Department of Computer Science and Engineering (Data Science)

SUB: Information Security

AY 2023-24 (Semester-V)

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Experiment No: 4

Aim: To Implement Encryption and Decryption using Columnar Transposition Cipher.

Theory:

1. Transposition Cipher

2. Columnar Transposition Cipher/ Row Column Transposition Cipher.

Example:

Encryption and Decryption

1) Plaintext: "Attack Postponed until two am"

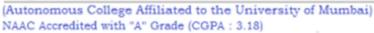
Keyword: 4312567

Ciphertext:



Shri Vile Parle Kelavani Mandal's

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```
import math
key = '4312567'
def encryptMessage(msg):
    cipher = ""
    msg_len = len(msg)
    key_lst = sorted(list(key))
    col = len(key)
    row = int(math.ceil(msg_len / col))
    matrix = [msg[i:i + col] for i in range(0, len(msg), col)]
    for _ in range(col):
        curr_idx = key.index(key_lst[_])
        k_{indx} = 0
        for row_idx in range(row):
            if (row_idx * col + curr_idx) < msg_len:
                cipher += matrix[row_idx][curr_idx]
            k_indx += 1
    return cipher
```

```
[26] def decryptMessage(cipher):
         msg = ""
         k indx = 0
         msg_indx = 0
         msg_len = len(cipher)
         msg_lst = list(cipher)
         col = len(key)
         row = int(math.ceil(msg_len / col))
         key_lst = sorted(list(key))
         dec cipher = []
         for _ in range(row):
             dec_cipher += [['_'] * col]
         for _ in range(col):
             curr_idx = key.index(key_lst[k_indx])
             for j in range(row):
                 if (j * col + curr_idx) < msg_len:</pre>
                     dec_cipher[j][curr_idx] = msg_lst[msg_indx]
                     msg indx += 1
             k indx += 1
             msg = ''.join(''.join(row) for row in dec_cipher)
         return msg.replace('_', '')
```



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Conclusion:

Thus transformation Cipher was implemented successfully.