## III B.TECH I Semester

<table>
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<th>Periods per week</th>
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UNIT-I: INTRODUCTION TO MANAGERIAL ECONOMICS AND DEMAND ANALYSIS

UNIT-II: THEORY OF PRODUCTION AND COST ANALYSIS
Production Function: isoquants and isocosts, Input - output relationship, law of returns, internal and external economies of scale, Cost Concepts: opportunity Vs out lay costs, Fixed Vs Variable costs, Explicit Vs implicit costs, out of pocket Vs inputted costs. Break Even Analysis (BEA), Determination of break even point, (Simple problems).

UNIT-III: INTRODUCTION TO MARKETS AND PRICING

UNIT-IV: BUSINESS AND NEW ECONOMIC ENVIRONMENT

UNIT-V: INTRODUCTION AND PRINCIPLES OF ACCOUNTING

UNIT-VI: FINAL ACCOUNTS
Introduction to final accounts, Trading Account, Profit and Loss Account, and Balance Sheet with Simple Adjustments, (Simple Problems).

UNIT-VII: CAPITAL AND CAPITAL BUDGETING

UNIT-VIII: COMPUTERIZATION OF ACCOUNTANCY SYSTEM
TEXT BOOKS:

REFERENCE BOOKS:
III B. Tech. I Semester

10BT4EC01: OPTIMIZATION TECHNIQUES

UNIT-I: INTRODUCTION TO OPTIMIZATION TECHNIQUES
Statement of an Optimization problem, design vector, design constraints, constraint surface, objective function, objective function surfaces, classification of Optimization problems.

UNIT-II: CLASSICAL OPTIMIZATION TECHNIQUES
Single variable Optimization, multi variable Optimization without constraints, necessary and sufficient conditions for minimum/maximum, multivariable Optimization with equality constraints, Solution by method of Lagrange multipliers, multivariable Optimization with inequality constraints, Kuhn - Tucker conditions.

UNIT-III: INTRODUCTION TO LINEAR PROGRAMMING
Standard form of a linear programming problem, geometry of linear programming problems, definitions and theorems, solution of a system of linear simultaneous equations, pivotal reduction of a general system of equations, motivation to the simplex method, simplex algorithm, big M-method, dual simplex algorithm.

UNIT-IV: TRANSPORTATION PROBLEM AND CONVEX PROGRAMMING
Finding initial basic feasible solution by North-West corner rule, least cost method and Vogel's approximation method, Assignment problems, variants, Integer Programming, Branch and bound technique, Convex programming.

UNIT-V: UNCONSTRAINED NONLINEAR PROGRAMMING
One-dimensional minimization methods: Classification, Fibonacci method, Problems and Quadratic interpolation method, Problems.

UNIT-VI: UNCONSTRAINED OPTIMIZATION TECHNIQUES

UNIT-VII: CONSTRAINED NONLINEAR PROGRAMMING
Characteristics of a constrained problem, Classification, Basic approach of Penalty Function method; Basic approaches of Interior and Exterior penalty function methods.

UNIT-VIII: DYNAMIC PROGRAMMING
Dynamic programming multistage decision processes, types, concept of sub optimization and the principle of optimality, computational procedure in dynamic programming, examples illustrating the calculus method of solution, examples illustrating the tabular method of solution.

TEXT BOOKS:

REFERENCE BOOKS:
III B. Tech. I Semester

10BT50502: MICROPROCESSORS AND INTERFACING

UNIT-I: INTRODUCTION
An overview of 8085, Architecture of 8086 microprocessor, Register organization, 8086 flag register and functions of 8086 flags, Addressing modes of 8086, Instruction set of 8086, Assembler directives, Procedures and Macros.

UNIT-II: ASSEMBLY LANGUAGE PROGRAMMING
Assembly language programs involving logical, branch and call instructions, sorting, evaluation of arithmetic expressions, string manipulation.

UNIT-III: ARCHITECTURE OF 8086 AND INTERFACING
Pin configuration of 8086-Minimum mode and maximum mode of operation, Timing diagram, Memory interfacing to 8086 (static RAM and EPROM), Need of Direct Memory Access (DMA), DMA data transfer method, Interfacing with 8237/8257.

UNIT-IV: PROGRAMMABLE INTERFACING DEVICES
8255 PPI-various modes of operation and interfacing to 8086. Interfacing keyboard, displays, 8279, stepper motor and actuators. D/A and A/D converter interfacing.

UNIT-V: INTERRUPTS AND PROGRAMMABLE INTERRUPT CONTROLLERS
Interrupt structure of 8086, Interrupt Vector table, Interrupt service routines, Introduction to DOS and BIOS interrupts, 8259 PIC architecture and interfacing cascading of interrupt controller and its importance, Programming with 8259.

