

Engineering and Management Institute of India

Diploma in Engineering

Computer Science Engineering Syllabus

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Department of Computer Science Engineering

Vision:-

To strengthen the region through imparting superior quality technical education and research; which enables the fulfillment of industrial challenge and establish itself as a Centre of Excellence in the field of Computer Science Engineering.

OPERATING SYSTEM (CSE-2.1)**UNIT-I**

Introduction:- Architecture, Goals & Structures of O.S, Basic functions, Interaction of O. S. & hardware architecture, System calls, Batch, multiprogramming. Multitasking, time sharing, parallel, distributed & real -time O.S.

UNIT –II

Process Management:- Process Concept, Process states, Process control, Threads, Uni-processor Scheduling: Types of scheduling: Preemptive, Non preemptive, Scheduling algorithms: FCFS, SJF, RR, Priority, Thread Scheduling, Real Time Scheduling. System calls like ps, fork, join, exec family, wait.

I/O management & Disk scheduling:- I/O Devices, Organization of I/O functions, Operating System Design issues, I/O Buffering, Disk Scheduling (FCFS, SCAN, C-SCAN, SSTF), RAID, Disk Cache.

UNIT – III

Concurrency control:-

Concurrency:- Principles of Concurrency, Mutual Exclusion: S/W approaches, H/W Support, Semaphores, pipes, Message Passing, signals, Monitors,

Synchronization:- Readers-Writers, Producer Consumer, and Dining Philosopher problem.

Deadlock:- Principles of deadlock, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, System calls like signal, kill.

UNIT – IV

Memory Management:- Memory Management requirements, Memory partitioning: Fixed and Variable Partitioning, Memory Allocation: Allocation Strategies (First Fit, Best

Fit, and Worst Fit), Fragmentation, Swapping, and Paging. Segmentation, Demand paging.

Virtual Memory:- Concepts, management of VM, Page Replacement Policies (FIFO, LRU, Optimal, Other Strategies), Thrashing.

UNIT –V

Inter Process Communication:- Basic Concepts of Concurrency, Cooperating process, Advantage of Cooperating process, Bounded- Buffer - Shared-Memory Solution, Inter-process Communication (IPC), Basic Concepts of Inter-process Communication and Synchronization.

Multi-Processor Based and Virtualization Concepts:- Virtual machines; supporting multiple operating systems simultaneously on a single hardware platform; running one or more operating systems on top of another. Reducing the software engineering effort of developing operating systems for new hardware architectures. True or pure virtualization. Para virtualization; optimizing performance of virtualization system; hypervisor call interface.

Reference Book :-

1. Operating system by G Deshmukh.
2. Operating System by Galvin.

COMPUTER PERIPHERALS (CSE-2.2)**UNIT-I****Microprocessor System:-**

Introduction of System overview, Introduction to Processors, Memory Interfacing, Interfacing I/O Devices, Interfacing Data Converters, Display Interface, Serial I/O and Data Communication, Higher level Processors.

UNIT –II**Introduction to PC Architecture:-**

Study of PC-AT/ATX System, Pentium, Core, Core 2 Duo, Core 2 Duo, I3, I5, I7 Processor Basics of Processor and CPU Block Diagram of Computer and Computer Generation Motherboards, Chipset and Controllers, BIOS and the Boot Process, Computer Memory.

UNIT – III**Internal Components:-**

IDE and SATA Devices: Hard Disk Drive and CD/DVDs Drives, SCSI Devices, Floppy Disk, Zip Drive, Backup Drive, Expansion Cards- LAN Card, IDE Card , VGA and SVGA Cards, Sound Card, Interface Cards, I/O cards, Video Cards, USB Card, Fire-Wire Cards, Internal Ports, Cables and Connector Types.

UNIT – IV**External Components:-**

Monitors:- CRT, LCD and LED Displays, Printers:- Dot-Matrix Printer, Inkjet Printer, Laser Printer Scanner:- Photo Scanner, Documents Scanner, Bar Code Scanner

Keyboards, Mouse, External Modem, Ports and Connectors, Batteries, Power supply, Pen Drives, SCSI interface devices, Laptop Computers, Digital Advance storage technology.

