

Ex. No.: 2

Date:

RAIL-FENCE

Problem Statement

The **rail fence cipher** (also called a **zigzag cipher**) is a form of transposition cipher. It derives its name from the way in which it is encoded. In the rail fence cipher, the plain text is written downwards and diagonally on successive “rails” of an imaginary fence, then moving up when the bottom rail is reached. When the top rail is reached, the message is written downwards again until the whole plaintext is written out. The message is then read off in rows. For example, if 3 “rails” and the message “HELLOWORLD” is used, the cipherer writes out:

H...O...L.

.E.L.W.R.D

..L...O...

Then reads off to get the ciphertext:

HOLELWRDLO

Implement a program to perform this cipher.

Aim:

To implement Rail-Fence Cipher technique using C.

Algorithm:

1. Get the plaintext string from the user.
2. Take the string length of the plaintext.
3. For each plaintext character do the following-
 - a. If $ch \% 2 == 0$ put in a[] array
 - b. Else put in b[] array
4. Take each character in a[] array and put in s[] array and increment the index.
5. After all characters in a[] array are copied, then copy each character from b[] array and put into s[] array and increment the index.
6. Print the contents of s[] array to get ciphertext.

Program Code:

```
#include<stdio.h>
#include<string.h>
void main()
{
    int i,j,k=0,l=0,m=0;
    char s[20],a[10],b[10];

    printf("enter a string:");
    scanf("%s",s);
    for(i=0;i<strlen(s);i++)
    {
        if(i%2==0) //even position
        {
            a[k]=s[i];
            k++;
        }
    }
}
```

```

        else //odd position
        {
            b[l]=s[i];
            l++;
        }
    }

    for(i=0;i<k;i++)
    {
        printf("%c ",a[i]);
        s[m]=a[i];
        m++;
    }
    printf("\n");
    for(i=0;i<l;i++)
    {
        printf(" %c",b[i]);
        s[m]=b[i];
        m++;
    }
    printf("\n\ncipher text is %s",s);
    getchar();
}

```

Output

```

PS C:\Users\saksh\OneDrive\Documents\c\javaa> cd "c:\Users\saksh\OneDrive\Documents\c\javaa\" ; if ($?) { gcc 1.c -o 1 } ; if ($?) { .\1 }
1.c:1:19: warning: extra tokens at end of #include directive
#include<stdio.h> #include<string.h>
                  ^
1.c: In function 'main':
1.c:8:12: warning: implicit declaration of function 'strlen' [-Wimplicit-function-declaration]
    for(i=0;i<strlen(s);i++)
               ~~~~~
1.c:8:12: warning: incompatible implicit declaration of built-in function 'strlen'
1.c:8:12: note: include '<string.h>' or provide a declaration of 'strlen'
enter a string:surendhar
s r n h r
u e d a

cipher text is srnhrueda
PS C:\Users\saksh\OneDrive\Documents\c\javaa>

```

Result