UNIT-VI: SERIAL DATA TRANSFER SCHEMES
Asynchronous and synchronous data transfer schemes, 8251 USART architecture and interfacing, TTL to RS232C and RS232C to TTL converson, Sample programs for serial data transfer, introduction to high - speed serial communications standards, USB.

UNIT-VII: ADVANCED MICROPROCESSORS
Introduction to 80286, Salient Features of 80386, Real and Protected Mode, Segmentation and Paging, Salient Features of Pentium, Branch Prediction, Overview of RISC Processors.

UNIT-VIII: 8051 MICROCONTROLLER AND ITS PROGRAMMING

TEXT BOOKS:

REFERENCE BOOKS:
3. Liu and GA Gibson, Micro computer system 8066/8088 family Architecture, programming and Design, 2nd edition, PHI.
III B. Tech. I Semester
10BT50503: DATABASE MANAGEMENT SYSTEMS

UNIT-I: INTRODUCTION

UNIT-II: DATABASE DESIGN

UNIT-III: RELATIONAL MODEL
Introduction to the Relational Model, Integrity Constraints over relations, Enforcing Integrity Constraints, Querying Relational Data, Logical Database Design: ER to Relational, Introduction to Views, Destroying/Altering Tables and Views.

UNIT-IV: SQL: QUERIES, CONSTRAINTS AND TRIGGERS
Overview, The form of a Basic SQL Query, Union, Intersect and Except operators, Nested Queries, Aggregate Operators, Null values, Complex Integrity Constraints in SQL, Triggers and Active Databases.

UNIT-V: SCHEMA REFINEMENT AND NORMAL FORMS
Introduction to Schema Refinement, Functional Dependencies, Reasoning about FDs, Normal Forms - 1NF, 2NF, 3NF, BCNF, Properties of Decompositions, Normalization, Schema Refinement in Database Design, Other Kinds of Dependencies - 4NF, 5NF, DKNF, Case Studies.

UNIT-VI: TRANSACTION MANAGEMENT

UNIT-VII: CONCURRENCY CONTROL AND RECOVERY SYSTEM
Concurrency Control: Lock Based protocols, Time-Stamp Based Protocols, Validation based Protocols, Multiple Granularity, and Deadlock Handling.

UNIT-VIII: OVERVIEW OF STORAGE AND INDEXING
Data on External Storage, File Organizations and Indexing, Index Data Structures, Comparison of File Organizations, Indexes and Performance Tuning.
TEXT BOOK:

REFERENCE BOOKS:
III B. Tech. I - Semester
10BT51201: SOFTWARE ENGINEERING
(Common to IT and CSE)

UNIT-I: INTRODUCTION TO SOFTWARE ENGINEERING
The evolving role of software, Changing Nature of Software, Software myths.

UNIT-II: PROCESS MODELS
Software Requirements: Functional and Non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

UNIT-III: REQUIREMENTS ENGINEERING PROCESSES
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.

UNIT-V: USER INTERFACE DESIGN AND RE-ENGINEERING
Performing User Interface Design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.
Re-Engineering: Reverse Engineering, Restructuring, Forward Engineering.

UNIT-VI: SOFTWARE TESTING
A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, System testing, the art of Debugging.

UNIT-VII: SOFTWARE METRICS
Product Metrics: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.
Size Oriented Metrics, Function-Oriented Metrics, Reconciling LOC and FP Metrics, Object-Oriented Metrics, Use-Case Oriented Metrics, Web Engineering Project Metrics, Metrics for Software Quality.

UNIT-VIII: RISK AND QUALITY MANAGEMENT
TEXT BOOKS:

REFERENCE BOOKS:
III B. Tech. I Semester

10BT51202: COMPUTER GRAPHICS

UNIT-I: INTRODUCTION TO COMPUTER GRAPHICS
Introduction, Application areas of Computer Graphics, overview of graphics systems, video-display devices, raster-scan systems, random scan systems, graphics monitors and work stations and input devices.

UNIT-II: OUTPUT PRIMITIVES
Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms.

UNIT-III: 2-D GEOMETRICAL TRANSFORMS
Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.

UNIT-IV: 2-D VIEWING
The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland-Hodgeman polygon clipping algorithm.

UNIT-V: 3-D OBJECT REPRESENTATION
Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon rendering methods.

UNIT-VI: 3-D GEOMETRIC TRANSFORMATIONS
Translation, rotation, scaling, reflection and shear transformations, composite transformations.
3-D Viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping.

UNIT-VII: VISIBLE SURFACE DETECTION METHODS
Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods.

UNIT-VIII: COMPUTER ANIMATION
Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications.
Image Manipulation and Storage: Digital image file formats, Image compression standard - JPEG.

