

# **ELC**

# **Activity**

## **Semester-III**

**By:**  
**Krish Sharma**  
**Roll No. 102318025**  
**Thapar Institute of Engineering and Technology**

## CODES:

```
# Caesar Cipher
def caesar_encrypt(text, shiR):
    result = ""
    for char in text:
        if char.isalpha():
            shiR_base = ord('A') if char.isupper() else ord('a')
            result += chr((ord(char) - shiR_base + shiR) % 26 + shiR_base)
        else:
            result += char
    return result

def caesar_decrypt(cipher_text, shiR):
    return caesar_encrypt(cipher_text, -shiR)

def read_text(filename):
    with open(filename, 'r') as file:
        return file.read()

def write_text(filename, text):
    with open(filename, 'w') as file:
        file.write(text)

# Playfair Cipher
Grid def
generate_grid(key):
    key = ".join(dict.fromkeys(key.upper().replace('J',
    'I'))).alphabet = "ABCDEFGHIKLMNOPQRSTUVWXYZ"
    grid = [char for char in key + ".join([ch for ch in alphabet if ch not in
    key])] return [grid[i:i + 5] for i in range(0, 25, 5)]

def find_posison(char, grid):
    for i, row in enumerate(grid):
        if char in row:
            return i, row.index(char)
```

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def playfair_encrypt_pair(pair, grid):
    pos1, pos2 = find_posison(pair[0], grid), find_posison(pair[1], grid)
    if pos1[0] == pos2[0]:
        return grid[pos1[0]][(pos1[1] + 1) % 5] + grid[pos2[0]][(pos2[1] + 1) % 5]
    elif pos1[1] == pos2[1]:
        return grid[(pos1[0] + 1) % 5][pos1[1]] + grid[(pos2[0] + 1) % 5][pos2[1]]
    else:
        return grid[pos1[0]][pos2[1]] + grid[pos2[0]][pos1[1]]

def playfair_encrypt(text, key):
    grid = generate_grid(key)
    text = text.upper().replace('J', 'I').replace(' ', '')
    pairs = [(text[i], text[i + 1]) if i + 1 < len(text) and text[i] != text[i + 1] else 'X')
        for i in range(0, len(text), 2)]
    return ''.join(playfair_encrypt_pair(pair, grid) for pair in pairs)

def playfair_decrypt_pair(pair, grid):
    pos1, pos2 = find_posison(pair[0], grid), find_posison(pair[1], grid)
    if pos1[0] == pos2[0]: # Same row
        return grid[pos1[0]][(pos1[1] - 1) % 5] + grid[pos2[0]][(pos2[1] - 1) %
5]
    elif pos1[1] == pos2[1]: # Same column
        return grid[(pos1[0] - 1) % 5][pos1[1]] + grid[(pos2[0] - 1) %
5][pos2[1]]
    else: # Rectangle
        return grid[pos1[0]][pos2[1]] + grid[pos2[0]][pos1[1]]

def playfair_decrypt(cipher_text, key):
    grid = generate_grid(key)
    cipher_text = cipher_text.upper().replace('J', 'I').replace(' ', '')

    # Ensure even-length ciphertext by removing last character if
    odd-length if len(cipher_text) % 2 != 0:
        print("Warning: Odd-length ciphertext detected. Removing the last character.")
        cipher_text = cipher_text[:-1]

    pairs = [(cipher_text[i], cipher_text[i + 1]) for i in range(0, len(cipher_text), 2)]
    return ''.join(playfair_decrypt_pair(pair, grid) for pair in pairs)

# Hill Cipher
import numpy as np

def hill_encrypt(text, key_matrix):
    n = len(key_matrix)
    text_vector = [ord(char) - ord('A') for char in text.upper()]
    text_vector = np.array(text_vector + [0] * (n - len(text_vector) % n))
    text_vector = text_vector.reshape(-1, n).T
    cipher_vector = np.dot(key_matrix, text_vector) % 26

