

Scientific Computing – Lab Assignment-2

Python Programming – Strings and List

Write Python programs for the following:

1. To accept a filename from the user and print the extension.
2. Given a string of odd length greater than 7, return a string made of the middle three chars of the given string.
Sample String = "Pythonstrings"
Expected Result: 'nst'
3. Count all lower case, upper case, digits, and special symbols from a given string.
Given String: str1 = "P@#yn26at^&i5ve"
Expected Output:
Total counts of chars, digits, and symbols
Chars = 8
Digits = 3
Symbol = 4
4. To find the longest and the smallest word in a string.
5. To check if a given string is a Palindrome. (A palindrome reads same from front and back. e.g. Madam, Bob, level.)
6. To generate a new string from a given one where all occurrences of its first char are replaced by '\$', except the first char itself.
Sample String: 'onion'
Expected Result: 'oni\$n.'
Sample String: ' people of philippines'
Expected Result: ' peo\$le of \$hili\$\$ines'
7. To add 'ing' at the end of a given string (length should be at least 3). If the given one already ends with 'ing' then add 'ly' instead. If the string length of the given string is less than 3, leave it unchanged.
Sample String: 'sky'.
Expected Result: 'skying'.
Sample String: 'being'.
Expected Result: 'beingly'.
Sample String: 'in'.
Expected Result: 'in'.
8. To split a list into two halves.
9. To reverse a list without using the reverse method.

10. To read a sentence from the user and create a list of words in the sentence. Also, count the occurrence of a specific word.
11. To generate a list of all four-digit numbers that have all their digits even and are perfect squares. *(e.g. the output should include 6400 but not 8100 (one digit is odd) or 4248 (not a perfect square))*
12. To create a list of all the Disarium numbers between 1 and 100. *(A number is said to be the Disarium number when the sum of its digit raised to the power of their respective positions is equal to the number itself. For example, 175 is a Disarium number as follows $1^1 + 7^2 + 5^3 = 1 + 49 + 125 = 175$)*
13. To create a list of all three-digit numbers which are the sums of the cubes of their digits. *(For example: $370 = 3^3 + 7^3 + 0^3$).*
14. To create a new list of all positive numbers from an existing list using list comprehension.
15. To generate a list where the values are square of numbers between 1 and 10 (both included) using list comprehension. Print the list except for the first two numbers and last three numbers.