TEXT BOOKS:

REFERENCE BOOKS:
III B.Tech. I Semester

10BT50511: MICROPROCESSORS AND INTERFACING LAB

I. MICROPROCESSOR 8086:
1. Introduction to MDS
2. Arithmetic operation - Multi byte Addition and Subtraction, Multiplication and Division - Signed and unsigned Arithmetic operation, ASCII - arithmetic operation.
3. Logic operations - Shift and rotate - Converting packed BCD to unpacked BCD, BCD to ASCII conversion.
4. By using string operation and Instruction prefix: Move Block, Reverse string, Sorting, Inserting, Deleting, Length of the string, String comparison.
5. DOS/BIOS programming: Reading keyboard (Buffered with and without echo) - Display characters, Strings.

II. INTERFACING:
1. 8259 - Interrupt Controller: Generate an interrupt using 8259.
2. 8279 - Keyboard Display: Write a small program to display a string of characters.
3. 8255 - PPI: Interfacing DAC, Stepper Motor, ADC.
4. 8251 - USART: Write a program in ALP to establish Communication between two processors.

III. MICROCONTROLLER 8051:
1. Reading and Writing on a parallel port.
2. Timer in different modes.
3. Serial communication implementation.
III B. Tech. I Semester
10BT50512: DATABASE MANAGEMENT SYSTEMS LAB

DESCRIPTION OF SALES DATABASE:
ABC is a company operating in the country with a chain of shopping centers in various cities. Everyday large numbers of items are sold in different shopping centers. The Sales database comprises of various tables like CUST, PROD, SALES_DETAIL, STATE_NAME with the following schemas.

**CUST TABLE**

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Remark</th>
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<tbody>
<tr>
<td>CID</td>
<td>VARCHAR2(6)</td>
<td>PRIMARY KEY</td>
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<tr>
<td>CNAME</td>
<td>VARCHAR2(10)</td>
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</tr>
<tr>
<td>CCITY</td>
<td>VARCHAR2(8)</td>
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**PROD TABLE**

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<tr>
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<th>Type</th>
<th>Remark</th>
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<tr>
<td>PID</td>
<td>VARCHAR2(6)</td>
<td>PRIMARY KEY</td>
</tr>
<tr>
<td>PNAME</td>
<td>VARCHAR2(6)</td>
<td></td>
</tr>
<tr>
<td>PCOST</td>
<td>NUMBER(4,2)</td>
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<tr>
<td>PROFIT</td>
<td>NUMBER(3)</td>
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**SALES DETAIL**

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<th>Type</th>
<th>Remark</th>
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<tr>
<td>CID</td>
<td>VARCHAR2(6)</td>
<td>COMPOSITE PRIMARY KEY</td>
</tr>
<tr>
<td>PID</td>
<td>VARCHAR2(6)</td>
<td>COMPOSITE PRIMARY KEY</td>
</tr>
<tr>
<td>SALE</td>
<td>NUMBER(3)</td>
<td></td>
</tr>
<tr>
<td>SALEDT</td>
<td>DATE</td>
<td>COMPOSITE PRIMARY KEY</td>
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**STATE NAME**

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<thead>
<tr>
<th>Name</th>
<th>Type</th>
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<tr>
<td>CCITY</td>
<td>VARCHAR2(8)</td>
<td>PRIMARY KEY</td>
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<tr>
<td>STATE</td>
<td>VARCHAR2(15)</td>
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1. **ER Model**

Draw an ER Model indicating many to many relationship between CUST vs PROD. Show the Cardinality Ratio between PROD and SALES_DETAIL is one-to-many because one product can be sold multiple times. Similarly show the Cardinality Ratio between CUST and SALES_DETAIL is one-to-many because one customer can purchase many products. Indicate CID# and PID# are unique in CUST and PROD entity respectively, where as CID and PID in SALE_DETAIL entity may occur many times.

Represent the ER Model in Tabular Form.
2. Normalization

In the above relations the following Functional Dependencies exist:

CID → CNAME, CCITY, STATE
PID → PNAME, PCOST, PPROFIT
CID, PID, SALEDT → SALE

<table>
<thead>
<tr>
<th>CID#</th>
<th>CNAME</th>
<th>CCITY</th>
<th>STATE</th>
<th>PID#</th>
<th>PNAME</th>
<th>PCOST</th>
<th>PROFIT</th>
<th>SALE</th>
<th>SALEDT#</th>
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<tr>
<td>C1</td>
<td>RAVI</td>
<td>HYD</td>
<td>AP</td>
<td>P1</td>
<td>CD</td>
<td>10</td>
<td>5</td>
<td>14-JUL-10</td>
<td></td>
</tr>
<tr>
<td>P3</td>
<td>DVD</td>
<td>20</td>
<td>10</td>
<td>14-JUL-10</td>
<td></td>
<td></td>
<td></td>
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<tr>
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Normalize the above table into 1NF, 2NF and 3NF. And handle Insert, Delete and Update anomalies.

