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**CLASS: TE-CO ROLL-NO.: 18CO63**

**EXPERIMENT NO. 02: PLAYFAIR CIPHER USING PYTHON.**

**PROGRAM:**

print("\n\t\t PLAYFAIR CIPHER \n")

key=input("ENTER KEY: ")

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

key=key.upper()

def matrix(x,y,initial):

return [[initial for i in range(x)] for j in range(y)]

result=list()

for c in key:

if c not in result:

if c=='J':

result.append('I')

else:

result.append(c)

flag=0

for i in range(65,91):

if chr(i) not in result:

if i==73 and chr(74) not in result:

result.append("I")

flag=1

elif flag==0 and i==73 or i==74:

pass

else:

result.append(chr(i))

k=0

my\_matrix=matrix(5,5,0)

for i in range(0,5):

for j in range(0,5):

my\_matrix[i][j]=result[k]

k+=1

def locindex(c):

loc=list()

if c=='J':

c='I'

for i ,j in enumerate(my\_matrix):

for k,l in enumerate(j):

if c==l:

loc.append(i)

loc.append(k)

return loc

def encrypt():

msg=str(input("\nENTER MESSAGE: "))

msg=msg.upper()

msg=msg.replace(" ", "")

i=0

for s in range(0,len(msg)+1,2):

if s<len(msg)-1:

if msg[s]==msg[s+1]:

msg=msg[:s+1]+'X'+msg[s+1:]

if len(msg)%2!=0:

msg=msg[:]+'X'

print("\nCIPHER TEXT: ",end=' ')

while i<len(msg):

loc=list()

loc=locindex(msg[i])

loc1=list()

loc1=locindex(msg[i+1])

if loc[1]==loc1[1]:

print("{}{}".format(my\_matrix[(loc[0]+1)%5][loc[1]],my\_matrix[(loc1[0]+1)%5][loc1[1]]),end=' ')

elif loc[0]==loc1[0]:

print("{}{}".format(my\_matrix[loc[0]][(loc[1]+1)%5],my\_matrix[loc1[0]][(loc1[1]+1)%5]),end=' ')

else:

print("{}{}".format(my\_matrix[loc[0]][loc1[1]],my\_matrix[loc1[0]][loc[1]]),end=' ')

i=i+2

print("")

def decrypt():

msg=str(input("\nENTER CIPHER TEXT: "))

msg=msg.upper()

msg=msg.replace(" ", "")

print("\nPLAIN TEXT: ",end=' ')

i=0

while i<len(msg):

loc=list()

loc=locindex(msg[i])

loc1=list()

loc1=locindex(msg[i+1])

if loc[1]==loc1[1]:

print("{}{}".format(my\_matrix[(loc[0]-1)%5][loc[1]],my\_matrix[(loc1[0]-1)%5][loc1[1]]),end=' ')

elif loc[0]==loc1[0]:

print("{}{}".format(my\_matrix[loc[0]][(loc[1]-1)%5],my\_matrix[loc1[0]][(loc1[1]-1)%5]),end=' ')

else:

print("{}{}".format(my\_matrix[loc[0]][loc1[1]],my\_matrix[loc1[0]][loc[1]]),end=' ')

i=i+2

print("")

while(1):

print("\nCHOOSE AN OPTION: \n")

choice=int(input(" 1.ENCRYPTION \n 2.DECRYPTION \n 3.EXIT \n\n"))

if choice==1:

encrypt()

elif choice==2:

decrypt()

elif choice==3:

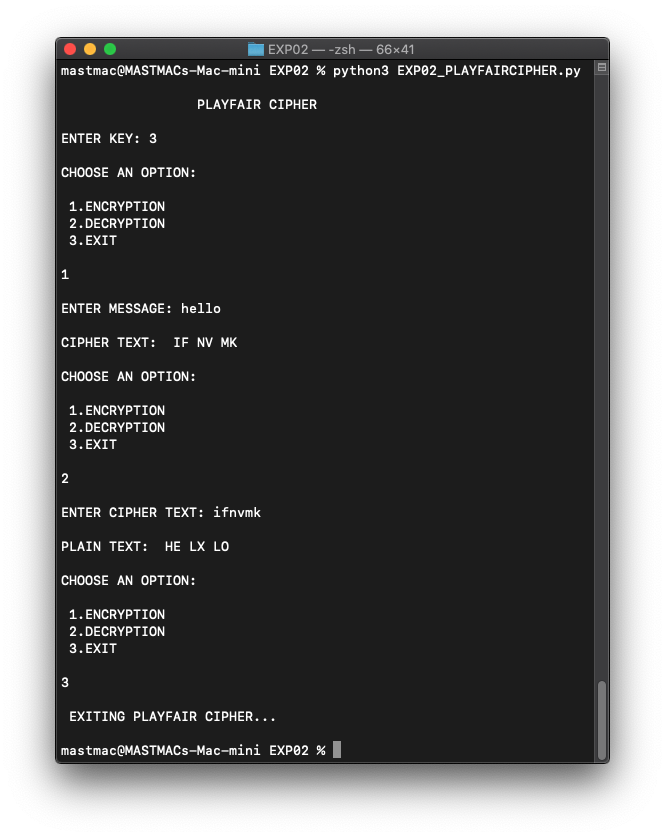
print("\n EXITING PLAYFAIR CIPHER... \n")

exit()

else:

print("\nINVALID OPTION! CHOOSE CORRECT OPTION \n")

**OUTPUT:**

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