RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Computer Science and Engineering, V-Semester

CS501 Theory of Computation

COURSE OBJECTIVE

- To understand computability, decidability, and complexity through problem solving.
- To analyse and design abstract model of computation & formal languages
- To understand and conduct mathematical proofs for computation and algorithms.

Unit-I

Introduction of Automata Theory: Examples of automata machines, Finite Automata as a language acceptor and translator, Moore machines and mealy machines, composite machine, Conversion from Mealy to Moore and vice versa.

Unit-II

Types of Finite Automata: Non Deterministic Finite Automata (NDFA), Deterministic finite automata machines, conversion of NDFA to DFA, minimization of automata machines, regular expression, Arden's theorem. Meaning of union, intersection, concatenation and closure, 2 way DFA.

Unit-III

Grammars: Types of grammar, context sensitive grammar, and context free grammar, regular grammar. Derivation trees, ambiguity in grammar, simplification of context free grammar, conversion of grammar to automata machine and vice versa, Chomsky hierarchy of grammar, killing null and unit productions. Chomsky normal form and Greibach normal form.

Unit-IV

Push down Automata: example of PDA, deterministic and non-deterministic PDA, conversion of PDA into context free grammar and vice versa, CFG equivalent to PDA, Petrinet model.

Unit-V

Turing Machine: Techniques for construction. Universal Turing machine Multitape, multihead and multidimensional Turing machine, N-P complete problems. Decidability and Recursively Enumerable Languages, decidability, decidable languages, undecidable languages, Halting problem of Turing machine & the post correspondence problem.

RECOMMENDED BOOKS

- Introduction to Automata Theory Language & Computation, Hopcroft& Ullman, Narosa Publication.
- Element of the Theory Computation, Lewis &Christors, Pearson.
- Theory of Computation, Chandrasekhar & Mishra, PHI.
- Theory of Computation, Wood, Harper & Row.
- Introduction to Computing Theory, Daniel I-A Cohen, Wiley.

COURSE OUTCOMES

After completion of this course, the students would be able to:

CO1.explain the basic concepts of switching and finite automata theory & languages.

CO2.relate practical problems to languages, automata, computability and complexity.

CO3.construct abstract models of computing and check their power to recognize the languages.

CO4.analyse the grammar, its types, simplification and normal form.

CO5.interpret rigorously formal mathematical methods to prove properties of languages, grammars and automata.

CO6.develop an overview of how automata theory, languages and computation are applicable in engineering application.

LIST OF EXPERIMENTS

1. Design a Program for creating machine that accepts three consecutive one.
2. Design a Program for creating machine that accepts the string always ending with 101.
3. Design a Program for Mode 3 Machine
4. Design a program for accepting decimal number divisible by 2.

5. Design a program for creating a machine which accepts string having equal no. of 1's and 0's.

6. Design a program for creating a machine which count number of 1's and 0's in a given string.

7. Design a Program to find 2's complement of a given binary number.

8. Design a Program which will increment the given binary number by 1.

9. Design a Program to convert NDFA to DFA.

10. Design a Program to create PDA machine that accept the well-formed parenthesis.

11. Design a PDA to accept WCW^R where w is any string and W^R is reverse of that string and C is a Special symbol.

12. Design a Turing machine that's accepts the following language $a^n b^n c^n$ where n>0.

COURSE OUTCOMES

After completion of this course, the students would be able to:

CO1: judge various computational models.

CO2: construct abstract models of computing.

CO3: justify the power of abstract models in computing to recognize the languages.

CO4: demonstrate analytical thinking and intuition for problem solving in the related areas.

CO5: discuss the limitations of computation in problemsolving.

CO6: follow set of rules for syntax verification.

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Computer Science and Engineering, V-Semester

CS502 Database Management Systems

Course Outcomes: After completion of the course students will be able to

1. Understand the different issues involved in the design and implementation of a database system.
2. Study the physical and logical database designs, database modeling, relational, hierarchical, and network models
3. Understand and use data manipulation language to query, update, and manage a database
4. Develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency,
5. Design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.
6. Evaluate a business situation and designing & building a database applications

Unit I
DBMS Concepts and architecture Introduction, Database approach v/s Traditional file accessing approach, Advantages, of database systems, Data models, Schemas and instances, Data independence, Data Base Language and interfaces, Overall Database Structure, Functions of DBA and designer, ER data model: Entitles and attributes, Entity types, Defining the E-R diagram, Concept of Generalization, Aggregation and Specialization. transforming ER diagram into the tables. Various other data models object oriented data Model, Network data model, and Relational data model, Comparison between the three types of models.

Unit II
Relational Data models: Domains, Tuples, Attributes, Relations, Characteristics of relations, Keys, Key attributes of relation, Relational database, Schemas, Integrity constraints. Referential integrity, Intension and Extension, Relational Query languages: SQL-DDL, DML, integrity con straints, Complex queries, various joins, indexing, triggers, assertions , Relational algebra and relational calculus, Relational algebra operations like select, Project ,Join, Division, outer union. Types of relational calculus i.e. Tuple oriented and domain oriented relational calculus and its operations.

Unit III
Data Base Design: Introduction to normalization, Normal forms, Functional dependency, Decomposition, Dependency preservation and lossless join, problems with null valued and dangling tuples, multivalued dependencies. Query Optimization: Introduction, steps of optimization, various algorithms to implement select, project and join operations of relational algebra, optimization methods: heuristic based, cost estimation based.

Unit IV
Transaction Processing Concepts: -Transaction System, Testing of Serializability, Serializability of schedules, conflict & view serializable schedule, recoverability, Recovery from transaction failures. Log based recovery. Checkpoints deadlock handling. Concurrency

Control Techniques: Concurrency Control, locking Techniques for concurrency control, time stamping protocols for concurrency control, validation based protocol, multiple granularity. Multi version schemes, Recovery with concurrent transaction. Introduction to Distributed databases, data mining, data warehousing, Object Technology and DBMS, Comparative study of OODBMS Vs DBMS . Temporal, Deductive, Multimedia, Web & Mobile database.

Unit V
Study of Relational Database Management Systems through Oracle/PL SQL
QL/MySQL: Architecture, physical files, memory structures, background process. Concept of table spaces, segments, extents and block. Dedicated server, multi threaded server. Distributed database, database links, and snapshot. Data dictionary, dynamic performance view. Security, role management, privilege management, profiles, invoker defined security model. SQL queries, Data extraction from single, multiple tables equi- join, non equi-join, self -join, outer join. Usage of like, any, all, exists, in Special operators. Hierarchical quires, inline queries, flashback queries. Introduction of ANSI SQL, anonymous block, nested anonymous block, branching and looping constructs in ANSI SQL. Cursor management: nested and parameterized cursors, Oracle exception handling mechanism. Stored procedures, in, out, in out type parameters, usage of parameters in procedures. User defined functions their limitations. Triggers, mutating errors, instead of triggers.

Suggested list of experiments:- Lab Assignments:
1. Delete duplicate row from the table.
2. Display the alternate row from table.
3. Delete alternate row from table.
4. Update multiple rows in using single update statement.
5. Find the third highest paid and third lowest paid salary.
6. Display the 3rd, 4th, 9th rows from table.
7. Display the ename, which is start with j, k, l or m.
8. Show all employees who were hired the first half of the month.
9. Display the three record in the first row and two records in the second row and one record in the third row in a single sql statements.
10. Write a sql statements for rollback commit and save points.
11. Write a pl/sql for select, insert, update and delete statements.
12. Write a pl/sql block to delete a record. If delete operation is successful return   1 else return 0.
13. Display name, hire date of all employees using cursors.
14. Display details of first 5 highly paid employees using cursors.
15. Write a database trigger which fires if you try to insert, update, or delete after 7'o' clock.
16. Write a data base trigger, which acts just like primary key and does not allow duplicate values.
17. Create a data base trigger, which performs the action of the on delete cascade.
18. Write a data base trigger, which should not delete from emp table if the day is Sunday.
19. In this subject the students are supposed to prepare a small database application in complete semester like financial accounting system, Railway reservation system,institute timetable management system. Student record system, library management system, hospital management system etc. in RDBMS as follows:
Section A:
Solving the case studies using ER datamodel (design of the database)
Section B:
Implement a miniproject for the problem taken in section A.

