PROGRAMMING AND PROBLEM SOLVING THROUGH 'C'

CODE CS 201

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RATIONALE

'C' is system programming language and also structured programming language, In 'C' programming language we consider various syntax used in programming. By having good knowledge of 'C', students can write modular application and system programs. 'C' is mainly used in software developments, projects involving compiler design, operating system design, system software etc. By acquiring a sound knowledge of 'C' students will be able to understand the concept of all the application areas.

Students of computer science diploma course are expected to gain adequate knowledge of numerical method and computation, optimization techniques. Numerical Methods and Techniques are widely useful in the various problems solving in Scientific and Engineering application optimization techniques are essential in industry in project management, inventory system and resources management. Hence this course is introduced to teach the students, the above concepts and also learn about the application of the same to various problems solving. Computer programs should also be developed for solving the numerical problems by way of introducing the algorithms and programming using 'C'.

CONTENTS

1. Introduction :

- 1.1 Scope of 'C' Language
- 1.2 Distinction and similarities with other HLLs
- 1.3 Special features and Application areas

2. Elements of 'C' :

- 2.1 Character set
- 2.2 Key words
- 2.3 Data types
- 2.4 Constants and Variables
- 2.5 Operators: unary, binary, ternary
- 2.6 Operator precedence

3. Console Input-Output :

- 3.1 Types of I-O
- 3.2 Console I-O
- 3.3 Unformatted console I-O: getchar(),putchar(), gets(), puts(), getch(),getche()
- 3.4 Formatted I-O: scanf(), printf()

4. Control Flow :

- 4.1 Statements and blocks
- 4.2 if
- 4.3 switch
- 4.4 Loops: for, while, do-while
- 4.5 goto and labels
- 4.6 break, continue, exit
- 4.7 Nesting control statements

5. Arrays :

- 5.1 Basic concepts
- 5.2 Memory representation
- 5.3 One dimensional array
- 5.4 Two dimensional array
- 5.5 Three dimensional array

6. Functions :

6.1 Basic concepts
6.2 Declaration and prototypes
6.3 Calling
6.4 Arguments
6.5 Scope rules
6.6 Recursion
6.7 Storage classes types
6.8 Library of functions: math, string, system

7. Pointers :

7.1 Basic concepts
7.2 &, * operator
7.3 Pointer expression: assignment, arithmetic, comparison
7.4 Dynamic memory allocation
7.5 Pointer v/s Arrays
7.6 Array of pointers
7.7 Pointer v/s Functions

8. Structure, Union and Enumerated Data Types :

8.1 Basic concepts
8.2 Declaration and memory map
8.3 Elements of structures
8.4 Structure v/s array
8.5 Structure v/s function
8.6 Union
8.7 Enumerated data types : typedef, enum
8.8 Self-referential structures
8.9 Low Level Bitwise Operators: & , | , ^

9. File Handling :

9.1 Types of files
9.2 File organization
9.3 Opening, reading, writing, closing
9.4 Text and binary file.

10. Numerical Methods :

10.1 Numerical Integration:
  10.1.1 Simpson's 1/3 rule
  10.1.2 Simpson's 3/8 rule
10.2 Matrix Operation
  10.2.1 Matrix Inverse by Gauss – Elimination Method
  10.2.2 Matrix Inverse by Gauss – Jordan Method
  10.2.3 Matrix Addition, Subtraction, Multiplication

PRACTICAL'S

1. Problems based on arithmetic expression, fixed mode arithmetic
2. Problems based on conditional statements and control structures.
3. Problems based on arrays (1-D, 2-D), functions, pointers, files
4. Problems based on string and character manipulation.
5. Problems based on Numerical Methods using 'C' language

REFERENCE BOOKS :

1.	Application Programming in C	R.S. Salaria, Khanna Pub. House.
2.	Programming with 'C'	Schaum's Series, TMH
3.	'C' Programming	E.Balguru Swami, TMH
4.	'C' Programming	Kernighan & Ritchie, TMH
5.	Let us 'C'	Yashwant Kanetkar, BPB
6.	Computer Oriented Numerical Method	R.S. Salaria, Khanna Pub. House.

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COMPUTER SYSTEM ARCHITECTURE

CODE CS 202 L T P
IT 202 2 2/2 --

RATIONALE

The aim of this course is to provide adequate knowledge about computer hardware. In this course student are taught about evolution of the computer (how computer technology developed from the early days) CPU (Central processing unit) architecture, Memory management, File organization, and other peripherals.