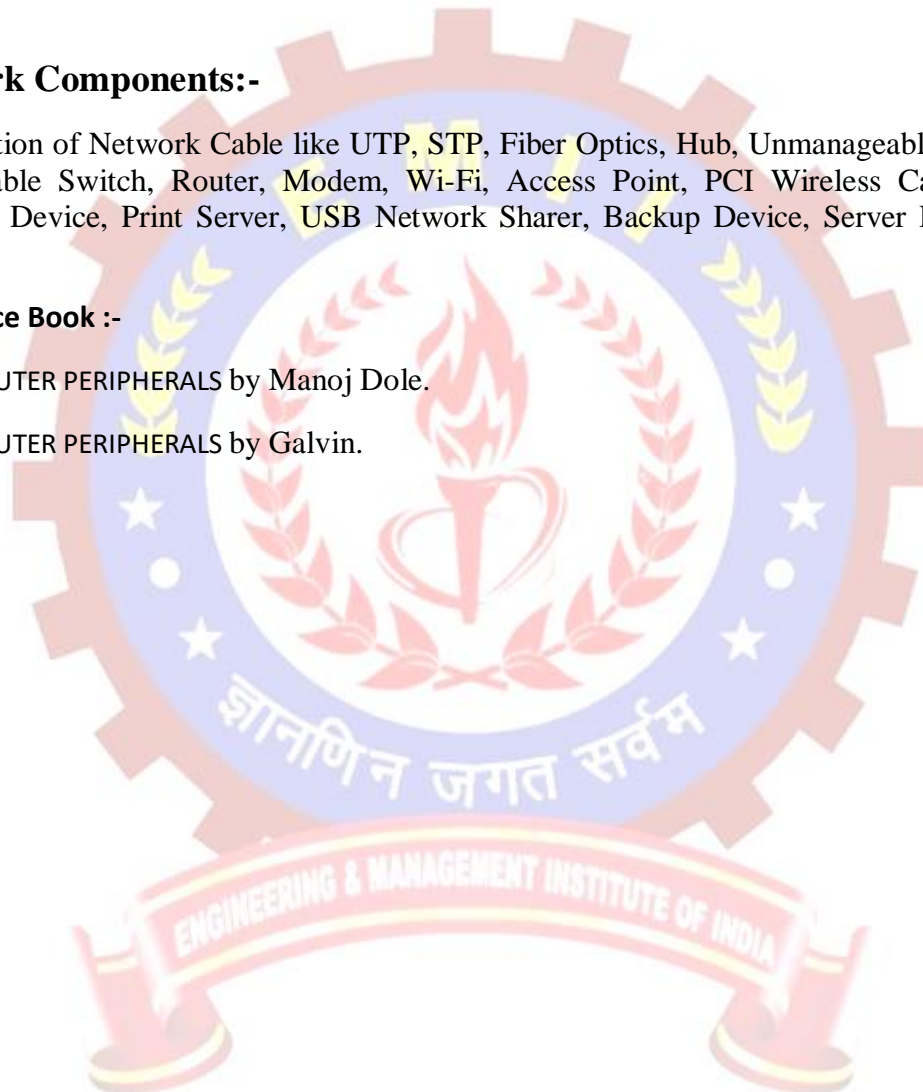
UNIT -V

Network Components:-

Introduction of Network Cable like UTP, STP, Fiber Optics, Hub, Unmanageable Switch, Manageable Switch, Router, Modem, Wi-Fi, Access Point, PCI Wireless Card, USB Wireless Device, Print Server, USB Network Sharer, Backup Device, Server Hardware etc.

Reference Book :-

1. COMPUTER PERIPHERALS by Manoj Dole.
2. COMPUTER PERIPHERALS by Galvin.



DATA COMMUNICATION (CSE-2.3)**UNIT-I****Introduction to data communication and networking:-**

Why study data communication?, Data Communication, Networks, Protocols and Standards, Standards Organizations. Line Configuration, Topology, Transmission Modes, Categories of Networks Internet works.

Study of OSI and TCP/IP protocol suit:-

The Model, Functions of the layers, TCP/IP Protocol Suites.

Study of Signals:-

Analog and Digital, Periodic and Aperiodic Signals, Analog Signals, Time and Frequency Domains, Composite Signals, Digital Signals.

UNIT –II**Study of Digital transmission:-**

Digital to Digital Conversion, Analog to Digital Conversion.

Study of Analog transmission:-

Digital to Analog Conversion, Analog to Analog Conversion.

Study of Multiplexing:-

Many to one/one to Many, Frequency division Multiplexing, Wave division Multiplexing, Time division Multiplexing, Multiplexing applications.

UNIT – III**Types of transmission media:-**

Guided Media, Unguided Media, Transmission Impairments, Performance Wavelength, Shannon Capacity, Media Comparison, PSTN, Switching.

UNIT – IV

Error Detection and Correction:-

Types of Errors, Detection, Parity Check, Vertical Redundancy Check Longitudinal Redundancy Check, Cyclic Redundancy Check, Checksum, Error Correction.

Study of DTE-DCE in brief:-

Digital data transmission, DTE-DCE Interface, Modems, 56K Modems , Cable Modems.

UNIT –V

Introduction to networks and devices:-

Network classes Repeaters, Hub, Bridges , Switches, Routers, Gateways Brouters Routing Algorithms, Distance Vector Routing , Link State Routing.

Reference Book :-

1. DATA COMMUNICATION by Ajit pal.
2. DATA COMMUNICATION by Behrouz A Forouzan.

Digital Electronics (CSE-2.4)**UNIT-I**

Introduction of Number System & Codes:- Distinction between analog and digital signal. Applications and advantages of digital signals. Need and process of A/D and D/A conversion, Binary and hexadecimal number system: conversion from decimal and hexadecimal to binary and vice-versa. Binary addition, subtraction, multiplication and division including binary points. 1's and 2's complement method of addition/subtraction, sign magnitude method of representation, floating point representation, Concept of code, weighted and non-weighted codes, examples of 8421, BCD, excess-3 and Gray code. Concept of parity, single and double parity and error detection Alpha numeric codes: ASCII and EBCDIC.

UNIT –II

Logic Gates and Simplification:- Concept of negative and positive logic, Definition, symbols and truth tables of NOT, AND, OR, NAND, NOR, EXOR Gates, NAND and NOR as universal gates. Postulates of Boolean algebra, De Morgan's Theorems. Various identities. Formulation of truth table and Boolean equation for simple problem. Implementation of Boolean (logic) equation with gates, Karnaugh map (upto 4 variables) and simple application in developing combinational logic circuits Logic Families: Logic family classification: Definition of SSI, MSI, LSI, VLSI- TTL and C MOS families and their sub classification- Characteristics of TTL and C MOS digital gates. Delay, speed, noise margin, logic levels, power dissipation, fan-in, power supply requirement and comparison between TTL and C MOS families Logic Circuits:-Open collector, wired OR and totem pole output circuit operation (qualitative) for a TTL NAND gate- C MOS circuit operation for a standard gate (NOR).

UNIT – III

Arithmetic Circuits, Coders and Decoders: - Half adder and Full adder circuit, design and implementation. Half and Full subtractor circuit, design and implementation. 4 bit adder/subtractor. Adder and Subtract or IC (7484), Encoders and Decoders: Four bit decoder circuits for 7 segment display and decoder/driver ICs. Multiplexers and De-

Multiplexers Basic functions and block diagram of MUX and DEMUX. Different types and ICs

UNIT – IV

Latches and flip flops and Counters:- Concept and types of latch with their working and applications, Operation using waveforms and truth tables of RS, T, D, JK, and Master/Slave JK flip flops. Difference between a latch and a flip flop, IC flip flops Counters: Binary counters, Divide by N ripple counters (including design), Decade counter. Pre settable and programmable counters, Down counter, up/down counter, Synchronous counters(only introduction). Difference between Asynchronous and Synchronous counters, Ring counter with timing diagram, Counter Ics.

UNIT –V

Shift Register and Memories:- Introduction and basic concepts including shift left and shift right. Serial in parallel out, serial in serial out, parallel in serial out, parallel in parallel out. Universal shift register, Buffer register, Tristate Buffer register IC 7495. Memories: Basic RAM cell, $N \times M$ bit RAM, Expansion of word length and capacity, static and dynamic RAM, basic idea of ROM, PROM, EPROM and EEPROM.

