

DEPARTMENT OF INFORMATION TECHNOLOGY
JAMAL MOHAMED COLLEGE (AUTONOMOUS)
TIRUCHIRAPPALLI – 620020



MASTER OF INFORMATION TECHNOLOGY
SYLLABUS – 2017
UNDER CHOICE BASED CREDIT SYSTEM

JAMAL MOHAMED COLLEGE (Autonomous), Tiruchirappalli-620 020
M.Sc .(IT)Programme –Course Structure under CBCS

(For the candidate admitted from the academic year 2017-2018 onwards)

SEM	Course Code	Course	Course Title	Ins. Hrs	Credit	Marks		Total
						CIA	ESE	
I	17PIT1C1	Core- I	Web Technology	6	5	25	75	100
	17PIT1C2	Core - II	Data Structures and Algorithms	6	5	25	75	100
	17PIT1C3	Core- III	RDBMS	6	4	25	75	100
	17PIT1C4P1	Core- IV A	Web Technology Lab	3	2	10	40	50
	17PIT1C4P2	Core- IV B	RDBMS Lab	3	2	10	40	50
	17PIT1CE1 A/B	Elective- I #		6	4	25	75	100
		TOTAL			30	22		
II	17PIT2C5	Core- V	Advanced Java Programming	6	5	25	75	100
	17PIT2C6	Core- VI	Distributed Operating Systems	6	5	25	75	100
	17PIT2C7	Core- VII	Software Testing	6	4	25	75	100
	17PIT2C8P	Core- VIII	Advanced Java Programming Lab	6	4	20	80	100
	17PIT2CE2 A/B	Elective- II #		6	4	25	75	100
		TOTAL			30	22		
III	17PIT3C9	Core- IX	Mobile Standard and Architecture	6	5	25	75	100
	17PIT3C10	Core- X	Web Services	6	5	25	75	100
	17PIT3C11	Core- XI	Cloud Computing	6	4	25	75	100
	17PIT3C12P1	Core- XII A	Mobile Application Development Lab	3	2	10	40	50
	17PIT3C12P2	Core- XII B	Web Services Lab	3	2	10	40	50
	17PIT3CE3 A/B	Elective- III #		6	4	25	75	100
	17PIT3EC1	Extra Credit - I	Information Security	-	5*	-	100	100*
		TOTAL			30	22		
IV	17PIT4C13	Core- XIII	Open Source Technology	6	5	25	75	100
	17PIT4C14P	Core- XIV	Open Source Technology Lab	6	5	20	80	100
	17PIT4PW	Project		18	14	-	300	300
	17PIT4EC2	Extra Credit - II	Enterprise Resource Planning	-	5*	-	100	100*
		TOTAL			30	24		
GRAND TOTAL				120	90			2000

*Not considered for grand total and CGPA

Core Based Electives

SEMESTER	COURSE CODE	COURSE TITLE
I	17PIT1CE1A	Mobile Communications
	17PIT1CE1B	Computer Networks
II	17PIT2CE2A	Data Mining
	17PIT2CE2B	Cryptography and Network Security
III	17PIT3CE3A	Big Data Analytics
	17PIT3CE3B	TCP/IP Programming

SEMESTER – I: CORE – I: WEB TECHNOLOGY

Course Code : 17PIT1C1
Hours/ Week : 6
Credit : 5

Maximum Marks : 100
Internal Marks : 25
External Marks : 75

Objective To understand the various concepts of web technologies

UNIT I **18 Hours**
HTML: Introduction- SGML – Head Section – Body Section – HTML forms – DHTML – Introduction – CSS

UNIT II **18 Hours**
JavaScript: JavaScript in Web Pages – The Advantages of JavaScript – Writing JavaScript into HTML – Basic Programming Techniques – JavaScript Array – Operators and Expressions – Constructs and conditional checking – Functions

UNIT III **18 Hours**
Placing text in a browser – Dialog Boxes – JavaScript DOM – Understanding objects in HTML – Browser objects – Handling events using JavaScript - Form object's methods – Built in objects – user defined objects.