Suggested Reading:-

1. Date C J, "An Introduction To DatabaseSystem", Pearson Educations
2. Korth, Silbertz,Sudarshan, "Fundamental of Database System", McGraw Hill
3. Rob, " Data Base System:Design Implementation & Management", Cengage Learninig
4. Elmasri, Navathe, "Fundamentals Of Database Systems", Pearson Educations
5 . Atul Kahate , " Introduction to Database Management System", Pearson Educations
6. Oracle 9i Database Administration Fundamental-I, Volume I, Oracle Press,TMH.
7. Paneerselvam,"DataBase Management System", PHI Learning
8. dev.mysql.com
9. www.postgressql.org

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Computer Science and Engineering, V-Semester

Departmental Elective CS- 503 (A) Data Analytics

UNIT-I:

DESCRIPTIVE STATISTICS :Probability Distributions, Inferential Statistics ,Inferential Statistics through hypothesis tests Regression & ANOVA ,Regression ANOVA(Analysis of Variance)

UNIT-II:

INTRODUCTION TO BIG DATA: Big Data and its Importance, Four V's of Big Data, Drivers for Big Data, Introduction to Big Data Analytics, Big Data Analytics applications.

BIG DATA TECHNOLOGIES: Hadoop's Parallel World, Data discovery, Open source technology for Big Data Analytics, cloud and Big Data, Predictive Analytics, Mobile Business Intelligence and Big Data, Crowd Sourcing Analytics, Inter- and Trans-Firewall Analytics, Information Management.

UNIT-III:

PROCESSING BIG DATA: Integrating disparate data stores, Mapping data to the programming framework, Connecting and extracting data from storage, Transforming data for processing, subdividing data in preparation for Hadoop Map Reduce.

UNIT-IV:

HADOOP MAPREDUCE: Employing Hadoop Map Reduce, Creating the components of Hadoop Map Reduce jobs, Distributing data processing across server farms, Executing Hadoop Map Reduce jobs, monitoring the progress of job flows, The Building Blocks of Hadoop Map Reduce Distinguishing Hadoop daemons, Investigating the Hadoop Distributed File System Selecting appropriate execution modes: local, pseudo-distributed, fully distributed.

UNIT-V:

BIG DATA TOOLS AND TECHNIQUES: Installing and Running Pig, Comparison with Databases, Pig Latin, User- Define Functions, Data Processing Operators, Installing and Running Hive, Hive QL, Querying Data, User-Defined Functions, Oracle Big Data.

REFERENCES:

1. Michael Minelli, Michehe Chambers, "Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Business", 1st Edition, Ambiga Dhiraj, Wiely CIO Series, 2013.
2. Arvind Sathi, "Big Data Analytics: Disruptive Technologies for Changing the Game", 1st Edition, IBM Corporation, 2012.1. Rajaraman, A., Ullman, J. D., Mining of Massive Datasets, Cambridge University Press, United Kingdom, 2012

3. Berman, J.J., Principles of Big Data: Preparing, Sharing and Analyzing Complex Information, Morgan Kaufmann, 2014
4. Barlow, M., Real-Time Big Data Analytics: Emerging Architecture, O Reilly, 2013
5. Schonberger, V.M. , Kenneth Cukier, K., Big Data, John Murray Publishers, 2013
6. Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", 1st Edition, Wiley and SAS Business Series, 2012.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Computer Science and Engineering, V-Semester

Departmental Elective CS- 503 (B) Pattern Recognition

Unit-I
Introduction – Definitions, data sets for Pattern, Application Areas and Examples of pattern recognition, Design principles of pattern recognition system, Classification and clustering, supervised Learning, unsupervised learning and adaptation, Pattern recognition approaches, Decision Boundaries, Decision region , Metric spaces, distances.

