



BON SECOURS COLLEGE FOR WOMEN (AUTONOMOUS)

Accredited with 'A++' Grade by NAAC in Cycle II
Affiliated to Bharathidasan University, Tiruchirappalli
UGC Recognized 2(f) and 12(B) Institution
Vilar Bypass, Thanjavur – 613 006

DEPARTMENT OF COMPUTER SCIENCE

PGDCA

ODD SEMESTER

24PCD101: Programming in Java

Internal marks: 25

External marks: 75

Objective:

To Impart sound knowledge in Object Oriented Programming skills in JAVA

UNIT I

An overview of Java – Java Buzzwords- Data Types, Variables and Arrays - Operators – Control Statements- Introducing Classes: Class Fundamentals – Declaring Objects – Introducing Methods – Constructors – The this keyword – Garbage Collection – Overloading Methods – Call by value, Call by reference – Recursion– Understanding static – final – Nested and Inner classes.

UNIT II

Inheritance: Inheritance Basics – Using super – Method overriding –Dynamic Method Dispatch- Using Abstract Classes - Final with Inheritance- Object class. Packages and Interfaces:Declaring Packages – #Access Protection# – Importing Packages – Defining, Implementing, Applying Interfaces - Exception Handling: Exception Types – try, catch – throw – throws – finally –multiple catch and nested try statements- Creating Userdefined Exception classes.

UNIT III

Multithreaded Programming: The Java Thread Model – Creating a Thread –Creating Multiple Threads-Thread Priorities- Synchronization – #Inter-thread communication. String Handling# –The Collection Interfaces and Collection Classes: List,Set,Map,Enumeration and Iterator interfaces- ArrayList, LinkedList, Vector, Stack,Properties,HashTable, StringTokenizer, and Date classes.

UNIT IV

Files and IO Streams: File – The Byte Streams: InputStream, Output Stream, FileInputStream,FileOutputStream, PipedInputStream and PrintStream – The Character Streams: Reader, Writer. FileReader and FileWriter – Serialization. Networking- Networking classes and interfaces: InetAddress class -TCP/IP Client and Server sockets–Datagrams – URL and URLConnection classes.

UNIT V

Introduction to Applet class- Applet Architecture- The HTML APPLET tag – Passing parameters to Applets – Event handling: The Delegation Event Model, Event Classes, Event Listener Interfaces - Working with Graphics, Color and Font classes - Understanding Layout managers- Swing Component classes: JApplet, JFrame and JDialog - Text Fields, Buttons, Combo boxes, List ,Tabbed and Scroll Panes.Understanding Layout managers.

Text Book:

1. Herbert Schildt, The Complete Reference Java 2, Fifth Edition, TMH Education Pvt. Ltd.,2009.

UNIT I: Chapter 1 to 7 UNIT II: Chapter 8 to 10 UNIT III: Chapter 11,13, and 15, 16 UNIT IV: Chapter 17 and 18 UNIT V: Chapter 19 to 22, and 26

Books for Reference:

Herbert Schildt with Joe O' Neil, Java – Programmer's Reference, TMH, 2000

24PCD102: Operating Systems

Internal marks: 25

External marks: 75

Objective:

To present fundamental aspects of various managements in an operating

Unit I

Operating Systems Objectives and functions – Operating System and User /Computer Interface, Operating System as a Resource Manager: Evaluation of Operating Systems – Serial Processing, Sample Batch Systems, Time Sharing Systems.

Unit II

Process Description, Process Control – Processes and Threads. Concurrency – Principles of Concurrency, Mutual Exclusion – Software support, Dekker's Algorithm – Mutual Exclusion – Hardware support, Mutual Messages – Deadlock – Deadlock prevention, Deadlock Detection, Deadlock Avoidance – An Integrated deadlock Strategy.

Unit III

Memory Management – Memory Management Requirements – Fixed Partitioning, Placement Algorithm, Relocation in a Paging System – Sample Segmentation. Virtual Memory – Paging – Address Translation in a Paging System. Segmentation – Organization, Address Translation in a Segmentation System – Combined Paging and Segmentation – Virtual Memory – Operating System Software – Fetch Policy, Placement Policy and replacement Policy, Page buffering resident set Management.

Unit IV

Scheduling – Types of Scheduling, scheduling Algorithms, scheduling criteria, FIFO, Round Robin, Shortest Process next, Shortest Remaining Time, Highest response ratio and Feedback scheduling Performance comparison – Fair – Share Scheduling. I/O Management and disk scheduling – Organization of the I/O function – the Evaluation of the I/O function, Logical structure of the I/O function, I/O Buffering, Disk Cache.

Unit V

File Management – Files, File Management Systems, File System Architecture, Functions of File Management File Directories – File Sharing – Secondary Storage Management – File allocation.

Text Books

1. William Stallings, "Operating Systems", Second edition, Maxwell McMillan, International Editions, 1997.
2. Charles Crowley, "Operating Systems-A Design Oriented Approach", IRWIN Publications Chicago, 1997.

References

1. Ann McIver McHoes and Ida M. Flynn, Understanding Operating Systems, Sixth Edition, Course Technology, Cengage Learningm2011
2. Ann McHoes, Ida M. Flynn ,Understanding Operating Systems, Seventh Edition, Cengage Learning, 2013.
3. Deital H.M. "An Introduction to Operating Systems", Addison Wesley Publishing

24PCD103: Computer Organization and Architecture

Internal marks: 25

External marks: 75

Unit I

Number Systems – Decimal, Binary, Octal and Hexadecimal Systems – Conversion from one system to another – Binary Addition, Subtraction, Multiplication and Division – Binary Codes–8421, 2421, Excess-3, Gray, BCD – Alphanumeric Codes – Error Detection Codes.

Unit II

Basic Logic Gates – Universal Logic – Boolean Laws and Theorems – Boolean Expressions – Sum of Products – Product of Sums – Simplification of Boolean Expressions –Karnaugh Map Method (up to 4 Variables) – Implementation of Boolean Expressions using Gate Networks.

Unit III

Combinational Circuits – Multiplexers – Demultiplexers – Decoders – Encoders – Arithmetic Building Blocks – Half and Full Adders – Half and Full Subtractors – Parallel adder –2's Complement Adder – Subtractor – BCD Adder.

Unit IV

Sequential Circuits – Flip Flops – RS, Clocked RS, D, JK, T and Master-Slave Flip Flops – Shift Register – Counters – Asynchronous, MOD-n and Synchronous Counters – BCD Counter –Ring Counter.

Unit V

Central Processing Unit: General Register Organization – Stack Organization – Instruction Formats – Addressing Modes – Data Transfer and Manipulation – Program Control – Reduced Instruction Set Computer – CISC characteristics – RISC Characteristics.

Text Books:

1. Donald P. Leach, Albert Paul Malvino and Goutam Saha, Digital Principles and Applications, Tata McGraw Hill, Sixth Edition, Third Reprint, 2007.
Unit:I: Chapter-5 Section (5.1-5.8)
Unit:II: Chapter-2 Section (2.1-2.2), Chapter-3 Section (3.1, 3.2, 3.5, 3.7)
Unit: III: Chapter-4 Section (4.1-4.3, 4.6), Chapter-6 Section (6.7, 6.8)
2. Thomas C. Bartee, Digital Computer Fundamentals, Tata McGraw-Hill, Sixth Edition, Twenty Fifth Reprint, 2006.
Unit:III: Chapter-5 Section (5.1, 5.3, 5.10, 5.11) Unit:IV: Chapter-4 Section (4.1-4.9)
2. Morris Mano M, Computer System Architecture, Prentice Hall of India, Third Edition,2008.
Unit: I: Chapter-3 Section (3.5-3.6) Unit: V: Chapter-8 Section (8.2-8.8)

Books for Reference:

1. Morris Mano. M, Digital Logic and Computer Design, Prentice Hall of India, 2008.
2. Linda Null, Julia Lobur, The Essentials of Computer Organization and Architecture, Fourth Edition 2014

24PCD151: Java Programming Lab

Internal marks: 40

External marks: 60

Objective:

To get hands on experience in developing Programs using Java.

1. Assume that a bank maintains 2 kinds of account for its customers' one called savings account and the other current account' The savings account provides compound interest and withdraw facilities but no cheque book facility. The current account provides cheque book facility but no interest. Current account falls below this level a service charge is imposed. Create a class Account that stores customers name' account number and type of account. From this derive the classes curr-acct and sav-acct to make them more specific to their requirements. Introduce the necessary methods in order to achieve the following tasks:

- a. Accept deposit form a customer and update the balance.
 - b. Display any deposit interest
 - c. Compute and deposit interest.
 - d. Permit withdrawal and update the balance.
 - e. Check for the minimum balance' impose penalty' if necessary and update the balance.
2. Use constructors and methods to initialize the class members. Write a program that accepts a shopping list of five items from the command line and stores them in a vector and accomplish the following:

- a. To delete an item in the list.
 - b. To add an item at a specified location in the list.
 - c. To add an item at the end of the list.
 - d. To print the contents of the vector.
3. Implementation of the concept of multiple inheritance using interfaces and design a package to contain the class students and another package to contain the interfaces sports.
4. Develop a simple real-life application program to illustrate the use of multithreads.
5. Create a try block that is likely to generate three types of exception and then incorporate necessary catch blocks to catch and handle them appropriately.
6. Write a Java applet' which will create the layout below:

FORMAT

Enter your Name:

Enter your Age:

Select City: *Delhi *Madras

Select SIW: *Oracle *Visual Basic *Java

OK CANCEL

Handle the following simple validations.

The name entered should be less than 25 characters wide.

Age entered should be done as the user exits the fields as well as when OK button is pressed. Hint use the Boolean action (Event evt' object arg).

7. Write an Applet which will play two sound notes in a sequence continuously use the play () methods available in the applet class and the methods in the Audio clip interface.

24PCD152: HTML Lab

Internal marks: 40

External marks: 60

Objective:

To provide learners with a comprehensive understanding and hands-on experience in fundamental HTML concepts and tags. The aim is to equip students with the skills necessary to structure web pages effectively and utilize various HTML elements to create interactive and well-formatted web content.

Syllabus:

1. Develop a program to illustrate body and pretags.
2. Develop a Program to illustrate text Font tag.
3. Develop a Program to illustrate comment, h1...h6, and div tag.
4. Develop a Program to illustrate text formatting tags.
5. Develop a Program to illustrate Order List tag.
6. Develop a Program to illustrate Unordered List tag.
7. Develop a program to illustrate Nested and Definition tag.
8. Develop a program to illustrate Hyper Link tag (Anchor tag).
9. Develop a Program to illustrate Table tag.
10. Develop a Program to illustrate Frame tag.
11. Write HTML code for develop a form.

EVEN SEMESTER

24PCD105: DATA BASE SYSTEMS

Internal marks : 25

External marks: 75

To impart knowledge about relational database and distributed database.

Unit I

Introduction – purpose of database systems – Data Abstraction – Data models – Instances and schemes – Data independence – DDL – DML – Database users – ER model – Entity sets – Keys – ER diagram – relational model – Structure – Relations Algebra – Relational Calculus – Views.

Unit II

SQL – QBE – QUEL – Basic structure – various Operations – Relational database design problems in the relational data base design – Normalization – normalization using functional, Multi value and join dependencies.

Unit III

File and system structure – overall system structure – file Organization – data dictionary – Indexing and hashing – basic concept B and B+ tree indices – Static and Dynamic hash functions.

Unit IV

Recovery and atomicity – failures classification and types – Transaction model and Log based recovery, schedules – serial and non-serial types – Serialization of schedules and views – testing for seriability – lock based protocols – time based protocols.

Unit V

Distributed data bases – structure of distributed databases – Trade offs in Distributing the database – Transparency and autonomy - security and integrity violations – authorization and views – security specification – encryption – Statistical databases.

Text Book(s):

1. Henry F.Korth, and Abraham Silberschatz, Sudarshan “Database system Concepts”, McGraw Hill, 4th Edition, 2016

References:

1. Hector Garcia Molina, Jeffrey D Ullman, JenniferWisdom,Database Systems: The Complete Book., Pearson Education 2013.
2. Pipin C. Desai, “An Introduction to data base systems”, Galgotia Publications Private Limited, 1991.
- C.J. Date, “An Introduction to Database Systems”, 3rd Edition, Addison Wesley 1983.

24PCD154: DATA BASE SYSTEMS LAB

Internal marks : 40

External marks: 60

Objective :

To provide hands-on experience in designing, implementing, and querying databases using SQL. Students will learn to create and manage database schemas, perform data manipulation.