UNIT IV **18 Hours**
What is XML? – Your first XML document – Attributes – XSL – Well formedness – DTDs and validity – Element declarations – Entity declarations – Attribute declarations.

UNIT V **18 Hours**
Python: Lexical matters – Built in data types – Functions and Classes – Statements – Functions, Modules, Packages and Debugging.

Text Books

1. N.P. Gopalan, J.Akilandeswari, Web Technology – A Developer's Perspective, Eastern Economy Edition.

UNIT I - Chapter 4 (4.1, 4.2, 4.4, 4.5, 4.6), Chapter 7 (7.1, 7.2)

2. Ivan Bayross, Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI, and BPB Publication

UNIT II & UNIT III – Chapter 8, 9 & 10

3. Eliote Rusty Harold, "XML Bible", Wrox Publications, 2nd Edition

UNIT IV – Chapter 1, 3, 5, 6, 8, 9, 10 & 11

4. Dave Kuhlman, A Python Book: Beginning Python, Advanced Python and Python exercises, 1st Edition

UNIT V – Chapter 1 (1.2, 1.3, 1.4, 1.5, 1.6, 1.7)

Reference Book

A.A.Puntambekar, Web Technologies, Technical Publications, Pune, 2009

SEMESTER – I: CORE - II: DATA STRUCTURES AND ALGORITHMS

Subject Code : 17PIT1C2

Hours : 6

Credits : 5

Maximum Marks : 100

Internal Marks : 25

External Marks : 75

Objective

To give a detailed knowledge on Data structures and to give an exposure in the development of algorithms related to data structures

UNIT I

18 Hours

Lists, Stacks and Queues: Abstract Data Types (ADTs) - The Stack ADT - The Queue ADT

UNIT II

18 Hours

Trees: Introduction - Binary Trees - Representing Binary Trees in Memory - Traversing Binary Trees - Traversal Algorithms using Stacks - Header Nodes: Threads. Binary Search Trees - Searching and Inserting in Binary Search Trees - Deleting in a Binary Search Tree - AVL Search Trees - Insertion in an AVL Search Tree - Deletion in an Search Tree - m-way Search Trees - Searching Insertion and Deletion in an m-way Search Tree - B Trees - Searching Insertion and Deletion in B Trees - Heap: Heapsort. Path Lengths: Huffman's Algorithm - General Trees

UNIT III

18 Hours

DIVIDE AND CONQUER: The General Method – Defective Chessboard – Binary Search – Finding the Maximum and Minimum – Merge Sort – Quick Sort – Selection - Strassen's Matrix Multiplication

UNIT IV

18 Hours

THE GREEDY METHOD: General Method - Container Loading - Knapsack Problem - Tree Vertex Splitting – Job Sequencing With Deadlines - Minimum Cost Spanning Trees - Optimal Storage On Tapes – Optimal Merge Patterns - Single Source Shortest Paths

UNIT V

18 Hours

DYNAMIC PROGRAMMING: The General Method – Multistage Graphs – All-Pairs Shortest Paths – Single-Source Shortest Paths - Optimal Binary Search Trees - String Editing - 0/1 Knapsack - Reliability Design - The Traveling Salesperson Problem - Flow Shop Scheduling. BACKTRACKING: The General Method – The 8-Queens Problem – Sum of Subsets – Graph Coloring – Hamiltonian Cycles – Knapsack Problem

Text Books

1. Mark Allen Weiss, “*Data Structures an Algorithm Analysis in C*”, Pearson publishing Company Limited, Second Edition, Reprint, Eleventh Impression 2009

UNIT I : Chapter 3

2. Seymour Lipschutz, *Data Structures* (Schaum's Outlines), Tata McGraw-Hill Publishing Company Limited, Fourth Reprint, 2006