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cipher_text = ''.join(chr(num + ord('A')) for num in cipher_vector.T.flatten())
return cipher_text

```

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def hill_decrypt(cipher_text, key_matrix):
    det = int(round(np.linalg.det(key_matrix)))
    det_inv = pow(det, -1, 26)
    key_matrix_inv = (det_inv * np.round(det * np.linalg.inv(key_matrix)).astype(int)) % 26

    n = len(key_matrix)
    cipher_vector = [ord(char) - ord('A') for char in cipher_text.upper()]
    cipher_vector = np.array(cipher_vector).reshape(-1, n).T
    plain_vector = np.dot(key_matrix_inv, cipher_vector) % 26
    plain_text = ''.join(chr(num + ord('A')) for num in plain_vector.T.flatten())
    return plain_text

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import sme

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def measure_sme(func, *args):
    start = sme.sme()
    result = func(*args)
    end = sme.sme()
    return result, end - start

```

```

def encrypt_file(input_file, output_file, algorithm, *args):
    # Read plaintext from the
    # file with open(input_file, 'r') as
    # file:
    plaintext = file.read()

    # Encrypt using the specified
    # algorithm ciphertext =
    ciphertext = algorithm(plaintext, *args)

    # Write ciphertext to the
    # output file with open(output_file,
    # 'w') as file:
    file.write(ciphertext)

    print(f"Data encrypted successfully and saved to {output_file}")

```

```

def decrypt_file(input_file, output_file, algorithm, *args):
    # Read ciphertext from
    # the file with open(input_file,
    # 'r') as file:
    ciphertext = file.read()

    # Decrypt using the specified
    # algorithm plaintext =
    plaintext = algorithm(ciphertext, *args)

```



```

# Write plaintext to the
output file with open(output_file,
'w') as file:
    file.write(plaintext)

print(f"Data decrypted successfully and saved to {output_file}")
sme_caesar = 0;
sme_playfair = 0;
sme_hill = 0;

def checking_Ceasar():
    global sme_caesar
    start = sme.sme()
    encrypt_file("Text_To_Be_Encrypted.txt", "ceasar_encrypt.txt", caesar_encrypt, 5) # A
shiR of 5
    sme_caesar = sme.sme() - start
    return

def checking_playfair():
    global sme_playfair
    start = sme.sme()
    encrypt_file("playfair_decrypt.txt", "playfair_encrypt.txt", playfair_encrypt,
"KrishISTHEBEST") # Key is 'KrishISTHEBEST'
    sme_playfair = sme.sme() - start
    return

def checking_hill():
    global sme_hill
    start = sme.sme()
    key_matrix = np.array([[11, 0, 10, 10],
                           [18, 7, 8, 18],
                           [19, 7, 4, 1],
                           [4, 18, 19, 0]])
    encrypt_file("Text_To_Be_Encrypted.txt", "hill_encrypt.txt", hill_encrypt, key_matrix) # Hill
cipher key matrix
    sme_hill = sme.sme() - start
    return

import matplotlib.pyplot as plt
import numpy as np
import matplotlib.pyplot as plt

def plot_smes():
    # Use the global sming variables
    global sme_caesar, sme_playfair, sme_hill

    # Times and labels
    smes = [sme_caesar, sme_playfair, sme_hill]

```

```

labels = ['Caesar Cipher', 'Playfair Cipher', 'Hill Cipher']
colors = ['lightblue', 'lightgreen', 'lightcoral'] # Opsonal

# Filter out zero or invalid smes (for robustness)
valid_indices = [i for i, t in enumerate(smes) if t > 0 and not np.isnan(t)]
if not valid_indices:
    print("No valid data to plot.")
    return

smes = [smes[i] for i in valid_indices]
labels = [labels[i] for i in valid_indices]
colors = [colors[i] for i in valid_indices]

# Create bar graph
plt.figure(figsize=(8, 6))
plt.bar(labels, smes, color=colors) # Bar graph with labels and colors
plt.style('Encryption Times by Algorithm')
plt.xlabel('Encryption Algorithm') plt.ylabel('Time (seconds)') plt.show()

def decryptsng_playfair():
    decrypt_file("playfair_encrypt.txt", "playfair_decrypt.txt", playfair_decrypt,
"KrishISTHEBEST")
    return

# Measure encryption
smes checking_Ceasar()
checking_playfair()
checking_hill()

# Plot the smes
plot_smes()