Unit -II
Classification: introduction, application of classification, types of classification, decision tree, naïve bayes, logistic regression , support vector machine, random forest, K Nearest Neighbour Classifier and variants, Efficient algorithms for nearest neighbour classification, Different Approaches to Prototype Selection, Combination of Classifiers, Training set, test set, standardization and normalization.

Unit – III
Different Paradigms of Pattern Recognition, Representations of Patterns and Classes, Unsupervised Learning & Clustering: Criterion functions for clustering, Clustering Techniques: Iterative square -error partitional clustering – K means, hierarchical clustering, Cluster validation.

Unit -IV
introduction of feature extraction and feature selection, types of feature extraction , Problem statement and Uses, Algorithms - Branch and bound algorithm, sequential forward / backward selection algorithms, (l,r) algorithm.

Unit -V
Recent advances in Pattern Recognition, Structural PR, SVMs, FCM, Soft computing and Neuro-fuzzy techniques, and real-life examples, Histograms rules, Density Estimation, Nearest Neighbor Rule, Fuzzy classification.

REFERENCE BOOKS:

1. Richard O. Duda, Peter E. Hart and David G. Stork, "Pattern Classification", 2nd Edition, John Wiley, 2006.
2. C. M. Bishop, "Pattern Recognition and Machine Learning", Springer, 2009.
3. S. Theodoridis and K. Koutroumbas, "Pattern Recognition", 4th Edition, academic Press, 2009.
4. Robert Schalkoff, "pattern Recognition: statistical, structural and neural approaches", JohnWiley & sons , Inc, 2007.

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New Scheme Based On AICTE Flexible Curricula

Computer Science and Engineering, V-Semester

Departmental Elective CS- 503 (C) Cyber Security

UNIT 1
Introduction of Cyber Crime, Challenges of cyber crime, Classifications of Cybercrimes: E-Mail Spoofing, Spamming, Internet Time Theft, Salami attack/Salami Technique,

UNIT 2
Web jacking, Online Frauds, Software Piracy, Computer Network Intrusions, Password Sniffing, Identity Theft, cyber terrorism, Virtual Crime, Perception of cyber criminals: hackers, insurgents and extremist group etc. Web servers were hacking, session hijacking.

UNIT 3
Cyber Crime and Criminal justice: Concept of Cyber Crime and the IT Act, 2000, Hacking, Teenage Web Vandals, Cyber Fraud and Cheating, Defamation, Harassment and E-mail Abuse, Other IT Act Offences, Monetary Penalties, jurisdiction and Cyber Crimes, Nature of Criminality, Strategies to tackle Cyber Crime and Trends.

UNIT 4
The Indian Evidence Act of 1872 v. Information Technology Act, 2000: Status of Electronic Records as Evidence, Proof and Management of Electronic Records; Relevancy, Admissibility and Probative Value of E-Evidence, Proving Digital Signatures, Proof of Electronic Agreements, Proving Electronic Messages.

UNIT 5
Tools and Methods in Cybercrime: Proxy Servers and Anonymizers, Password Cracking, Key loggers and Spyware, virus and worms, Trojan Horses, Backdoors, DoS and DDoS Attacks , Buffer and Overflow, Attack on Wireless Networks, Phishing : Method of Phishing, Phishing Techniques.

Suggested Books:
 1. Principles of Cyber crime, Jonathan Clough Cambridge University Press
2. John R. Vacca, Computer Forensics:Computer Crime Scene Investigation, 2nd Edition, Charles River Media, 2005
3. Cyber Law Simplified, VivekSood, Pub: TMH.
4. Cyber Security by Nina Godbole, SunitBelapure Pub: Wiley-India
5. Information Warfare: Corporate attack and defense in digital world, William Hutchinson, Mathew Warren, Elsevier.
6. Cyber Laws and IT Protection, Harish Chander, Pub:PHI.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Computer Science and Engineering, V-Semester

Open Elective CS- 504 (A) Internet and Web Technology

After completion of the course students will be able to
1.Describe the concepts of WWW including browser and HTTP protocol.
2.List the various HTML tags and use them to develop the user friendly web pages.
3.Define the CSS with its types and use them to provide the styles to the webpages at various levels.
4.Develop the modern web pages using the HTML and CSS features withdifferent layouts as per need of applications.
5.Use the JavaScript to develop the dynamic web pages.
6.Use server side scripting with PHP to generate the web pages dynamically using the database connectivity.
7.Develop the modern Web applications using the client and server sidetechnologies and the web design fundamentals.