By acquiring adequate knowledge of this subject student may be able to understand the hardware functioning of the computer and also get an over all idea of the computer system organization. After completing this course, the student will be able to undertake maintenance and repair tasks of computer hardware at IC level.

CONTENTS

1. Overview of Computer Organization:

- 1.1 Evolution of computer,
- 1.2 Von Neumann architecture,
- 1.3 Computer generations,
- 1.4 Microprocessors and micro-computers design methodology

2. Register and Micro -Operations:

- 2.1 Register
- 2.2 Register transfer
- 2.3 Arithmetic micro operations
- 2.4 Logic micro operations
- 2.5 Shift micro operations
- 2.6 Control functions.

3. Basic Computer Organization :

- 3.1 Instruction codes
- 3.2 Computer Instructions
- 3.3 Timing and Control
- 3.4 Execution of instructions
- 3.5 I/O and interrupt

4. Central Processor Organization :

- 4.1 Processor Bus organisation
- 4.2 ALU : Simple and floating point
- 4.3 Stack Organisation
- 4.4 Instruction formats modes
- 4.5 Addressing schemes
- 4.6 Data transfer and manipulation
- 4.7 Program control

5. Arithmetic Processor Organization :

5.1 Comparison and subtraction of unsigned binary numbers
5.2 Addition and subtraction Algorithm
5.3 Multiplication and division Algorithms,
5.4 Floating point operations.

6. Input / Output Organization :

6.1 Peripheral devices
6.2 I/O processors
6.3 DMA
6.4 Interrupt handling
6.5 Data communication
6.6 Multiprocessor organizations

7. Memory Organization:

7.1 Concept of primary and secondary memory
7.2 Memory hierarchy
7.3 Cache memory
7.4 Associative memory (CAM)
7.5 Virtual memory concept
7.6 Memory management unit

8. Introduction to Parallel Processing:

8.1 Flynn's Classification
8.2 Pipelining
8.3 Vector Processor
8.4 Parallel Processors

REFERENCE BOOKS:

1. Computer System Architecture — Morris Mano, PHI
2. Structured Computer Organization — Tanenbaum (PHI)
3. Computer Organization and Architecture — Stallings (PHI)
4. Computer Architecture and Organisation — John P. Hayes
5. Advanced Computer Architecture — Rajeev Chopra, Vikas Pub. House
6. Computer Organization and Design — Pal Choudhary (PHI)
7. Introduction to Digital Computer Design — V. Rajaraman

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OPERATING SYSTEM PRINCIPLES

CODE CS 203 / IT 203 — L T P: 2 2/2 --

RATIONALE

This course is aimed at teaching the basic concepts of operating system principles, Memory management, job scheduling, multiprogramming, concurrent device operations deadlocks, buffer management etc.

CONTENTS

1. Introduction :

1.1 What is an operating System
1.2 Mainframe, Desktop & Multi processor

1.3 Distributed System
1.4 Real time Systems
1.5 Operating System Services

2. Process Management and CPU Scheduling :

2.1 Process Concept
2.2 Process Scheduling
2.3 Concept of Threads & Multithreading
2.4 Basic Complets – CPU/IU burst, CPU Scheduler, Premptine scheduling dispatcher
2.5 Scheduling Criterions
2.6 Scheduling Algos : FCFS, SJF, Priority, Round Robin

3. Deadlocks :

3.1 What is Deadlock ?
3.2 Necessary Conditions for deadlock
3.3 Resource allocation graph
3.4 Deadlock prevention
3.5 Deadlock avoidance – Banker's Algo
3.6 Deadlock Detection wait for graph and detection algorithm
3.7 Deadlock recovery

4. Memory Management:

4.1 Structure of computer memory
4.2 Logical verses physical address space
4.3 Contiguous memory allocation and Fragmentation
4.4 Concept of Paging: Basic method & h/w support
4.5 Concept of segmentation: Basic Method & h/w support

5. Virtual Memory:

5.1 Concept of Virtual memory
5.2 Concept of Demand Paging
5.3 Page replacement Algorithms: FIFO, Optimal, LRU
5.4 Allocation Algorithms: equal & proportional allocation
5.5 Thrashing: Cause and Solution (working set model)

