program for Playfair algorithm is based on the use of a 5 X 5 matrix of letters constructed using a keyword. Plaintext is encrypted two letters at a time using this matrix.

Program:

# Simple Playfair Cipher Program

def generate\_key(key):

key = key.replace("j", "i").lower()

result = ""

for c in key:

if c not in result and c.isalpha():

result += c

for c in "abcdefghijklmnopqrstuvwxyz":

if c not in result and c != "j":

result += c

return [list(result[i:i+5]) for i in range(0, 25, 5)]

def find\_pos(matrix, ch):

for i in range(5):

for j in range(5):

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

return i, j

def encrypt\_pair(a, b, matrix):

r1, c1 = find\_pos(matrix, a)

r2, c2 = find\_pos(matrix, b)

if r1 == r2:

return matrix[r1][(c1+1)%5] + matrix[r2][(c2+1)%5]

elif c1 == c2:

return matrix[(r1+1)%5][c1] + matrix[(r2+1)%5][c2]

else:

return matrix[r1][c2] + matrix[r2][c1]

def playfair\_encrypt(text, key):

matrix = generate\_key(key)

text = text.replace("j", "i").replace(" ", "").lower()

if len(text) % 2 != 0:

text += 'x'

result = ""

i = 0

while i < len(text):

a = text[i]

b = text[i+1] if i+1 < len(text) else 'x'

if a == b:

b = 'x'

result += encrypt\_pair(a, b, matrix)

i += 2

return result

# Main

key = input("Enter key: ")

text = input("Enter plaintext: ")

encrypted = playfair\_encrypt(text, key)

print("Encrypted text:", encrypted)

output:

