MSU/ 2017-18 / UG-Colleges / Part-III (B.C.A) / Semester – I / Core - 1

Programming in C

Unit I

Overview of C:

Introduction- Importance of C - Sample C Programs - Basic structure of C - Executing C program

Constant, variables and data types:

Introduction- Character set - tokens – keywords and identifiers – constants – variables- data types – declaration of variables – assigning values of variables.

Operators and expressions:

Introduction – arithmetic of operations- relational operator – assignment operator – increment and decrement operator – conditional operator – bitwise operator – special operator – evaluation of expressions – precedence of arithmetic operators – type conversion in expression- operator precedence and associatively- mathematical functions

Unit II

Managing input and output operators:

Introduction: Reading a character- writing a character – formatted input – formatted output

Decision making and branching:

Introduction – decision making with IF statement- simple IF statement – The IF ELSE statement- nesting of IF –ELSE statement –ELSE IF ladders- The switch statement – The?: operators – The GOTO statement

Decision making and looping:

The While statement – The Do statement – The for statement- Jump in loops

Unit III

Arrays:

One dimensional arrays – two dimensional arrays -Initializing two dimensional arrays – multi dimensional arrays

Handling of character strings:

Introduction: declaring and Initializing string variables- Reading string from terminal- writing string to screen – arithmetic operation on characters – putting strings together – comparison of two strings together – string handling functions

Unit IV

User defined functions:

Introduction – need for user- define functions- A multi- function program – The form of C functions- return values and their types – calling a function- category of function – no argument and no return values – argument with no return values -argument with return values – handling of non integer functions – nesting of functions – recursion – function with arrays – the scope and life time of variables in functions.

Unit V

Pointers

Introduction: understanding pointers – accessing the address of variables – declaring and initializing pointers – accessing a variable through its pointer – pointer expressions – pointer increments and scale factor – pointers and character strings – pointers and functions – points on pointer.

TOTAL: 60 HOURS

Text Book:

Programming in ANSI C – By E.Balagurusamy, Tata Mc Graw-Hill Publishing Company

Reference Book:

Programming with ANSI and TURBO C – by Ashok N. Kamthane

MSU/ 2017-18 / UG-Colleges / Part-III (B.C.A) / Semester – I / Allied Practical - I

Office Automation Lab –I

MS-WORD

1. Creating and saving documents
2. Letter Typing and Editing
3. Design an invitation
4. Design a Calendar
5. Design a Time Table
6. Prepare student Bio-Data
7. Using of Header/Footer/Book mark/Spell Check
8. Design an cover page
9. Mathematical Equations and Symbols
10. Mail Merge

MS-EXCEL

1. Mark sheet Preparation
2. Pay roll Preparation
3. Sales details
4. Graphs and Charts
5. Mathematical/Statistical /Logical Functions
6. Budget Preparation

JAVA PROGRAMMING

UNIT- I

Java language fundamentals: The building blocks of Java – Data types – Variable declarations – Wrapper classes – Operators and assignment – Control structures – Arrays – Strings.

UNIT- II

Java as an OOP language: Defining classes – Modifiers – Packages – Interfaces
Exception handling: Introduction – Basics of exception handling in JAVA – Exception hierarchy – Constructors and methods in throwable classes – Unchecked and checked exceptions – Handling Exceptions in Java

UNIT- III

Multithreading: Creating threads – Thread life-cycle – Thread priorities and thread scheduling – Thread synchronization. File and I/O streams: Java I/O – File streams – File Input Stream and File Output Stream – Filter streams

UNIT- IV

Applets: Java applications versus Java applets – Applet Life-cycle – working with applets – the HTML APPLET tag. Database handling using JDBC: JDBC architecture – working with JDBC – Processing queries – Transaction commit and Rollback – Handling exceptions – Accessing Metadata

UNIT- V

The Abstract Window Toolkit: Basic classes in AWT – Drawing with graphics class – Class hierarchy of AWT – Event handling – AWT controls – Layout managers.