Reference Book :-

1. Digital Electronics by RP Jain.
2. Digital Electronics by KS Jamwal.

INTERNET & WEB DESIGNING (CSE-2.5)**UNIT-I**

Web Development Introduction:- Internet, WWW, Browser, Search engine Client Server Model, URL, Web Pages, Website and Web Services, Types of Websites (Static, Dynamic and Responsive), Developer options of Browser (View page source, Developer Tools, Inspect Element etc).

UNIT –II

HTML:- HTML Document, Basic Structure of HTML, Syntax, HTML Tags and Attributes, Types of HTML Tags, Rules of nesting, Basic Tags (HTML Tag, Head Tag, Title Tag, Body Tags). Page Formatting. Adding a new Paragraph, Adding a line break, Inserting a blank space , changing page background , Div and Span tag.

Images, Text Links, Image Links, opening a page in New Window or Tab, Linking to an area of same page, Introduction to Table Tags, Advantages and limitations of tables, Frames & IFrame, HTML Forms , XHTML.

UNIT – III

Cascading Style Sheets:- Introduction, Benefits of CSS, CSS Syntax, CSS Implementation (inline, internal and external), CSS Selectors (ID Selectors, Class Selectors, Grouping Selectors, Universal Selectors, CSS Pseudo-classes), CSS properties (background-color, background-image, border-style, height, width, color, text-align, font-family, font-style, font-size, font-weight), Box Model in CSS(margin, border, padding).

UNIT – IV

Java Scripts:- Java Script Introduction , variables , data types , operators, control flow (if-else, for loop , while loop , do-while loop) , Declaring Functions , Calling functions with parameters, Adding JavaScript to Web Documents, JavaScript Objects , Document Object Models, HTML Events and calling Java Script functions on Events.

UNIT –V**Bootstrap:-**

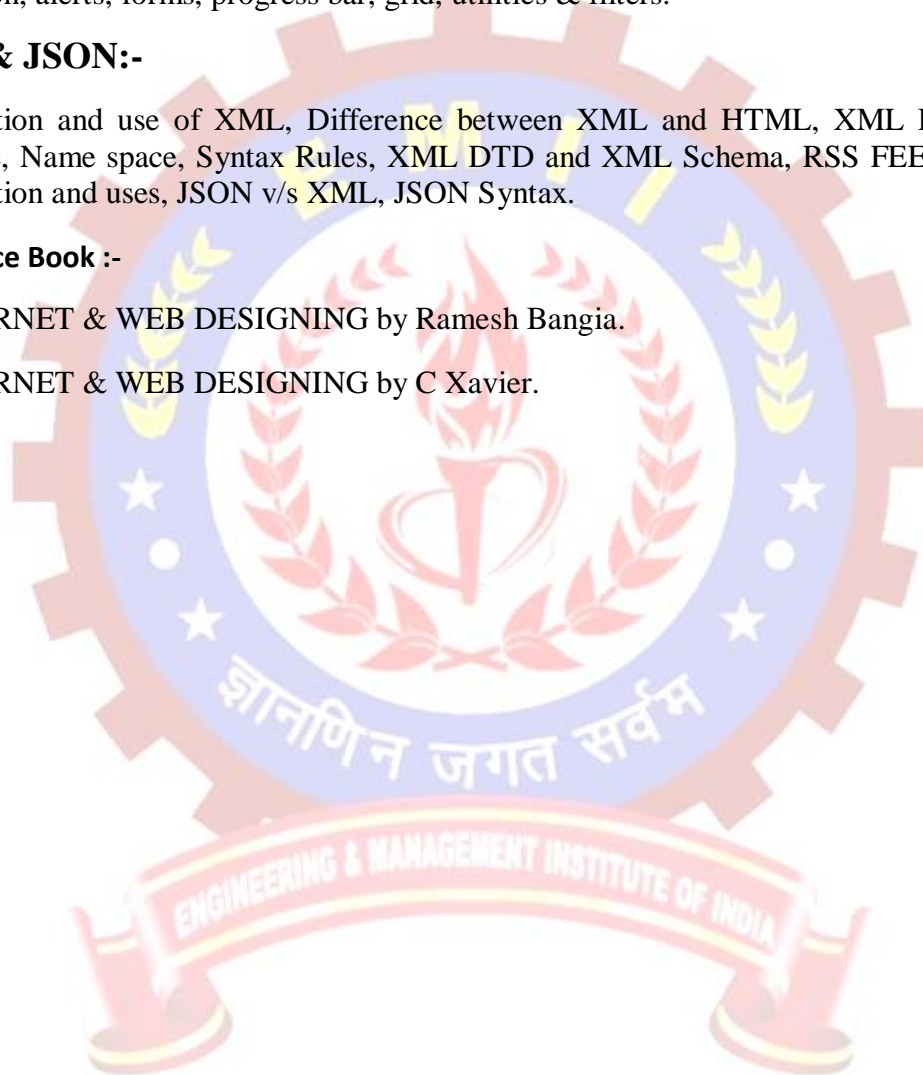
Color Management, Buttons, Table, drop-down, navigation-bar, images, pagination, jumbotron, alerts, forms, progress bar, grid, utilities & filters.

XML & JSON:-

Introduction and use of XML, Difference between XML and HTML, XML Elements, Attribute, Name space, Syntax Rules, XML DTD and XML Schema, RSS FEED, JSON Introduction and uses, JSON v/s XML, JSON Syntax.

Reference Book :-

1. INTERNET & WEB DESIGNING by Ramesh Bangia.
2. INTERNET & WEB DESIGNING by C Xavier.



COMPUTER WORKSHOP (CSE-2.6)**UNIT-I****Assembly of Computer:-**

Introduction to hardware peripherals like RAM, ROM, keyboard, Mouse, processors, etc. Generation of processors. Working of SMPS. Study of various ports. step and precautions to assemble computer.

UNIT –II**Assembly of Laptop:-**

Laptop hardware peripherals like RAM, ROM, keyboard, Mouse, processors, etc. Generation of processors. Study of various ports. Step and precaution to assemble laptop.

UNIT – III**Computer Network Tools:-**

Introduction to computer network. study of various topologies. preparing the network cable using crimping tools and connectors. study of various network environments.

Internet:-

Introduction and evolution of internet. Study of various internet-based services like Email, social network, chat, etc. introduction to cyber security and cyber laws.

UNIT – IV**Operating system and software installations:-**

Introduction to operating system. Type of operating system (Windows and Linux).

