

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
B.Tech. III-I-Sem. (C.S.E)

(9A05501) PRINCIPLES OF PROGRAMMING LANGUAGES
(Common to CSE, ECM)

UNIT I

Preliminary Concepts: Reasons for studying, concepts of programming languages, Programming domains, Language Evaluation Criteria, influences on Language design, Language categories, Programming Paradigms: Imperative, Object Oriented, functional Programming, Logic Programming. Programming Language Implementation, Compilation and Virtual Machines, Programming environments.

UNIT II

Syntax and Semantics: general Problem of describing Syntax and Semantics, formal methods of describing syntax, BNF, EBNF for common programming languages features, parse trees, ambiguous grammars, attribute grammars, Denotational semantics and axiomatic semantics for common programming language features.

UNIT III

Data types: Introduction, primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization.

UNIT IV

Expressions and Statements: Arithmetic relational and Boolean expressions, Short circuit evaluation mixed mode assignment, Assignment Statements, Control Structures: Statement Level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

UNIT V

Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, parameters that are sub-program names, design issues for functions user defined overloaded operators, co routines.

UNIT VI

Abstract Data types: Abstractions and encapsulation, introductions to data abstraction, design issues, language examples, C++ parameterized ADT, object oriented programming in small talk, C++, Java, C#, Ada 95, Concurrency: Subprogram level concurrency, semaphores, monitors, message passing, Java threads, C# threads.

UNIT VII

Exception handling: Exceptions, exception Propagation, Exception handler in Ada, C++ and Java. Logic Programming Language : Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

UNIT VIII

Functional Programming Languages: Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative Languages. Scripting Language: Pragmatics, Key Concepts, Case Study : Python – Values and Types, Variables , Storage and Control, Bindings and Scope, Procedural Abstraction, Data Abstraction, Separate Compilation, Module Library.

TEXT BOOKS:

1. Concepts of Programming Languages Robert W. Sebesta, Eighth Edition, Pearson Education, 2008.
2. Programming Language Design Concepts, D. A. Watt, Wiley Dreamtech, rp-2007.

REFERENCES:

1. Programming Languages, Second Edition, A.B. Tucker, R.E. Noonan, TMH.
2. Programming Languages, K. C.Louden, Second Edition, Thomson, 2003.
3. LISP, Patric Henry Winston and Paul Horn, Pearson Education.
4. Programming in Prolog, W.F. Clocksin and C.S.Mellish, Fifth Edition, Springer.
5. Programming Python, M.Lutz, Third Edition, O'reilly, SPD, rp-2007.
6. Core Python Programming, Chun, Second Edition, Pearson Education, 2007.
7. Guide to Programming with Python, Michael Dawson, Thomson, 2008.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR**B.Tech. III-I-Sem. (C.S.E)****(9A05502) SOFTWARE ENGINEERING****(Common to CSE, CSSE, IT)****UNIT I**

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, legacy software, Software myths. A Generic view of process: Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

UNIT II

Process models: The waterfall model, Incremental process models, Evolutionary process models, Specialized process models, The Unified process. Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

UNIT III

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. System models: Context Models, Behavioral models, Data models, Object models, structured methods.

UNIT IV

Design Engineering: Design process and Design quality, Design concepts, the design model, pattern based software design. Creating an architectural design: software architecture, Data design, Architectural styles and patterns, Architectural Design, assessing alternative architectural designs, mapping data flow into software architecture.

UNIT V

Modeling component-level design: Designing class-based components, conducting component-level design, Object constraint language, designing conventional components. Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT VI

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging. Product metrics: Software Quality, Frame work for Product metrics, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

UNIT VII

Metrics for Process and Products: Software Measurement, Metrics for software quality. Risk management: Reactive vs Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

UNIT VIII

Quality Management: Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

TEXT BOOKS:

1. Software Engineering: A practitioner's Approach, Roger S Pressman, Sixth Edition. McGrawHill International Edition, 2005
2. Software Engineering, Ian Sommerville, Seventh Edition, Pearson Education, 2004.