3. Data Retrieval

a) Write a query to display all columns of CUST table.
b) Write a query to display pName of all records. Sort all records by pName. (use order by clause)
c) Write a query to display cname and ccity of all records. Sort by ccity in descending order.
d) Write a query to display cname, ccity who lives in mysore.
e) Write a query to display cname, pName, sale, saledt for all customers.
f) Write a query to display cname who have purchased Pen.
g) Write a query to display saledt and total sale on the date labeled as sale of all items sold after 01-sep-2010.
h) Write a query to display saledt and total sale on the date labeled as sale of all items other than DVD.
i) Write a query to display cname and ccity of all customers who live in Kolkata or Chennai.

4. Use of Distinct, Between, In clause, Like operator, Dual

a) Write a query to display the pname and pcost of all the customers where pcost lies between 5 and 25.
b) Find the product ids in sale_detail table (eliminating duplicates).
c) Write a query to display distinct customer id where product id is p3 or sale date is ‘18-mar-2011’.
d) Write a query to display cname, pid and saledt of those customers whose cid is in c1 or c2 or c4 or c5.
e) Write a query to display cname, pid, saledt of those customers whose pid is p3 or sale date is ‘20-dec-2009’.
f) Write a query to display system date.
g) Write a query to display all records of prod table in which first and third character of pName is any character and second character is ‘E’.
h) Write a query to display all cname which includes two ‘A’ in the name.

5. Constraints

a) Implement table level and Column level constraints like NOT NULL, UNIQUE, PRIMARY KEY, FOREIGN KEY, CHECK.
6. Single Row Functions: DATE Function
   a) Write a query to display the system date by rounding it to next month.
   b) Write a query to display the system date by rounding it to next year.
   c) Write a query to display the last date of the system date.
   d) Write a query to display the next date of system date which is Friday.
   e) Write a query to display sale date and date after 02 months from sale date.
   f) Write a query to display system date, sale date and months between two dates.
   g) Write a query to display the greatest date between sale date and system date, name it as BIG, also display sale date and SYSDATE.
   h) Write a query to display the least date between sale date and system date name it as SMALL, also display sale date and SYSDATE.

7. Single Row Functions: Numeric and Character Function
   a) Write a query to display the product name along with the rounded value of product cost for product name is "Pencil".
   b) Write a query to display product cost along with MOD value if divided by 5.
   c) Write a query to display cname in uppercase, lowercase, titlecase from cust table where customer name is "rohan".
   d) Write a query to display all concatenated value of cname, ccity by converting cname into titlecase and ccity into uppercase.
   e) Write a query to display the first 3 characters of cname.
   f) Write a query to display the position of 'M' in the cname of the customer whose name is "SAMHITA".
   g) Write a query to display the length of all customer names.
   h) PAD # character in left of product cost to a total width of 5 character position.

8. Group Functions and SET Functions
   a) Write a query to display the total count of customer.
   b) Write a query to display the minimum cost of product.
   c) Write a query to display average value of product cost rounded to 2nd decimal places.
   d) Write a query to display product name with total sale detail in descending order.
   e) Write a query to display product name, sale date and total amount collected for the product.
   f) Write a query to display sale date and total sale date wise which was sold after "14-jul-08".
   g) Write a query to display the customer name who belongs to those places whose name is having I or P.
   h) Write a query to display customer name who belongs to a city whose name contains characters 'C' and whose name contains character 'A'.
   i) Write a query to display the customer name who does not belong to PUNE.

9. PL/SQL
   a) Write a PL/SQL program to find largest number among three. (Hint: Use Conditional Statement)
   b) Write a PL/SQL program to display the sum of numbers from 1 to N using for loop, loop...end and while...loop.

10. SQL Cursor
    a) Write a PL/SQL program to display the costliest and cheapest product in PROD table.
    b) Write a PL/SQL program which will accept PID and display PID and its total sale value i.e. sum.
11. Functions
   a) Write a function that accepts two numbers A and B and performs the following operations.
      i. Addition
      ii. Subtraction
      iii. Multiplication
      iv. Division
   b) Write a function that accepts to find the maximum PCOST in PROD table.

12. Procedures
   a) Write a procedure that accepts two numbers A and B, add them and print.
   b) Write procedures to demonstrate IN, IN OUT and OUT parameter.

13. Trigger
   a) Develop a PL/SQL program using BEFORE and AFTER triggers.

14. Cursor
   a) Declare a cursor that defines a result set. Open the cursor to establish the result set. Fetch the data into local variables as needed from the cursor, one row at a time. Close the cursor when done.
UNIT-I: VOCABULARY BUILDING:
Synonyms and Antonyms, Word roots, One-word substitutes, Prefixes and Suffixes, Study of word origin, Analogy, Idioms and Phrases.
Functional English: starting conversation, responding appropriately and relevantly, using the right body language, role play in different situations.