Windows- Evolution of operating system. Introduction to software.

Types of software (MS office, VLC media player, win rar), etc.

Linux:- evolution of operating system. Introduction to software. Types

Of software (open office, web browser, etc.)

Case study of installations step for operating system and application software.

UNIT –V**Server:-**

Introduction to server. Difference between server and normal desktop. Evolution of servers. Study of various servers like Email, data, domain, etc.

Reference Book :-

1. Computer workshop by .
2. Computer workshop by Galvin.

JAVA PROGRAMMING (CSE-2.7)**UNIT-I**

Introduction:- Programming language Types and Paradigms, Computer Programming Hierarchy, How Computer Architecture Affects a Language ? , Why Java ? , Flavors of Java, Java Designing Goal, Role of Java Programmer in Industry, Features of Java Language, JVM –The heart of Java , Java’s Magic Byte code.

The Java Environment:- Installing Java, Java Program Development , Java Source File Structure ,Compilation, Executions.

UNIT –II

Object Oriented Programming:- Class Fundamentals , Object & Object reference , Object Life time & Garbage Collection, Creating and Operating Objects , Constructor & initialization code block, Access Control, Modifiers, methods Nested , Inner Class & Anonymous Classes ,Abstract Class & Interfaces Defining Methods, Argument Passing Mechanism , Method Overloading, Recursion, Dealing with Static Members, Finalize() Method, Native Method. Use of “this “ reference, Use of Modifiers with Classes & Methods, Design of Accessors and Mutator Methods Cloning Objects, shallow and deep cloning, Generic Class Types.

UNIT – III

Extending Classes and Inheritance:- Use and Benefits of Inheritance in OOP, Types of Inheritance in Java, Inheriting Data members and Methods , Role of Constructors in inheritance , Overriding Super Class Methods ,Use of “super” , Polymorphism in inheritance ,Type Compatibility and Conversion Implementing interfaces.

UNIT – IV

Array & String :- Defining an Array, Initializing & Accessing Array, Multi – Dimensional Array, Operation on String, Mutable & Immutable String, Using Collection Bases Loop for String, Tokenizing a String, Creating Strings using String Buffer .

Thread :- Understanding Threads , Needs of Multi-Threaded Programming ,Thread Life-Cycle, Thread Priorities ,Synchronizing Threads, Inter Communication of Threads ,Critical Factor in Thread – Dead Lock,

UNIT –V

A Collection of Useful Classes:- Utility Methods for Arrays ,Observable and Observer Objects , Date & Times ,Using Scanner Regular Expression, Input/Output Operation in Java(java.io Package),Streams and the new I/O Capabilities ,Understanding Streams, The Classes for Input and Output, The Standard Streams, Working with File Object, File I/O Basics, Reading and Writing to Files, Buffer and Buffer Management, Read/Write Operations with File Channel, Serializing Objects .

Reference Book :-

1. Java programming by Mahesh gurunani.
2. Java programming by p. Radha Krishna .

COMPUTER ORGANIZATION (CSE-2.8)**UNIT-I**

Basic Functional units of Computers:- Functional units, basic Operational concepts, Bus structures. Software, Performance, Multiprocessors, Multicomputer.

Data Representation:- Signed number representation, fixed and floating point Representations.

Computer Arithmetic: Addition and subtraction, multiplication Algorithms, Division Algorithms. Error detection and correction codes.

UNIT –II

Register Transfer Language and Micro Operations:- RTL- Registers, Register transfers, Bus and memory transfers. Micro operations: Arithmetic, Logic, and Shift micro operations, Arithmetic logic shift unit.

Basic Computer Organization and Design :- Computer Registers, Computer instructions, Instruction cycle. Instruction codes, Timing and Control, Types of Instructions: Memory Reference Instructions, Input – Output and Interrupt.

UNIT – III

Central Processing Unit organization:- General Register Organization, Stack organization, Instruction formats, Addressing modes, Data Transfer and Manipulation, Program Control, CISC and RISC processors.

Control unit design:- Design approaches, Control memory, Address sequencing, micro program example, design of CU. Micro Programmed Control.

UNIT – IV

Memory Organization:- Semiconductor Memory Technologies, Memory hierarchy, Interleaving, MainMemory-RAM and ROM chips, Address map, Associative memory-Hardware organization. Match logic. Cache memory-size vs. block size, Mapping functions-Associate, Direct, Set Associative mapping. Replacement algorithms, write policies. Auxiliary memory Magnetic.

UNIT –V

Input –Output Organization:- Peripheral devices, Input-output subsystems, I/O device interface, I/O Processor, I/O transfers–Program controlled, Interrupt driven, and DMA, interrupts and exceptions. I/O device interfaces – SCII, USB.

Pipelining and Vector Processing:- Basic concepts, Instruction level Parallelism Throughput and Speedup, Pipeline hazards.

Reference Book :-

1. Computer Organization by V Rajaraman.
2. Computer Organization by Stallings

TROUBLE SHOOTING OF COMPUTER SYSTEM (CSE-2.9)**UNIT-I**

Introduction mother boards & its types-ports, slots, connectors, add on cards, power supply units, and cabinet types.

UNIT-II

Storage devices. primary & secondary storage medium-magnetic disc, RAM,ROM ,PROM, EPROM, Floppy, CD Rom, CDRW, DVD, Virtual memory, Cache memory, Linear & Physical memory, video memory.

UNIT - III

Hardware Trouble Shooting:- Printers, floppy drive, Microphone.

UNIT - IV

Hardware Trouble Shooting: Scanner, Network, Hardware failure, Testing, CMOS, CDRM, Hard disk drive,

UNIT-V

Hardware Trouble Shooting: Monitor , Mother Board, Sound Card, Video Card, Tips.

Reference Book :-

1. Computer Organization by V Rajaraman.
2. Computer Organization by Stallings

OBJECT ORIENTED PROGRAMMING C++ (CSE-2.10)**UNIT-I**

Introduction :- What is object oriented programming? Why do we need object oriented. Programming, characteristics of object-oriented languages. C and C++.

C++ Programming basics :- Output using cout. Directives. Input with cin. Type bool. The setw manipulator. Type conversions.

UNIT –II

Object and Classes :- Making sense of core object concepts (Encapsulation, Abstraction, Polymorphism, Classes, Messages Association, Interfaces) Implementation of class in C++, C++ Objects as physical object, C++ object as data types constructor. Object as function arguments. The default copy constructor, returning object from function. Structures and classes. Classes objects and memory static class data. Const and classes.