UNIT 01
Introduction: Concept of WWW, Internet and WWW, HTTP Protocol : Request and Response, Web browser and Web servers, Features of Web 2.0 Web Design: Concepts of effective web design, Webdesign issues including Browser, Bandwidth and Cache, Display resolution, Look and Feel of the Web
site, Page Layout and linking, User centric design, Sitemap, Planning and publishing website, Designing effective navigation.

UNIT 02
HTML :Basics of HTML, formatting and fonts, commenting code, color, hyperlink, lists, tables, images, forms, XHTML, Meta tags, Character entities, frames and frame sets, Browser architecture and Web site structure. Overview and features of HTML5

UNIT 03
Style sheets : Need for CSS, introduction to CSS, basic syntax andstructure, using CSS, background images, colors and properties,manipulating texts, usingfonts, borders and boxes, margins, padding lists,positioning using CSS, CSS2, Overview and features of CSS3 JavaScript : Client side scriptingwith JavaScript, variables, functions, conditions, loops and repetition, Pop up boxes, Advance JavaScript: Javascript and objects, JavaScript own objects, the DOM and web browser environments, Manipulation using DOM, forms and validations,DHTML : Combining HTML, CSS andJavascript, Events and buttons

UNIT 04
XML : Introduction to XML, uses of XML, simple XML, XML keycomponents, DTD andSchemas, Using XML with application. Transforming XML using XSL and XSLT PHP: Introduction and basic syntax of PHP, decision and looping with examples, PHP and HTML, Arrays, Functions, Browser control and detection, string, Form processing, Files, Advance Features: Cookies and Sessions, Object Oriented Programming with PHP

UNIT 05
PHP and MySQL:Basic commandswith PHP examples, Connection to server, creating database, selecting a database, listing database, listing table names,creating a table, inserting data, altering tables, queries, deleting database, deleting data and tables, PHP myadmin and databasebugs

Reference Books:

1.Developing Web Applications, Ralph Moseley and M. T. Savaliya, Wiley-India

2.Web Technologies, Black Book, dreamtech Press

3.HTML 5, Black Book, dreamtech Press

4.Web Design, Joel Sklar, Cengage Learning

5.Developing Web Applications in PHP and AJAX, Harwani, McGrawHill

6.Internet and World Wide Web How to program, P.J. Deitel & H.M. Deitel , Pearson

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Computer Science and Engineering, V-Semester

Open Elective CS- 504 (B) Object Oriented Programming

Unit-I
Basics of programming: Character set, Constants, Variables, keywords, identifiers literals. Instructions: Type Declaration Instruction, arithmetic Integer Long Short, Signed unsigned, storage classes, Integer and Float Conversions, type conversion in assignment, hierarchy of
operations.

Unit –II
Decision control structure: control instructions, if, if-else, use of logical operator, hierarchy of
logical operators, arithmetic operators, relational operators, assignment operators, increment and decrement operators, conditional operators, bit wise operators, special operators, "&,*,.,>, "sizeof" Loops control structure: while loop, for loop, do – while loop, odd loop, nested loop, break, continue, case control structure, go to, exit statement.

Unit-III
Array: what are arrays , array initialization, bound checking 1D array, 2D array initialization of 1D and 2D array, memory map of 1D and 2D array, Multidimensional array. Strings: what are strings, standard library string function strlen(), strcpy(), strcat(), strcmp(), 2D array of characters.

Unit-IV
Structure: Why use structure, declaration of structure, accessing structure elements, how structure elements are stored, array of structure, uses of structure. Preprocessor: features of Preprocessor, macro expansion, micro with arguments, file inclusion, conditional, #if, #elif, miscellaneous directives, #include, #define, directives, #undef, #pragma directives. Union: Union definition & declaration, accessing a union member, union of structures, initialization of union member, uses of union, use of user defined data types.

