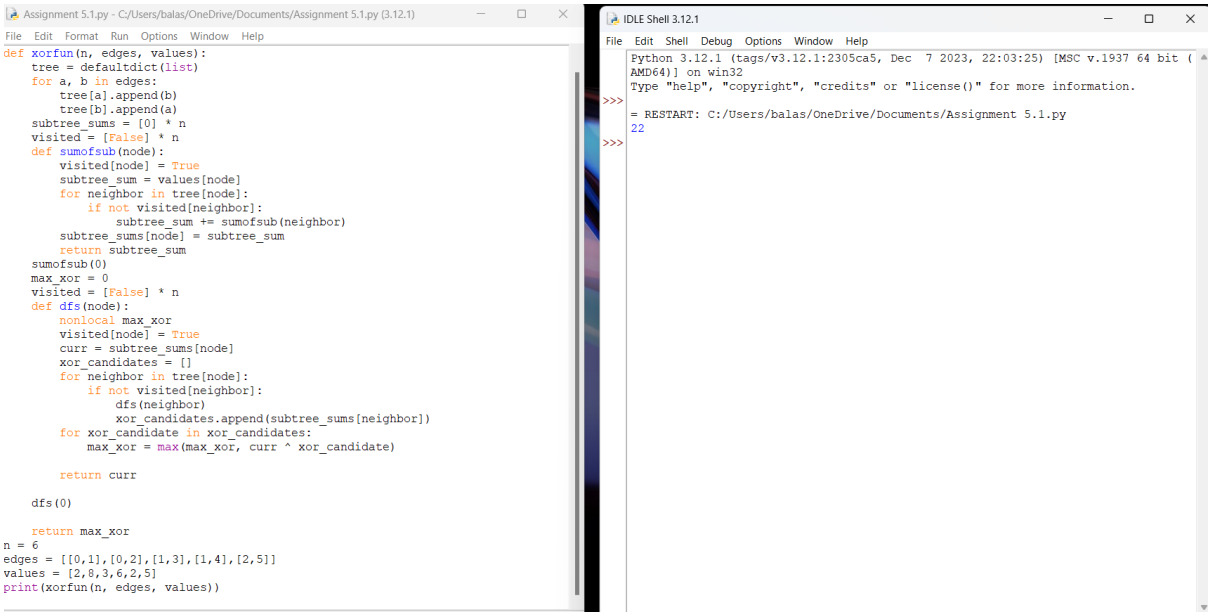
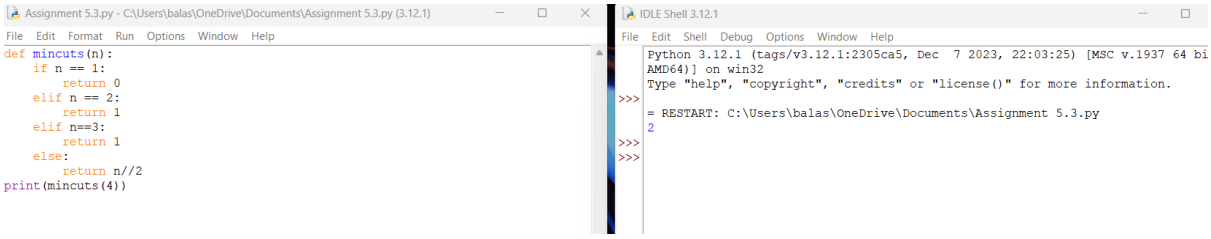
1. Maximum XOR of Two Non-Overlapping Subtrees There is an undirected tree with n nodes labeled from 0 to n - 1. You are given the integer n and a 2D integer array edges of length n - 1, where edges[i] = [ai, bi] indicates that there is an edge between nodes ai and bi in the tree. The root of the tree is the node labeled 0.Each node has an associated value. You are given an array values of length n, where values[i] is the value of the ith node.Select any two non-overlapping subtrees. Your score is the bitwise XOR of the sum of the values within those subtrees.Return the maximum possible score you can achieve. If it is impossible to find two nonoverlapping subtrees, return 0.