Functions :- Returning values from functions. Reference arguments. Overloaded function. Inline function. Default arguments. Returning by reference.

UNIT – III

Operator over loading :- Overloading unary operations. Overloading binary operators, data conversion, pitfalls of operators overloading and conversion keywords. Explicit and Mutable.

Inheritance :- Concept of inheritance. Derived class and based class. Derived class constructors, member function, inheritance in the English distance class, class hierarchies, inheritance and graphics shapes, public and private inheritance, aggregation : Classes within classes, inheritance and program development.

UNIT – IV

Pointer :- Addresses and pointers. The address of operator and pointer and arrays. Pointer and Fraction pointer and C-types string. Memory management : New and Delete, pointers to objects, debugging pointers.

Virtual Function :- Virtual Function, friend function, Static function, Assignment and copy initialization, this pointer, dynamic type information.

UNIT –V

Streams and Files :- Streams classes, Stream Errors, Disk File I/O with streams, file pointers, error handling in file I/O with member function, overloading the extraction and insertion operators, memory as a stream object, command line arguments, and printer output.

The Standard Template Library :- Introduction algorithms, sequence containers, iterators, specialized iterators, associative containers, strong user-defined object, function objects.

Reference Book :-

1. OBJECT ORIENTED PROGRAMMING C++ by Debasish Jana.
2. OBJECT ORIENTED PROGRAMMING C++ by Rajesh k. shukla.

Microprocessor (CSE-2.11)**UNIT-I****MICROPROCESSOR & ARCHITECTURE:-**

Intel 8085-ALU. Timing and control unit, Registers, Data and Address bus, P Configuration, Intel 8085 instructions. One byte, two byte & three byte instruction. Timing and control signals fetch operation, execute operation.

UNIT –II**INSTRUCTION SET FOR INTEL 8085:-**

Instruction and data format- single byte, two byte and three byte instruction. Addressing mode. Direct addressing register addressing, Register indirect addressing, Intermediate addressing, Implicit addressing, status flag, Intel m8085 Instructions-m Data transfer group. Arithmetic group, Logical group, Stack, I/OI and machine group.

UNIT – III**EXAMPLE OF ASSEMBLY LANGUAGE PROGRAMMES:-**

M/C Language programmes, demerits M/C language programmes, source language. Mnemonics Assembly language programmes. Assemble high level language. Interrupts, subroutines Editor, Monitor. Programmes examples: Addition of two 8-bit numbers, 8-bit subtraction, 1's compliment of 8 bit number, 2's compliment. Masking off, least & significant bits of an 8 bit number. Masking off, 4A.m. S.B. of a 8bit number and other.

UNIT – IV**APPLICATION OF MICROPROCESSOR & MICRO CONTROLLER:-**

Analog to digital convertor ADC-800 S/H circuit, Analog multiplexers Interfacing of A/D convertor. (Assembly language programmed, Interfacing of ADC 800& Analog multiplexer AM 3705, DDC-800(programmed)Delay subroutine using one register, two Register and three register 7 segment display. FND-500/503 MAN 74A programmed). Application of Microprocessor and Microcontroller with specific examples.

UNIT –V**INTERFACE OF MEMORY & PERIPHERAL DEVICES:-**

Address space partitioning- Memory mopped, I/O mopped I/O scheme, I/O interfacing Data transfer scheme. Synchronous data transfer, Asynchronous data transfer, Interrupts driven data transfer, multiple, interrupts, interrupts of 8085.

Reference Book :-

- 1 Microprocessor by Ajay Wadhwa.
2. Microprocessor by N Senthil kumar.

COMPUTER NETWORK (CSE-2.12)**UNIT-I**

INTRODUCTION: - Network applications, network hardware, network software, reference models: OSI, TCP/IP, Internet, Connection oriented network - X.25, frame relay. **THE PHYSICAL LAYER:** Theoretical basis for communication, guided transmission media, wireless transmission, the public switched telephone networks, mobile telephone system.

UNIT –II

THE DATA LINK LAYER: - Design issues, error detection and correction, elementary data link protocols, sliding window protocols, example data link protocols - HDLC, the data link layer in the internet. **THE MEDIUM ACCESS SUBLAYER:** Channel allocations problem, multiple access protocols, Ethernet, Data Link Layer switching, Wireless LAN, Broadband Wireless, Bluetooth.

UNIT – III

THE NETWORK LAYER: - Network layer design issues, routing algorithms, Congestion control algorithms, Internetworking, the network layer in the internet (IPv4 and IPv6), Quality of Service.