UNIT II : Chapter 7

3. Ellis Horowitz, SatrajSahni and Sanguthevar Rajasekaran, *Fundamentals of Computer Algorithms*, Universities Press, Second Edition, Reprint 2009

UNIT III : Chapter 3 (3.1 – 3.8)

UNIT IV : Chapter 4

UNIT V: Chapter 5 and 7

Reference Book

Introduction to Algorithms^{3rd}EditionSep2010 Charles E. Leiserson. Ronald L. Rivest. Clifford Stein

SEMESTER – I: CORE – III: RDBMS

Subject Code : 17PIT1C3

Hours : 6

Credits : 4

Maximum Marks : 100

Internal Marks : 25

External Marks : 75

Objective To understand the concepts Relational Database Management Systems.

UNIT I

18 Hours

Introduction: Database System Applications – Purpose of Database Systems – Views of Data – Database Languages – Data Storage and Querying – Database Architecture – Database Users and Administrator – Structure of Relational Database – Keys – Schema Diagrams – Formal Relational Query Languages: Relational Algebra

UNIT II

18 Hours

Introduction to SQL: Over View of SQL – SQL Definition – Basic Structure of SQL Queries – Additional Basic Operations – Set Operations – Null Values – Aggregate Functions – Nested Sub queries – Modification of the database

UNIT III

18 Hours

Intermediate SQL: Join Expression – Views – Integrity Constraints – Authorization – Advanced SQL: Accessing SQL From a Programming Language – Functions and Procedure – Trigger – Recursive Queries

UNIT IV

18 Hours

Entity-Relationship Model – Constraints – Removing Redundant Attributes in Entity Sets – Entity-Relationship Diagram. Functional Dependencies: Basic Definition – Trivial and Non Trivial Dependencies – Closure of a Set of Dependencies – Non-loss Decomposition – First, Second, Third Normal forms – BCNF – Multi-valued Dependencies – Join Dependencies

UNIT V

18 Hours

Transaction: Transaction Concept – A simple Transaction Model – Storage Structure – Transaction Atomicity and Durability – Transaction Isolation – Serializability – Concurrency Control: Lock-Based Protocol – Timestamp-Based Protocol – Validation-Based Protocol – Recovery Systems: Failure Classification – Recovery and Atomicity

Text Books

1. Abraham Silberschatz, Hendry F. Korth and S. Sudarshan, Database System Concepts, 6th Edition, Mcgraw- Hill International Edition.

UNIT I : Chapter (1.1-1.5, 1.9, 1.12, 2.1, 2.3, 2.4, 6.1)

UNIT II : Chapter (3.1 – 3.9)

UNIT III : Chapter (4.1 – 4.4, 4.6, 5.1 – 5.4)

UNIT IV : Chapter (7.1 – 7.5)

UNIT V : Chapter (14.1 – 14.6, 15.1, 15.4, 15.5, 16.1, 16.3)

2. C.J Date, A. Kannan and S.Swaminathan, An Introduction to Database Systems, 8th Edition, Pearson Education Asia.

UNIT IV : Chapter (11.2 – 11.4, 12.2, 12.3, 12.5, 13.2, 13.3)

Reference Book

Fundamentals of Database Systems, 5th Edition by Ramez Elmasri, Shamkant B. Navathe, Pearson Education Ltd.

