St. Vincent Pallotti College of Engineering & Technology, Nagpur
Department of Computer Engineering
Session 2024-25
CNS Practical Details

Practical 2:

Aim: To implement Transposition Techniques

1A.

Case Study:

A secure communication system using Keyless transposition technique is required to transmit confidential messages between two parties, Alice and Bob. The system should ensure that the message remains confidential and cannot be intercepted or decoded by an unauthorized third party.

Objective:

Design a secure communication system that uses the **Rail Fence Transposition** technique to encrypt and decrypt messages.

Requirement:

1. The system should be able to encrypt and decrypt messages using Rail fence techniques.
2. The system should be able to handle messages of varying lengths.
3. The system should be able to use a variable number of rails.
4. The system should provide a secure way to transmit the encrypted message between Alice and Bob.

1B.

Case Study:

The banking industry handles sensitive customer data, including account numbers, passwords and transaction history. To ensure the confidentiality and integrity of this

data, Bank needs to implement secure data transmission protocols to protect against cyber threats.

Objective:

Design a secure data transmission system for a bank that uses the Simple Columnar Transposition Technique to encrypt and decrypt sensitive customer data.

Requirement:

1. The system should be able to encrypt and decrypt customer data.
2. The system should be scalable and flexible to accommodate changing the business needs.

1C

Implement a program to design key inversion in a transposition cipher i.e., to create a decryption key, if the encryption key is given or vice versa.

Working:

1. Add the indices to the key table.
2. Swap the contents and indices.
3. Sort the pairs according to the index.

1D

Implement the hybrid transposition cipher method combining keyless and keyed method.

Working:

1. Write the text into table row by row. (***Keyless method***).
2. Do the permutation by reordering the columns. (***Keyed method***).
3. Read the new table column by column. (***Keyless method***).

{Note the following:

1. **Student need to implement the code using any programming tool.**
2. **Student need to write the practical in the following order on RHS of the page:**
    a. **Aim.**
    b. **Objective.**
    c. **Theory of each algorithm separately with diagram explanation, with an example.**
    d. **Algorithm as per the lab.**
    e. **Code/Implementation separately as per the given lab.**
    f. **Result & Discussion (Min 3 outputs should be displayed & discussed separately).**
    g. **Cryptanalysis (Mentioning the advantages & disadvantages of each method separately).**
    h. **Conclusion in your words.**
    i. **Neat Flowchart should be drawn that clearly explains the flow of the code on LHS of the page.}**

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Practical In-charge