Unit-V
Introduction: Basic concepts of OOP: object, class, data abstraction, data encapsulation, inheritance, polymorphism, Static and dynamic binding, message passing, benefits of OOP's, disadvantage of OOP's, application of OOP's, a simple program, anatomy of program, creating a source file, compiling and Linking.

References:
1. David Parsons; Object oriented programming with C++; BPB publication
2. Object oriented programming in C++ by Robert Lafore: Galgotia
3. Balagurusamy; Object oriented programming with C++; TMH
4. Java Complete Reference: Herbert Schildt, Mc Graw Hill
5. Hubbard; Programming in C++ (Schaum); TMH
6. Mastering C++ by Venugopal, TMH

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Computer Science and Engineering, V-Semester

Open Elective CS- 504 (C) Introduction to Database Management Systems

Unit 1: Database Management System Concepts: Introduction, Significance of Database, Database System Applications; Data Independence; Data Modeling for a Database; Entities and their Attributes, Entities, Attributes, Relationships and Relationships Types, Advantages and Disadvantages of Database Management System, DBMS Vs RDBMS.

Unit 2: Database Models and Implementation: Data Model and Types of Data Model, Relational Data Model, Hierarchical Model, Network Data Model, Object/Relational Model, Object-Oriented Model; Entity-Relationship Model, Modeling using E-R Diagrams, Notation used in E-R Model, Relationships and Relationship Types; Associative Database Model

Unit 3 : SQL : Data Definition Language : Categories of SQL Commands; Data Definition Language ; Create table , Drop table and Alter Table . Primary Key , Foreign Key, Truncate Table, Index, Cursor.

UNIT 4 : SQL DML :Data Manipulation Language, Insert Statement, Multiple Inserts, Delete Statement, Delete with conditions , Update statement, Update with Conditions , Merge Statement,

UNIT 5 SELECT . SQL queries, Data extraction from single, multiple tables equi-join, non equi-join, self-join, outer join. Usage of like, any, all, exists, in Special operators. Hierarchical queries, inline queries, flashback queries. Introduction of ANSI SQL, anonymous block, nested anonymous block, branching and looping constructs in ANSI SQL.

Suggested Reading:-

1. Date C J, "An Introduction To Database System", Pearson Educations

2. Korth, Silbertz,Sudarshan, "Fundamental of Database System", McGraw Hill

3. Rob, " Data Base System:Design Implementation & Management", Cengage Learninig

4. Elmasri, Navathe, "Fundamentals Of Database Systems", Pearson Educations

5 . Atul Kahate , " Introduction to Database Management System", Pearson Educations

6. Oracle 9i Database Administration Fundamental-I, Volume I, Oracle Press,TMH.

7. Paneerselvam,"DataBase Management System", PHI Learning

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Computer Science and Engineering, V-Semester

CS505 Linux (LAB)

Course Outcomes: After completion of the course students will be able to

1. Understand the system calls

2. Compare between ANSI C AND C++ AND POSIX standards

3. Mapping the relationship between UNIX Kernel support for files

4. Understand Kernel support for process creation and termination and memory allocation

Overview of Unix/Linux:-
Concepts, Unix/Linux Installation Process, Hardware Requirements for Unix/Linux, Advantages of Unix/Linux, Reasons for Popularity and Success of Linux/Unix Operating System, Features of Linux/Unix Operating System, Kernel, Kernel Functions,

The Shell Basic Commands, Shell Programming:-
Shell Variables, Branching Control Structures, Loop-Control Structure, Continue and break Statements, Sleep Command, Debugging Script. Use of Linux as web-
server, file server, directory server, application server, DNS server, SMTP server, Firewall, Proxy server.

File System: -
Definition of File System, Defining Geometry, Disk Controller, Solaris File System, Disk Based File Systems, Network-Based File Systems, Virtual File systems, UFS File System, The Boot Block, The Super Block, The Inode, Tuning File System, Repairing File System.

