

Python Exercise Book

1. Write a Python function that accepts a multi-line text and displays the number of digits, letters, special characters and lines in the text.
2. Write a Python function to validate the password input by users.
Validation Rules are:
At least 1 letter between [a-z] and 1 letter between [A-Z].
At least 1 number between [0-9].
At least 1 character from [\$#@].
Minimum length 6 characters.
Maximum length 16 characters.
3. Write a python function which takes your date of birth in ("mm/dd/yyyy") format and returns your age in years, months and days
4. Write a python code to print the sum of the first n terms of following series
a+aa+aaa+aaaa+aaaaa+aaaaaa+.....
where a can be any digit between 1 and 9
5. Write a Python function which modifies the input string where all occurrences of its first char have been changed to '@', except the first char itself.
st=input("Enter the string :")
define the function modifystring
print(modifystring(st))
6. Write a python code to word-wise reverse an input string
7. Write a Python function to count the frequency of each character in a string and return a dictionary containing each character and its frequency as key-value pair.
8. Shashi Tharoor's latest Facebook post, the author was off discussing the shortest possible sentence using all 26 letters of the English alphabet – known as a pangram – with his friends. Now, for all those who have spent time changing fonts or filling up dummy text on book layouts, the most well-known and oft-used pangram across the world has been "The quick brown fox jumps over the lazy dog" for years. That's 32 letters. A **perfect pangram** is a sentence that uses each letter of the alphabet only one time. In English this means that **there** are can only be 26 letters in the

entire sentence. Write a python function to check for a perfect pangram. *"The quick brown fox jumps over the lazy dog."*(32 letters) But *"Pack my box with five dozen liquor jugs"*= 31!

9. Write a python function to find the binary equivalent of a fractional number upto a given significant digits. The prototype of the function should be :

def convertBinary(floatValue, no_of_significant_digits)

10. Write a Python code to find the shortest common substring from two input strings.

11. Write a Python code to swap the cases of each character in the string. If the first character is in Uppercase, the swapping should start from second character else it should start from first character

ApPlE -> APpLE or ANgE->ORanGe

12. Given a list L and an Integer val, find out all pairs in the List L with sum as val.

L=[1, 2, -1, -3, 4] val=3 returns (1,2) , (-1,4)

13. Write a python function to check whether a given number is odd number without using division or % operation.

14. **Ciphertext** refers to a message encoded with a particular key. **Plaintext** refers to the original, unencoded text. In this problem, both the **ciphertext** and the key are simply strings of upper-case characters.

The ciphertext is generated from the plaintext by "adding" corresponding characters of the plaintext and the key together. If the plaintext is shorter than the key, only some of the key will be used. Similarly, if the plaintext is shorter than the key, the key will be used multiple times.

For example, to encode the plaintext "HELLO" with the key "CAT": Plaintext: HELLO
Key: CATCA Ciphertext: KFFOP And to encode the plaintext "DOG" with the key "FIDO": Plaintext: DOG Key: FID Ciphertext: JXK

To add two letters together, use the following convention: A=1, B=2, ..., Z=26. If the sum of two letters is greater than 26, subtract 26 from the sum. For example: A + E = 1 + 5 = 6 = F, and D + X = 4 + 24 = 28 = 2 = B.

15. Try to find the plaintext from the Ciphertext and key in the previous question.

16. Try to encode an input String using the following rules

| | |
|--|---|
| If the letter is between the given letters, inclusive: | The number of letters to count is given by: |
| A–E | Multiply its numerical value by 2 |
| F–J | Divide its numerical value by 3. Multiply the integer remainder by 5 |
| K–O | Divide its numerical value by 4. Multiply the integer remainder by 8. |
| P–T | Add 10. |
| U–Z | Find the largest integer factor of its numerical value less than the value itself. Multiply it by 12. |

Example:

1. If the letter to encode is a B, the B has a numerical value of 2 and encodes to a 4 and becomes a D, the 4th letter of the alphabet.
2. The G has a numerical value of 7. It encodes to a 5 and becomes an E.
3. The numerical value of Z is 26. Its largest factor is 13. You must count 156 (13*12) letters. This has the effect of wrapping around the alphabet 6 complete times and ending at Z. If a numerical value of zero is evaluated print a # symbol.

17. Slang language in English is used to chat on mobiles these days. Can u create a converter in Python which converts each English sentence in to its slang form.

Note: You can choose your own slang language rules

18. *Anagrams* are words or phrases made by mixing up the letters of other words or phrases, Write a code to find whether the two given strings are anagrams or not. For example, “the eyes” and “they see” are anagrams.

19. Write a python code that reads in a list of numbers and then prints out the same list except for numbers that have already been printed will be printed as a zero instead.

Sample Input : 4 3 2 1 4 Sample Output: 3 2 1 0

20. Two lists are said to be compatible if they are of the same size and if the ith element in the first list is greater than or equal to the ith element in the second list for all i. Write a program to find whether two lists are compatible or not.

Input Format: Input consists of $2n+1$ integers. The first integer corresponds to 'n', the size of the list. The next 'n' integers correspond to the elements in the first list. The last 'n' integers correspond to the elements in the second list.

21. An integer List A of size N is provided. You need to find the closest pair of numbers in the list and print their difference.

Input Format : The first line of the input contains an integer NUM denoting the number of test cases. The description of NUM cases follows Integer N and next line contains N space separated values (A_i)

22. Write a python program to print each combination of characters in a given string.

23. You have a text file containing the rollno and percentage of n students in two columns. Write a program to print the top 3 students in the class.

24. As an extension of the above program, write a program which can modify the percentage of a student with a new percentage so provided. And in the same way try to create a find/replace facility for any text file as is provided in many DOC applications.

25. Also write a code which can delete an entry of a student in the same file provided above.