REFERENCES:

1. Fundamentals of Software Engineering, Rajib Mall, PHI, 2005.
2. Software Engineering, A Precise Approach, Pankaj Jalote, Wiley India, 2010.
3. Software Engineering: A Primer, Waman S Jawadekar, Tata McGraw-Hill, 2008.
4. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
5. Software Engineering1: Abstraction and modeling, Diner Bjorner, Springer International edition, 2006.
6. Software Engineering2: Specification of systems and languages, Diner Bjorner, Springer International edition, 2006.
7. Software Engineering Foundations, Yingxu Wang, Auerbach Publications, 2008.
8. Software Engineering Principles and Practice, Hans Van Vliet, Third edition, John Wiley & Sons Ltd.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR**B.Tech. III-I-Sem. (C.S.E)****(9A05503) COMPUTER GRAPHICS****(Common to CSE, ECM)****UNIT I**

Introduction: Image Processing as Picture Analysis, The Advantages of Interactive Graphics, Representative Uses of Computer Graphics, Classification of Applications, Development of Hardware and Software for Computer Graphics, Conceptual Framework for Interactive Graphics, Drawing With SRGP, Basic Interaction Handling, Raster Graphics Features, Limitations of SRGP.

UNIT II

Basic Raster Graphics Algorithms For Drawing 2D Primitives: Overview, Scan Converting Lines, Scan Converting Circles, Scan Converting Ellipses, Filling Rectangles, Filling Polygons, Filling Ellipse Arcs, Pattern Filling, Thick Primitives, Line Style and Pen Style, Clipping in a Raster World, Clipping Lines, Clipping Circles and Ellipses, Clipping Polygons, Generating Characters, SRGP Copy Pixel, Antialiasing.

UNIT III

Geometrical Transformations: 2D Transformations, Homogeneous Coordinates and Matrix Representation of 2D Transformations, Composition of 2D Transformations, The Window-to-Viewport Transformation, Efficiency, Matrix Representation of 3D Transformations, Composition of 3D Transformations, Transformation as a change in Coordinate System, Viewing in 3D: Projections, Specifying an Arbitrary 3D View, Examples of 3D Viewing, The Mathematics of Planar Geometric Projections, Implementing Planar Geometric Projections, Coordinate Systems.

UNIT IV

Object Hierarchy and Simple PHIGS(SPHIGS): Geometric Modeling, Characteristics of Retained-Mode Graphics Packages, Defining and Displaying Structures, Modeling Transformations, Hierarchical Structure Networks, Matrix Composition in Display Traversal, Appearance-Attribute Handling in Hierarchy, Screen Updating and Rendering Modes, Structure Network Editing for Dynamic Effects, Interaction, Additional Output Features, Implementation Issues, Optimizing Display of Hierarchical Models, Limitations of Hierarchical Modeling in PHIGS, Alternative Forms of Hierarchical Modeling, Input Devices, Interaction Techniques, and Interaction Tasks: Interaction Hardware, Basic Interaction Tasks, Composite Interaction Tasks.

UNIT V

Representing Curves and Surfaces: Polygon Meshes, Parametric Cubic Curves, Parametric Bicubic Surfaces, Quadratic Surfaces.

UNIT VI

Solid Modeling: Representing Solids, Regularized Boolean Set Operations, Primitive Instancing, Sweep Representations, Boundary Representations, Spatial-Partitioning Representations, Constructive Solid Geometry, Comparison of Representations, User Interfaces for Solid Modeling.

UNIT VII

Achromatic Light and Colored Light: Achromatic Light, Chromatic Color, Color Models for Raster Graphics, Reproducing Color, Using Color in Computer Graphics.

UNIT VIII

Illumination and Shading: Illumination Models, Shading Models for Polygons, Surface Detail, Shadows, Transparency, Interobject Reflections, Physically Based Illumination Models, Extended Light Sources, Spectral Sampling, Improving the Camera Model, Global Illumination Algorithms, Recursive Ray Tracing, Radiosity Methods, The Rendering Pipeline.

TEXT BOOKS:

1. Computer Graphics Principles and Practice, Second Edition in C, James D.Foley, Andries Van Dam, Steven K.Feiner, Jhon F.Hughes.
2. Computer Graphics C version, Donald Hearn and M. Pauline Baker, Pearson education.

REFERENCES:

1. Computer Graphics Second Edition, Zhigand xiang, Roy Plastock, Schaum's outlines, Tata Mc Graw Hill.
2. Procedural elements for Computer Graphics, David F Rogers, Tata Mc Graw hill, Second Edition.
3. Principles of Interactive Computer Graphics, Neuman and Sproul, TMH.
4. Principles of Computer Graphics, Shalini, Govil-Pai, Springer.
5. Computer Graphics, Steven Harrington, TMH
6. Computer Graphics, F.S.Hill, S.M.Kelley, PHI.
7. Computer Graphics, P.Shirley, Steve Marschner & Others, Cengage Learning.
8. Computer Graphics and Animation, M.C.Trivedi, Jaico Publishing House.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR

B.Tech. III-I-Sem. (C.S.E)

(9A05504) COMPILER DESIGN

UNIT I

Overview of Compilation: Phases of Compilation – Lexical Analysis, Regular Grammar and regular expression for common programming language features, pass and Phases of translation, interpretation, bootstrapping, data structures in compilation – LEX lexical analyzer generator.

