

## Syllabus for Third Semester

### OPERATING SYSTEM

<b>L</b>	<b>T</b>	<b>P</b>
<b>3</b>	<b>1</b>	<b>3</b>

#### **Rationale**

The course provides the students with an understanding of human computer interface existing in computer systems and the basic concepts of operating system and its working. The aim is to gain proficiency in using various operating systems after undergoing this course.

#### **DETAILED CONTENTS**

1. **Brief introduction to system software:** Compiler, Assembler, Loader, Operating system.
2. **Overview of Operating system:** Operating system as resource manager, operating system services. System calls, operating system classifications single user, multi-user, batch-processing time-sharing real-time Operating System, multi processing, distributed operating system, network operating system.
3. **Memory Management:** Single Contiguous allocation, partitioned allocation. Relocatable partitioned allocation. Paged allocation, segmentation.
4. **Processor Management:** Processor overview, process states, multi-programming, levels of schedulers, multi-processor scheduling. Deadlock, necessary conditions for deadlock, Deadlock prevention.
5. **File Management:** File supports, access methods, contiguous, linked and indexed allocation. Directory systems, single level, two levels, tree structure, graph directory system and file protection.
6. **Device Management:** Dedicated, Shared and Virtual devices, sequential access, direct access devices, Interrupt processing, idea of spooling, disk scheduling.
7. **Case Study:** Case study of Window operating System

#### **List of Practical:**

1. Practical exercises involving various Internal and External DOS Commands.
2. Exercises on Windows operating system.
3. Exercises on UNIX/Linux operating system-shell programming/Operating system commands.

#### **Reference Books**

1. Operating system concepts-Silberschatz, Galvin
2. Operating system design and implementation-Andrew Tanenbaum and Woodhull
3. Operating system-Godbalakar
4. Operating system-Dhamdhare

# DATABASE MANAGEMENT SYSTEM

L	T	P
3	1	3

## Rationale

This course will acquaint the student with knowledge of fundamentals concepts of DBMS and its application in different areas, storage, manipulation and retrieval of data using query languages.

### 1. INTRODUCTION

- View of data
- Data model-ER model, relational model
- Database language-DDL, DML
- Database user ;and administrator
- Database system Vs File system
- Database system application

### 2. DATABASE SYSTEM CONCEPT AND ARCHITECTURE

- Schemes, instances and database state
- DBMS architecture
- Data independence-logical and physical data independence

### 3. ENTITY-RELATIONSHIP MODEL

- Entity and attributes
- Entity types and entity sets.
- Weak entity types
- Key-primary key, candidate key and super key
- Relationship among entities
- ER diagram

### 4. RELATION MODEL

- Domains, attributes, tuples and relations
- Domain constraints
- Key constraints and constraints on null
- Entity integrity, referential integrity and foreign key
- Relational algebra-SELECT, PROJECT, JOIN

### 5. RELATION DATABASE DESIGN

- First normal form
- Functional dependency
- Decomposition
- BCNF
- Third normal form
- Forth normal form

### 6. EMERGING DATABASE TECHNOLOGIES

- Database warehousing
- Database warehousing
- Multimedia database
- Distributed data base concept
- Data Base security & authorization concept

## **PRACTICALS**

1. Overview, features and functionality, application development in ORACLE
2. Exercise on creating tables
3. Exercise on insertion of data into tables
4. Exercise on deletion of data using different conditions
5. Exercise on SELECT statement
6. Exercise on PROJECT statement
7. Exercise on UPDATE statement

## **REFERENCE BOOKS**

1. An introduction to Database systems-C.J. Date
2. Database system concept-Silberschatz,, Korth, Sudarshan
3. Fundamentals of database systems-Elmasri, Navathe
4. Introduction to DBMS - Naveen prakash

## FRONT END TECHNIQUES

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### RATIONALE

This course will enable the students to understand the basics of internet and various applications of internet like e-mail, FTP, Telnet, Newsgroups and video conferencing. In addition, this course develops competency amongst the students to design professional with sites and interactive web pages.

Net is an upcoming technology so the teacher should take pain in making the students conversant with this. The demonstration should be given using .NET software for describing the various features of NET technology.