UNIT-II: READING COMPREHENSION
Reading for facts, Guessing meanings from context, Scanning, Skimming, Inferring meaning and Critical reading.

UNIT-III: ACADEMIC ESSAY WRITING
Accuracy, Brevity, Clarity, Brainstorm, List your ideas, Sub-headings, Revising Content and Organization.

UNIT-IV: TECHNICAL REPORT WRITING
Types of formats and styles, Subject-matter, Subject- organization, Clarity, Coherence and Style, Planning, Data-collection, Tools, Analysis.

UNIT-V: CAREER SKILLS
Career direction, Exploring your talents, Personality inventories, Write a "Who I Am" statement, Thinking further, Perform career research, How do I get hired, Creating job satisfaction, Identify your satisfaction triggers, Positive attitude, Maintain a balanced lifestyle, Analyze your job in terms of your interests, Set goals to bring your interests and responsibilities in line, Personal SWOT analysis, Making the most of your talents and opportunities, Shaping your job to fit you better, Future proof your career, Managing your emotions at work, Get the recognition you deserve.

UNIT-VI: RESUME WRITING
Structure and Presentation, Planning, Defining the career objective, Projecting ones strengths and skill-sets, Summary, Formats and Styles, Cover letter.

UNIT-VII: GROUP DISCUSSION
Dynamics of group discussion, Intervention, Summarizing, and Modulation of voice, Fluency and Coherence, Participation, Relevance, Assertiveness, Eye contact and Body language.

UNIT-VIII: INTERVIEW SKILLS
Concept and Process, Pre-interview planning, Opening strategies, Answering strategies, Interview through Tele and Video- conferencing.

TEXT BOOKS:


**SUGGESTED SOFTWARE:**

1. TOEFL, GRE and IELTS (Kaplan, Aarco and Barrons, Cliffs)
2. Softwares from 'train2success.com'
5. Study Skills Success, (Essay, Vocabulary strategies, IELTS), Young India Films.
6. Vocabulary Builder, Young India Films.
7. E-correspondence, Young India Films.
8. Group Discussions, (Ease - 2), Young India Films.
UNIT-I: INTRODUCTION TO COMPILERS
Definition of compiler, interpreter and its differences, The phases of a compiler, Role of lexical analyzer, Regular expressions, Finite automata, From regular expressions to finite automata, Pass and phases of translation, bootstrapping, LEX-lexical analyzer generator.

UNIT-II: PARSING
Parsing, Role of parser, Context free grammar, Derivations, Parse trees, Ambiguity, Elimination of left recursion, Left factoring, Eliminating ambiguity from dangling-else grammar, Classes of parsing, Top-down parsing- Backtracking, Recursive-descent parsing, Predictive parsers, LL(1) grammars.

UNIT-III: BOTTOM-UP PARSING
Definition of bottom-up parsing, Handles, Handle pruning, Stack implementation of Shift-Reduce parsing, Conflicts during Shift-Reduce parsing, LR grammars, LR parsers-Simple LR, Canonical LR and Look Ahead LR parsers, Error recovery in parsing, Parsing ambiguous grammars, YACC-automatic parser generator.

UNIT-IV: SYNTAX-DIRECTED TRANSLATION
Syntax directed definition, Construction of syntax trees, S-attributed and L-attributed definitions, Translation schemes, Emitting a Translation.

Intermediate Code Generation: Intermediate forms of source programs- Abstract syntax tree, Polish notation and Three address code, Types of three address statements and its implementation, Syntax directed translation into three-address code, Translation of simple statements, Boolean expressions and flow-of-control statements.

UNIT-V: TYPE CHECKING
Definition of type checking, Type expressions, Type systems, Static and dynamic checking of types, Specification of a simple type checker, Equivalence of type expressions, Type conversions, Overloading of functions and operators.

UNIT-VI: RUN TIME ENVIRONMENTS
Source language issues, Storage organization, Storage-allocation strategies, Access to nonlocal names, Parameter passing, Symbol tables, Language facilities for dynamic storage allocation.

UNIT-VII: CODE OPTIMIZATION
Organization of code optimizer, Basic blocks and flow graphs, Optimization of basic blocks, The principal sources of optimization, The DAG representation of basic block, Global data flow analysis.

UNIT-VIII: CODE GENERATION
Machine dependent code generation, Object code forms, The target machine, A simple code generator, Register allocation and assignment, Peephole optimization.

TEXT BOOK:

REFERENCE BOOKS:
UNIT-I: INTRODUCTION TO UNIX AND UNIX UTILITIES
A Brief history of Unix, Architecture of Unix, Features of Unix, Introduction to vi editor. General Purpose Utilities, File Handling Utilities, Security by File Permissions, Process Utilities, Disk Utilities, Networking Commands, detailed commands to be covered are passwd, tty, script, clear, date, cal, cp, mv, ln, rm, unlink, mkdir, rmdir, du, df, mount, umount, find, unmask, ulimit, ps, who, w, finger, arp, ftp, telnet, rlogin.

