



GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

OPERATING SYSTEM AND COMPUTER NETWORKS LAB

Course Code: GR15A1078
II Year II Semester

L:0 T:0 P:2 C:2

Prerequisites

- Fundamentals of computer science
- Fundamentals of data communication

Course Objectives

- Graduates will demonstrate the core features of OS.
- Graduates will simulate the various algorithms of the subject.
- Simulation of routing algorithms.
- Error detection and correction methods.

Course Outcomes

- The students will be able to judge and adopt the different programming languages and its constructs.
- An ability to design and develop programs as well as analyze and interpret data.
- An ability to understand the significance of modularizing the programs.
- Implement the CPU Scheduling algorithms.
- Compare file Organization techniques.
- Analyze memory management techniques and implement page replacement algorithms.
- Implement algorithms for deadlock avoidance and prevention.
- Implementation of various network algorithms.

PART-I

Objectives

To understand the operating System functionalities System/ Software requirement

1. Simulate the following CPU scheduling algorithms
a) Round Robin b) SJF c) FCFS d) Priority
2. Simulate all file allocation strategies
a) Sequential b) Indexed c) Linked
3. Simulate MVT and MFT
4. Simulate all File Organization Techniques
a) Single level directory b) Two level directory
5. Simulate Bankers Algorithm for Dead Lock Avoidance



6. Simulate all page replacement algorithms
 - a) FIFO
 - b) LRU
 - c) LFU
7. Simulate Paging Technique of memory management.

PART-II

1. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.
2. Implement on a data set of characters the three CRC polynomials–CRC 12, 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 at each node using distance vector routing algorithm. Take an example subnet of hosts. Obtain broadcast tree for it.
5. Using RSA algorithm Encrypt a text data and Decrypt the same.

Teaching methodologies

1. Power Point presentations
2. Tutorial Sheets
3. Assignments
4. Lab experiments

Text Books

1. Operating System Concepts- Abraham S. Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.
2. Operating Systems–Internal and Design Principles Stallings, Fifth Edition–2005, Pearson education/PHI
3. Larry L. Peterson, Bruce S. Davie, “Computer Networks: A Syses Approach”, Third Edition, Morgan Kauffmann Publishers Inc., 2003.

Reference Books

1. Operating systems- A Concept based Approach-D. M. Dhamdhare, 2nd Edition, TMH
2. Operating System A Design Approach-Crowley, TMH.
3. Modern Operating Systems, Andrew S Tanenbaum 2nd edition Pearson/PHI.
4. James F. Kuross, Keith W. Ross, “Computer Networking, A Top-Down Approach Featuring the Internet”, Third Edition, Addison Wesley, 2004.
5. Andrew S. Tanenbaum, “Computer Networks”, Fourth Edition, 2003.