SEMESTER – I: CORE – IV A: WEB TECHNOLOGY LAB

Course Code : 17PIT1C4P1
Hours/ Week : 3
Credit : 2

Maximum Marks : 50
Internal Marks : 10
External Marks : 40

1. Create a web page with Four Frames (Picture, List, Table and Hyperlink)
2. Create a web page to prepare a bio data form
3. Create a web page in HTML using Cascading Style Sheets
4. Write a JavaScript to perform all arithmetic operations
5. Write a JavaScript to check whether the given integer is palindrome or not
6. Write a JavaScript to create a blinking effect on web page
7. Design a simple calculator using HTML and JavaScript
8. Write a JavaScript to sort the given array in ascending and descending order
9. Write a JavaScript to generate a Fibonacci series
10. Write a XML program using XSLT/XSL
11. Design an XML program to store information about a student in arts and science colleges affiliated to Bharathidasan University. The information must include Register Number, Name and Name of the College, Branch, Year of Joining, and e-mail id. Make up sample data for 3 students. Create a CSS style sheet and use it to display the document
12. Write a Python class to find a pair of elements from a given array [10, 20, 10, 40, 50, 60, and 70] whose sum equals to 50
13. Write a Python program to reverse a string
14. Write a Python program to convert temperatures to and from celsius, fahrenheit
15. Write a Python script to sort (ascending and descending) a dictionary by value

SEMESTER – I: CORE – IV B: RDBMS LAB

Course Code : 17PIT1C4P2
Hours/ Week : 3
Credit : 2

Maximum Marks : 50
Internal Marks : 10
External Marks : 40

I. Data Definition Languages

1. Create the following relations

Customer (customer-Id (Primary key), customer-name, address)

Account (account-number (Primary key), branch-name, and balance)

Loan (loan-number (Primary key), branch-name, and amount)

Branch (branch-name, branch-city, assets)

Depositor (customer-name, account-number)

Borrower (customer-name, loan-number)

Supplier (supplier-number, part-number, color, quantity) use candidate key

2. Write DDL query to perform foreign key with on delete cascade - A foreign key with cascade delete means that if a record in the parent table is deleted, then the corresponding records in the child table will automatically be deleted.

3. Write DDL query to change the column and table name.

4. Alter with three options

Add – add columns in the existing table

Modify – modify the data type and size in the existing table

Drop – delete column from existing table

II. Data Manipulation Languages

(1) Insert Operation

(2) Rename Operation

Display the customer-name instead of customer-id

(3) Tuple Variables

Using branch relation, Find the names of all branches that have assets greater than at least one branch located in a city (any city)

(4) String Operations

Find the customer names whose names start with M.

Find the customer names whose names end with R.

Find the customer name whose names contain “mo” as a substring

Find the customer name whose names exactly six character.

Find the customer name whose names at least five character.

(5) Ordering of Tuples

To list in alphabetic order all customers who have loan at a branch (ex: cantonment)

To list customer names in descending order.

(6) Set Operation – (union, Intersect, minus)

Find all customers having a loan, an account or both at the bank.

Find all customers who have both a loan and account at the bank.

Find all customers who have an account but no loan at the bank.

Find all customers who have a loan but not an account at the bank.

- (7) Aggregate functions – (average, minimum, maximum, total, and count)
Find average account balance at a branch. (Any branch name like cantonment branch)
Find the minimum balance at a branch.
Find the maximum balance at a branch.
Find the total balance at a branch
Find the number of accounts in a branch.
- (8) Aggregate functions with group by and having clause)
Find the average account balance at each branch.
Find branch names those branches where the total balance is more than Rs. 1, 00,000.
Find the branches those branches where the total accounts are more than 3.
- (9) Nested sub-queries. Membership (in and not in)
Find all customers who have both a loan and account at the bank.
Find all customers who have an account but no loan at the bank.
Set Comparison (some, all)
Using branch relation, Find the names of all branches that have asset value greater than at least one branch located in a city (any city)
Find the names of all branches that have asset value greater than that of each branch located in a city (any city)
- (10) Views
Create the view consisting of customer-names and branch-names who have either loan or an account at the branch.
- (11) Deletion
Delete the tuples of all accounts with balances below the average at the bank (sub-query).
Delete all accounts tuples at every branch located in a city(any city)
- (12) Updates
All balances are to be increased by 5 percent.
Update with case statements
All accounts with balances over 10000 receives 10 percent interest where as others receive 5 percent
- (13) Join Operations
Inner join – Find the customer-names who have loan from a branch (KK nagar)
Left outer join – Show the relation, which loan not buy a single customer.
Right outer join – Show the relation, which customers bought loan, that loan details
Not in the loan relation

III. PL/SQL Procedure

1. Reverse the string.
2. Student Mark Sheet Preparation
3. Pay Roll preparation
4. Find factorial number using recursive function.
5. Find Fibonacci series using recursive function.

