Practice Week 8

Competition Time: 24th Nov to 27th Nov

Q1) Switch Vowel.

Write a program to remove the vowels from a string using switch case.

The string will be provided by user to the program.

Input: Input will always be a string of characters.

Output: Output must also be string of characters.

*(check for both upper and lower case).

Sample Input 1:

Apple

Sample Output 1:

ppl

Sample Input 2:

Mangoes

Sample Output 2:

Mngs

Sample Input 3:

TV

Sample Output 3:

The string consists of no vowels.

Q2) Air Purifier

You are given with an air purifier which purifies the air @40 cm sq/min if the door of the room is closed

but at the same time if someone opens the door its effieciency will reduce and can purify only 30cm sq/min.

The efficiency is given at 25 deg Centigrade. If the temperature increases by 1 deg Centigrade then the efficiency

will increase by 2 cm sq /min and vice versa if the temperature decreases. Your program should take the following

inputs:

> Temperature in deg C

> No of times door opened

> Time for which the purifier is turned on

Write a program that will calculate the area purified according to given inputs by the user.

* Let that the size of the room is infinite, that means the area of purification can exceed the normal size of room and no need to take room area as input.

Sample Input:

Enter the temperature of room in deg C: 26

Enter the times door opened : 4

Operating time of purifier in min : 5

Sample Output:

Purifier purifies 170 sq/min with the given conditions.

Q3) Longest prefix of Maximum length.

Given five integers **X**, **Y**, **A**, **B**, and **N**, the task is to find the maximum possible absolute difference between **X** and **Y** by performing the following the operations exactly **N** times:

- Decrement the value of **X** by **1** up to **A**.
- Decrement the value of **Y** by **1** up to **B**.

Note: The value of **(X – A + Y – B)** must be greater than or equal to **N**

Examples:

Sample Input: $X = 12, Y = 8, A = 8, B = 7, N = 2$

Sample Output: 4

Explanation:
Decrementing the value of X by 1. Therefore, X = X – 1 = 11
Decrementing the value of Y by 1. Therefore, Y = Y – 1 = 7
Therefore, the maximum absolute difference between X and Y =
abs(X – Y) = abs(11 – 7) = 4

Sample Input: $X = 10, Y = 10, A = 8, B = 5, N = 3$

Sample Output: 3

Explanation:
Decrementing the value of Y by 1 three times. Therefore, Y = Y – 3 = 7
Therefore, the maximum absolute difference between X and Y =
abs(X – Y) = abs(10 – 7) = 3

Q4) Construct a Binary Matrix whose sum of each row and column is a Prime Number

Given an integer N, the task is to construct a binary matrix of size N * N such that the sum of each row and each column of the matrix is a prime number.

Examples:

Input: N = 2

Output:

```
1 1
1 1
```

Explanation:
Sum of 0th row = 1 + 1 = 2 (Prime number)
Sum of 1st row = 1 + 1 = 2 (Prime number)
Sum of 0th column = 1 + 1 = 2 (Prime number)
Sum of 1st column = 1 + 1 = 2 (Prime number)

Input: N = 4

Output:

```
1 0 0 1
0 1 1 0
0 1 1 0
1 0 0 1
```

Link for Submission:

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