## COURSE STRUCTURE
(Applicable for 2012-13 admitted batch)

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<tr>
<th>Sl. No</th>
<th>Code</th>
<th>Subject</th>
<th>Theory</th>
<th>Practical</th>
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<tr>
<td>1</td>
<td>ITP1 3422</td>
<td>Advanced Data bases</td>
<td>4</td>
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<tr>
<td>2</td>
<td>ITP1 3423</td>
<td>Information Security</td>
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<td>3</td>
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<td>Multimedia Application Development</td>
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<td>E-Commerce</td>
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<td>Information Retrieval System</td>
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<td>ITP1 3427</td>
<td>Software Project management</td>
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<td>Software Design Methodologies</td>
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<td>Information Security Laboratory</td>
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<td>ITP1 3211</td>
<td>Internship</td>
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|                |            | Total Credits                          |        |           | 26      |
COURSE STRUCTURE
(Applicable for 2012-13 admitted batch)

Course Title: MULTIMEDIA APPLICATIONS DEVELOPMENT                  Course Code: ITP1 3422

Course objectives: Students undergoing this course are expected to:

• Represent data in multimedia applications; examine image data, video data, and audio data in detail.
• Apply compression techniques to multimedia content Carry out the multimedia projects using software tools such as Macromedia flash using Object oriented design and Action script.
• Explore network technologies and protocols that make interactive multimedia applications.
• Examine the ideas behind MPEG standards such as MPEG-1, MPEG-2, MPEG-4, and MPEG-7

Course outcomes:

• Apply lossless data compression which involves no distortion of the original signal
• Understand the concepts focusing on the discrete cosine transform and discrete wavelet transform.
• Know various multimedia software tools.
• Design multimedia software that are suitable to Internet applications
• Explore issues and technologies for computer and multimedia network communications

UNIT- I
16 Hrs

UNIT-II
15 Hrs
Action Script I: ActionScript Features, Object-Oriented ActionScript, Datatypes and Type Checking, Classes, Authoring an ActionScript Class, Inheritance, Authoring an ActionScript 2.0 Subclass, Interfaces, Packages, Exceptions.
UNIT- III  
15 Hrs


UNIT- IV  
14 Hrs

Basic Video Compression Techniques: Introduction to video compression, video compression based on motion compensation, search for motion vectors, MPEG-1, Basic Audio Compression Techniques. Multimedia Networks: Basics of Multimedia Networks, Multimedia Network Communications and Applications: Quality of Multimedia Data Transmission, Multimedia over IP

Text Books:

1. Fundamentals of Multimedia by Ze-Nian Li and Mark S. Drew PHI/Pearson Education.
2. Essentials ActionScript 2.0, Colin Moock, SPD O'REILLY.

Reference Books:

1. Digital Multimedia, Nigel Chapman and Jenny Chapman, Wiley-Dreamtech
Department of Information Technology
M.C.A.- 5th Semester

COURSE STRUCTURE
(Applicable for 2012-13 admitted batch)

Course Title: ADVANCED DATABASES
Course Code: ITP1 3423

Course objectives: Students undergoing this course are expected to:
- Inculcate knowledge on Centralized and Distributed Databases.
- Understand Transparency and Fragmentation in Distributed Databases.
- Understand about Query Processing and Optimization in both Centralized and Distributed Databases.
- Learn about transaction management, concurrency control, and reliability in Distributed Databases.
- Explore the features of Object Oriented databases.
- Create awareness on the major technical challenges in distributed systems design and implementation.

Course outcomes: After undergoing the course, Students will be able to
- Decompose global relations into fragments.
- Analyze the concepts of transaction management, concurrency control in Distributed Databases.
- Optimize the Queries in centralized databases and Distributed Databases.
- Differentiate the ORDBMS, OODBMS.
- Analyze the principles applied in contemporary distributed database systems.

UNIT- I
Introduction:
Distributed Data Processing, Distributed Database System.
Distributed DBMS Architecture:
Architectural Models for Distributed DBMS, DDMBS Architecture
Distributed Database Design:

UNIT-II
Query Processing and decomposition:
Query Processing Objectives, Characterization of query processors, layers of query processing, query decomposition, Localization of distributed data.
Distributed query Optimization:
Query optimization, centralized query optimization, Distributed query optimization algorithms.
UNIT- III 16 Hrs

Distributed concurrency control:

Distributed DBMS Reliability:
Reliability concepts and Measures, fault-tolerance in Distributed systems, failures in Distributed DBMS, local & Distributed Reliability Protocols, site failures and Network partitioning.

