

10. Write a python program for Playfair matrix:

M F H I/J K

U N O P Q

Z V W X Y

E L A R G

D S T B C

Encrypt this message: Must see you over Cadogan West. Coming at once.

Code:

```
# Playfair matrix
matrix = [
    ['M','F','H','I','K'],
    ['U','N','O','P','Q'],
    ['Z','V','W','X','Y'],
    ['E','L','A','R','G'],
    ['D','S','T','B','C']
]

# Function to find position of a letter in the matrix
def find_pos(ch):
    if ch == 'J': ch = 'I'
    for r in range(5):
        for c in range(5):
            if matrix[r][c] == ch:
                return r, c

# Function to prepare digraphs
def prepare_text(text):
    text = text.upper().replace("J","I").replace(" ", "").replace(".", "")
    digraphs = []
    for i in range(0, len(text) - 1, 2):
        digraphs.append(text[i:i+2])
    if len(text) % 2 != 0:
        digraphs.append(text[-1])
```

```

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'

    i += 1

    else:
        i += 2

    digraphs.append(a+b)

return digraphs

# Encrypt function

def encrypt_playfair(text):

    digraphs = prepare_text(text)

    cipher = ""

    for pair in digraphs:

        r1,c1 = find_pos(pair[0])

        r2,c2 = find_pos(pair[1])

        if r1 == r2:

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

        elif c1 == c2:

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

        else:

            cipher += matrix[r1][c2] + matrix[r2][c1]

    return cipher

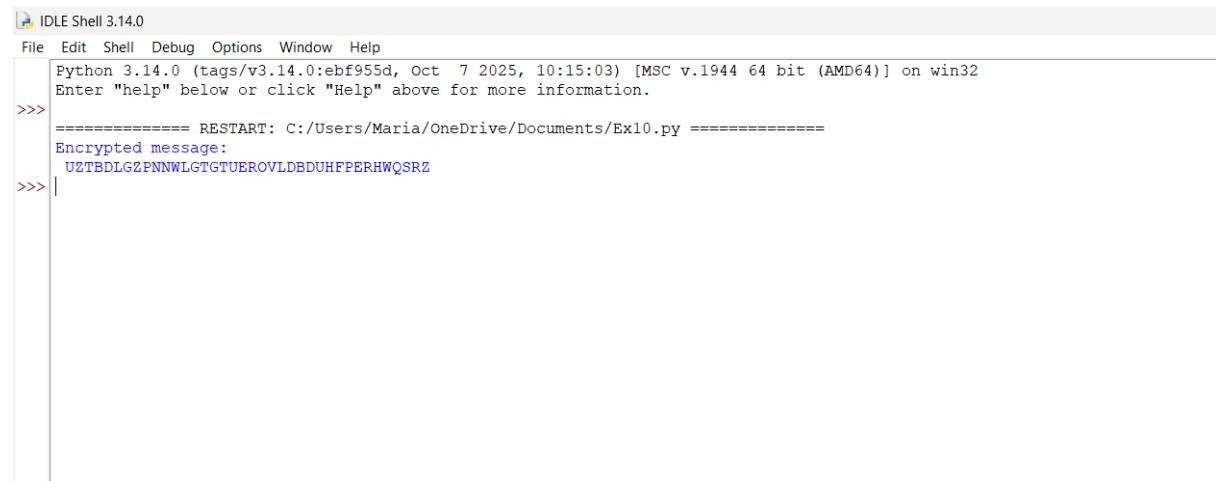
# Message to encrypt

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

ciphertext = encrypt_playfair(message)

```

```
print("Encrypted message:\n", ciphertext)
```



IDLE Shell 3.14.0

File Edit Shell Debug Options Window Help

Python 3.14.0 (tags/v3.14.0:ebf955d, Oct 7 2025, 10:15:03) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.

>>> ===== RESTART: C:/Users/Maria/OneDrive/Documents/Ex10.py ======

Encrypted message:

UZTBDLGZPNNWLGTGTUEROVLDBDUHFPERHWQSRZ

>>> |