UNIT – IV

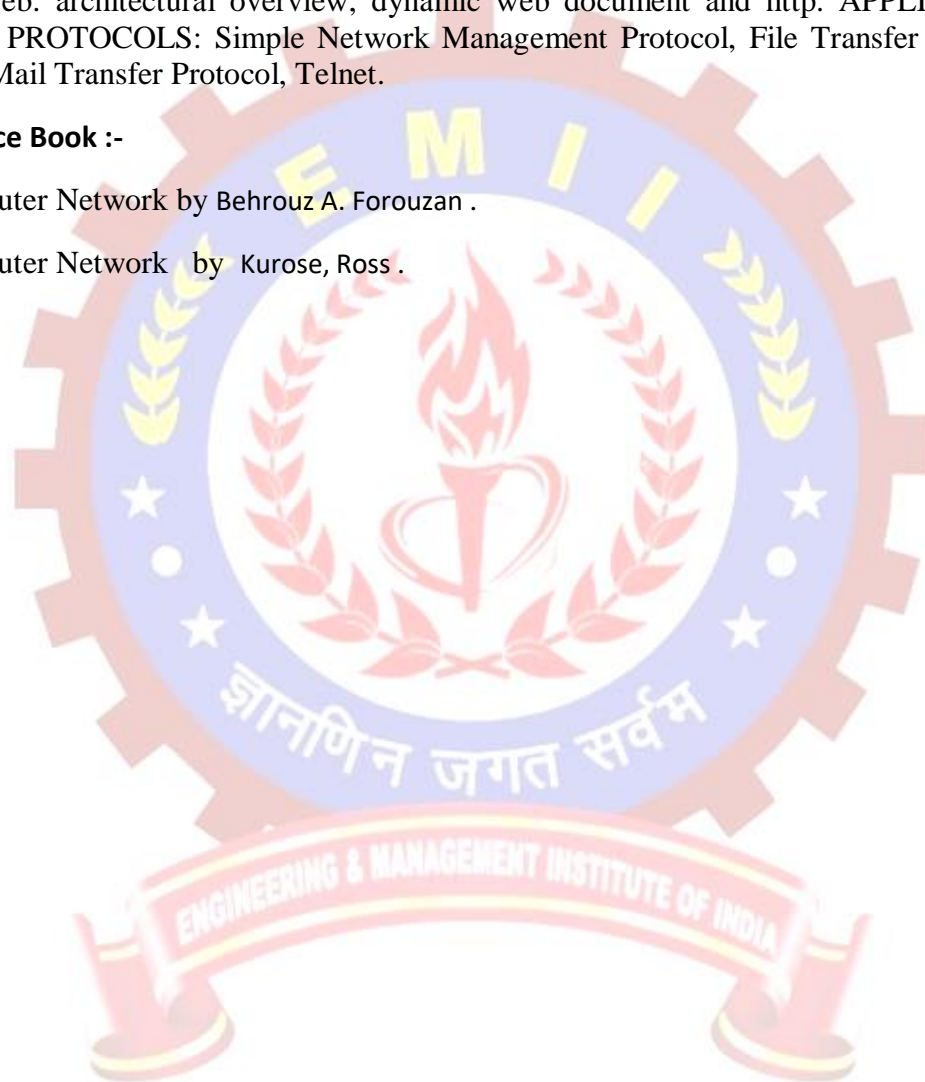
THE TRANSPORT LAYER: - Transport service, elements of transport protocol, Simple Transport Protocol, Internet transport layer protocols: UDP and TCP.

UNIT -V

THE APPLICATION LAYER: - Domain name system, electronic mail, World Wide Web: architectural overview, dynamic web document and http. APPLICATION LAYER PROTOCOLS: Simple Network Management Protocol, File Transfer Protocol, Simple Mail Transfer Protocol, Telnet.

Reference Book :-

1. Computer Network by Behrouz A. Forouzan .
2. Computer Network by Kurose, Ross .



SOFTWARE ENGINEERING (CSE-2.13)**UNIT-I****The software problem & Software process:-**

Software Problem - Cost, Schedule and quality, Scale and Change.

Software Process - Process and Project, Component Software Processes, Software development Process Models, Waterfall, Prototyping, Iterative development, Rational Unified Process, Time boxing Model, Extreme programming and Agile processes, Using process model in a project, Project Management Process.

UNIT –II

Software requirements analysis and specifications:- Value of good SRS, Requirement process, Requirement Specification, Desirable Characteristics of an SRS, Components of an SRS, Structure of a Requirements Documents, Functional Specification with use cases, Basics, Examples, Extensions, Developing use cases, Other Approaches for Analysis, Data Flow Diagram, Validation.

UNIT – III**Software architecture & Planning a software project:-**

Software Architecture - Role of Software Architecture, Architecture Views, Component and Connector view, Components, Connectors, Example, Architecture styles for C&C View, Pipe and Filter, Shared data Style, Client Server style, Some other styles, Documenting Architecture Design, Evaluating Architectures.

Planning a software project - Effort Estimation, Top-Down Estimation Approach, Bottom Up Estimation Approach, Project Schedule and Staffing, Quality Planning, Risk Management Planning, Risk Management Concepts, Risk Assessment, Risk Control, A Practical Risk Management Approach, Project Monitoring Plan, Measurements, Project Monitoring and tracking, Detailed Scheduling.

UNIT – IV

Design:- Design Concepts, Coupling, Cohesion, the Open-Closed Principle, Function Oriented Design, Structure Charts, Structured Design Methodology, Example, Object Oriented Design, OO Concepts Unified Modelling Language (UML), A Design Methodology, Examples, Detailed Design, Logic/Algorithm Design, State Modelling of Classes, Verification.

UNIT –V**Coding & Testing:-**

Coding - Programming Principles and Guidelines, Structured Programming, Information Hiding, Some Programming Practices, Coding Standards, Incrementally Developing Code, An incremental coding process, Test Driven development, Pair Programming, Managing Evolving Code, Source Code Control and Build, Refactoring, Unit Testing, Testing procedural units, Unit testing of Classes, Code Inspection, Planning, Self review, Group review meeting.

Testing - Testing Concept, Error, Fault and Failure, Test Case, Test Suite and Test Harness, Psychology of Testing, Levels of Testing, Testing Process, Test Plan, Test Case Design, Test Case Execution.

Reference Book :-

1. Software Engineering by Pankaj Jalote .
2. Software Engineering by Rajib mall .

ARTIFICIAL INTELLIGENCE (CSE-2.14)**UNIT-I**

Introduction:- Artificial Intelligence and its applications, Artificial Intelligence Techniques, Level of models, criteria of success, Intelligent Agents, Nature of Agents, Learning Agents. AI Techniques, advantages, and limitations of AI, Impact and Examples of AI, Application domains of AI. The AI Ladder - The Journey for Adopting AI Successfully, Advice for a career in AI, Hotbeds of AI Innovation.

UNIT –II

Problem solving techniques:- State space search, control strategies, heuristic search, problem characteristics, production system characteristics., Generate and test, Hill climbing, best first search, A* search, Constraint satisfaction problem, Mean-end analysis, Min-Max Search, Alpha-Beta Pruning, Additional refinements, Iterative Deepening.