UNIT-II: TEXT PROCESSING AND BACKUP UTILITIES
Text Processing Utilities and Backup Utilities, detailed commands to be covered are cat, tail, head, sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, tar, cpio.

UNIT-III: WORKING WITH THE BOURNE AGAIN SHELL (BASH)
Shell, Shell Responsibilities, Types of Shell, Pipes and I/O Redirection, Shell as a Programming Language, Shell Syntax: Variables, Conditions, Control Structures, Commands, Command Execution, Here Documents, and Debugging Scripts.

UNIT-IV: UNIX FILE STRUCTURE

UNIT-V: PROCESS AND SIGNALS

UNIT-VI: DATA MANAGEMENT AND FILE LOCKING
Data Management: Managing Memory: malloc, free, realloc, calloc, File Locking: Creating Lock Files, Locking Regions, Use of Read and Write with Locking, Competing Locks, Other Lock Commands, Deadlocks.

UNIT-VII: INTER-PROCESS COMMUNICATION

UNIT-VIII: INTRODUCTION TO SOCKETS
Socket, Socket Connections: Socket Attributes, Socket Addresses, socket, connect, bind, listen, accept, Socket Communications.

TEXT BOOK:

REFERENCE BOOKS:
III  B. Tech. II Semester

10BT60503: DATA WAREHOUSING AND DATA MINING

UNIT-I: DATA WAREHOUSE AND OLAP TECHNOLOGY
Data Warehouses - Definitions - Multidimensional Data Model - Data Warehouse Architecture - Schemas.

UNIT-II: INTRODUCTION TO DATA MINING
Definition of Data Mining - Definition, Kinds of Data - Data Mining Functionalities - Classification of Data Mining Systems - Primitives - Major Issues in Data Mining.

UNIT-III: DATA PREPROCESSING
Descriptive Data Summarization - Data Cleaning - Data Integration and Transformation - Data Reduction - Data Discretization and Concept Hierarchy Generation.

UNIT-IV: MINING FREQUENT PATTERNS AND ASSOCIATIONS
Basic Concepts - Efficient and Scalable Frequent Itemset Mining Methods - Association Rule Mining.

UNIT-V: CLASSIFICATION
Decision Tree Induction, Bayesian Classification - Rule Based Classification, Prediction - Accuracy and Error Measures.

UNIT-VI: CLUSTER ANALYSIS
Cluster Analysis - Categories of Clustering Methods - Partitioning Methods - Hierarchical Methods - Density based Methods - Grid based methods - Model Based Clustering methods - Clustering High Dimensional Data - Outlier Analysis.

UNIT-VII: MINING STREAM, TIME SERIES AND SEQUENCE DATA
Mining data streams, Mining Time Series Data, Mining Sequence Patterns in Biological Data.

UNIT-VIII: MINING OBJECT, SPATIAL, MULTIMEDIA, TEXT AND WEB
Multi Dimensional Analysis on Complex Object data types - Descriptive Mining on Complex Objects - Spatial Data Mining - Multimedia Data Mining - Text Mining - Web Mining.

TEXT BOOK:

REFERENCE BOOKS:
2. Amitesh Sinha, Data Warehousing, Thomson Learning, 2007
III B. Tech. II Semester

10BT61201: OBJECT ORIENTED ANALYSIS AND DESIGN

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UNIT-I: INTRODUCTION TO UML
Introduction to object oriented concepts like inheritance, polymorphism, information hiding, Importance of modeling, principles of modeling, object oriented modeling, An overview of UML, conceptual model of the UML, Architecture, Software Development Life Cycle.

UNIT-II: BASIC STRUCTURAL MODELING
Classes-Terms and concepts, Common modeling techniques, Relationships-modeling simple dependencies, single Inheritance and structural relationships, common Mechanisms, and diagrams. Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages, Instances.

UNIT-III: CLASS AND OBJECT DIAGRAMS
Terms, concepts, modeling techniques for Class Diagram-modeling Simple collaboration, Logical database Schema Forward and Reverse Engineering, Object Diagrams-Modeling object structures, Forward and reverse engineering.

UNIT-IV: BASIC BEHAVIORAL MODELING-I
Interactions-Terms and concepts, modeling a flow of control, Interaction diagrams-terms and concepts, modeling flows of control by time ordering and control by organization, Forward and reverse Engineering.

UNIT-V: BASIC BEHAVIORAL MODELING-II
Use cases-terms and concepts, modeling the behavior of the element, Usecase Diagrams-Terms and concepts, modeling the context of a system and requirement of a system, Forward and reverse Engineering, Activity Diagrams - Terms and concepts, modeling a workflow and an operation, Forward and reverse Engineering.