```

//OUTPUTS OF EACH CIPHER FOR CUSTOMISED INPUT (for the required Text\_to\_be\_encrypted.txt has been pasted at the last of this document

ShiR = 5

Caesar text given: Hi my name is Krish Sharma and this is sensisve informason

Caesar encryption: Mn rd sfrj nx Qfppxm Xmfwrf fsi ymnx nx xjsxnynaj nsktwrfynts

Caesar ciphertext: Mn rd sfrj nx Qfppxm Xmfwrf fsi ymnx nx xjsxnynaj nsktwrfynts

Caesar decryption: 'Hi my name is Krish and this is sensisve informason'

Caesar encrypt: KrishISTHEBEST

caesar cipher text: QFPPXMNXYMJGJXY

Key = KrishISTHEBEST

Playfair text given: KrishISTHEBEST

Playfair Encryption: AKEKHLBLCABCBKEW

Playfair encrypted txt : AKEKHLBLCABCBKEW

Playfair decrypson: LAKXSHISTHEBESTX

Key matrix = [[11, 0, 10, 10], [18, 7, 8, 18], [19, 7, 4, 1], [4, 18, 19, 0]]

Hill text: KrishISTHEBEST

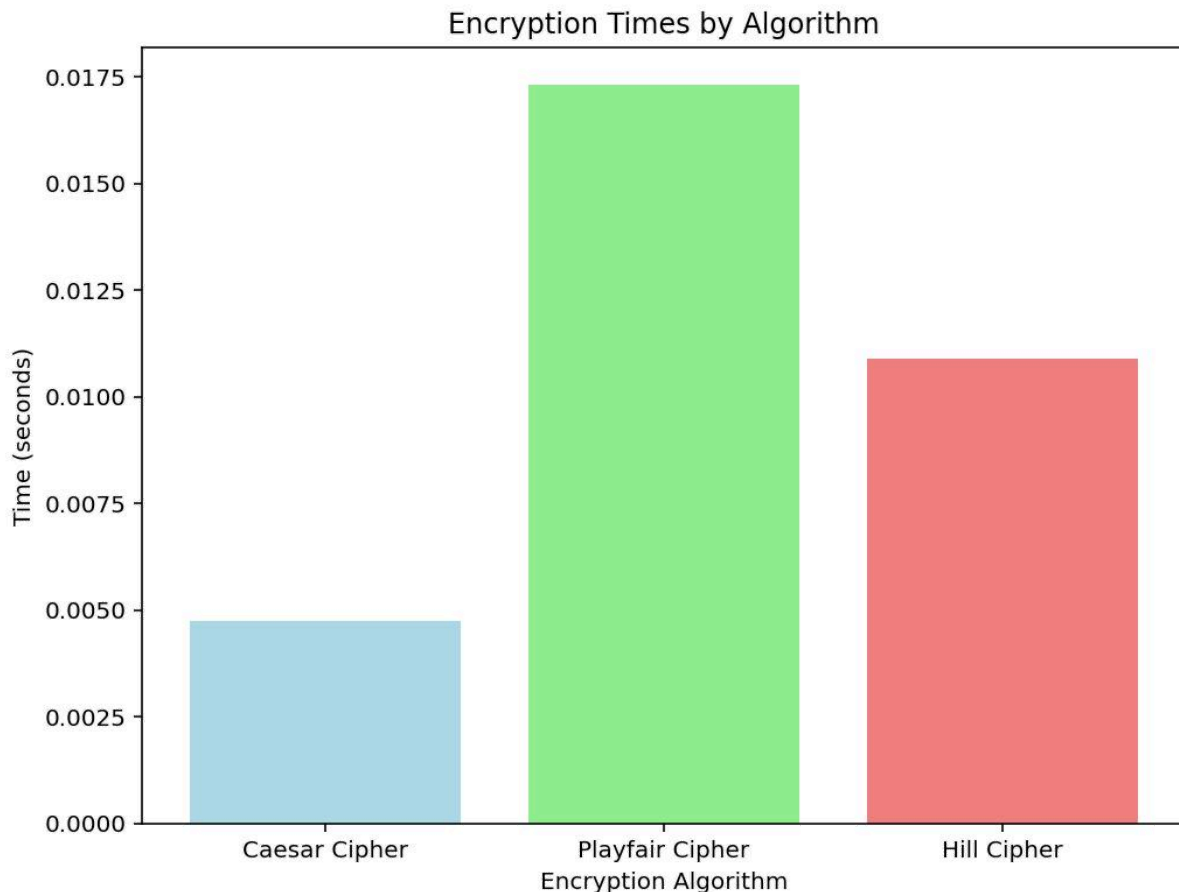
Hill Encryption: JQZAQHZMZZLSAMSZ

Hill ciphertext: JQZAQHZMZZLSAMSZ

Hill decrypson: 'KrishISTHEBESTA'

Plot of smes taken by each cipher:





Evident, that least time was taken by Caesar Cipher and most by Playfair Cipher.

**Hence, I have used Caesar Cipher (fastest) and Hill Cipher (secure) to encrypt the given text file on LMS.**

**Q. What is Your understanding of How these results reflect real-world use cases where encryption speed and security must be balanced?**

In real-world use cases, the balance between encryption speed and security is crucial for determining the right algorithm for a given application. The following points summarize how these results reflect that balance:

- **Speed vs. Complexity:** Simpler algorithms like Caesar Cipher are faster but less secure, making them suitable for low-risk applications or situations where speed is the priority, such as small-scale or low-security environments.
- **Security Considerations:** More complex algorithms like Playfair and Hill Cipher offer higher security due to larger key spaces and more intricate encryption processes, but they come at the cost of slower performance. These are better suited for high-security environments where data protection is paramount, like financial institutions or government communications.
- **Real-World Application:** In environments where data needs to be encrypted quickly and security is a lower priority (e.g., temporary file encryption), faster algorithms

may be preferred. In contrast, applications requiring long-term data protection (e.g., secure communications, banking) will prioritize stronger, slower encryption methods to ensure confidentiality.

- **Scalability:** As the volume of data grows, the choice of encryption method should factor in both performance and security to maintain efficient and secure operations at scale.