IV. SQL FORMS

1. Student Mark System
2. Pay Roll Preparation
3. Income Tax Calculation

SEMESTER – I: ELECTIVE – I: MOBILE COMMUNICATIONS

Course Code : 17PIT1CE1A
Hours/ Week : 6
Credit : 4

Maximum Marks : 100
Internal Marks : 25
External Marks : 75

Objective

To understand the concepts of Mobile communications

UNIT I

18 Hours

Introduction: Applications – History of wireless communication – Market for mobile communications – Open research topics – Simplified reference model Wireless transmission: Multiplexing – Cellular systems Medium Access Protocol: Comparison of S/T/F/CDMA

UNIT II

18 Hours

Telecommunication systems: GSM Satellite systems: History – Applications – Basics – Routing – Localization – Handover

UNIT III

18 Hours

Wireless LAN: Infra-red vs radio transmission – Infrastructure and ad-hoc network – System architecture – Protocol architecture – Historical HIPERLAN – Bluetooth User Scenarios – Architecture

UNIT IV

18 Hours

Mobile network layer: Mobile IP – Dynamic host configuration protocol – Mobile ad-hoc networks

UNIT V

18 Hours

Mobile transport layer: Traditional TCP – Classical TCP improvements – TCP over 2.5/3G wireless networks Support for mobility: Wireless application protocol Architecture – Wireless datagram protocol – Wireless application environment – Wireless markup language – WML Script

Text Book

Jochen Schiller, *Mobile Communications*, Pearson Education, Second Edition, 2011.

UNIT I : Chapter 1, 2 & 3 (1.1 to 1.5, 2.5, 2.8, 3.6)

UNIT II : Chapter 4 & 5 (4.1, 5.1 to 5.6)

UNIT III : Chapter 7 (7.1, 7.2, 7.3.1, 7.3.2, 7.4.1, 7.5.1, 7.5.2)

UNIT IV : Chapter 8 (8.1, 8.2, 8.3)

UNIT V : Chapter 9 & 10 (9.1, 9.2, 9.3, 10.3.1, 10.3.2, 10.3.6, 10.3.7, 10.3.8)

Reference Book

T.G. Palanivelu, R.Nakkeeran, *Wireless and Mobile Communication*, PHI Learning Private Limited, New Delhi, 2009

SEMESTER – I: ELECTIVE – I: COMPUTER NETWORKS

Course Code : 17PIT1CE1B
Hours/ Week : 6
Credit : 4

Maximum Marks : 100
Internal Marks : 25
External Marks : 75

Objective To provide an overall knowledge in computer communication networks.

UNIT I **18 Hours**

INTRODUCTION: Data communications – Networks – Internet. Network Models: The OSI Model – Layers in the OSI Model – TCP/IP Protocol suite – Physical Layer: Multiplexing – Transmission Media: Guided Media.

UNIT II **18 Hours**

Data Link Layer: Error Detection and Correction- Introduction – Blocking coding – Cyclic Codes – Checksum. Data Link Control: Framing – # Flow and Error Control # – Protocols – Noiseless Channels – Noisy Channel – HDLC

UNIT III **18 Hours**

Network Layer Design Issues – Routing Algorithms: The Optimality Principle – Shortest Path Algorithm – Flooding – Distance Vector Routing – Link State Routing – Hierarchical Routing – Broadcasting Routing – Congestion Control Algorithms – Network Layer in the Internet: The IP Version 4 Protocol – IP Addresses – # IP Version 6 #