Text Book:

Object Oriented Programming through JAVA – P. Radha Krishna – Universities Press

Reference Books:

1. Programming with Java – C. Muthu
2. Programming with Java 2 – C. XAVIER
3. Introduction to OOP through Java – ISRD Group Tata McGraw hill
4. Programming with Java a primer 3/E E. BALAGURUSWAMY
5. The Complete Reference JAVA 25/ E HERBERT SCHILDT

MSU/2016-17/UG-Colleges/Part-III (BCA) Semester-III/Ppr.no.17/Major Practical - III

JAVA PROGRAMMING LAB

1. Write a java program to find the area of Square, Rectangle, and Triangle by

    a. Overloading Constructor b. Overloading Method

2. Define a class called student with data members name, Rollno, and age. Write a suitable constructor and method output () to display the details. Derive another class student 1 from the student with the data member's height and weight. Write a suitable constructor and method output () to display the details which overwrites the super class method output ().(Apply Method Overriding concepts)

3. Write a java program to create a package "Employee" which contains the classes Emp and Emppay. The data members of Emp are name, emp_id, category, and Bpay. Write suitable constructor and methods to compute the net pay of the employee. The class Emppay contains the main method.

4. Write a java program to create and Implement an Interface.

5. Write a java program to create a thread

    b. Using Thread Class

6. Write a java program to Design a calculator to perform arithmetic operations.

7. Create an applet with four Checkboxes with labels and a Text area object. The program must display the details while clicking a particular checkbox.

8. Write a java program to demonstrate the use of choice box.

9. Write a java program, which creates a window with a checkbox group with boxes for the colors, violet, indigo, yellow, orange, red, blue and green. When the button is selected the background color must change accordingly

10. Write a java program to throw the following Exception

    a. Negative Array Size b. Array Index Out OF Bounds

11. Write a java program to create a file menu with option New, Save and Close, Edit menu with option cut, copy, and paste

12. Write a java programming to illustrate Mouse Event Handling.

MSU/2016-17/UG-Colleges/Part-III (BCA) Semester-III/ Ppr.no.18/Allied - 3

DATA STRUCTURES

UNIT - I

Introduction: Pseudo code – The Abstract Data Type – A Model for an Abstract Data Type – Algorithms Efficiency.
Searching: List Searches – Hashed List Searches – Collision Resolution

UNIT- II

Linked Lists: Linear List Concepts - Linked List Concepts - Linked List Algorithms – Processing a Linked List – Complex Linked List Structures

UNIT- III

Stacks and Queues: Basic Stacks Operations – Stack Linked List Implementation – Stack Applications – Queue Operations – Queue Linked List Design

UNIT- IV

Trees: Basic Tree Concepts – Binary Tree - Binary Tree Traversals – Expression Trees- General Trees – Binary Search Trees – Heap definition – Heap Structure – Basic Heap Algorithm.

UNIT- V

Sorting And Graphs: General Sort Concepts – Quick sort – External sorts
Graphs: Terminology – Operations – Graph storage Structure – Networks.

Text books:

Data Structures a Pseudo code Approach with C++, Richard F. Gilberg & Behrouz A forouzan, Thomsan Brooks / Cple.

Reference Books:

1. Fundamentals of Data Structures Eilis Horowitz & Sartaj GalGotia Publications
2. Data Structures & Algorithm in Java third edition – Adam Drozdek.

MSU/2016-17/UG-Colleges/Part-III (BCA) Semester-III & IV/Ppr.no.19/Allied Practical –III

DATA STRUCTURES LAB

1. Write a C++ program to implement sequential search and Binary search in array.

2. Write a C++ program to implement linked list and perform the following operations

    a) Add a node as first node.
    b) Add a node as last node.

3. Write a C++ program to implement linked list and implement the following Objects.
    a) Delete the first node.
    b) Delete the last node.

4. a. Write a C++ program to implement a stack linear list perform the push and pop Operations.
    b. Write a C++ program to implement a queue using circular list and implement add and delete operations.

5. Write a C++ program to implement binary tree using Linked and perform the following traversal
    a. In order traversal
    b. Pre order traversal
    c. Post order traversal

6. Write a C++ program to implement graph using Adjacency matrix and perform the following operations
    a. Depth first search
    b. Breath first search

7. Write a C++ program to implement merge sort.

8.Write a C++ program to implement quick sort.

MSU/2016-17/UG-Colleges/Part-III (BCA) Semester –III / Ppr.no.20/Skill Based – I

SKILLED BASED SUBJECTS SYLLABUS

Skill based subjects are practical oriented; One hour should be assigned for tutorial class and three hours of practical to do the given practical list.

OPTIONAL – I

DTP

Samples should be provided to the students for designing the given list.

Page Maker

1. Design of ID card (3”X2”) / Visiting card (3.5”X2”).
2. Design of an attractive Invitation card (5.5”X8”) / letter pad (7.5”X9”).
3. Preparation of a small booklet with 6 pages (3.6”X4.5”)
4. Design a handbill (5.5”X8.5”) / advertisement.
5. Design your college progress card / a Receipt bill with counter foil.