# Encryption from Caesar Cipher

VEOMGCIUNBDXSJ TZHLYRAQPWWUFKMIERCJZTWSGLQODPHFBYNAVEURCTXQOHDGWSPKF  
LMYJAUINQZERCJDVOWUMTSXFBPLQHIKGYZTNEUQRVWDM SOPJLXIKTGBCYFNAHSEZQOMR  
WPDLTJIUHV BGSXACFLQZYOURWDPIMKTQHNJEVCSZGYLBPF OUXIQRWHADGMYLSNTKEBZJF  
PRCWUQIOHMDGVELYASFXTJPBNZKRWQCUIDOMGVHSALYEBPQRCZJTOFWIUGNAKDESXVL  
MYHOFPW BSTQRLAJZCGIUNXEKYVOMHSRWFQABDZPTLEUNOGIMCHKRVD PWUQTSZYAJFLB  
QOXISEGCNYRTWMPH AVUIZDJLKOQXSXCNBPTFIYGM RVAZWHEUCDSNYLQOPIMXTFGBUJSAR  
VHDWCPKYZEUQSTGLBMIFJAORWHZVXDUCYKNEQPLTMSGWABFJZVORDCKYAHQPUNWXIET  
LSMGRCBQJDVZUYPIOHAWSMXRFEKNLQBTIVGUJDZWP SACYOREHFKMTJGQBUNLWZVCIDSX  
RAPYOMW HFKBUJQLNDVCZEITPRYGSWAOXHMVQUCKBDNEPTLRYOFISZXAGWQMUHVDTESJ  
KPLYRCBIOMWNUZQXGAFHTQSDJVP OYLEBZICRUMGWPNVDXOSJAFKEQHLBGIUTYSMRCDW  
KPZOQAEJTHCVNSFLYMGIUWRBXOPKDZTQANHEVFCSWLMUROTYPQZJXGDAIBHKS VDEF PZW  
RYMOAJLGCNUTQBHVXSZWIDCQYPAFLORKGENUMTHIBWJCQRDVXSZOYAPFKLTINDGEQM HU  
BWC RSVJXPAOKGLYTZQUMEFWDNISRBHOAYLVPJUXDWQEGSMCTHBRZAYVUPFILOXNJEWDS  
GKCQMBTYRAWPUZLOIHENDGVBFMXTQCKZRJADHYSGL OEWPIUQNVBMFTSAXDCZHOEGNK  
LWIPRQYUVJDXMTBFZASCKRQOPENYH WLXAUDGVITMBWQCOJRYHPKSUFZEVDILMAXNSTQR  
WCGYODBZJEPNASUQXKRIDGVL MYFWZTOCHEKB PQJUSAYCXDFNMERGLWVIPOZQKTSHUAC  
BMNJTYDWXOGZELFCQKRPVBDNWUSIEAJOMHTXYGIZCSRQUELOPWNVAFMKDJBXHQSGYTO  
CEZPRUABIQLXSHVTWDJEKMNOQZFPCARUHYSXVOIDLBWQGFNKPCUMRZATSEIOQBYANXZH  
VLPDWFEUMJGTRCQSBVIOPKYHULXZNWACRJEDTVGYQSMOHBIFEWAZPLTKNUCRSJDBXMOV  
IGQYKFHPUAETRXQZWLD SNMCVBOYHAJITPFKDQGXSRUMLEZWBOTNJPHYDKQUCAFRWIVS  
MLPXNB TGQZEDAYHV KIOURMWCJSLNXTQGE BPZYAUWVDQSCRKIOHGNPELXWTBMYJU ZDV  
FAHRCWBKQXSIMULEYOVNGZPDTJCARKBEOIFQM HZWUSYNLVPXDCTGJQSBKFM OEWA VLRYP  
XDINUHJZPGOQTSMWKDFAYLCZVUXSRENBWKITADJPGVOMRBUQLXDYEKFSZWNTCAHOQBP  
MUVRLEYJ KISGNXATDCVYHOFZQWELRUGKPM SIABDXNJHQOTVFPYZUMCLEWATGDRBQKOIU  
VNCYZXHMJSWQBKPTRLFOIMEGNVUYDACJPXRHGZWQKLT SOCYZVFERXUDHOMWQPYBCAN  
VIMLTGDKSOQEAJWRBUFPXZSHCYKMIVGNOQLTWUPDBFRSAJQYCHXZOIGWEUMKLRTVB FPA  
NOSJCDIZUQE WYGVMRXH QKPESADCYFOBTLVJIGUZR WQMDHONBSKYTPCAVLXIDFWREHGJU  
MZN BQYCIOPTAFLWKDSVHXUMCTYREQWPJODAI ZBLFSNGYKHQEUXCMVWRZOTPLVIFBSADC  
YUGEXQRNWLYRAQPWWUFKMIERCJZTWSGLQODPHFBYNAVEURCTXQOHDGWSPKF LMYJAU I  
NQZERCJDVOWUMTSXFBPLQHIKGYZTNEUQRVWDM SOPJLXIKTGBCYFNAHSEZQOMR WPDLTJ I  
UHV BGSXACFLQZYOURWDPIMKTQHNJEVCSZGYLBPF OUXIQRWHADGMYLSNTKEBZJF PRCWU  
QIOHMDGVELYASFXTJPBNZKRWQCUIDOMGVHSALYEBPQRCZJTOFWIUGNAKDESXV LMYHOF P  
WBSTQRLAJZCGIUNXEKYVOMHSRWFQABDZPTLEUNOGIMCHKRVD PWUQTSZYAJFLB QOXISEG  
CNYRTWMPH AVUIZDJLKOQXSXCNBPTFIYGM RVAZWHEUCDSNYLQOPIMXTFGBUJSARVHDWCP  
KYZEUQSTGLBMIFJAORWHZVXDUCYKNEQPLTMSGWABFJZVORDCKYAHQPUNWXIETLSMGRC