Parallel Database Systems:
Database Series, Parallel Architecture, Parallel DBMS Techniques, Parallel exception problems, Parallel Execution for Hierarchical architecture.

UNIT IV 14 Hrs

Distributed object Database Management Systems:
Fundamental object concepts and Models, Object Distributed Design, Architectural Issues, Object Management, Distributed Object storage, Object Query Processing

Object Oriented Data Model:
Inheritance, Object identity, persistent programming languages, persistence of objects, comparing OODBMS and ORDBMS

Text Books:
2. Stefano Ceri and Willipse Pelagatti: Distributed Databases, McGraw Hill.

Reference Books:
1. Henry F Korth, A Silberchatz and Sudershan : Database System Concepts, MGH
2. Raghuramakrishnan and Johhanes Gehrke: Database Management Systems, MGH
Department of Information Technology
M.C.A.- 5th Semester

COURSE STRUCTURE
(Applicable for 2012-13 admitted batch)

Course Title: INFORMATION SECURITY
Course Code: ITP1 3424

L T P C
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Course objectives: Students undergoing this course are expected to:
- Know the methods of conventional encryption.
- Understand the concepts of public key encryption and number theory
- Understand authentication and Hash functions.
- Know the network security tools and applications.
- Understand the system level security used.

Course outcomes: After undergoing the course, Students will be able to understand
- conventional encryption concepts
- Encryption algorithms
- Authentication and Hash functions
- System level security

UNIT- I
14 Hrs
Introduction to security attacks, services and mechanism, introduction to cryptography, Conventional Encryption: Conventional encryption model, classical encryption techniques- substitution ciphers and transposition ciphers, cryptanalysis, steganography, stream and block ciphers.
Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, Conventional Encryption Principles, location of encryption devices, key distribution
Approaches of Message Authentication

UNIT-II
16 Hrs
Modern Block Ciphers: Block ciphers principles, data encryption standard (DES), strength of DES, block cipher modes of operations, triple DES, AES, confidentiality using conventional encryption, key distribution, random number generation.
Principles of public key crypto systems, RSA algorithm, security of RSA, key management, Diffie-Hellman key exchange algorithm, Introduction to Elliptic Curve Cryptography

UNIT-III
16 Hrs
Message Authentication and Hash Function: Authentication requirements, authentication functions, message authentication code, hash functions, security of hash functions and MACS, MD5 message digest algorithm, Secure hash algorithm(SHA), HMAC, Digital Signatures, authentication protocols.
Authentication Applications: Kerberos and X.509, directory authentication service, electronic mail security-pretty good privacy (PGP).
UNIT IV                                                                                                                       14 Hrs

Text Books:

Reference Books:
2. Bruce Schiener, “Applied Cryptography”.
3. Fundamentals of Network Security by Eric maiward(Dremtech press)
Department of Information Technology
M.C.A.- 5th Semester

COURSE STRUCTURE
(Applicable for 2012-13 admitted batch)

ELECTIVE - III

Course Title: E-COMMERCE
Course Code: ITP1 3425

L  T  P  C
3   1   0   4

Course objectives: Students undergoing this course are expected to:
- Acquaint with fundamental terms and concepts of e-commerce.
- Compare and contrast the types of business models and e-commerce models.
- Analyze important strategic planning factors when implementing e-commerce initiatives.
- Recommend appropriate technical resources for e-commerce projects.
- Evaluate e-commerce projects for financial and technological feasibility.

Course outcomes: After undergoing the course, Students will be able to understand
- Examine some typical distributed applications.
- Detail some of the problems that are encountered when developing distributed applications.
- Understand some of the technologies that are used to support distributed applications.
- Illustrate some of the business models used in the internet.

UNIT- I  14 Hrs
Electronic Commerce-Frame work, anatomy of E-Commerce applications, Types of E-commerce Applications.
Consumer Oriented Electronic commerce - Mercantile Process models.

UNIT-II  16 Hrs
Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment systems.
Inter Organizational Commerce - EDI, EDI Implementation.

UNIT- III  14 Hrs
Intra Organizational Commerce - work Flow, Automation Customization and internal Commerce, Supply chain Management.
UNIT IV

Consumer Search and Resource Discovery - Information search and Retrieval, Commerce Catalogues, Information Filtering.

Multimedia - key multimedia concepts, Desktop video processing, Desktop video conferencing.

