EXP NO: 1c
DATE: 10/02/2024

RAIL FENCE CIPHER

AIM:
   To write a python program implementing rail fence cipher algorithm

ALGORITHM:

1. Get the plain text from the user
2. Set the key as 2 by default.
3. Arrange the plaintext in two rows in a zig-zag manner.
4. Derive the cipher text by adding the first row of arrangement with the second row of arrangement.
5. Get the original text by using the cipher text and arranging it in zigzag manner and repeat the same process.

PROGRAM:

```
def main():
    text = input('Input Text : ')
    rows = int(input('Input Rows : '))
    text = text.replace(' ','')

    while True:
        chc = input('1.Encrypt\n2.Decrypt\nEnter your choice: ')
        if chc in ['0','1']:
            break
        print('Choose 0 / 1')

    #print(len(text))
    if int(chc):
        arr = [[ ' ' for y in range(len(text))] for x in range(rows)]
        #[ print(row) for row in arr ]

        dir_down = None
        row, col = 0 , 0
        for i in range(len(text)):
            if row == 0: dir_down = True
            if row == rows - 1: dir_down = False

            arr[row][col] = '*'
            col += 1

            if dir_down: row += 1
            else: row -= 1

        #print('\n\n')
        #[ print(row) for row in arr ]
        count = 0
        for row in arr:
            for i in range(len(row)):
                if row[i] == '*':
                    row[i] = text[count]
```

```
            count += 1

    #print('\n\n')
    #[ print(row) for row in arr ]

    result = []
    row, col = 0, 0
    for i in range(len(text)):

        if row == 0: dir_down = True
        if row == rows-1: dir_down = False

        if (arr[row][col] != '*'):
            result.append(arr[row][col])
            col += 1

        if dir_down: row += 1
        else: row -= 1

    print(" ".join(result).strip())
else:
    arr = [ [] for x in range(rows)]
    #print(arr)
    count = 0
    finish = False

    while True:
        for j in range(0,rows-1):
            arr[j].append(text[count])
            count += 1

            if count >= len(text):
                finish = True
                break

        if finish :
            break
```

```
        for k in range(rows - 1 ,0,-1):
            arr[k].append(text[count])
            count += 1

            if count >= len(text):
                finish = True
                break

        if finish :
            break
    print(arr)


main()
```
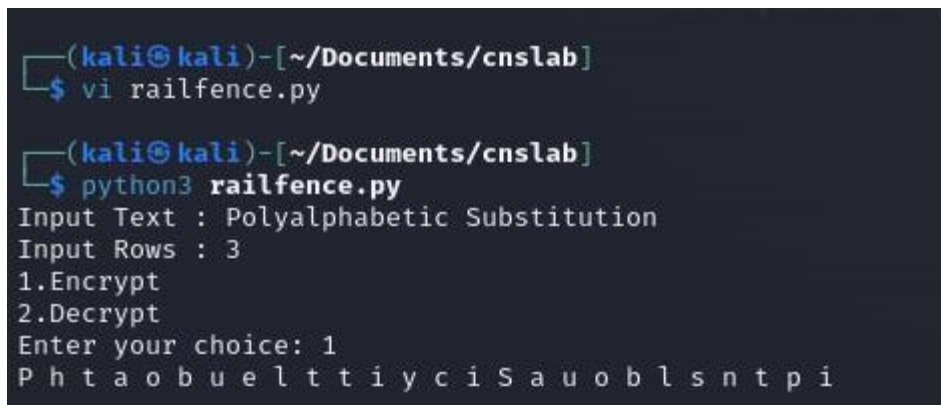
OUTPUT:

RESULT:

      Thus, a python program has been implemented to demonstrate Rail Fence Cipher.