6. File System:

6.1 File concept
6.2 File Attributes
6.3 File Operations
6.4 File Types
6.5 File Access: Sequential and Direct
6.6 Allocation Methods:
  6.6.1 Contiguous Allocation
  6.6.2 Linked Allocation
  6.6.3 Indexed Allocation

7. Distributed Operating System (DOS):

7.1 Introduction
7.2 Hardware Concept: Multiprocessor and Multicomputer Systems
7.3 Software Concept: Network File System (NFS), Network Operating System (NOS) verses DOS
7.4 Design Issues: Transparency, Flexibility, Reliability, Performance, Scalability

REFERENCE BOOKS :

1.	Operating System	Silber Schaltz, Galvin, Gagne , Wiley Pub.
2.	Operating System	Tannenbaum.
3.	Operating System	Godebole
4.	Operating System	Stallings
5.	Distributed Operating System	Tannenbaum

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BASICS OF ELECTRONIC DEVICES AND CIRCUITS

CODE CS 204

L	T	P
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RATIONALE

Today is the day of electronics. This subject covers the basic concept of electronics for engineers, this subject is foundation of electronics which helps the student to study the other subject.

CONTENTS

1. Semiconductor and PN Junction :

1.1. Metal, non metals and semiconductors and their Energy Band Diagram.
1.2 Intrinsic and Extrinsic Semiconductors.
1.3 Effect of temperature on extrinsic semiconductor
1.4 Energy band diagram of extrinsic semiconductor
1.5 Drift and diffusion current
1.6 Hall Effect
1.7 P-N Junction Diode

- 1.7.1 Space charge region, Barrier potential and effect of temperature
- 1.7.2 Energy band diagram
- 1.7.3 Biasing of diode.
- 1.7.4 V-I characteristics
- 1.7.5 Static and dynamic resistance
- 1.7.6 Transition and diffusion capacitance
- 1.7.7 Zenner and Avalanche breakdown

1.8 Working, characteristics and application of

- 1.8.2 Zener diode
- 1.8.3 Varactor diode
- 1.8.4 Photo diode
- 1.8.5 Light emitting diode (LED)

1.9 Photo conductors
1.10 Cds photo conductive cells and photo voltaic cell.

2. Bipolar Junction Transistor (BJT) :

2.1 Constructional details of PNP and NPN transistors
2.2 Working of a transistor

- 2.2.1 Charge transport phenomenon
- 2.2.2 Transistor amplifying action
- 2.2.3 Relation between different currents in a transistor
- 2.2.4 Simple problems

2.3 Configuration of transistor (CB, CE and CC)
2.4 Behavior of BJT in Active, Cut off and Saturation regions

2.4.1 Transistor as a switch
2.4.2 Transistor as an amplifier

3. Transistor Biasing and Bias Stability :

3.1 D.C. and A.C. Load line.
3.2 Operating point and its stability
3.3 Factors affecting bias stability
3.4 Stability factors
3.5 Bias stabilization
3.6 Calculation of operating point and stability factor for

3.6.1 Fixed Bias Circuit.
3.6.2 Collector to base biasing.
3.6.3 Voltage Divider biasing (Self bias)

3.7 Bias Compensation techniques using

3.7.1 Diode.
3.7.2 Thermistor and Sensistor.

3.8 Thermal stability and Thermal runaway

4. Field Effect Transistor:

4.1 Construction, operation and characteristics of JFET , E and D MOSFET
4.2 Biasing of FET
4.3 Small signal model of JFET
4.4 Terminology used with JFET
4.5 Precaution for handling of MOSFETs

5. Rectifiers :

5.1 Working of rectifiers

5.1.1 Half wave rectifier
5.1.2 Centre tape full wave rectifier
5.1.3 Bridge rectifier

5.2 Analysis of rectifiers (for all type)
5.2.1 Calculations for average and RMS values
5.2.2 PIV of diodes
5.2.3 Ripple factor
5.2.4 Regulation and efficiency

5.3 Calculation of ripple factor and working of following filters:
5.3.1 Capacitance filter
5.3.2 Inductance filter
5.3.3 L-C and π (Pie) filters

5.4 Voltage Multipliers

6. Power Supplies & Sensors :

6.1 SMPS, UPS, Inverter
6.2 Thermocouple, Pressure Gauge, Strain Gauge
6.3 Displacement Sensor (LVDT, RVDT)

REFERENCE BOOKS :

