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

RAIL FENCE CIPHER

AIM:

To write a C Program to perform Rail Fence Cipher for both encryption and decryption process

ALGORITHM:

Step 1 : Start.

Step 2 : Include necessary header files.

Step 3 : Create a function for encryption process.

Step 4 : Define encryption function.

Step 5 : Create a function for decryption process.

Step 6 : Define decryption function.

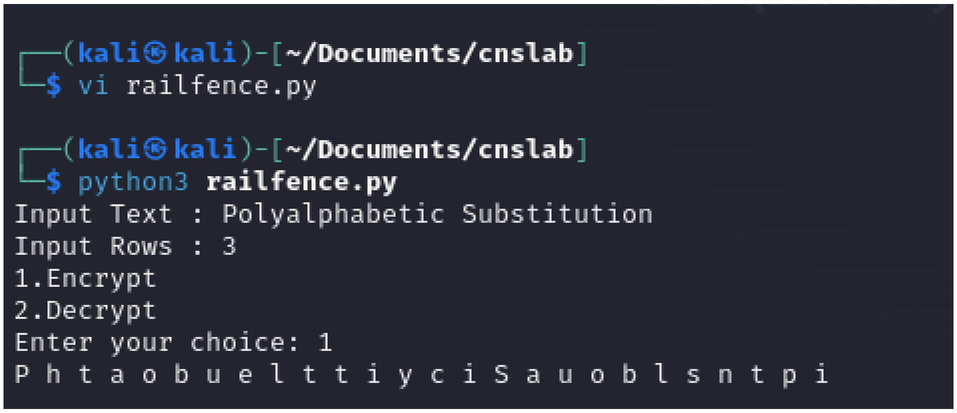
Step 7 : Call both encryption and decryption function inside main function.

Step 8 : End.

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:



```
┌──(kali㉿kali)-[~/Documents/cnslab]
└─$ vi railfence.py

┌──(kali㉿kali)-[~/Documents/cnslab]
└─$ python3 railfence.py
Input Text : Polyalphabetic Substitution
Input Rows : 3
1.Encrypt
2.Decrypt
Enter your choice: 1
P h t a o b u e l t t i y c i S a u o b l s n t p i
```

RESULT:

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