UNIT II

Top down Parsing: Context free grammars, Top down parsing – Backtracking, LL (1), recursive descent parsing, Predictive parsing, Preprocessing steps required for predictive parsing.

UNIT III

Bottom up parsing: Shift Reduce parsing, LR and LALR parsing, Error recovery in parsing , handling ambiguous grammar, YACC – automatic parser generator.

UNIT IV

Semantic analysis: Intermediate forms of source Programs – abstract syntax tree, polish notation and three address codes. Attributed grammars, Syntax directed translation, Conversion of popular Programming languages language Constructs into Intermediate code forms, Type checker.

UNIT V

Symbol Tables: Symbol table format, organization for block structures languages, hashing, tree structures representation of scope information. Block structures and non block structure storage allocation: static, Runtime stack and heap storage allocation, storage allocation for arrays, strings and records.

UNIT VI

Code optimization: Consideration for Optimization, Scope of Optimization, local optimization, loop optimization, frequency reduction, folding, DAG representation.

UNIT VII

Data flow analysis: Flow graph, data flow equation, global optimization, redundant sub expression elimination, Induction variable elements, Live variable analysis, Copy propagation.

UNIT VIII

Object code generation: Object code forms, machine dependent code optimization, register allocation and assignment generic code generation algorithms, DAG for register allocation.

TEXT BOOKS:

1. Principles of compiler design: A.V. Aho, J.D.Ullman, Pearson Education.
2. Modern Compiler Implementation in C: Andrew N. Appel, Cambridge University Press.

REFERENCES :

1. Lex & Yacc – John R. Levine, Tony Mason, Doug Brown, O'reilly
2. Modern Compiler Design- Dick Grune, Henry E. Bal, Criel T. H. Jacobs, Wiley Dreamtech.
3. Engineering a Compiler-Cooper and Linda, Elsevier.
4. Compiler Construction, Loudon, Thomson.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
B.Tech. III-I-Sem. (C.S.E)
(9A05505) OPERATING SYSTEMS
(Common to CSE, IT, ECM)

UNIT I

Operating Systems Overview: Operating systems functions, Overview of computer operating systems, protection and security, distributed systems, special purpose systems, operating systems structures: operating system services and systems calls, system programs, operating system structure, operating systems generation.

UNIT II

Process Management: Process concepts, threads, scheduling-criteria, algorithms, their evaluation, Thread scheduling, case studies UNIX, Linux, Windows.

UNIT III

Concurrency: Process synchronization, the critical-section problem, Peterson's Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors, Synchronization examples, atomic transactions. Case studies UNIX, Linux, Windows.

UNIT IV

Memory Management: Swapping, contiguous memory allocation, paging, structure of the page table, segmentation, virtual memory, demand paging, page-replacement, algorithms, Allocation of frames, Thrashing case studies UNIX, Linux, Windows

UNIT V

Principles of deadlock: system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock.

UNIT VI

File system Interface: The concept of a file, Access Methods, Directory structure, File system mounting, File sharing, protection. File System implementation: File system structure, file system implementation, directory implementation, allocation methods, free-space management, efficiency and performance, case studies. UNIX, Linux, Windows

UNIT VII

Mass-storage structure: overview of Mass-storage structure, Disk structure, disk attachment, disk scheduling, swap-space management, RAID structure, stable-storage implementation, Tertiary storage structure. I/O systems: Hardware, application I/o interface, kernel I/O subsystem, Transforming I/O requests to Hardware operations, STREAMS, performance.

UNIT VIII

Protection: Protection, Goals of Protection, Principles of Protection, Domain of protection Access Matrix, Implementation of Access Matrix, Access control, Revocation of Access Rights, Capability-Based systems, Language – Based Protection, Security: The Security problem, program threats, system and network threats cryptography as a security tool, user authentication, implementing security defenses, firewalling to protect systems and networks, computer –security classifications, case studies UNIX, Linux, Windows.

TEXT BOOKS:

1. Operating System Concepts, Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Eighth edition, John Wiley.
2. Operating Systems, A Concept based Approach-D.M.Dhamdhare, Second Edition, TMH.

