**Ques 5.** Implement play fair cipher substitution operation.

Ans:-

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import string

import numpy as np

key=input("Enter key :- ")

key=key.lower()

key=key.replace(" ","")

temp=[]

for alpha in key:

if alpha not in temp:

temp.append(alpha)

key=temp

matrix=[]

for i in string.ascii\_lowercase[:26]:

if i not in key:

key.append(i)

i=key.index('i')

j=key.index('j')

if i<j:

del key[j]

else:

del key[i]

temp1=key

while key!=[]:

matrix.append(key[:5])

key=key[5:]

print("Playfair Cipher Matrix is :- ",matrix)

def getpoistion(alpha,matrix):

for i in range(len(matrix)):

for j in range(len(matrix[i])):

if matrix[i][j] == alpha:

return (i, j)

text=input("Enter Text to Encrypt :- ")

text=text.lower()

text=text.replace(" ","")

text1=[]

for i in text:

if i not in temp1:

if i=='j':

text1.append('i')

else:

text1.append('j')

else:

text1.append(i)

text=text1

print("Cipher text is :- ")

for i in range(len(text)):

r1,c1=getpoistion(text[i],matrix)

r2,c2=getpoistion(text[i+1],matrix)

i=i+1

if r1==r2:

i1=(r1\*5)+c1+1

i2=(r1\*5)+c2+1

i1=i1%25

i2=i2%25

print(temp1[i1])

print(temp1[i2])

elif c1==c2:

i1=(r1\*5)+c1+5

i2=(r1\*5)+c2+5

print(temp1[i1])

print(temp1[i2])

else:

if r1<r2:

print(matrix[r1][c2])

print(matrix[r2][c1])

else:

print(matrix[r2][c1])

print(matrix[r1][c2])

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