Text Books:

Reference Books:
1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.
Department of Information Technology
M.C.A.- 5th Semester

COURSE STRUCTURE
(Applicable for 2012-13 admitted batch)

Course Title: INFORMATION RETRIEVAL SYSTEMS  Course Code: ITP1 3426

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Course objectives: Students undergoing this course are expected to:

- Learn document management and retrieval, metadata management, and searching the web.
- Understand how Web search engines work and how they could be improved.
- Know about hypermedia architectures, design and usability of information retrieval systems

Course outcomes: After undergoing the course, Students will be able to understand

- Classical techniques of Information Retrieval, and the additional techniques employed by Web search engines
- The difficulty of representing and retrieving documents.
- Implementation techniques for the preprocessing needed for information retrieval systems.
- How to develop a small information retrieval system by using user search techniques and text search algorithms

UNIT- I 14 Hrs

Introduction: Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses.

Information Retrieval System Capabilities: Search, Browse, Miscellaneous

UNIT-II 16 Hrs


UNIT- III 15 Hrs

Automatic Indexing: Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages

Document and Term Clustering: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters.
UNIT IV 15 Hrs

User Search Techniques: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search. Searching the Internet and hypertext, Information Visualization

Text Search Algorithms: Introduction, Software text search algorithms, Hardware text search systems.

Text Books:

Reference Books:
2. Modern Information Retrieval By Yates Pearson Education.
Department of Information Technology  
M.C.A.- 5th Semester

COURSE STRUCTURE  
(Applicable for 2012-13 admitted batch)

Course Title: SOFTWARE PROJECT MANAGEMENT  
Course Code: ITP 3427

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Course objectives: Students undergoing this course are expected to:
• Learn about the art of planning and leading software projects.
• Know about how the projects are planned, monitored and controlled.
• Analyze work estimates needed to achieve each task, for each resource.
• Understand managing resources for software projects

Course outcomes: After undergoing the course, Students will be able to understand
• Manage project’s critical issues such as Resource planning, Risk assessment and financial Planning.
• Apply various project management methods meeting stakeholder’s requirements.
• Track project evolution in terms of completion, time and costs.
• Choose the best process model that suits the user application.
• Assess the quality of the project using various metrics like quality indicators and management indicators.

UNIT-I  
16 Hrs

Conventional Software Management: The waterfall model, conventional software Management performance.  
The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

UNIT-II  
14 Hrs

Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases.  
Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

UNIT-III  
16 Hrs

Iterative Process Planning: work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.
UNIT-IV                                                                                                                             14 Hrs

**Project Organizations and Responsibilities:** Line-of-Business Organizations, Project Organizations, evolution of Organizations.

**Process Automation:** Automation Building blocks, The Project Environment. **Project Control and Process instrumentation:** The seven core Metrics, Managementindicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation. **Tailoring the Process:** Process discriminants.

**TEXT BOOKS:**

**REFERENCE BOOKS:**
Software Project Management, Joel Henry, Pearson Education.
Department of Information Technology  
M.C.A.- 5th Semester

**COURSE STRUCTURE**  
(Applicable for 2012-13 admitted batch)  
**ELECTIVE – IV**

Course Title: MIDDLEWARE TECHNOLOGIES  
Course Code: ITP13428

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Course objectives:

Students undergoing this course are expected to:

- Understand different types of client server computing models and also Benefits of client server computing, pitfalls of client server programming
- Establish communication between client and server through java RMI and JDBC
- Implement C#,Net applications using Assemblies, Callback Interfaces, Delegates, and Events.
- Carry out client server communication using heterogeneous programming languages using CORBA.
- Learn java bean component model EJBS and CORBA

Course outcomes:

After undergoing the course, Students will be able to understand

- Know client server computing models and can establish communication between them
- Design a dynamic remote application with RMI and JDBC Connectivity
- Develop programming using C#.net
- Differentiate homogeneous and heterogeneous language communications.
- Develop real time projects by combining CORBA and database interfacing

UNIT- I  
**14 Hrs**

*Introduction to client server computing:* Evolution of corporate computing models from centralized to distributed computing, client server models, Benefits of client server computing, pitfalls of client server programming.

**CORBA with Java:** Review of Java concept like RMI, RMI API, JDBC. Client/Server CORBA-style

UNIT-II  
**16 Hrs**

*Introducing C# and the .NET Platform:* Understanding .NET Assemblies; Object –Oriented Programming with C#; Callback Interfaces, Delegates, and Events.

**Building c# applications:** Type Reflection, Late Binding, and Attribute-Based Programming; Object Serialization and the .NET Remoting Layer; XML Web Services.
UNIT- III  
**Core CORBA / Java:** The object web: CORBA with Java. 
Two types of Client/ Server invocations-static, dynamic, static CORBA, first CORBA program, ORBlets with Applets, Dynamic CORBA- Portable count

**Existential CORBA:** CORBA initialization protocol, CORBA activation services, CORBAIDL mapping
CORBA java- to- IDL mapping, The introspective CORBA/Java object.