UNIT – III

Logic:- Propositional logic, predicate logic, Resolution, Resolution in propositional logic and predicate logic, Clause form, unification algorithm,

UNIT – IV

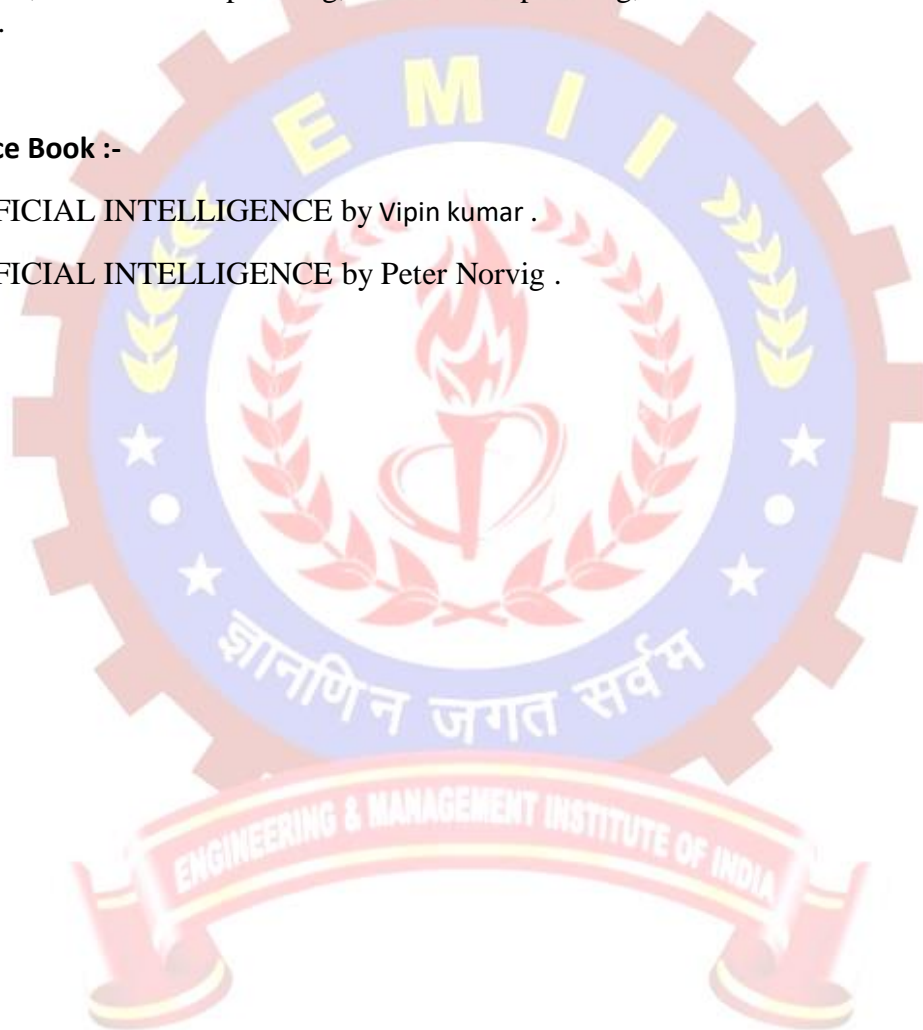
Knowledge Representation schemes and reasoning:- Mapping between facts and representations, Approaches to knowledge representation, procedural vs declarative knowledge, Forward vs. Backward reasoning, Matching, conflict resolution, Nonmonotonic reasoning, Default reasoning, statistical reasoning, fuzzy logic Weak and Strong filler structures, semantic nets, frame, conceptual dependency, scripts.

UNIT –V

Planning:- The Planning problem, planning with state space search, partial order planning, planning graphs, planning with propositional logic, Analysis of planning approaches, Hierarchical planning, conditional planning, Continuous and Multi Agent planning.

Reference Book :-

1. ARTIFICIAL INTELLIGENCE by Vipin kumar .
2. ARTIFICIAL INTELLIGENCE by Peter Norvig .



DATABASE MANAGEMENT SYSTEM (CSE-2.15)**UNIT-I****Introduction to Databases and Transactions:-**

What is database system, purpose of database system, view of data, relational databases, database architecture, transaction management,

UNIT –II**Data Models:-**

The importance of data models, Basic building blocks, Business rules, The evolution of data models, Degrees of data abstraction.

Transaction management and Concurrency control:-

Transaction management: ACID properties, serializability and concurrency control, Lock based concurrency control (2PL, Deadlocks), Time stamping methods, optimistic methods, database recovery management.

UNIT – III**Database Design ,ER-Diagram and Unified Modeling Language:-**

Database design and ER Model:overview, ER-Model, Constraints, ER-Diagrams, ERD Issues, weak entity sets, Codd's rules, Relational Schemas, Introduction to UML.

Relational database model:-

Logical view of data, keys, integrity rules. Relational Database design: features of good relational database design, atomic domain and Normalization (1NF, 2NF, 3NF, BCNF).

UNIT – IV**Relational Algebra and Calculus:-**

Relational algebra: introduction, Selection and projection, set operations, renaming, Joins, Division, syntax, semantics. Operators, grouping and ungrouping, relational comparison. Calculus: Tuple relational calculus, Domain relational Calculus, calculus vs algebra, computational capabilities.

UNIT –V**Constraints, Views and SQL:-**

What is constraints, types of constrains, Integrity constraints, Views: Introduction to views, data independence, security, updates on views, comparison between tables and views SQL: data definition, aggregate function, Null Values, nested sub queries, Joined relations. Triggers.

Reference Book :-

1. ARTIFICIAL INTELLIGENCE by Vipin kumar .
2. ARTIFICIAL INTELLIGENCE by Peter Norvig .

Entrepreneurship Development & Management(CSE-2.16)**UNIT-I**

Introduction:- Meaning and Importance, Evolution of term 'Entrepreneurship, Factors influencing entrepreneurship, Psychological factors, Social factors, Economic factor, Environmental factors, Characteristics of an entrepreneur, Entrepreneur and Entrepreneur, Barriers to entrepreneurship.

Types of entrepreneur:- According to Type of Business, According to Use of Technology, According to Motivation, According to Growth, According to Stages, New generations of entrepreneurship viz. social entrepreneurship, Edupreneurship, Health entrepreneurship, Tourism entrepreneurship, Women entrepreneurship etc.

UNIT –II

Entrepreneurial Motivation:- Motivation, Maslow's theory, Herzberg's theory, McGregor's Theory, McClelland's Need – Achievement Theory, Culture & Society , Values / Ethics , Risk taking behavior.

Creativity:- Creativity and entrepreneurship, Steps in Creativity, Innovation and inventions, Using left brain skills to harvest right brain ideas, Legal Protection of innovation, Skills of an entrepreneur, Decision making and Problem Solving (steps indecision making).

