Module 2: Sequences and File Operations

Assignment

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1. Smith wishes to register on a ticket booking website for booking bus tickets. To authenticate the registration, he needs to provide a user-id and password. There are some built-in rules for checking the validity of the passwords entered by the users. Following are the rules for checking the validity of a password:

   i.   At least 1 alphabet
   ii.   At least 1 digit between [0–9]
   iii.   At least 1 character from [@&]
   iv.   Minimum length of transaction password: 5
   v.   Maximum length of transaction password: 10

2. Write a program for printing all elements of a list and their indexes in the list. Take the list as user input.

3. Write a program that accepts a string from the console and prints the characters that have even indexes if the character is an alphabet. Concatenate the characters and print.

   Example

   If the following string is given as input to the program:

   Ed12ur3ka1Python12

   Then, the output of the program should be:

   EuaPto

4. Please write a program that accepts a string from the console and prints it in reverse order.

   Example

   If the following string is given as input to the program:

   welcome to edureka

   Then, the output of the program should be:

   akerude ot emoclew

5. Please write a program that counts and prints the numbers of each character in a string input by the console.

Example

If the following string is given as input to the program:

abcdefgabc

Then, the output of the program should be:

a,2

c,2

b,2

e,1

d,1

g,1

f,1

6. With two given lists [1,5,10,12,34,13] and [4,7,8,10,5,13,24], write a program to create a new list whose elements are the intersection of the above-given lists.

7. By using list comprehension, please write a program to print the list after removing the values which are divisible by 6 in [12,24,35,24,88,120,155].

8. By using list comprehension, please write a program to print the list after removing the 1st,3rd, and 5th numbers in [12,24,35,70,88,120,155].

9. Please write a program to randomly generate a list with 6 numbers, which are divisible by 5 and 7, between 1 and 1500 inclusive.

10. Write a program to compute $1/2+2/3+3/4+...+n/n+1$ with a given n input by console (n>0).

Example

If the following n is given as input to the program:**5**

Then, the output of the program should be:**3.55**

11.Case Study

Domain: Banking

Focus: Optimization

Business challenge/requirement

FinBank is the latest entrant in the banking market of Thailand. The verification process for opening a bank account is done manually by reviewing the photocopy of the approved ID card. However, they have recently introduced a system where the customers' fingerprints will be mapped with the newly introduced Unique ID for citizens of Thailand by the government. FinBank should implement a system that verifies customers against their fingerprints and Unique Id.

Key issues
Build a system where when a user enters a Unique ID, it gets encrypted so that hackers cannot view the mapping of the Unique ID and fingerprint.

Considerations
The system should be secure.

Data volume
- NA

Additional information
- NA

Business benefits
The bank will be able to verify customers' data quickly, and the expected gain in volume is approximately ten times as the manual process of verification is replaced with a secure automated system.

Approach to solve
1. Read the input from the command line – Unique ID.
2. Check for validity of Unique ID – it should be 10 digits and must contain only numbers.
3. Encrypt the Unique ID and print it.

Enhancements for code
You can try these enhancements in code.

1. Allow alphabets and some special characters in Unique ID
2. Provide the option for decryption to the user.