BQJDVZUYPIOHAWSMXRFEKNLQBTIVGUJDZWPSCYOREHFKMTJGQBUNLWZVCIDSXRAPYOM  
WHFKBUJQLNDVCZEITPRYGSWAOXHMVQUCKBDNEPTLRYOFISZXAGWQMUHVDTESJKPLYRCB  
IOMWNUZQXGAFHTQSDJVPOYLEBZICRUMGWPNVDXOSJAFKEQHLBGIUTYSMRCDWKPZOQA  
EJTHCVNSFLYMGIUWRBXOPKDZTQANHEVFCSWLMUROTYPQZJXGDAIBHKSVDFFPZWRYMOAJ  
LGCNUTQBHVXSZWIDCQYP AFLORKGENUMTHIBWJCQRDVXSZOYAPFKLTINDGEQMHUBWCRS  
VJXPAOKGLYTZQUMEFWDNISRBHOAYLVPJUXDWQEGSMCTHBRZAYVUPFILOXNJEWDGSKCQM  
BTYRAWPUZLOIHENDGVBFXMTQCKZRJADHYSGLQEWPIUQNVBMFTSAXDCZHOEGNKLWIPRQ  
YUVJDXMTBFZASCKRQOPENYHWLXAUDGVITMBWQCOJRYHPKSUFZEVDILMAXNSTQRWCGYO  
DBZJEPNASUQXKRIDGVL MYFWZTOCHEKBPQJUSAYCXDFNMERGLWVIPOZQKTSHUACBMNJTY  
DWXOGZELFCQKRPVBDNWUSIEAJOMHTXYGIZCSRQUELOPWNVAFMKDJBXHQSGYTOCEZPRU  
ABIQLXSHVTWDJEKMNOQZFPCARUHYSXVOIDLBWQG FNKPCUMRZATSEIOQBYANXZHVLPDW  
FEUMJGTRCQSBVIOPKYHULXZNWACRJEDTVGYQSMOHBIFEWAZPLTKNUCRSJDBXMOVIGQYKF  
HPUAETRXQZWLD SNMVCVBOYHAJITPFKDQGXSRUMLEZWBOTNJPHYDKQUCAFRWIVSMLPXNB  
TGQZEDAYHVKIOURMWJC SLNXTQGE BPFZYAUWVDQSCRKIOHGNPELXWTBMYJUZDVFAHRCW  
BKQXSIMULEYOVNGZPDTJCARKBEOIFQMHZWUSYNLVPXDCTGJQSBKFMOWAVLRYPX DINUHJ  
ZPGOQTSMWKDFAYLCZVUXSRENBWKITADJPGVOMRBUQLXDYEKFSZWNTCAHOQBPMUVR LYE  
JKISGNXATDCVYHOFZQWELRUGKPM SIABDXNJHQOTVFPYZUMCLEWATGDRBQKOIUVN CYZXH  
MJSWQBKPTRLF OIMEG NVUYDACJPXRHGZWQKLT SOCYZVFERXUDHOMWQPYBCANVIMLTGD  
KSOQEAJWRB UFPXZSHCYKMIVGNOQLTWUPDBFRSAJQYCHXZOIGWEUMKLRTVBFPANOSJCDI  
ZUQEWYGV MRXHQPESADCYFOBT LVJIGUZR WQMDHONBSKYTPCAVLXIDFWREHGJUMZNBQ  
YCIOPTAFLWKDSVHXUMCTYREQWPJODAI ZBLFSNGYKHQEUXCMVWRZOTPLVIFBSADCYUGEX  
QRNWTEUSBDRGFPYNAIVMLQXZKCHOHWSEUGATOMPIKLZRCFBWJQYDVHSXNIGREUBTPVS  
WOKFAXYDQCHINJLZGUMPETRYBVWQICOF AKHJSDZNXLGEUQYBTRVPCIKAWOMFHLDSZXN  