UNIT IV  
**Java Bean Component Model:** Events, properties, persistency, Intrespection of beans, CORBA Beans.

**EJBs and CORBA:** Object transaction monitors CORBA OTM’s, EJB and CORBA OTM’s, EJB container frame work, Session and Entity Beans, The EJB client/server development Process, EJB design Guidelines.

**Text Books:**
1. Client/Server Computing D T Dewire, TMH
3. C# and the .NET Platform Andrew Troelsen, Apress Wiley-dreamtech, India

**Reference Books:**
3. Modern Information Retrieval By Yates Pearson Education.
Department of Information Technology  
M.C.A.- 5th Semester

**COURSE STRUCTURE**  
(Applicable for 2012-13 admitted batch)

Course Title: SOFTWARE DESIGN METHODOLOGIES  
Course Code: ITP1 3429

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**Course objectives**: Students undergoing this course are expected to:

- Learn about the art of design and quality parameters of software projects.
- Know about software architectural models.
- Analyze design methods – ATAM, SAAM, and HASARD Models
- Understand architectural styles like data-flow, call and return, data-centered

**Course outcomes**: After undergoing the course, Students will be able to understand

- Principles and Process of software development
- Design various software architectures with visual notations
- Evaluate the software design methods

**UNIT- I**  
14 Hrs

**Basic concepts of Design**: Introduction, Characteristics of design activities, Essential elements of designs
Software quality models: Hierarchical models, Relational model, the effect of design on software quality
**Quality attributes of software design**: Witt, Baker and Merritt’s design objectives, Parnas and Weiss’s requirements of good designs, Quality of development process
**Design Principles**: Basic rules of software design: Causes of difficulties, Vehicles to overcome difficulties, Basic rules of software design
**Design processes**: The context of design in software development process, Generic design process: descriptive models, structure of software design methods

**UNIT-II**  
16 Hrs

**Software Architecture**:  
The notion of architecture: Architecture in the discipline of buildings, Architecture in the discipline of computer hardware, the general notion of architecture: The notion of software architecture: Prescriptive models, Descriptive models, Multiple view models, the roles of architecture in software design, software architectural style:
**Description of Software Architectures**: The visual notation: Active and passive elements, Data and control Relationships, Decomposition/Composition of architectural elements
UNIT- III            15 Hrs

Typical Architectural Styles: Data flow: The general data flow styles, the pipe and filter sub-style, the batch sequential processing sub-style
Independent components: the general independent components style, the event based implicit invocation systems sub-style: Call and return, data abstraction, Data-centred style, Virtual machine Architecture
Using Styles in Design: Choices of styles, Combinations of styles, Hierarchical heterogeneous styles, Case Study: Keyword frequency vector
Architectural Design space: Theory of design spaces: Structure of design spaces, solving design synthesis and analysis problems, Design space of architectural elements: Behavior features, static features, Static features

UNIT IV                                                                                                                        15 Hrs

Analysis and Evaluation: The concept of scenario, scenarios for evaluating modifiability: Scenarios for evaluating reusability, specification of operational profiles, evaluation and analysis of performance, Scenarios for evaluating reusability: Analysis and Evaluation of Modifiability: the SAAM Method:
Quality Trade-Off Analysis: The ATAM Method: ATAM analysis process, ATAM analysis activities
Model-Based Analysis: The HASARD Method
Derivation of quality features: contribution factors of a quality concern, sensitive quality attributes of a component, Quality risks, trade-off points.

Text Books:

Reference Books:
Department of Information Technology  
M.C.A.- 5th Semester

COURSE STRUCTURE  
(Applicable for 2012-13 admitted batch)

Course Title: MANAGEMENT SCIENCE  
Course Code: ITP1 3430

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Course objectives :

Students undergoing this course are expected to:

- Equip students with the knowledge and the process of envisioning, designing, developing, and supporting new products and services
- Manage logistics and their application fields
- Gain the ability to work on multidisciplinary tasks
- Inculcate effective project engineering and business management skills
- Integrate the concepts of total quality management into engineering practice

Course outcomes :

After undergoing the course, Students will be able to understand

- Analyze technology, resource needs, product cost, and market demand, to assess projects’ feasibility
- Work with management, production, and marketing personnel to discuss specifications and procedures
- Review and write reports, approve expenditures, enforce rules, and make decisions about the purchase of materials or services
- Recruit employees; assign, direct, and evaluate their work; and oversee the development and maintenance of staff competence
- Plan, direct, and coordinate survey work with other staff activities, certifying survey work, and writing land legal descriptions