1.	Electronic Devices & Circuits	Millman & Halkias, MH
2.	Electronic Devices & Circuits	V. K. Mehta, S. Chand
3.	Electronic Devices & Circuits	A.Mottershed PHI
4.	Industrial Electronics	A.K. Khatri, CBH, Jaipur
5.	Electronic Devices & Circuits	Sanjeev Gupta, Dhanpat Rai,
6.	Electronic Devices & Circuits	Floyd, Pearson Education
7.	Electronic Devices & Circuits	Boylestad, Pearson Education
8.	Electronic Devices & Circuits	J.P. Gupta, Kataria & Sons
9.	Industrial Electronic & Control	Paul, PHI

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BASICS OF DIGITAL ELECTRONICS

CODE CS 205 L T P
IT 205 2 -- 2

RATIONALE

Basic digital electronics is the requirement of modern computer, microprocessor and digital communication systems. On account of reliability and accuracy digital electronic systems are replacing conventional analog systems. A diploma pass out having knowledge of digital system will be useful to the industries.

CONTENTS

1. Introduction :

1.1 Digital signal and its representation
1.2 Advantages of digital techniques

2. Number System :

2.1 Decimal, binary, octal and hexa-decimal number system
2.2 Conversion of a number from one system to another system
2.3 Binary addition, subtraction and multiplication
2.4 Representation of positive and negative numbers
2.5 1's complement and 2's complement
2.6 Subtraction using 2's complement
2.7 Parity bit
2.8 Binary codes (Gray, Excess -3, Hamming codes), ASCII code
2.9 Floating point number

3. Logic Gates & Families :

3.1 Introduction
3.2 Symbol and truth table of NOT, AND, OR, NAND, NOR, EX-OR and EX-NOR gates
3.3 Universal gates
3.4 Positve, negative and tristate logic
3.5 Classification of digital ICs.
3.6 Characteristics of digital ICs.

4. Boolean Algebra:

4.1 Historical review - logical statements, logical constants and variables, truth table
4.2 Boolean operators
4.3 Postulates of Boolean algebra
4.4 Laws of Boolean algebra
4.5 Duality theorem

4.6 De' Morgan's theorem
4.7 Simplification of Boolean expressions
4.8 Verification of Boolean expressions using truth table

5. Minimization Techniques (K-Mapping) :

5.1 Representation of Boolean expression - min. and max. Term SOP, POS
5.2 Conversion of truth tables in POS and SOP form
5.3 Karnaugh map upto 4 variables - implication of logic function with and without don't care conditions
5.4 Realization of logic diagrams using NAND/NAND, NOR/NOR gate

6. Combinational Logic Design :

6.1 Binary half and full adder
6.2 Binary half and full subtractor
6.3 Binary serial, parallel and BCD adder
6.4 Parity bit generator and checker
6.5 Binary comparator
6.6 Multiplexer
- 6.6.1 4 to 1 multiplexer
- 6.6.2 16 to 1 multiplexer

6.7 Demultiplexer
- 6.7.1 1 to 4 Demultiplexer
- 6.7.2 1 to 16 Demultiplexer

6.8 Encoder
- 6.8.1 Decimal to BCD

6.9 Decoder
- 6.9.1 BCD to Decimal
- 6.9.2 BCD to seven segment

7. Sequential Systems:

7.1 Introduction
7.2 Symbol, logic circuit, truth table of R-S, J-K, M/S J-K,D,T flip-flops
7.3 Edge and level triggering
7.4 Shift registers

- 7.4.1 Left, right and bi-direction
- 7.4.2 Series and parallel
- 7.4.3 Universal shift register

7.5 Asynchronous and synchronous counters - up, down and up-down
7.6 Mod counters - Mod 5, Mod 9, decade counter
7.7 Ring counters, Johnson counter
7.8 Programmable counters
7.9 Use of shift register for simple binary multiplication and division.