REFERENCES:

1. Operating Systems: Internals and Design Principles, Stallings, Sixth Edition–2009, Pearson Education.
2. Modern Operating Systems, Andrew S Tanenbaum, Second Edition, PHI.
3. Operating Systems, S.Haldar, A.A.Aravind, Pearson Education.
4. Principles of Operating Systems, B.L.Stuart, Cengage learning, India Edition.
5. Operating Systems, A.S.Godbole, Second Edition, TMH.
6. An Introduction to Operating Systems, P.C.P. Bhatt, PHI.
7. Operating Systems, G.Nutt, N.Chaki and S.Neogy, Third Edition, Pearson Education.
8. Operating Systems, R.Elmasri, A,G.Carrick and D.Levine, Mc Graw Hill.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR

B.Tech. III-I-Sem. (C.S.E)

(9A05506) COMPUTER NETWORKS

(Common to CSE, IT)

UNIT 1

Introduction: Network Hardware, Network Software, References Models. The Physical Layer: The Theoretical Basis for Data Communication Guided Transmission Media, Communication Satellites, The public Switched Telephone Network- The Local Loop: Modern ADSL, and wireless, Trunks and Multiplexing, Switching

UNIT II

The Data Link Layer: Data link Layer Design Issues, Elementary Data Link Protocols, Sliding Window Protocols.

UNIT III

The Medium Access Control Sublayer: The Channel allocation Problem, Multiple Access protocols, Ethernet- Ethernet Cabling, Manchester Encoding, The Ethernet MAC Sublayer Protocol. The Binary Exponential Backoff Algorithm, Ethernet Performance, Switched Ethernet, Fast Ethernet. Wireless Lans- The 802.11 Protocol Stack, The 802.11 Physical Layer, The 802.11 MAC SubLayer Protocol, The 802.11 Frame Structure .

UNIT IV

The Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms.

UNIT V

Internetworking, The Network Layer in the Internet.

UNIT VI

The Transport Layer: The Transport Service, Elements of Transport Protocols, The Internet Transport Protocols: UDP, The Internet Transport Protocols: TCP.

UNIT VII

The Application Layer: DNS-The Domain Name System, Electronic Mail. The World Wide web, Multimedia.

UNTI VIII

Network Security: Cryptography, Symmetric-Key Algorithms, Public-Key Algorithms, Digital Signatures.

TEXT BOOKS:

1. Computer Networks, Andrew S. Tanenbaum, Fourth Edition, Pearson Education.

REFERENCES:

1. Computer Communications and Networking Technologies, Michael A. Gallo, William M. Hancock, Cengage Learning.
2. Computer Networks: Principles, Technologies and Protocols for Network Design, Natalia Olifer, Victor Olifer, Wiley India.
3. Data Communications and Networking, Behrouz A. Forouzan, Fourth Edition, Tata McGraw Hill.
4. Understanding Communications and Networks, Third Edition, W.A.Shay, Cengage Learning.
5. Computer and Communication Networks, Nader F. Mir, Pearson Education
6. Computer Networking: A Top-Down Approach Featuring the Internet, James F.Kurose, K.W.Ross, Third Edition, Pearson Education.
7. Data and Computer Communications, G.S.Hura and M.Singhal, CRC Press, Taylor and Francis Group.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR

B.Tech III-I Sem. (C.S.E)

(9AHS601) ADVANCED ENGLISH COMMUNICATION SKILLS LAB

(Common to BOT, CE, CSE, CSSE, IT)

1. Introduction

The Advanced English Language Skills Lab introduced at the 3rd year B.Tech level is considered essential for the student for focusing on his/her career. At this stage it is imperative for the student to start preparing for the ever growing competition in the job market. In this scenario, in order to be on par with the best, he/she needs to improve his/her Communication and soft skills

This course focuses on the practical aspects of English incorporating all the four (LRSW) skills relevant to the requirements of the prospective employers in view of globalization. The proposed course will enable the students to perform the following:

- Intensive reading to improve comprehension and communication
- Attentive listening for better understanding
- Write project/research/technical reports
- Write Resume[?] to attract attention
- Discuss ideas / opinions for better solutions
- Face interviews confidently
- Gather information, organize ideas, and present them effectively before an audience
- To help the students cultivate the habit of reading passages from the computer monitor, thus providing them with the required ability to face computer-based competitive exams such GRE, TOEFL,CAT, GMAT etc.