Photoshop

1. Design of a brochure for an institution.
2. Seasonal greeting card.
3. Transporting an image from one background to another.
4. Design a web page poster (1004x750) / Textbook cover page.
5. Crop an image/ rotate an image.

MSU/2016-17/UG-Colleges/Part-IV (BCA) Semester-III/Ppr.no.21(B)/Non Major Elective-1(B)

INTRODUCTION TO COMPUTERS

UNIT- I

Computer Basics: Introduction, Characteristics of Computers – Evolution of Computers, Generation of Computers, Classification of Computers, The Computer System, Application of Computers.

UNIT- II

Computer Organization and Architecture: Central Processing Unit, inside a computer, Data representation in Computer, Coding Schemes.

UNIT -III

Input/Output Units: Computer input units, Computer output units.

UNIT- IV

Computer Memory and Storage: Introduction, Memory Hierarchy, Random Access Memory (RAM), Read Only Memory (ROM), RAM, ROM and CPU interaction, Types of Secondary storage devices, Magnetic tape, Magnetic disk, types of magnetic disk, optical disk, type of optional disks.

UNIT- V

Operating System: Introduction, Operating System, Definition, Evolution of Operating System,Types of Operating System, Functions of Operating System.
Computer Software: Introduction, Computer Software, Definition, Categories of Software,Installing and Uninstalling software, Software piracy, Software terminologies.

Text Book:

Introduction to computer and Information Technology,D.Glory Ratha Mary, S.Selvanayahi, Shekina Publications.

Reference Books:

1. Introduction to computer, Peter Norton Tata McGraw Hill
2. Fundamental of Information Technology By Alexis Leaon & Mathews Leon Vikas Publication – New Delhi.

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SOFTWARE ENGINEERING

UNIT- I

Software and Software Engineering: The Nature of Software – What is Software Engineering? - Software engineering as a branch of the engineering profession – Stack holders in Software engineering - Software quality - Software engineering projects – Activities common to Software projects – Difficult and risk in software engineering as a whole.

Review of Object Orientation: What is object orientation/ - Classes and objects – Instance variables – Methods, Operations and Polymorphism – Concepts best define object orientation – Difficulties and risks in programming language choice and object – oriented programming.

UNIT- II

Developing Requirements: Domain analysis – The starting point for software projects – Defining the problem and the scope – What is a requirement? – Types of requirements – Some techniques for gathering and analyzing requirements – Managing changing requirements – Difficulties and risks in domain and requirements analysis.

UNIT- III

Modeling with Classes: What is UML? – Essentials of UML class diagrams – Associations and Multiplicity – Generalization – Instance diagrams – More advanced features of class diagrams. Modeling Interactions and Behavior: Interaction diagram – State diagrams – Activity diagrams.

UNIT- IV

Architecting and Designing Software: The process of design – Principles leading to good design – Techniques for making good design decisions – Software architecture – Architectural patterns – Writing agood designing document.

UNIT-V

Testing and Inspecting to Ensure High Quality: Basic definitions – Effective and efficient testing – Defects in ordinary Algorithms – Defects in numerical algorithms – Defects in timing and co-ordination:Deadlocks, live locks and critical races – Defects in handling stress and unusual Situations.

Managing the Software Process: What is project management? – Software process models – Costestimation – building software engineering teams – Project scheduling and tracking.

Text Book:

Object Oriented Software Engineering, Timothy C.Lethbridge and Robert Laganiere, TMH 2004

Reference Books:

1. Object Oriented and classical Software Engineering, Fifth Edition, Stephen, R. Schach, TMH

2.Fundamentals of Software Engineering, Second Edition, Cario Ghezzi, Medhi Jazayeri, Dino Mandrioli, PHI

MSU/2016-17/UG-Colleges/Part-III (BCA) /Semester- V/ Ppr.no.30/ Core-7

WEB TECHNOLOGY

UNIT- I

Introduction to the Web: Understanding the Internet and World Wide Web – History of the Web – Protocols Governing the Web – Creating Websites for Individuals and the Corporate World – Web Applications – Writing Web projects – Identification of Objects – Target Users – Web Team – Planning and Process Development – Web Architecture – Major Issues in Web Solution Development – Web Servers (Apache Web Server) – Web Browsers (Microsoft Internet Explorer and Netscape Navigator) – Internet Standards – TCP/IP Protocol Suite – IP Address – MIME – Cyber Laws. Hyper Text Transfer Protocol (HTTP): Introduction – Web servers and clients – Resources – URL and its Anatomy – Message Format – Example – Persistent and Non – persistent – Web Caching – Proxy.

