

Task 3

Python Tasks and Expected Outputs

Upload .py or Ipy nb extension file on github public repo "100DaysofBytewise" and share the link in the submission form by 13 June 2024

1. Recursive Factorial

- Write a recursive function to calculate the factorial of a given number.
- Expected output: If the input is 5, the output should be "The factorial of 5 is 120."

2. Palindrome Linked List

- Write a program to determine if a given linked list is a palindrome.
- Expected output: If the linked list is `1 -> 2 -> 3 -> 2 -> 1`, the output should be "The linked list is a palindrome." If the linked list is `1 -> 2 -> 3 -> 4 -> 5`, the output should be "The linked list is not a palindrome."

3. Merge Sorted Arrays

- Write a function that takes two sorted arrays and merges them into a single sorted array.
- Expected output: If the two input arrays are `[1, 3, 5]` and `[2, 4, 6]`, the output should be `[1, 2, 3, 4, 5, 6]`.

4. Binary Search Tree

- Implement a Binary Search Tree (BST) data structure, including methods for insertion, deletion, and search.
- Expected output: The program should be able to perform various BST operations and print the results.

5. Longest Palindromic Substring

- Write a program to find the longest palindromic substring within a given string.
- Expected output: If the input string is "babad", the output should be "bab" or "aba". If the input string is "cbdd", the output should be "bb".

6. Merge Intervals

- Write a program to merge overlapping intervals in a list of intervals.
- Expected output: If the input is `[(1, 3), (2, 6), (8, 10), (15, 18)]`, the output should be `[(1, 6), (8, 10), (15, 18)]`.

7. Maximum Subarray

- Write a program to find the maximum sum of a contiguous subarray within a given array.
- Expected output: If the input array is `[-2, 1, -3, 4, -1, 2, 1, -5, 4]`, the output should be `6`, as the maximum subarray is `[4, -1, 2, 1]`.

8. Reverse Linked List

- Write a program to reverse a singly-linked list.
- Expected output: If the input linked list is `1 -> 2 -> 3 -> 4 -> 5`, the output should be `5 -> 4 -> 3 -> 2 -> 1`.

9. Minimum Edit Distance

- Write a program to calculate the minimum number of operations (insertions, deletions, or substitutions) required to transform one string into another.
- Expected output: If the two input strings are "kitten" and "sitting", the output should be `3`.

10. Boggle Game

- Implement a program that solves the Boggle game, given a board and a list of words.
- Expected output: The program should print all the words found in the Boggle board.