PRACTICALS

1. Verify the truth tables of NOT, AND, OR, NAND, NOR, EX-OR, EX-NOR gates
2. Design a NOT, AND, OR, EX-OR, EX-NOR gates using universal gates
3. Design a binary half and full adder
4. Design a binary half and full subtractor
5. Study of BCD to 7 segment decoder
6. Verify the truth table of RS, D, J-K, M/S J-K,D,T flip-flops.
7. Study of asynchronous binary ripple up, down and up-down and different mod counters

8. Study of synchronous counters
9. Study of decade counter
11. Study of programmable counter
12. Study of a shift register using flip flops
13. Study of ring counter using flip flops

REFERENCE BOOKS :

1. Digital Principles & Applications — Malvino Leach., TMH
2. Integrated Electronics — Millman & Halkias, M. Hill
3. Digital Electronics — T.C. Bartee
4. Digital Electronics Practice Using IC's — R.P. Jain. TMH
5. Modern Digital Electronics — R.P. Jain,TMH
6. Digital Circuit & Design — S. Salivahanan, Vikash Pub.
7. Digital Intregrated Circuit — K.R. Botker
8. Digital Design — Flloyd
9. Digital Logic Design — Morris Mano., PHI

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DATA COMMUNICATION

CODE CS 206 / IT 206 — L T P: 2 2/2 --

RATIONALE

For the transmission and reception of signals in industry and domestic life the basic knowledge of communication engineering is essential. The study of the subject provides the basic knowledge of various modulation, demodulation technique which further provide the fundamentals to understands the operation of communication systems. Detailed knowledge of radio receiver is also included in the syllabus.

CONTENTS

1. Introduction :

1.1 Data Communication : Model and Components
1.2 Computer Networks
1.3 Line Configurations
1.4 Topology
1.5 Transmission modes
1.6 Communication Protocol: Layered Architecture
1.7 Reference Models : OSI and TCP/IP

2. Signals and Transmission :

2.1 Analog and Digital Forms
2.2 Analog Signals : Amplitude, Period and Frequency, Phase, Spectrum and bandwidth
2.3 Digital Signals : Bit Interval and Bit Rate
2.4 Digital Data Transmission : Parallel and Serial, Asynchronous and Synchronous
2.5 Modems

3. Multiplexing and Communication Hardware :

3.1 FDM and TDM
3.2 Transmission Media: Guided & Unguided media, Performance factors
3.3 Network devices: Repeaters, Bridges, Switches, Routers and Gateways

4. Data Link Layer :

4.1 Introduction
4.2 Flow control & Error control
4.3 Types of errors : Single bit & burst errors
4.4 Error Detection & Correction
  4.4.1 VRC, LRC, CRC
  4.4.2 Checksum
  4.4.3 Hamming Code

4.5 Flow control & error control protocols :
  4.5.1 Stop & Wait
  4.5.2 Sliding window
  4.5.2 ARQ
4.6 HDLC
4.7 Local Area Networks : Introduction to Ethernet, Token bus, Token Ring & FDDI.

5. Switching and Frame Relay :

5.1 Circuit Switching
5.2 Packet Switching : Datagram & Virtual Circuit approach
5.3 Introduction to Frame relay : Its role, advantages & disadvantages.
5.4 Frame relay operation
5.5 Congestion Control : BECN, FECN, Leaky Bucket Algorithm.

REFERENCES BOOKS :

1. Data Communications & Networking — Behrouz A. Forouzan, TMH
2. Data & Computer Communication — William Stallings, PHI
3. Data Communication & Computer N/W — Sanjay Pahuja, Std. Publication
4. Data Communication and Networks — Godbole, TMH

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DATA BASE MANAGEMENT SYSTEMS

	L	T	P
CODE CS 207 / IT 207	2	2/2	--

RATIONALE

This course objective is to expose the students to the theoretical concepts of introduction to data base, physical and logical data base, schema design, study of entity, rational diagram, different type of data base modules, also involves the principle of designing relational data bases, normalisation process, storing and retrieval of data, securities, features of locking.

An elementary introduction to the distributed data bases will be covered apart from this the students will be completely exposed to the practical applications of dbase III, development of application software by getting exposures to the commands, program development, After completion of the course the students will achieve full competence in the area of application software development using data base.

CONTENTS

1. An overview of database management system
2. Need for DBMS
3. Components of DBMS
4. Applications of DBMS
5. Advantage of DBMS
6. Database system versus file system
7. Disadvantages of DBMS
8. Database System Concepts and Architecture
9. Application Architecture of DBMS
   9.1. Two-Tier Architecture
   9.2 Three-Tier Architecture

10. Database Models
    - 10.1 Hierarchical Database Model
    - 10.2 Network Database Model
    - 10.3 Relational Database Model
    - 10.4 Object-Oriented Database Model
11. Schema and Instances
12. Data Independence
    - 12.1 Physical Data Independence
    - 12.2 Logical Data Independence