### DETAILED CONTENTS

- 1. Developing Portals using HTML**  
Basic structure of HTML, designing a web page, inserting links images. Horizontal rules, comments. Formatting text, title, headings, colors, fonts, sizes, simple tables and forms. HTML tags, hyperlinks, Adding graphics and images, image maps, image files. Using tables, forms, style sheets and frames and DHTML.
- 2. Using Front Page**  
Front page editor, Front page explore
- 3. NET-evolution**  
Need and prospective in current scenario, NET framework over view Structural diagram.
- 4. NET framework Base classes**  
User and program interface, windows forms, web forms, console applications
- 5. XML**  
An overview of XML, use of XML, integrity of XML with databases, XML as the NET Meta languages
- 6. Visual Studio NET**  
Common IDE for all languages, the common language specification, all NET languages, management of multiple language, projects.
- 7. Language Changes**  
Visual basic, C++, C#, overview of C#, data types in C#, control flow in C#, C# classes
- 8. Features of Dream Weaver**

### PRACTICALS:

1. Installing of NET
2. Exploring the various features of NET
3. Ability to work and start various tasks and features of NET framework

4. Able to work and develop program in Visual basic NET
5. To explore in detail Visual studio NET
6. Exercises based on HTML, DHTML & XML -Creating Web pages using HTML

### **REFERENCE BOOKS**

1. HTML-4 for World Wide Web -Castro Addison Wesley
2. Dynamic Web publishing - Unleashed tech Media
3. Preparing Instructional objectives – Mager
4. Designing effective Instruction - E.RRoss,Kemp
5. The systematic design of instruction -cennarno,kalbe

## DIGITAL ELECTRONICS & MICROPROCESSOR (THEORY)

L	T	P
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1. Number system & their conversion. Binary arithmetic, Binary codes, Logic gates
2. Fundamentals of Boolean algebra, Boolean function, minimization. Technique for logic operation sum of product and product of sum rule, karnaugh map technique up to 4 variable.
3. Introduction to microprocessor, basic block diagram of microprocessor, flip flop, memory cell, buffer, latch, decoder, encoder. Architecture block diagram of Intel 8085 microprocessor data, address and control lines pin diagrams and function of various pins.
4. Instruction cycle-fetch and execute operation m/c cycle, and states, Timing diagram opcode fetch-cycle, memory read and write operation. Memory organization, memory map and addresses. Basic concept of memory interfacing, address decoding and memory addresses.
5. Instruction set, data transfer instruction, arithmetic instruction logic instruction, branch instruction, machine control instruction. Instruction word size addressing modes. Programming concept.
6. Uses of counter, delay, stack and subroutine. Interfacing and data transfer schemes, synchronous and asynchronous data transfer and peripheral controlled data transfer schemes.
7. Interrupt RST instruction, 8085 vector interrupt, interrupt priority level triggering level, RIM and SIM instruction.

### PRACTICALS

1. Familiarization with microprocessor kit location of 8085, 8279, 8253, keyboard, Display field, EPROM programmer, expansion slot TTY and serial lines, Binary and decimal
2. Addition and subtraction of 8 bit number.
3. Addition of two 8 bit number and result is 16 bit.
4. Addition of two 16 bit numbers.
5. Find the smallest and largest from the series.
6. To arrange the data array in ascending and descending order.
7. Counter design with delay.
8. Programming using the interrupt.

### REFERENCE BOOKS

1. Micro-processor architecture programming and application with –8085 -Ramesh S.Gaonkar
2. Digital Fundamental - Floyds & Jain
3. Fundamental of microprocessor & microcomputer -B.Ram
4. 2.Digital Logic Design - Morris Mano