UNIT- II

Huber Text Markup Language (HTML): History of HTML and W3C – HTML and its Flavors – HTML Basics – Elements, Attributes, and Tags – Basic Tags – Advanced Tags – Frames. Cascading Style Sheet (CCS): Introduction – Advantages – Adding CSS – Browser Compatibility – CSS and Page Layout – Selectors.

UNIT-III

JAVA Script: Introduction – Variables – Literals – Operators – Control Structure – Conditional statements – Arrays – Functions – Objects. JavaScript Regular **Expression:** Introduction.

UNIT- IV

Extensible Markup Language (XML): Common Usage – Role of XML – Prolog – Body – Elements –Attributes – Validation – Displaying XML – Namespace.

XML DTD: XML Schema Languages– Validation – Introduction to DTP – Purpose of DTP – Using aDTP in an XML Document – Element Type Declaration – Attribute Declaration.

UNIT- V

Common Gateway Interface (CGI): Internet Programming Paradigm – Server – side Programming – Languages for CGI – Applications – Server Environment – Environment Variables – CGI Building Blocks – CGI Scripting Using C, Shell Script – Writing CGI programs – CGI Security – Alternatives and Enhancements to CGI. Servlet: Server – Side Java – Advantages Over Applets - Servlet Alternatives – Servlet Strength – Servlet Architecture – Servlet Life Cycle - Generic Servlet and HttpServlet – First Servlet – Passing Parameters to Servlets – Retrieving Parameters – Limitations of Cookies – Deploying Filter – Problems with Servelet.

Text Book:

Web Technologies – Uttam K.Roy – Oxford University Press 2010.

Reference Books:

1. Web Technology and Design, C. Xavier, New Age International Publishers

2.Web Technologies TCP/IP Architecture and Java Programming Second Edition, Achyut S. Godbole & Atul Kahate, Tata McGraw Hill

3. Web Technology A Developer's Perspective, N.P.Gopalan, J.Akilandeswari, PHI

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RDBMS

UNIT- I

An overview: Personal databases – Client server databases – Oracle 9i An introduction – The SQL*Plus Environment – SQL – SQL*PLUS commands – Sample Databases.
Oracle Tables: Naming rules and conventions – Data types – Constrains – Creating an Oracle table – Displaying table information's – Altering and exiting table – Dropping a table – Renaming a table – Truncating a table.

UNIT- II

Working with tables: DML statements – Arithmetic operations – Where clause – sorting – Definecommand – Built in functions – Grouping data

UNIT- III

Multiple tables: Joints – Set operators – Sub query – Top – N Analysis
Advanced features: Views – Subsequences – Synonyms – Index – Transactions – Locking – Controllingaccess

UNIT- IV

PL/SQL: Fundamentals – Block structure – Comments – Data types – Variable declaration – Anchoreddeclaration – Assignment operation – Bind variables – Substitution Variables – Arithmetic operators.
Structures in PL/SQL: Control structures – Nested blocks – SQL in PL/SQL DML in PL/SQL –Transaction Control Statements.

UNIT- V

PL/SQL Cursors & Exceptions - PL/SQL Composite data types: Records, Tables and ARRAYS.

Text Book:

Database System Using Oracle – Second edition – Nilesh Shan – PHI 2007

Reference Book:

Oracle 9i Complete reference – Loney Koch - Tata McGraw Hill 2005

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RDBMS LAB

1. Create an employee database with tables department, employee details, address, pay details and project details. After the tables and add constraints relevant to the fields in the tables. Insert records into all the tables.
2. Create queries to retrieve relevant information from a table
3. Create a table from the exiting tables. Create views from the tables.
4. Develop queries to retrieve information from more than one table. Develop summary queries to retrieve relevant information from the table
5. Create a partition table and query the records.
6. Create a table with abstract data type and query the records.
7. Create a PL / SQL Program to print multiplication table.
8. Create a PL / SQL Program to check whether a given string is palindrome or not.
9. Create a PL / SQL Program to print student details using report
10. Create a Procedure to calculate Electricity Bill (use cursor)
11. Create a PL/SQL Program to perform updating using various triggers
12. Create a PL/SQL Program to find factorial of numbers using function and procedure