13. Database Language and Interface
14. Overall Database Structure

2. Data Modeling Using the E-R Model :

- 2.1 E-R Model concepts
- 2.2 Notations of E-R Diagram
- 2.3 Mapping Constraints
  - 2.3.1 One-to-one
  - 2.3.2 One-to-Many
  - 2.3.3 Many-to-One
  - 2.3.4 Many-to-many
- 2.4 Keys
  - 2.4.1 Super key
  - 2.4.2 Candidate Key
  - 2.4.3 Primary key
  - 2.4.4 Composite key
  - 2.4.5 Foreign key
  - 2.4.6 Alternate key
  - 2.4.7 Secondary key
- 2.5 Examples of E-R Diagrams

3. Relational Data Model and Language :

- 3.1 Introduction
- 3.2 Properties of Relational Tables
- 3.3 Differences between DBMS and RDBMS
- 3.4 Codd's Rules of RDBMS
- 3.5 Integrity Constraints
  - 3.5.1 Entity Integrity Constraints
  - 3.5.2 Referential Integrity Constraints
- 3.6 Domain Integrity Constraits
- 3.7 Query Language
  - 3.7.1 Relational Algebra
  - 3.8.2 Relational Calculus

4. Normalization :

- 4.1 Normalization Concepts
- 4.2 Functional Dependencies
- 4.3 Lossless/Lossy Join Decomposition
- 4.4 Normal Forms
  - 4.4.1 First Normal Form (1NF)
  - 4.4.2 Second Normal Form (2NF)
  - 4.4.3 Third Normal Form (3NF)
  - 4.4.4 Boyce-Codd Normal Form (BCNF)
- 4.5 Multi-valued Dependency & Fourth normal Form
- 4.6 Join Dependency and Fifth Normal Form.

5. Transaction Processing Concepts :

- 5.1 Transaction System
- 5.2 Properties of Transaction
  - 5.2.1 Atomicity
  - 5.2.2 Consistency
  - 5.2.3 Isolation
- 5.3 Transaction States
- 5.4 Transaction Processing System
- 5.5 Recovery from Transaction Failures
  - 5.5.1 Cascading Rollback
  - 5.5.2 Recoverable Schedule
  - 5.5.3 Log Based Recovery
  - 5.5.4 Check Points
  - 5.5.5 Backup Mechanism
  - 5.5.6 Shadow Paging
- 5.6 Distributed Database
  - 5.6.1 Homogeneous Distributed Database
  - 5.6.2 Heterogeneous Distributed Database
- 5.7 The major Advantages of Distributed DBMS (DDBMS)

6. Deadlock Handling :

- 6.1 Introduction
- 6.2 Deadlock Detection
- 6.3 Recovery from Deadlock

7. Concurrency Control Techniques :

- 7.1 Concurrency Control
- 7.2 Locking Techniques for Concurrency Control
- 7.3 Mode of Locking
  - 7.3.1 Shared Lock
  - 7.3.2 Exclusive Lock
- 7.4 The Two-phase Locking Protocol
  - 7.4.1 Static (or Conservative) Two-phase Locking
  - 7.4.2 Dynamic Two-phase Locking
  - 7.4.3 Strict Two-phase Locking
- 7.5 Time Stamping Protocol for Concurrency Control

REFERENCES BOOKS :

1. Database management System — P.K. Yadav, S.K. Kataria & Sons, Delhi
2. An Introduction to Database System — Bipin C. Desai, Galgotia Publications
3. Fundamentals of Database Systems — R. Elmastri, S.B. Navathe, Pearson Education
4. An Introduction to Database management System (A-level) — Satish jain, BPB Publication
5. Database Ssytems: Concepts, Design & Applications" — S.K. Singh, Pearson Education

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MICROPROCESSOR AND INTERFACING

CODE CS 208

L	T	P
2	--	2

RATIONALE

The development of semiconductor technology has revolutionized the branch of electronics, starting from small scale integrated circuit (SSI), where the complete C.P.U on a single chip which is known as microprocessor has changed the concept of automation as well as has proved itself as a very cost effective and reliable, alternate for automation. Due to this reason the computers and microprocessor based equipment's are invading into every walk of life. In advance technology of electronics field it must be necessary the knowledge of microprocessors and their application for the students of electronics, where the students exposed to the concept of microprocessor programming, interfacing and designing of microprocessor based system.