EGPTUCRYIAKHWOBVJDMFSCTLZGAUQHREQJDVZUYPIOHAWSMXRFEKNLQBTIVGUJDZWPSCYOREHFKMTJGQBUNLWZVCIDSXRAPYOMWHFKBUJQLNDVCZEITPRYGSWAOXHMVQUCKBDNEPTLRYOFISZXAGWQMUHVDTESJKPLYRCBIOMWNUZQXGAFHTQSDJVPOYLEBZICRUMGWPNVDXOSJAFKEQHLBGIUTYSMRCDWKPZOQAEJTHCVNSFLYMGIUWRBXOPKDZTQANHEVFCSWLMUROTYPQZJXGDAIBHKSVDFFPZWRYMOAJLGCNUTQBHVXSZWIDCQYP AFLORKGENUMTHIBWJCQRDVXSZOYAPFKLTINDGEQMHUBWCRSVJXPAOKGLYTZQUMEFWDNISRBHOAYLVPJUXDWQEGSMCTHBRZAYVUPFILOXNJEWDGSKCQMBTYRAWPUZLOIHENDGVBFXMTQCKZRJADHYSGLQEWPIUQNVBMFTSAXDCZHOEGNKLWIPRQYUVJDXMTBFZASCKRQOPENYHWLXAUDGVITMBWQCOJRYHPKSUFZEVDILMAXNSTQRWCGYODBJEPNASUQXKRIDGVL MYFWZTOCHEKBPQJUSAYCXDFNMERGLWVIPOZQKTSHUACBMNJTYDWXOGZELFCQKRPVBDNWUSIEAJOMHTXYGIZCSRQUELOPWNVAFMKDJBXHQSGYTOCEZPRUABIQLXSHVTWDJEKMNOQZFPCARUHYSXVOIDLBWQG FNKPCUMRZATSEIOQBYANXZHVLPDWFEUMJGTRCQSBVIOPKYHULXZNWACRJEDTVGYQSMOHBIFEWAZPLTKNUCRSJDBXMOVIGQYKFHPUAETRXQZWLD SNMVCVBOYHAJITPFKDQGXSRUMLEZWBOTNJPHYDKQUCAFRWIVSMLPXNB TGQZEDAYHVKIOURMWJC SLNXTQGE BPFZYAUWVDQSCRKIOHGNPELXWTBMYJUZDVFAHRCWBKQXSIMULEYOVNGZPDTJCARKBEOIFQMHZWUSYNLVPXDCTGJQSBKFMOWAVLRYPX DINUHJZPGOQTSMWKDFAYLCZVUXSRENBWKITADJPGVOMRBUQLXDYEKFSZWNTCAHOQBPMUVR LYEJKISGNXATDCVYHOFZQWELRUGKPM SIABDXNJHQOTVFPYZUMCLEWATGDRBQKOIUVN CYZXHMJSWQBKPTRLF OIMEG NVUYDACJPXRHGZWQKLT SOCYZVFERXUDHOMWQPYBCANVIMLTGDKSOQEAJWRB UFPXZSHCYKMIVGNOQLTWUPDBFRSAJQYCHXZOIGWEUMKLRTVBFPANOSJCDIZUQEWYGV MRXHQPESADCYFOBT LVJIGUZR WQMDHONBSKYTPCAVLXIDFWREHGJUMZNBQYCIOPTAFLWKDSVHXUMCTYREQWPJODAI ZBLFSNGYKHQEUXCMVWRZOTPLVIFBSADCIYOXNPWDKCFBSVMTZGAYLRJEU IQHCOKXDWFPSLV MGRQAOTYCBNEUPJKHZDIASXWMGQVPFUCYOBTLERJAHNIZSKDQXMWGOFCBSTNPVARELY UDIJQHKXZAOMWGDQCBFHUTPERSKYL NIZJVADXMUCOGQTWSYPBEKFARHZDJNMVCIULQO