UNIT- I  
15 Hrs


Designing Organizational Structures : Basic concepts related to Organization - Departmentation and Decentralisation, Types of mechanistic and organic structures of organization (Line organization, Line and staff organization, functional organization, Committee organization, matrix organization, Virtual Organization, Cellular Organization, team structure, boundaryless organization, inverted pyramid structure, lean and flat organization structure) and their merits, demerits and suitability.
UNIT-II                      15 Hrs

Operations Management: Principles and Types of Plant Layout-Methods of production (Job, batch and Mass Production), Work Study -Basic procedure involved in Method Study and Work Measurement

Materials Management: Objectives, Need for Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Stores Records. b) Marketing: Functions of Marketing, Marketing Mix, Marketing Strategies based on Product Life Cycle, Channels of distribution

UNIT- III                    16 Hrs


Project Management (PERT/CPM): Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing. (simple problems)

UNIT IV                      14 Hrs


Text Books:


Reference Books:
1. Kotler Philip & Keller Kevin Lane: Marketing Management 12/e, PHI, 2005
2. Koontz & Weihrich: Essentials of Management, 6/e, TMH, 2005
COURSE STRUCTURE
(Applicable for 2012-13 admitted batch)

Course Title: MULTIMEDIA APPLICATION DEVELOPMENT LAB
Course code: ITP1 3209

Course Objectives:
This lab course is intended to help students familiarize and get used to work on author ware tool with macromedia flash as a tool. The secondary objective of the lab is to expose students to work on action script 2.0. Detailed objectives of the lab include:

• Introduction to working on author ware tool flash (shape tween, motion tween).
• Basic action scripts such as assigning actions to an object and a button, Creating loops, generating random numbers.
• Exposure to working on create API s in flash using action scripts like drawing a circle, rectangle, filling shape with gradient.
• Practice to work on movie clips like tinting a movie clips color, controlling movie clips color with sliders using action script.
• Exposure to animation and multimedia fundamentals such as usage of masking, morphing techniques.
• Exposure to working on creating applications that supports Math Class such as in space center applications like converting angle measurements, distance between points, converting units and measurements,
• Exposure to working on text fields, message fields to create flash players like sorting an array, making pass word field.

Course outcomes:
• Know various multimedia software tools.
• Design multimedia software that are suitable to Internet applications.
• Design flash animations

List of Experiments

1. Assigning Actions to an Object, and a Button
• Creating Loops  
• Generation Random Numbers  
• Creating a Function, Calling a Function

2.

• Detecting the Player Version  
• Detecting the Operating System  
• Checking the System language  
• Detecting Display Settings

3.

• Tinting a Movie Clip’s Color  
• Controlling a Movie Clip’s Color with Sliders

4.

• Drawing a Circle  
• Drawing a Rectangle

5.

• Filling a Shape with a Gradient  
• Scripting Masks

6.

• Converting Angle Measurements  
• Calculating the Distance Between the Two Points

7.

• Formatting Currency Amount  
• Converting Between Units of Measurement

8.

• Determining Points Along a Circle

9.

• Sorting or Reversing an Array  
• Implementing a Custom Sort

10.

• Creating a Text Field  
• Making a Password Input field

11.

• Object oriented action script  
• authoring an action script class

12.

• Inheritance  
• authoring an action script sub class

Reference:
1. Action Script Cookbook, Joey Lott, SPD-Oreilly.
2. Flash MX Action Script for designers, Doug Sahlin, Dreamtech Wiley.
3. Flash MX Professional 2004 Unleashed, David Vogeleer and Matthew Pizzi, Pearson Education.
Department of Information Technology
M.C.A.- 5th Semester

COURSE STRUCTURE
(Applicable for 2012-13 admitted batch)

Course Title: INFORMATION SECURITY LAB
Course code: ITP1 3210
L T P C
0 0 3 2

Course Objectives: This lab course is intended to
• know the methods of conventional encryption.
• understand the concepts of public key encryption and number theory
• Know the security services and mechanisms

Course outcomes: After undergoing the course students will be able to:
• understand conventional encryption concepts
• implement Encryption algorithms
• understand concept of Authentication and Hash functions

List of Experiments

1. Write program for Mono alphabetic cipher
2. Implementation of Vigenere cipher (Polyalphabetic substitution)
3. Implementation of Play Fair cipher
4. Implement of RSA algorithm
5. Implement Diffie-Hellman key-exchange
6. Implementation of DES for encryption and decryption of 8-bit data using ‘Simplified DES Algorithm’
7. Implement any of block cipher mode.
8. Generate digital signature using Hash code
9. Generate digital signature using MAC code
10. Generate message digest for the given message