CONTENTS

1. Introduction :

- 1.1 Microprocessor concept
- 1.2 Historical review of microprocessor development
- 1.3 Organization of a micro computer

2. The 8085 Architecture :

- 2.1 Internal block diagram
- 2.2 8085 signals and their functions
- 2.3 Demultiplexing of buses
- 2.4 Pin configuration and logical diagram.

3. 8085 Instructions and Programming :

- 3.1 Instruction format
  - 3.1.1 Mnemonics
  - 3.1.2 Opcode and operand
  - 3.1.3 Instruction length
- 3.2 Classification of instruction
  - 3.2.1 Data transfer
  - 3.2.2 Arithmetic
  - 3.2.3 Logical
  - 3.2.4 Branching
  - 3.2.5 Machine control
- 3.3 Different interrupts of 8085 Microprocessor
- 3.4 Addressing modes
- 3.5 Stack operation and related instructions
- 3.6 Subroutine and related instructions
- 3.7 Machine and assembly language
- 3.8 Assembly language programming
- 3.9 Debugging of programs

4. Memory and I/O System :

- 4.1 Memory types
- 4.2 Memory organization
- 4.3 Basic concept of memory interfacing and I/O interfacing
- 4.4 Difference between peripheral I/O and memory mapped I/O

5. Instruction Execution and Timings:

- 5.1 Instruction cycle - machine cycle, T-states

5.2 Fetch cycle
5.3 Memory read and writes cycle
5.4 I/O read and write cycle
5.5 Interrupt acknowledge cycle
5.6 Bus idle cycle
5.7 DMA cycle
5.8 Machine cycle with wait states.
5.9 Programs using delays and counters

6. Interfacing With 8085 :

6.1 Decoder & Encoder
6.2 Memory (RAM & ROM)
6.3 PPI (8255)
6.4 PIC (8259)
6.5 USART (8251)

7. Introduction to x 86 Family (8086) :

7.1 Segment register
7.2 Instruction Pointer
7.3 Index Register
7.4 Stack pointer
7.5 Flags
7.6 Programmable Registers (8/16 bit)
7.7 Even & Odd Addressing Techniques
7.8 20 bit address Generation

PRACTICALS

1. Study of 8085 microprocessor kit
2. Addition of two 8 bit numbers with and without carry
3. Subtraction of two 8 bit numbers with and without borrow
4. Multiplication of two 8 bit number using successive addition and resistor shifting method
5. Program to find out square of a number.
6. Programs involving data arrays

6.1 Generating odd numbers.
6.2 Data transfer schemes
6.3 Sorting of odd/even numbers.
6.5 Finding largest and smallest numbers.
6.6 Arrange data array in ascending / descending order

7. Programs using stack
8. Programs using subroutine.
9. Debugging of programs using single stepping on kit
10. Interfacing various Chips with 8085

REFERENCE BOOKS:

1. Microprocessor Architecture, Programming & Application — Gaonkar
2. Fundamentals of Microprocessors & MicroComputers — B.Ram
3. Assembly Language Programming — A.Leventhal, Osborn
4. Theory & Problems of Microprocessor Fundamentals — Tokhein
5. Microprocessor & Peripheral Hand book — INTEL
6. Computer Architecture & org. — J.P Hayes
7. Digital Computer Fundamentals — T.C.Bartee
8. An Introduction to Microprocessors — A.P.Mathur

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INTERNET AND WEB TECHNOLOGIES

	L	T	P
CODE CS 209 / IT 209	2	--	2

RATIONALE

Web programming will help you plan and develop well-designed web sites that combine effective navigation with the balanced use of graphics, text, and color. You will learn how to create web sites that let users easily and quickly access your information, regardless of browser type, connection speed, or computing platform.

CONTENTS

1. Internet Basics :

- 1.1. Concept
- 1.2. Establishing Connectivity on Internet
- 1.3. Email: POP, SMTP
- 1.4. www, File Transfer, Telnet
- 1.5. IP Address
- 1.6. Brief overview of TCP/IP

2. HTML :

- 2.1 File Creation, Web Server, Web Client
- 2.2 Introduction to HTML
  - 2.2.1 HTML Tags
  - 2.2.2 Structure of HTML Programs
  - 2.2.3 Heading, Titles and Footers
  - 2.2.4 Text Formatting
  - 2.2.5 Text Styles
  - 2.2.6 Text Effects
  - 2.2.7 Color and Backgrounds
  - 2.2.8 Lists
  - 2.2.9 Adding Graphics
  - 2.2.10 Tables
  - 2.2.11 Linking Documents
  - 2.2.12 Frames