## NETWORKING FUNDAMENTALS

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- 1. Data transmission:-** Concepts and technology-transmission terminology, time domain concepts, frequency domain concepts, Analog & digital data transmission-analog & digital data, analog & digital signals, analog & digital transmission. Transmission impairments-attenuation, delay distortion noise, thermal noise, impulse noise. Channel capacity-nyquist bandwidth, Shannon capacity formulae.
- 2. Transmission media:-** guided transmission media-twisted pair, transmission characteristic, unshielded & shielded twisted pair. Coaxial cable, optical fiber, wave guides. Wireless transmissions brief description of antennas, terrestrial microwave and satellite microwave. Transmission characteristics & application-wireless propagation-ground wave propagation, sky wave propagation, line of sight propagation. Line of sight propagation-free space loss, atmospheric absorption, multipath, refraction.
- 3. Signal encoding techniques:-** digital data, digital signals-non return to zero, multilevel binary, bi-phase, modulation rate, scrambling techniques, digital data analog signals-ASK, FSK, PSK.
  - (a) Analog Data digital signal-PCM, DM.
  - (b) Analog data analog signal-AM.FM
- 4. Digital data communication techniques:-** Asynchronous and synchronous transmission-Asynchronous transmission, synchronous transmission, Type of error, error detection, parity check.
  - (a) Error correction-Block code principles
  - (b) Line configuration-Topology, Half Duplex and Full Duplex.
- 5. Communication Standard:-** Direct and handshake mode of communication, physical aspect of different interface standards (Rs-232 line drivers, IEEE-488, centronics interface).
- 6. Protocol Architecture and switching techniques:-** Need of protocol architecture, simple protocol architecture, OSI (Open system interconnection), circuit switching concept, packet switching principle, comparison of communication switching technique, X.25, frame delay.

## PRACTICALS

1. Comparative study between various antennas based on antenna parameters.
2. Radiation pattern of Omni directional & directional antenna
3. Forming PC-to-PC communication link using optical fiber lin and Rs-232 interface.
4. To obtain an amplitude modulation wave and measure its modulation index.
5. To demodulate and AM signal and compare it will original signal.
6. To obtain FM wave and find maximum deviation.
7. To detect FM signal and compare it with the original signal.
8. To obtain a PCM signal and observe the effect of quantizatic
9. Study of a given modem and its working.

## **REFERENCE BOOKS**

1. Computer & Data Communication - W.Stalling
2. Electronic Communications Systems - Kennedy
3. Data communication - William schweber



# OBJECT ORIENTED PROGRAMMING

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## Rationale

Object orientation is a new approach to understand the complexities of the real world. This course offers the model programming language C++ that shall help the students to implement the various concepts of object orientation practically.

## Detailed Contents

### 1. Introduction

- Problems with procedure oriented Programming technique.
- Concepts of OOPs
- Characteristics Of OOPs
- Advantages and application of OOPs

### 2. C++ Programming Basics

- Basic Data types
- Type Compatibility
- Operators in C++
- Scope resolution operator
- Control Structure

### 3. Function C++

- Function Prototyping
- Call by reference
- Inline function
- Function overloading
- Library Function

### 4. Class and Objects

- Comparison of Class and C-Structure
- Creating objects
- Arrays within Class
- Arrays of objects
- Objects as Function Arguments

### 5. Constructor and Destructor

- Constructor and its characteristics
- Parameterized Constructor
- Multiple Constructor in a class
- Copy Constructor
- Overloaded Constructor
- Destructor and its characteristics

### 6. Operator Overloading

- Overloading of unary operator
- Overloading of binary operator
- Manipulation of Strings using operator
- Type conversion- basic type to class & class to basic type

7. **Inheritance**
  - Type o inheritance
  - Need of protected members
  - Application of inheritance
8. **Managing Console I/O operation**
  - Unformatted I/O operation
  - Formatted I/O operation: fill, precision, width
  - I/O streams
9. **File Operation**
  - Opening & closing a file
  - Programming with files
10. **Virtual & friend function**
  - Pointers to objects
  - This pointers
  - Pointer to derived classes
  - Virtual functions
  - Pure virtual functions
  - Concept of late & early binding

## LIST OF PRACTICALS

1. Write a program using control structure.
2. Write a program using constructor and destructor.
3. Using objects as function arguments perform the addition of time hours, minutes and second's format.
4. Perform addition of two complex number using classes.
5. Define a class to represent bank account include ;the following members Data  
Member: Name of the depositor, account Number, type of account, and balance amount in the account.  
Member functions: To assign initial value, to deposit an amount, to withdraw an amount after checking the balance, to display name and balances. Write a main program to test the program
6. Modify the program (5) for handling 10 customers using array of objects
7. Create a class FLOAT that contains one float data member overload all the four arithmetic operators so that operate on the object of the FLOAT
8. Define a class string. Use overloaded==operator to compare two strings
9. Write a program using friend function
10. Write a program using virtual function
11. Additional Exercise based on various topics.

### Reference books:

1. Object oriented programming with c++ - E. Balaguruswamy.
2. Object oriented programming in turbo c++ - Robert Lafore.