UNIT-VI: ADVANCED BEHAVIORAL MODELING
Events and signals-modeling a family of signals and exceptions, state machines-modeling the lifetime of an object, state machines, processes and Threads-modeling multiple flows of control and interprocess communication, time and space-modeling timing constraints, distribution of objects and objects that migrate, state chart diagrams-modeling reactive objects and Forward and reverse Engineering.

UNIT-VII: ARCHITECTURAL MODELING
Component-Terms and concepts, modeling executables and Libraries, modeling tables, file, and documents, modeling an API, modeling source code, Deployment-modeling processors and devices, modeling the distribution of components, Component diagrams-modeling source code, executable release, physical database, Adaptable Systems, Forward and reverse Engineering and Deployment diagrams-modeling an embedded systems, Client/server System, Fully distributed systems, Forward and reverse Engineering.

UNIT-VIII: CASE STUDIES
Model all the views of: Automation of a Library, Point of Sales System.
TEXT BOOK:

REFERENCE BOOKS:
1. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd., 2006
UNIT-I: INTRODUCTION

UNIT-II: THE PHYSICAL LAYER
Theoretical Basis for communication, Guided Transmission media, Wireless Transmission, The public switched telephone Networks, Mobile telephone system.

UNIT-III: THE DATA LINK LAYER

UNIT-IV: THE MEDIUM ACCESS SUBLAYER

UNIT-V: THE NETWORK LAYER

UNIT-VI: THE TRANSPORT LAYER
Transport Service, Elements of transport protocol, Internet Transport layer protocols: UDP and TCP.

UNIT-VII: THE APPLICATION LAYER

UNIT-VIII: IEEE STANDARDS AND NETWORK SECURITY
Introduction to IEEE standards, Wi-Fi: 802.11b, Bluetooth: 802.15, 3G: 802.16, 4G: 802.16m, Wi-Max: 802.16a.

TEXT BOOK:

REFERENCE BOOKS:
4. Leon-Gracia and Widjaja, Communication Networks, 2nd edition, TMH
III B.Tech. II Semester
10BT50501: DESIGN AND ANALYSIS OF ALGORITHMS

UNIT-I: INTRODUCTION
Algorithm, Pseudo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big O notation, Omega notation, Theta notation and Little O notation, Recurrences, Probabilistic analysis.

UNIT-II: DISJOINT SETS AND GRAPHS (Algorithm and analysis)
Disjoint set operations, union and find algorithms, Graphs-Breadth First search and Traversal, Depth First Search and Traversal, spanning trees, connected components and biconnected components.

UNIT-III: DIVIDE AND CONQUER
General method, Applications-Analysis of Binary search, Quick sort, Merge sort, Strassen's matrix multiplication, Finding the Maxima and Minima.

UNIT-IV: GREEDY METHOD
General method, Applications-Job sequencing with dead lines, 0/1 knapsack problem, Minimum cost spanning trees, Single source shortest path problem, Optimal storage on Tapes.

UNIT-V: DYNAMIC PROGRAMMING
General method, Applications-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design, String Editing.

UNIT-VI: BACKTRACKING
General method, applications-n-queen problem, sum of subsets problem, graph colouring, 0/1 knapsack problem, Hamiltonian cycles.

UNIT-VII: BRANCH AND BOUND
General method, applications - Travelling sales person problem, 0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution.

UNIT-VIII: NP-HARD AND NP-COMPLETE PROBLEMS
Basic concepts, non deterministic algorithms, NP - Hard and NP Complete classes, Cook's theorem, NP-hard scheduling Problems.

TEXT BOOK:

REFERENCE BOOKS:
Case studies given below should be Modeled using Rational Rose tool in different views i.e Use case view, logical view, component view and Deployment view.

**CASE STUDY 1: LIBRARY INFORMATION SYSTEM**

**Problem Statement:**

A library lends books and magazines to members, who are registered in the system. Also it handles the purchase of new titles for the library. Popular titles are bought in multiple copies. A member can reserve a book or magazine that is not currently available in the library, so that when it is returned by the library that person is notified. The library can easily create, update and delete information about the titles, members, loans and reservations in the systems.

**CASE STUDY 2: A POINT OF SALE (POS) SYSTEM**

**Problem Statement:**

A POS System is a computerized application used to record sales and handle payments; it is typically used in a retail store. It includes hardware components such as a computer and bar code scanner, and software to run the system. It interfaces to various service applications, such as a third-party tax calculator and inventory control. These systems must be relatively fault tolerant; that is, even if remote services and temporarily unavailable they must still be of capturing sales and handling at least cash payments. A POS system must support multiple and varied client - side terminals and interfaces such as browser, PDA's, touch - screens.

**CASE STUDY 3: AUTOMATED TELLER MACHINE (ATM)**

**Problem Statement:**

Software is designed for supporting a computerized ATM banking network. All the process involved in the bank is computerized these days.