3. Java Script :

- 3.1 Java script in web pages
- 3.2 Advantages of JavaScript
- 3.3 Writing JavaScript into HTML
- 3.4 Programming
  - 3.4.1 Data types and Literals
  - 3.4.2 Type casting
  - 3.4.3 Variables
  - 3.4.4 Arrays
  - 3.4.5 Operators and Expressions
  - 3.4.6 Conditional and Iterative Loops
  - 3.4.7 Functions
- 3.5 Dialog Boxes
- 3.6 Cookies

4 DHTML :

- 4.1 Introduction to DHTML
- 4.2 Cascading Style sheets (CSS)
  - 4.2.1 Font Attributes

4.2.2 Color, Background
4.2.3 Text and Border
4.2.4 List Attributes
4.3 Class
4.3.1 The <SPAN> … </SPAN> Tag
4.4 Java Script Style Sheet
4.4.1 The <DIV> … </DIV> Tag

5. CGI:

5.1 Use of CGI
5.2 Working of CGI
5.3 Methods of Data Submission (GET and POST)
5.4 Environment Variables
5.5 Process Form Information in CGI Program

6. Perl :

6.1 Basics of Perl
6.2 Strings, Scalar variables
6.3 Arrays, Hash Array
6.4 Arithmetic and Comparison Operators
6.5 Control Program Flow
6.6 Functions: String, Array, Mathematical and Time
6.7 File Handling
6.7.1 STDIN & STDOUT
6.7.2 Concept of Files and Directories
6.7.3 Open and Close Files
6.7.4 Reading and Writing Files

PRACTICALS

1. Installation of Web server and Web browser
2. Practice for creating web pages/sites using HTML
3. Practice for creating web pages/sites using JavaScript
4. Practice for creating web pages/sites using DHTML
5. Practice for creating web pages/sites using CGI
6. Practice for creating web pages/sites using Perl

REFERENCE BOOKS :

1. Web Enabled Commercial Application Development Using HTML, DHTML, Java Script Ivan Bayross, BPB
2. Internet and Web Technology Xavier, TMH
3. Web 101, Making the Network for you Wendy Lehnert, PEA
4. Java Script Flamange, (ORA/SPD)
5. Dynamic HTML Goodman, (ORA/SPD)

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PC MAINTENANCE AND TROUBLE SHOOTING

CODE CS 210

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RATIONALE

The objective of this course is to introduce the students to the concepts of personal computer hardware its function and external interface methods by both theoretical and practical sessions. After the completion of the concept ideas, the student will be achieving the practical interfacing techniques and design methods of various devices to the personal computers. The students will achieve full competence of need of interfacing devices to the personal computers system and trouble shooting of the failure of devices.

CONTENTS

7.3 HDD Interface types: SCSI, IDE, and SATA
7.4 USB External Hard disk

8. Windows Components and Tools
8.1 Windows Registry
8.2 Scandisk and Disk Defragmenter
8.3 Disk management
8.4 File Systems-FAT16, FAT32, and NTFS

9. Memory :
9.1 RAM
9.1.1 SDRAM
9.1.2 DDR
9.2 ROM

PRACTICALS

1. Study and Identify of various parts of a PC
2. Creating Disk Partitions and formatting them.
3. Installation of Windows Operating System.
4. Installation of Linux Operating system.
5. Installation of Operating Systems using VMWARE utility
6. Installation of Network Interface Card (NIC) or LAN card
7. Installation of Local Printer
8. Installation of Network Printer
9. Installation of Scanner
10. Use PING command to verify the TCP/IP connection between two nodes.
11. To login to remote Desktop using TeamViewer utility.
12. To prepare a Straight cable using standard color coding.
13. To prepare a Crossover cable using standard color coding.
14. To connect two PCs using Crossover cable without using a Switch or Router.
15. To use CD writing Software for Copying Files and Disc-to-Disc Copying.

REFERENCE BOOKS :

1. Computer Installation and Servicing — D Balasubramanian, TMH
2. The Complete Reference PC Hardware — Craig Zacker, John Rourke, TMH
3. IBM PC and Clones — B. Govidarajalu, TMH
4. The Complete PC Upgrade and Maintenance Guide — Mark Minasi, Wiley-India

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