Syllabus:

1. Create a table and perform the following basic mysql operations
 - a) Set the primary key
 - b) Alter the structure of the table
 - c) Insert values
 - d) Delete values based on constraints
 - e) Display values using various forms of select clause
 - f) Drop the table
2. Develop mysql queries to implement the following set operations
 - a) Union
 - b) Union all
 - c) Intersect
 - d) Intersect all
3. Develop mysql queries to implement the following aggregate functions
 - a) Sum
 - b) Count
 - c) Average
 - d) Maximum
 - e) Minimum
 - f) Group by clause & having clause
4. Develop mysql queries to implement following join operations
 - a) Natural join
 - b) Inner join
 - c) Outer join-left outer, right outer, full outer
 - d) Using join conditions
5. Develop mysql queries to implement nested subqueries
 - a) Set membership (int, not int)
 - b) Set comparison (some, all)
 - c) Empty relation (exists, not exists)
 - d) Check for existence of Duplicate tuples(unique, not unique)

24PCD106: COMPUTER NETWORKS

Internal marks : 25

External marks: 75

Objective:

To understand the Design and Organization of Computer Networks

Syllabus:

Unit I

Overview and Physical Layer: Introduction: Data Communications - Network- Network Types, Network Models: TCP/IP Protocol Suite- The OSI Model, Bandwidth utilization : Multiplexing- Spread Spectrum, Transmission Media: Guided Media-Unguided Media, Switching: Circuit Switched Network-Packet Switching- Structure of a switch

Unit II

Data Link Layer: Error Deduction and Correction : Introduction- Cyclic codes- Forward error correction, Data link Control: Data link layer protocols- Media Access Control: Random Access- Controlled Access, Wireless Networks: - Bluetooth-Cellular Telephone- Satellite network- Connection devices,

Unit III

Network Layer Services : Packet Switching- Network layer performance- IPV4 Addresses- Internet Protocol-Routing Algorithms

Unit IV

Transport Layer : Transport Layer Protocols- User Datagram Protocol - TCP:TCP Services TCP features - Windows in TCP - Flow Control - Error Control

Unit V

Application Layers : Client Server Programming - Word Wide Web & HTTP - FTP- Email - DNS

Text Book:

1. Data Communications and Networking, Behrouz A Forouzan, Tata McGrawHill, Fifth Edition, 2013.

Reference Book:

1. Data Communications and Networks, Achyut Godbole and Atul Kahate, McGraw Hill Education, 2011.

24PCD104: WEB PROGRAMMING

Internal marks : 25

External marks: 75

Objective:

It aims to provide hands-on knowledge in JDBC, Applets, AWT, and event-driven programming. Students will also learn to work with XML and Web Services for building dynamic and interactive web applications.

Syllabus:

UNIT- I SCRIPTING:

Web page Designing using HTML, Scripting basics- Client side and server side scripting. Java Script-Object, names, literals, operators and expressions- statements and features- events

UNIT- II JAVA:-

Introduction to object-oriented programming-Features of Java – Data types, variables and arrays, Operators – Control statements – Classes and Methods – Inheritance

UNIT - III JDBC:-

JDBC Overview – JDBC implementation – Connection class – Statements - Catching Database Results, handling database Queries. Networking– InetAddress class

UNIT - IV APPLETS:

Java applets- Life cycle of an applet – Adding images to an applet – Adding sound to an applet. Passing parameters to an applet. Event Handling. Introducing AWT: Working with Windows Graphics and Text. Using AWT Controls, Layout Managers and Menus

UNIT -V XML AND WEB SERVICES:

XML – Introduction-Form Navigation-XML Documents- XSL – XSLT- Web services- UDDI-WSDL-Java web services – Web resources.

TEXTBOOKS:

1. Harvey Deitel, Abbey Deitel, Internet and World Wide Web: How To Program 5th Edition.
2. Herbert Schildt, Java - The Complete Reference, 7th Edition. Tata McGraw- Hill Edition.
3. Michael Morrison XML Unleashed Tech media SAMS.

REFERENCES:

1. John Pollock, Javascript - A Beginners Guide, 3rd Edition -- Tata McGraw-Hill Edition.
2. Keyur Shah, Gateway to Java Programmer Sun Certification, Tata McGraw Hill, 2002

24PCD153: WEB PROGRAMMING LAB

Internal marks : 40

External marks: 60

Objective:

To equip students with practical skills in web development and basic programming using HTML, CSS, JavaScript, Java Applets, and XML for creating interactive and structured web applications.

Syllabus:

1. Create a form that collects personal information (name, age, email, etc.) from the user.
2. Apply some basic CSS to style a web page, changing the text color, background, and font.
3. Create a simple image gallery with a grid layout using HTML and CSS.
4. Create a simple calculator that performs basic arithmetic operations (addition, subtraction, multiplication, division).
5. Create a basic to-do list where you can add and remove tasks.
6. Create a countdown timer that counts down from 10 seconds to 0.
7. Create a simple Java Applet that displays a window with a label, a text field, and a button. When the button is clicked, it displays a greeting message.
8. Create a simple XML document that represents a book catalog.