All the accounts maintained in the bank and also the transactions effected, including ATM transactions are to be processed by the computers in the bank. An ATM accepts a relevant cash card, interacts with user, communicates with the central system to carry out the transaction, dispenses cash, and prints receipts. The system to be designed and implemented must include appropriate record keeping and security provisions. The system must handle concurrent access to the same account.

**CASE STUDY 4: ONLINE TICKET RESERVATION FOR RAILWAYS**

**Problem Statement:**

Computer play an integral part of the day in today’s life. It makes the entire job easier and faster, every job is computerized so as the ticket reservation we can book over the online ticket reservation system. During the booking of the ticket reservation passenger has to select origin, data of journey, destination, class of train etc.The reservation counter keeps track of passenger's information. Thus the system will have all the details about the trains and facilities provided by them. There are various trains with the different level of convenience for the passengers. The whole database will be maintained by database administrator. There are varieties of trains where the passengers can select the train according to the convenience for their destination journey. The journey could be within the state or across the India. Each train has the three types of classes i.e Sleeper class, First class and the AC compartment. Design the application for the above problem description.

**CASE STUDY 5: RECRUITMENT PROCEDURE FOR SOFTWARE INDUSTRY**

**Problem Statement:**

In the software industry the recruitment procedure is the basic thing that goes in the hand with the requirement as specified by the technical management team. HR first gives an advertisement in leading Newspapers, Journals, Weeklies and Websites. The job seekers can apply for it through by Post or by e-mail to the company.
The technical skill and the experience of the candidates are reviewed and the sort listed candidates are called for the interview. There may be different rounds for interview like the written test technical interview, HR interview. After the successful completion of all rounds of interview, the selected candidates names are displayed.

Meanwhile HR gives all the details about the salary, working hours, terms and conditions and the retirement benefit to the candidate.

**CASE STUDY 6: DESIGN A STUDENT REGISTRATION SYSTEM**

**Problem Statement:**
Each student has access to his or her course and grade information only and must be authenticated prior to viewing or updating the information. A course instructor will use the system to view the list of courses he or she is assigned for a given semester or has taught previously, view the list of students registered for the course(s) he or she is teaching, and record final grades for each student in the course(s). TA assignments will also be viewable through this system. Instructors must also be authenticated prior to viewing or updating any information.

**CASE STUDY 7: PROBLEM TITLE: ONLINE AUCTION SALES**

**Problem Statement:**
The online auction system is a design about a website where sellers collect and prepare a list of items they want to sell and place it on the website for visualizing. To accomplish this purpose the user has to access the site. Incase it's a new user he has to register. Purchaser's login and select items they want to buy and keep bidding for it. Interacting with the purchasers and sellers through messages does this. There is no need for customer to interact with the sellers because every time the purchasers bid, the details will be updated in the database. The purchaser making the highest bid for an item before the close of the auction is declared as the owner of the item. If the auctioneer or the purchaser doesn't want to bid for the product then there is fixed cutoff price mentioned for every product. He can pay that amount directly and own the product. The purchaser gets a confirmation of his purchase as an acknowledgement from the website. After the transition by going back to the main menu where he can view other items.

**REFERENCES:**
### III B.Tech. II Semester

**10BT61212: UNIX AND COMPUTER NETWORKS LAB**

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1. Study and practice various commands like tty, script, clear, date, cal, cp, mv, ln, rm, unlink, mkdir, rmdir, du, df, unmask, ulimit, ps, who, w.

2. Study and practice various commands like cat, tail, head, sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff.

3. **a.** Write a Shell Script to print all .txt files and .c files.
   **b.** Write a Shell Script to move a set of files to a specify directory.
   **c.** Write a Shell Script to display all the users who are currently logged in after a specified time.
   **d.** Write a Shell Script to wish the user based on the login time.

4. **a.** Simulate head Command.
   **b.** Simulate cp Command.

5. **a.** Write a Program to handle the Signals like SIGINT, SIGQUIT, and SIGFPE.
   **b.** Write a Program to create a Zombie Process.
   **c.** Create a Process using fork() and display Child and Parent Process Id's.

6. **a.** Write a Program to Lock a File.
   **b.** Write a Program to accept a file and Change the Permissions for the file using chmod().

7. Implement the Following IPC Forms
   **a.** FIFO
   **b.** PIPE

8. Implement the following IPC Forms
   **a.** Message Queue
   **b.** Shared Memory

9. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.

10. Implement on a data set of characters the three CRC polynomials - CRC 12, CRC 16 and CRC CCIP.

11. Implement Dijkstra's algorithm to compute the Shortest path through a graph.

12. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table at each node using distance vector routing algorithm.

13. Take an example subnet of hosts. Obtain broadcast tree for it.

**REFERENCES:**