2. Objectives:

Keeping in mind the previous exposure of the student to English, this lab focuses on improving the student's proficiency in English at all levels. The lab intends to train students to use language effectively, to participate in group discussions, to help them face interviews, and sharpen public speaking skills and enhance the confidence of the student by exposing him/her to various situations and contexts which he/she would face in his/her career

3 Syllabus

The following course content is prescribed for the Advanced Communication Skills Lab:

Reading Comprehension -- Reading for facts, guessing meanings from context, speed reading, scanning, skimming for building vocabulary(synonyms and antonyms, one word substitutes, prefixes and suffixes, idioms and phrases.)

Listening Comprehension-- Listening for understanding, so as to respond relevantly and appropriately to people of different backgrounds and dialects in various personal and professional situations.

Technical Report Writing—Types of formats and styles, subject matter, organization, clarity, coherence and style, data-collection, tools, analysis

Resume' Writing—Structure, format and style, planning, defining the career objective, projecting one's strengths, and skills, creative self marketing, cover letter

Group Discussion-- Communicating views and opinions, discussing, intervening. providing solutions on any given topic across a cross-section of individuals,(keeping an eye on modulation of voice, clarity, body language, relevance, fluency and coherence) in personal and professional lives.

Interview Skills—Concept and process, pre-interview planning, mannerisms, body language, organizing, answering strategies, interview through tele and video-conferencing

Technical Presentations (Oral)— Collection of data, planning, preparation, type, style and format ,use of props, attracting audience, voice modulation, clarity, body language, asking queries.

4. Minimum Requirements

The English Language Lab shall have two parts:

The Computer aided Language Lab for 60 students with 60 systems, one master console, LAN facility and English language software for self-study by learners.

The Communication Skills Lab with movable chairs and audio-visual aids with a P.A System, a TV, A digital stereo-audio and video system, Camcorder etc

System Requirement (Hardware Component):

Computer network with LAN with a minimum of 60 multimedia systems with the following specifications:

P-IV Processor, Speed-2.8 GHz, RAM_512 MB minimum, Hard Disk-80 GB, Headphones

Prescribed Software: GLOBARENA

Books Suggested for English Language Lab Library (to be located within the lab in addition to the CDs of the text book which are loaded on the systems):

1. **Technical writing and professional communication, Huckin and Olsen** Tata Mc Graw-Hil 2009.
2. **Speaking about Science, A Manual for Creating Clear Presentations by Scott Morgan and Barrett Whitener, Cambridge University press, 2006**
3. **Books on TOEFL/GRE/GMAT/CAT/ IELTS by Barron's/DELTA/Cambridge University Press.**
4. **Handbook for Technical Writing** by David A McMurrey & Joanne Buckely CENGAGE Learning 2008
5. **Technical Communication** by Meenakshi Raman & Sangeeta Sharma, Oxford University Press 2009.
6. **The ACE of Soft Skills** by Gopal Ramesh and Mahadevan Ramesh, Pearson Education, 2010
7. **Cambridge English for Job-Hunting** by Colm Downes, Cambridge University Press, 2008
8. **Resume's and Interviews** by M.Ashraf Rizvi, Tata Mc Graw-Hill, 2008
9. **From Campus To Corporate** by KK Ramachandran and KK Karthick, Macmillan Publishers

India Ltd, 2010

10. **English Language Communication : A Reader cum Lab Manual** Dr A Ramakrishna Rao, Dr G Natanam & Prof SA Sankaranarayanan, Anuradha Publications, Chennai 2008.
11. **Managing Soft Skills** by K R Lakshminarayan and T.Muruguvel, Sci-Tech Publications, 2010
12. **Business Communication** by John X Wang, CRC Press, Special Indian Edition,2008

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
B.Tech. III-I-Sem. (C.S.E)
(9A05507) COMPUTER NETWORKS and OPERATING SYSTEMS LAB

Objective:

- To Understand the functionalities of various layers of OSI model
- To understand the operating System functionalities

System/ Software Requirement

- Intel based desktop PCs LAN CONNECTED with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space

Part - A

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 art each node using distance vector routing algorithm.
5. Take an example subnet of hosts . Obtain broadcast tree for it.
6. Take a 64 bit playing text and encrypt the same using DES algorithm .
7. Write a program to break the above DES coding.
8. Using RSA algorithm Encrypt a text data and Decrypt the same .

Part -B

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 c) Hierarchical d) DAG
5. Simulate Bankers Algorithm for Dead Lock Avoidance.
6. Simulate Bankers Algorithm for Dead Lock Prevention.
7. Simulate all page replacement algorithms
a) FIFO b) LRU c) LFU Etc. ...
8. Simulate Paging Technique of memory management.