UNIT – III

Organisation Assistance:- Assistance to an entrepreneur, New Ventures, Industrial Park (Meaning, features, & examples), Special Economic Zone (Meaning, features & examples), Financial assistance by different agencies, MSME Act Small Scale Industries, Carry on Business (COB) licence, Environmental Clearance, National Small Industries Corporation (NSIC), Government Stores Purchase scheme (e-tender process), Excise exemptions and concession, Exemption from income tax, Quality Standards with special

reference to ISO, Financial assistance to MSME, Modernisation assistance to small scale unit, The Small Industries Development Bank of India(SIDBI), The State Small Industries Development Corporation(SSIDC), Export oriented units, Incentives and facilities to exports entrepreneurs, Export-Import Bank of India, Export oriented zone.

UNIT – IV

Rules And Legislation:- Applicability of Legislation, Industries Development (Regulations) Act, 1951., Factories Act, 1948, The Industrial Employment (Standing Orders) Act, 1946, Suspension, Stoppage of work, Termination of employment, West Bengal Shops and Establishment Act, 1963, Environment (Protection) Act, 1986, The sale of Goods Act, 1950, Industrial Dispute Act 1947.

Project Report:- Introduction, Idea Selection, Selection of the Product / Service, Aspects of a Project, Phases of a Project, Project Report, Contents of a Project Report, Proforma of a Suggested Project Report for a manufacturing Organization, Suggested Readings.

UNIT –V

Agencies for industrial assistance:- West Bengal Electronics Development Corporation, ICICI West Bengal Infrastructure Development Corporation, West Bengal Industrial Infrastructure Development Corporation, Other Corporations with focus as specific segments, State Industrial Development Corporation (SIDC), State Financial Corporation (SFCs), Directorate General of Supplies and Disposals(DGS & D), Registration with DGS & D, Registration Categories, Registration Procedure, Benefits of DGS & D, Information facilities centre in DGS & D, Khadi and Village Industries Commission (KVIC), Industrial Estate, Financing of Industrial Estates, Shilpabandhu-M Incentives for entrepreneurs reference to The West Bengal State Support for Industries Scheme 2008 & 2013.

Reference Book :-

1. Entrepreneurial Development, by S S Khanka.
2. The Entrepreneur, by Mark Casson.

NETWORK SECURITIES (CSE-2.17)**UNIT-I**

Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs, Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, and man-in-the-middle attacks.

UNIT –II

Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution Approaches of Message Authentication, Secure Hash Functions and HMAC.

UNIT – III

Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management Kerberos, X.509 Directory Authentication Service.

UNIT – IV

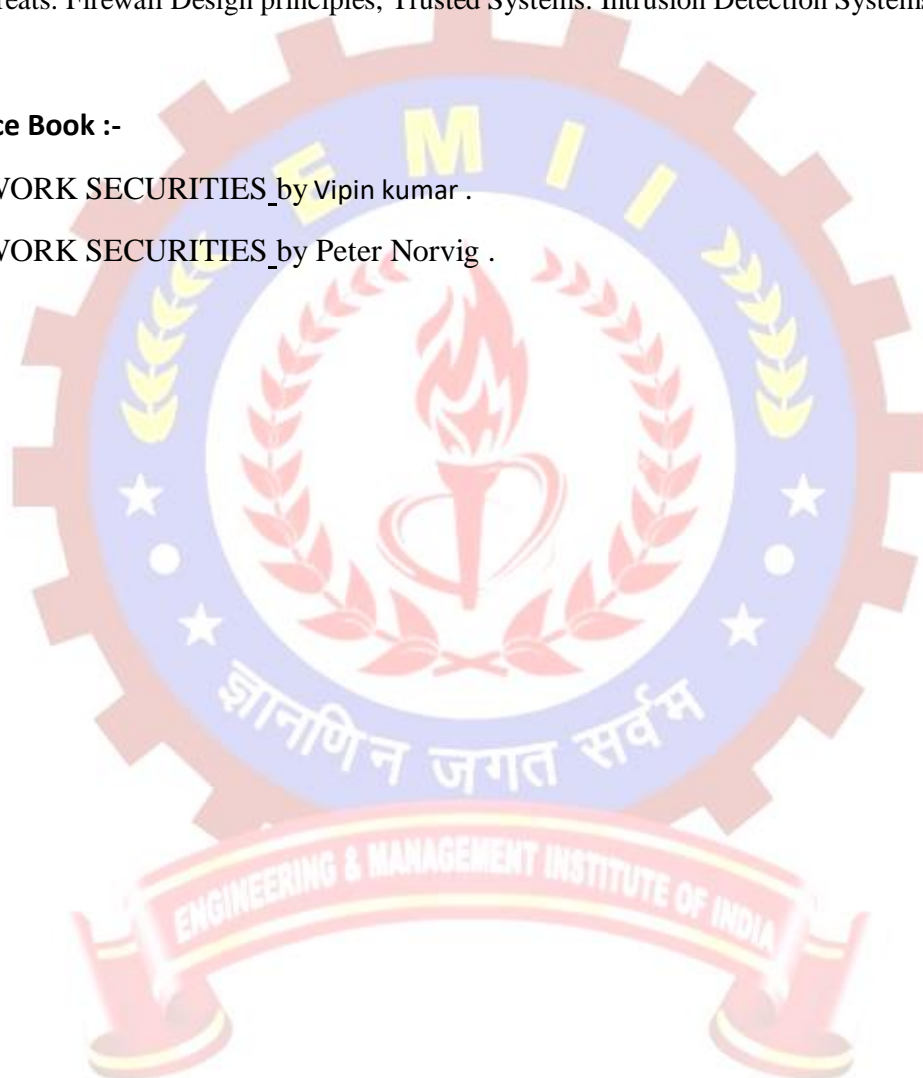
Email privacy: Pretty Good Privacy (PGP) and S/MIME.IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management.

UNIT -V

Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3. Intruders, Viruses and related threats. Firewall Design principles, Trusted Systems. Intrusion Detection Systems.

Reference Book :-

1. NETWORK SECURITIES_by Vipin kumar .
2. NETWORK SECURITIES_by Peter Norvig .



Final year Project

Project (CSE-2.18)

Select any one topic:-

1. 3 Level Authentication Software Engineering Project PDF
2. Airline Reservation System Software Engineering Project PDF
3. Banking Management System Software Engineering Project PDF
4. Bus Route Enquiry System Software Engineering Project PDF
5. Car Showroom Dealership Software Engineering Project PDF
6. Cricket Management System Software Engineering Project PDF
7. Criminal Record Management System Software Engineering Project PDF
8. E-Boutique Software Engineering Project PDF.