and generates a 2-dimensional array. The element value in the i-th row and j-th column of the array should be i*j.
Note: i=0,1.., X-1; j=0,1,Y-1.
Example 1:
Suppose the following inputs are given to the program:
3,5
Then, the output of the program should be:
[[0, 0, 0, 0, 0], [0, 1, 2, 3, 4], [0, 2, 4, 6, 8]]

Example 2:
3,4
Output:
[[0, 0, 0, 0], [0, 1, 2, 3], [0, 2, 4, 6]]

4. Finding words which are greater than given length k

We will take a string of words from the user along with an integer k. We will find all words whose length is greater than k.
Example:
Input:
"learn programming at include help", k = 6
Output:
programming, include

5. Convert a String to camelCase in Python (Without using any string functions[capitalize()..etc], Use ASCII Values)

Example of camelCase:
   String: "Hello world"
   camelCase string: "helloWorld"

6. Find uncommon words from two string

We will take two strings as input from users consisting of words. And then we will print all words from the string that are not present in both the strings.
The string consists of sentences that are space-separated words.
Example:
Input:
str1 = "learn programming at includehelp"
str2 = "learn python programming language"

Output:
"python", "at", "includehelp"

7. Pattern Printing:

```
5 4 3 2 1 1 2 3 4 5
 5 4 3 2   2 3 4 5
  5 4 3     3 4 5
   5 4       4 5
    5         5
```

8. Pattern Printing:

```
1 * 2 * 3 * 4
1 * 2 * 3
1 * 2
1
```

9.Pattern Printing:

```
*
* *
* * *
* * * *
* * * * *
* * * * * *

* * * * * *
* * * * *
* * * *
* * *
* *
*
```