

# **CNS LAB**

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## **Assignment 6**

**Aim - Given the plain text, encrypt it using Columnar Encryption Algorithm**

### **Columnar Cipher Encryption Algorithm**

In a transposition cipher, the order of the alphabets is re-arranged to obtain the cipher-text. 1. The message is written out in rows of a fixed length, and then read out again column by column, and the columns are chosen in some scrambled order.

2. Width of the rows and the permutation of the columns are usually defined by a keyword.
3. For example, the word HACK is of length 4 (so the rows are of length 4), and the permutation is defined by the alphabetical order of the letters in the keyword. In this case, the order would be “3 1 2 4”.
4. Any spare spaces are filled with nulls or left blank or placed by a character (Example: \_).
5. Finally, the message is read off in columns, in the order specified by the keyword 6.

### **Code:**

```
string s;  
cout << "Enter plain text" << endl;  
  
getline(cin, s);  
  
string x;
```

```

for (int i = 0; i < s.length(); i++)
if (s[i] != ' ')
x += s[i];
s = x;

int kSize;
cout << "Enter key size" << endl;

cin >> kSize;
vector<int> k(kSize);
int n = s.size();
for (int i = 0; i < kSize; i++)
cin >> k[i];

cout << "\nPlain text is: " << s << endl;

vector<vector<char>> mat(kSize + 1); int
row = 0;

for (int i = 0; i < s.length(); i++)
{
mat[k[row++]].push_back(s[i]);
row = row % kSize;
}

string cipher = "";

for (int i = 0; i <= kSize; i++)
for (int j = 0; j < mat[i].size(); j++)
cipher += mat[i][j];

cout << "\nCipher text is: " << cipher;

```

## TestCases

```
D:\4th_year\CNS\Ass6.exe

Enter plain text:
my name is sadaf

Enter length of key:
4

Enter key
3
2
4
1

Plain text: mynameissadaf

Reading the text in sequence with respect to key

asa
yea
mmsf
nid

Cipher text: asayeammsfnid
-----
Process exited after 12.67 seconds with return value 0
Press any key to continue . . .
```