9.Encrypt play fair matrix:

Program:

def playfair\_encrypt(key, message):

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

key\_square = []

for letter in key:

if letter not in key\_square:

key\_square.append(letter)

for letter in "ABCDEFGHIKLMNOPQRSTUVWXYZ":

if letter not in key\_square:

key\_square.append(letter)

message = message.upper().replace("J", "I")

message = "".join(filter(str.isalpha, message))

digraphs = []

i = 0

while i < len(message):

if i == len(message) - 1 or message[i] == message[i+1]:

digraphs.append(message[i] + "X")

i += 1

else:

digraphs.append(message[i:i+2])

i += 2

ciphertext = ""

for digraph in digraphs:

row1, col1 = divmod(key\_square.index(digraph[0]), 5)

row2, col2 = divmod(key\_square.index(digraph[1]), 5)

if row1 == row2:

ciphertext += key\_square[row1\*5 + (col1+1)%5] + key\_square[row2\*5 + (col2+1)%5]

elif col1 == col2:

ciphertext += key\_square[((row1+1)%5)\*5 + col1] + key\_square[((row2+1)%5)\*5 + col2]

else:

ciphertext += key\_square[row1\*5 + col2] + key\_square[row2\*5 + col1]

return ciphertext

key = "MFHIKUNOPQZVWXYELARGDSTBC"

message = "Must see you over Cadogan West. Coming at once"

ciphertext = playfair\_encrypt(key, message)

print(ciphertext)

Output:

