

## **Exp No: 1.1**

### **Playfair Cipher**

#### **Aim**

To implement a Playfair cipher substitution technique.

#### **Generate the key Square Matrix(5×5):**

- The key square is a 5×5 grid of alphabets that acts as the key for encrypting the plaintext. Each of the 25 alphabets must be unique and one letter of the alphabet (usually J) is omitted from the table (as the table can hold only 25 alphabets). If the plaintext contains J, then it is replaced by I.
- The initial alphabets in the key square are the unique alphabets of the key in the order in which they appear followed by the remaining letters of the alphabet in order.
- Algorithm to encrypt the plain text: The plaintext is split into pairs of two letters (digraphs). If there is an odd number of letters, a Z is added to the last letter.
- Pair cannot be made with same letter. Break the letter in single and add a bogus letter to the previous letter
- If the letter is standing alone in the process of pairing, then add an extra bogus letter with the alone letter
- If both the letters are in the same column: Take the letter below each one (going back to the top if at the bottom).
- If both the letters are in the same row: Take the letter to the right of each one (going back to the leftmost if at the rightmost position).
- If neither of the above rules is true: Form a rectangle with the two letters and take the letters on the horizontal opposite corner of the rectangle.

#### **Algorithm**

1. Read the key as input from the user.
2. Then create the key table of 5x5 grids of alphabets.
3. Get the plain text as an input.
4. Then split the plain text message into pairs of two letters(digraphs).
5. Pair cannot be made with same letter. Break the letter in single and add a bogus letter z to the previous letter
6. If both the letters are in the same column, take the letter below each one.
7. If both letters are in the same row, take the letter to the right of each one.
8. If neither of the preceding two rules are true, form a rectangle with the two letters and take the letters on the horizontal opposite corner of the rectangle.

## **SAMPLE INPUT & OUTPUT**

1)

Enter keyword: scope

Enter message to encrypt: security

S C O P E

A B D F G

H I K L M

N Q R T U

V W X Y Z

Encrypting. ..

The encrypted text is: CSEQQKYP

Decrypting...

The encrypted text is: SECURITY

2)

Enter keyword: network

Enter message to encrypt: securitylabvit

N E T W O

R K A B C

D F G H I

L M P Q S

U V X Y Z

Encrypting. ..

The encrypted text is: MORZCDWXPKEYGO

=====

Decrypting...

The encrypted text is: SECURITYLABVIT