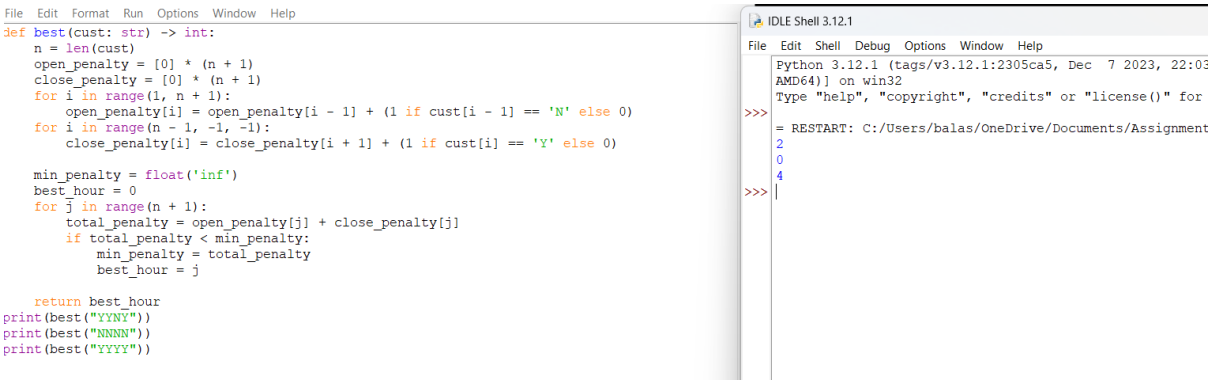
2. Form a Chemical Bond

Each row of this table contains information of one element. type is an ENUM of type ('Metal', 'Nonmetal', 'Noble') - If type is Noble, electrons is 0. - If type is Metal, electrons is the number of electrons that one atom of this element can give. - If type is Nonmetal, electrons is the number of electrons that one atom of this element needs. Two elements can form a bond if one of them is 'Metal' and the other is 'Nonmetal'.Write an SQL query to find all the pairs of elements that can form a bond.Return the result table in any order

3. Minimum Cuts to Divide a Circle A valid cut in a circle can be: A cut that is represented by a straight line that touches two points on the edge of the circle and passes through its center, or A cut that is represented by a straight line that touches one point on the edge of the circle and its center.



4. You are given the customer visit log of a shop represented by a 0-indexed string customers consisting only of characters 'N' and 'Y': ● if the ith character is 'Y', it means that customers come at the ith hour ● whereas 'N' indicates that no customers come at the ith hour. If the shop closes at the jth hour (0 <= j <= n), the penalty is calculated as follows: ● For every hour when the shop is open and no customers come, the penalty increases by 1. ● For every hour when the shop is closed and customers come, the penalty increases by 1. Return the earliest hour at which the shop must be closed to incur a minimum penalty



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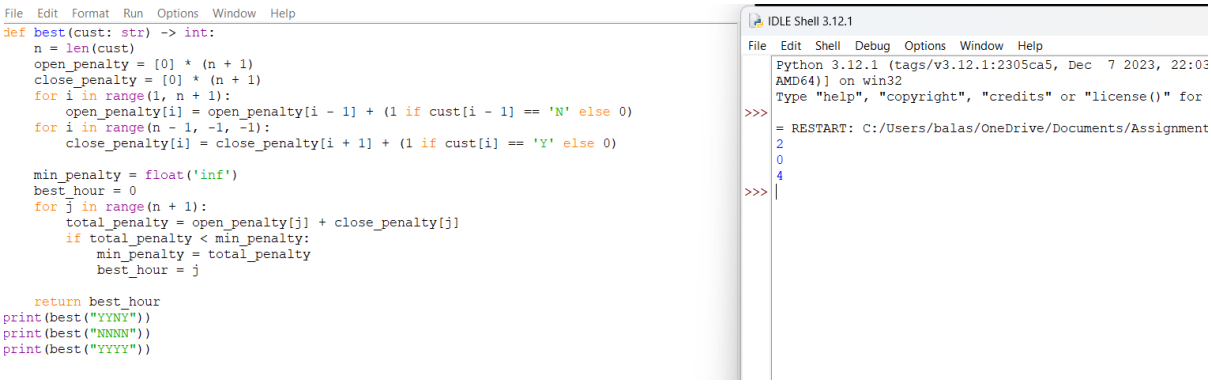


6. Count Palindromic Subsequences Given a string of digits s, return the number of palindromic subsequences of s having length 5. Since the answer may be very large, return it modulo 109 + 7. Note: ● A string is palindromic if it reads the same forward and backward. ● A subsequence is a string that can be derived from another string by deleting some or no characters without changing the order of the remaining characters.

```
File  Edit  Format  Run  Options  Window  Help
def count(s):
    MOD = 10**9 + 7
    n = len(s)
    count = 0

    for i in range(n):
        for j in range(i + 1, n):
            for k in range(j + 1, n):
                for l in range(k + 1, n):
                    for m in range(l + 1, n):
                        if s[i] == s[m] and s[j] == s[l]:
                            count = (count + 1) % MOD

    return count
s = "103301"
print(count(s))
```

```
File  Edit  Shell  Debug  Options  Window
Python 3.12.1 (tags/v3.12.1:230
AMD64)] on win32
Type "help", "copyright", "cred
>>>
= RESTART: C:/Users/balas/OneDr
2
>>>
```