XSETYAGWRKDFPQHCUBMNLAVSTIEYZXWJOGUQPKFDRHZSVOECLAINMUBYWTPQXGKFDOJS  
ZCEAQYNPUIMVRBGHWTKSLOXQFDPYAMIRUSEVKBGNWTZHCQJLAMXOEUFVRBWDPIGKQSC  
YTANLVHMZOEXBUDFCRIVPQGKYTSAOHJNWMCZEDLQUSRGIXTAKVZOBWEYQHLPMFUCNSCI  
OAVQWDYGMHTERZXBLUKVPQAJCDINSZWYOMFRGLHXETBKUQVSPADHZICJMNLRXOEYBGW  
QTKUVPAJCMOFDEWRXNHLBSIZGYQKODTVCPAWZESNILMXGBQFJUYPDHOVKSTCAPEWMLQI  
XZUFJYKDHGVRWTBQMNXESPAZCILKUFDSWYOMGQTERHVBBDPXNUAKYWILMCQFSVERGT  
OHZPBAYXWJDVQNKISEMFLCOGWHUYTABZRJVQDMPNEICOXFSLGWTKYHVBZUQEADRISCNP  
OKJMXFHWTLAObGVYRQZPDECKUMANIOJLTSGFWHYRXBQVEODZPSKLCUTIMAQJNYHGVXR  
WCBZFEUQISTKAPMJONDGHYELPWFRXBKUCQOMDTIZSJEALYPNHZGCVIQRUFBOKXTSWMP  
YNEZAQGLDKHUCJBOSQFPTXRIWYEKAZDMNCUGOHQLSVPBIEYJAXZCWFQRMGTPSOHDUA  
NYKBVEQJLRIXTCOHWD MF SAGZPQKEUNYLPBRHJCWVDIAXSTZGQUMOFPEKDLICRBYTWAQQ  
ZNSGXIHPVUMYWT LQCKBREAO DFIJGSVN XHYPZQMWB LDUETRAKOGVQISZJCWXBYMPERFU  
DTQSZCAVKWONLBHIJXGMCYRVTPSUZOQEDLVKTIABXCFWMHPRGNQYOJUSEZDBLKCVTAXQ  
MUHWONGYERZFIJDTPQLBRKUCVWOGQFEIHYSMNZADJP UXTLVRKBQGWCZDENSOIATMYR  
PHXKUAFCDVESPLQBZJIMWOTNRXAGHVYEKPUIVBDR CJOALZQTXGMSYWEPNDKUIHVS CYJA  
ROWBEMZQLTFPXUGINKODHVQCABSRJMYZETXWPILUMFGKDOZPBVQEYHTJLNWSXMAURIC  
FOGKWEQZBJVLYTSDXNPCUHRAMTIGKVCQLBJEYZFOUAXPWNSDTMGRKVIWBLAZUYDEO FCT  
QSHMJPNOXADV KYZGIRULSMCWQBHPTFNEJXODEKRFAPULYMW TIVCXQSNGBJZAHDYVPIQK  
REUCOMWLTSGNFTXAPZDHMVIBQWOSKGUCJYNRFLZETOXPDQAUH WBM YC VIRSJKNZQPLDG  
TOXPSUWFMHYAJKTQVCERBDZNSILGXWPOMFU YQCKTSNBVGEIPZWOJUALRHD MXGFVQSYN  
CKZVEAJOLPQIXDHSUMYWBGRFAOEQPTVCNLSZWRBUVOKYPXQTJMCGEADIFLZRVWHSNCQ  
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# Encryption from Playfair Cipher

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# Encryption from Hill Cipher

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