**Cryptography and Network Security Lab (6CS451)**

**Assignment No 2**

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1. Perform encryption and decryption using following transposition techniques a. Rail fence b. row and Column Transformation

**Code :**

#include <iostream>

#include <vector>

#include <string>

#include <algorithm>

std::string rowColumnEncrypt(std::string text, int rows, int cols) {

    char grid[rows][cols];

    int k = 0;

    for (int i = 0; i < rows; i++) {

        for (int j = 0; j < cols; j++) {

            if (k < text.length())

                grid[i][j] = text[k++];

            else

                grid[i][j] = 'X'; // Fill the empty spaces with a dummy character

        }

    }

    std::string encrypted;

    for (int j = 0; j < cols; j++) {

        for (int i = 0; i < rows; i++) {

            encrypted += grid[i][j];

        }

    }

    return encrypted;

}

std::string rowColumnDecrypt(std::string text, int rows, int cols) {

    char grid[rows][cols];

    int k = 0;

    for (int j = 0; j < cols; j++) {

        for (int i = 0; i < rows; i++) {

            grid[i][j] = text[k++];

        }

    }

    std::string decrypted;

    for (int i = 0; i < rows; i++) {

        for (int j = 0; j < cols; j++) {

            decrypted += grid[i][j];

        }

    }

    return decrypted;

}

int main() {

    std::string text = "HELLOTHISISROWCOLUMN";

    int rows = 4;

    int cols = 5;

    std::string encrypted = rowColumnEncrypt(text, rows, cols);

    std::cout << "Row-Column Encrypted: " << encrypted << std::endl;

    std::string decrypted = rowColumnDecrypt(encrypted, rows, cols);

    std::cout << "Row-Column Decrypted: " << decrypted << std::endl;

    return 0;

}

**Output :**