7. Find the Pivot Integer Given a positive integer n, find the pivot integer x such that: ● The sum of all elements between 1 and x inclusively equals the sum of all elements between x and n inclusively. Return the pivot integer x. If no such integer exists, return -1. It is guaranteed that there will be at most one pivot index for the given input.

```
Assignment 5.6.py - C:/Users/balas/OneDrive/Documents/Assignment 5.6.py (3.12.1)
File  Edit  Format  Run  Options  Window  Help
def findpivot(n):
    total_sum = n * (n + 1) // 2

    left_sum = 0
    for x in range(1, n + 1):
        left_sum += x
        right_sum = total_sum - left_sum

        if left_sum == right_sum:
            return x

    return -1
n = 8
print(findpivot(n))
```

```
IDLE Shell 3.12.1
File  Edit  Shell  Debug  Options  Window  Help
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023, 22:03:25) [MSC v.1937
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========= RESTART: C:/Users/balas/OneDrive/Documents/Assignment 5.6.py =
-1
>>>
```

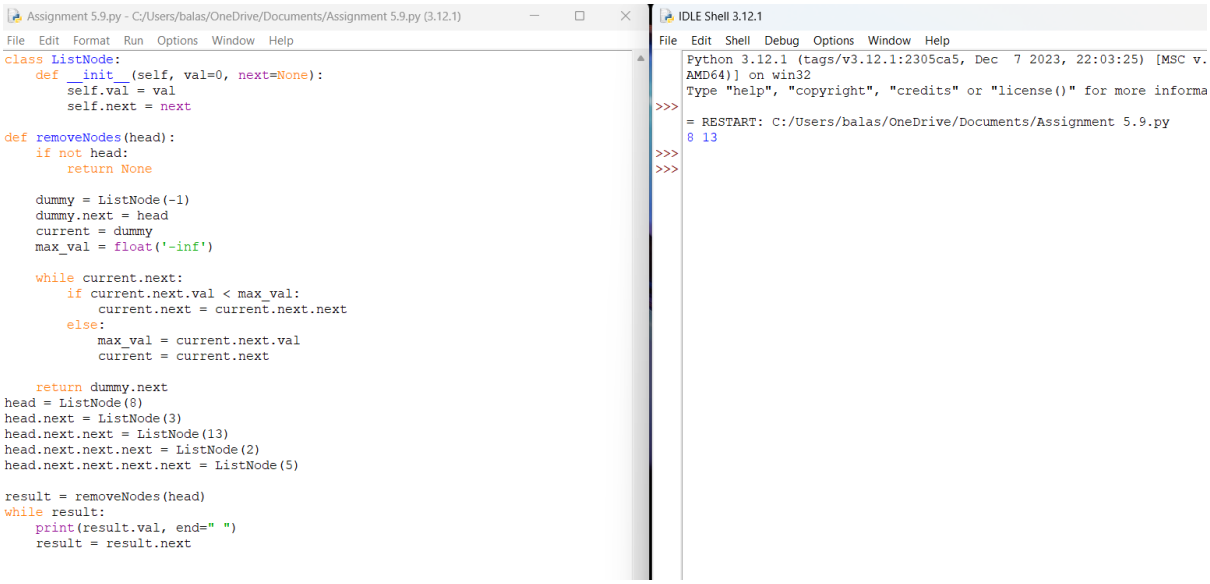
8. Append Characters to String to Make Subsequene You are given two strings s and t consisting of only lowercase English letters. Return the minimum number of characters that need to be appended to the end of s so that t becomes a subsequence of s. A subsequence is a string that can be derived from another string by deleting some or no characters without changing the order of the remaining characters.

```
File  Edit  Format  Run  Options  Window  Help
def char(s, t):
    m, n = len(s), len(t)
    dp = [[0] * (n + 1) for _ in range(m + 1)]
    for i in range(1, m + 1):
        for j in range(1, n + 1):
            if s[i - 1] == t[j - 1]:
                dp[i][j] = dp[i - 1][j - 1] + 1
            else:
                dp[i][j] = max(dp[i - 1][j], dp[i][j - 1])
    append_count = n - dp[m][n]

    return append_count
s = "abcde"
t = "a"
print(char(s, t))
```

```
File  Edit  Shell  Debug  Options  Window  Help
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023, 22:03:25) [MSC v.1937 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:/Users/balas/OneDrive/Documents/Assignment 5.8.py
0
>>>
```

9. Remove Nodes From Linked List You are given the head of a linked list.Remove every node which has a node with a strictly greater value anywhere to the right side of it.Return the head of the modified linked list.



10. Count Subarrays With Median K You are given an array nums of size n consisting of distinct integers from 1 to n and a positive integer k. Return the number of non-empty subarrays in nums that have a median equal to k. Note: ● The median of an array is the middle element after sorting the array in ascending order. If the array is of even length, the median is the left middle element. ○ For example, the median of [2,3,1,4] is 2, and the median of [8,4,3,5,1] is 4. ● A subarray is a contiguous part of an array.