Process Control:-
Viewing a Process, Command to display Process, Process Attributes, Process States, Process Fields, PS Commands options, PGREP, PRSTAT, CDE Process Manager, Scheduling Process, Scheduling Priorities, Changing the Priority of a time-sharing process, Killing Process.

System Security:-
Physical Security, Controlling System Access, Restricted Shells Controlling File Access, File Access Commands, Access Control List(ACLs), Setting ACL Entries, Modifying ACL entries on a file, Deleting ACL entries on a file, Restricting FTP, Securing Super User Access, Restricting Root Access, Monitoring super user Access, TCP Wrappers.

Dynamic Host Configuration Protocol: -
Introduction, DHCP Leased Time, DHCP Scopes, DHCP IP Address, Allocation Types, Planning DHCP Deployment, DHCP Configuration files, Automatic Startup of DHCP Server, Configuration of DHCP Clients, Manually Configuring the DHCP.

Case Study: -
Installation of Linux, Customization of Linux, Installation of SAMBA, APACHE,
TOMCAT, Send MAIL, Postfix, Implementation of DNS, LDAP services, Firewall, Proxy
server

List of Experiments:-

1. To Study basic & User status Unix/Linux Commands.
2. Study & use of commands for performing arithmetic operations with Unix/Linux.
3. Create a file called wlcc.txt with some lines and display how many lines, words and
characters are present in that file.
4. Append ten more simple lines to the wlcc.txt file created above and split the
appended file into 3 parts. What will be the names of these split files? Display the
contents of each of these files. How many lines will be there on the last file?
5. Given two files each of which contains names of students. Create a program to
display only those names that are found on both the files.
6. Create a program to find out the inode number of any desired file.
7. Study & use of the Command for changing file permissions.
8. Write a pipeline of commands, which displays on the monitor as well as saves the
information about the number of users using the system at present on a file called usere.ux.
9. Execute shell commands through vi editor.
10. Installation, Configuration & Customizations of Unix/Linux.
11. Write a shell script that accepts any number of arguments and prints them in the reverse
order.
12. Write a shell script to find the smallest of three numbers that are read from the keyboard.
13. Write a shell script that reports the logging in of a specified user within one minute after
he/she logs in. The script automatically terminates if the specified user does not login during
a specified period of time.
14. Installation of SAMBA, APACHE, TOMCAT.
15. Implementation of DNS, LDAP services,
16. Study & installation of Firewall & Proxy server

Suggested Reading:
1. Venkatesh Murthy, "Introduction to Unix &Shell", Pearson Edu
2. Forouzan, "Unix &Shell Programming", Cengage Learning
3. Sumitab Das,"Unix Concept & Application",TMH
4. Gopalan, Shivaselvan,"Beginners Guide to Unix " PHI Learning
5. Venkateshwavle,"Linux Programming Tools Unveil`ed", BS Publication.
6. Richard Peterson,"Linux Complete Reference",TMH
7. Richard Peterson,"Unix Complete Reference",TMH

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Computer Science and Engineering, V-Semester

CS506- Python

List of Experiments (Please Expand it):

1. To write a Python program to find GCD of two numbers.
2. To write a Python Program to find the square root of a number by Newton's Method.
3. To write a Python program to find the exponentiation of a number.
4. To write a Python Program to find the maximum from a list of numbers.
5. To write a Python Program to perform Linear Search
6. To write a Python Program to perform binary search.
7. To write a Python Program to perform selection sort.
8. To write a Python Program to perform insertion sort.
9. To write a Python Program to perform Merge sort.
10. To write a Python program to find first n prime numbers.
11. To write a Python program to multiply matrices.
12. To write a Python program for command line arguments.
13. To write a Python program to find the most frequent words in a text read from a file.
14. To write a Python program to simulate elliptical orbits in Pygame.
15. To write a Python program to bouncing ball in Pygame.

References:

1. Timothy A. Budd: Exploring python, McGraw-Hill Education.
2. R.Nageshwar Rao ,"Python Programming" ,Wiley India
3. Allen B. Downey; Think Python, O'Reilly Media, Inc.