BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY AND SCIENCE (A) :: BATLAPALEM, Andhra Pradesh, India

MCA Course Structure & Syllabus

(Applicable for batches admitted from 2025-2026)

MCA II Semester

Course code : 25MC2L05

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NETWORKS AND SECURITY LAB

Course Objectives:

- To learn basic understanding of cryptography, how it has evolved, and some key encryption techniques used today..
- To understand and implement encryption and decryption using Caesar Cipher, Substitution Cipher, Hill Cipher.

List of Experiments:

1. Implement the data link layer farming methods such as character stuffing and bit stuffing.
2. Implement on a data set of characters the three CRC polynomials – CRC12, CRC 16 and CRC CCIP.
3. Implement Dijkstra's algorithm to compute the Shortest path thru a graph.
4. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table art each node using distance vector routing algorithm
5. Take an example subnet of hosts. Obtain a broadcast tree for it.
6. Write a C program that contains a string (char pointer) with a value 'Hello World'. The program should XOR each character in this string with 0 and display the result.
7. Write a C program that contains a string (char pointer) with a value 'Hello World'. The program should AND or and XOR each character in this string with 127 and display the result
8. Write a Java program to perform encryption and decryption using the following algorithms: a) Caesar Cipher b) Substitution Cipher c) Hill Cipher
9. Write a Java program to implement the DES algorithm logic
10. Write a C/JAVA program to implement the BlowFish algorithm logic
11. Write a C/JAVA program to implement the Rijndael algorithm logic.
12. Using Java Cryptography, encrypt the text "Hello world" using BlowFish.
13. Create your own key using Java key tool.

a) Write a Java program to implement RSA Algorithm

b) Write a Java program to implement Public key Algorithm like El Gamal

c) Implement the Diffie-Hellman Key Exchange mechanism using HTML

Web Resources:

1. https://csrc.nist.rip/publications/nistpubs/800-12/800-12-html/chapter19.html
2. http://vlabs.iitkgp.ac.in/ant/
3. https://networklessons.com/labs/network-fundamentals-lab-1
4. https://elearn.daffodilvarsity.edu.bd/course/view.php?id=10230
5. https://www.cybrary.it/practice-lab/cryptography-basics
6. https://www.infosecinstitute.com/resources/cryptography/cryptographic-algorithmslab/

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