UNIT IV **18 Hours**

Transport Layer: Process to Process Delivery – User Datagram Protocol (UDP) – TCP. Application Layer: Name Space – Domain Name Space – Distribution of Name Space – DNS in the Internet – Remote Logging – E-Mail – # File Transfer #

UNIT V **18 Hours**

Network Security: Cryptography - Introduction to Cryptography - Substitution Ciphers - Transposition Ciphers – DES – RSA – Digital Signature: Symmetric Key Signature – Public Key Signature – Communication Security: Firewalls – VPN. Authentication Protocols: Authentication Based on a Shared Secret Key - Establishing a Shared Key: The Diffie-Hellman Key Exchange. E-Mail Security: PGP – Web Security: Threats – # Secure Naming #- SSL

..... # **Self-study portion.**

Text Books

1. Behrouz A Forouzan, Data Communications and Networking, Fourth Edition, Tata McGraw-Hill, Special Indian Edition 2006

UNIT I : Chapter 1.1 – 1.3, 2.2 – 2.4, 6.1, 7.1
UNIT II : Chapter 10.1, 10.2, 10.4, 10.5, 11.1 – 11.6,
UNIT IV : Chapter 23.1 – 23.3, 25.1 – 25.4, 26.1 – 26.3

2. Andrew S. Tanenbaum, David J. Wetherall, Computer Networks, Fifth Edition, Pearson Education, Inc., Publishing as Prentice Hall, 2011

UNIT III : Chapter 5.1.1 – 5.1.5, 5.2.1 – 5.2.7, 5.3.1 – 5.3.5, 5.6.1 – 5.6.3
UNIT V : Chapter 8.1.1 – 8.1.3, 8.2.1, 8.3.1, 8.4.2, 8.4.3, 8.6.2, 8.6.3, 8.7.1, 8.7.2, 8.8.1, 8.9.1 – 8.9.3

Reference Book

William Stallings, Data and Computer Communication, PHI, Eighth Edition, 2009

SEMESTER – I: CORE - I: ADVANCED JAVA PROGRAMMING

Course Code : 17PIT2C5

Hours/Week : 6

Credit : 5

Maximum Marks : 100

Internal Marks : 25

External Marks : 75

Objective To impart sound knowledge in Object Oriented Programming skills in JAVA.

UNIT I

18 Hours

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. Inheritance: Inheritance Basics – Using super – Method overriding –Dynamic Method Dispatch- Using Abstract Classes

UNIT II

18 Hours

Packages and Interfaces: Declaring Packages – Access Protection – Importing Packages – Defining, Implementing, Applying Interfaces - Exception Handling: Exception Types – try, catch – throw – throws – finally – Creating User-defined Exceptions. Multithreaded Programming: The Java Thread Model – Creating a Thread – Thread Priorities - String Handling

UNIT III

18 Hours

The Collection Interfaces and Utility Classes: List, Set, Map, Enumeration - ArrayList, LinkedList, Vector, Stack, StringTokenizer, and Date classes. Files and IO Streams: File – The Byte Streams:FileInputStream – FileOutputStream – SequenceInputStream – PrintStream. The Character Streams: FileReader – FileWriter – BufferedReader - BufferedWriter – Serialization

UNIT IV

18 Hours

Networking: Networking Basics – InetAddress- TCP/IP Client and Server Sockets–URL-Datagrams. Java Database Connectivity: Establishing a connection – Creation of data tables – Entering data into table – Table Updating – Use of PreparedStatement – obtaining metadata – using transactions

UNIT V

18 Hours

Understanding Layout Managers – Event Handling: Event Model – Event Classes – Event Listeners and Interfaces. Swing Component classes: Icons and JLabels - JText Fields – JButtons - JCombo boxes - JTabbed and JScroll Panes – JTrees – JTables

Text Books

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

UNIT I : Chapter 6, 7, 8

UNIT II : Chapter 9, 10, 11

UNIT III : Chapter 15, 17

UNIT IV : Chapter 18

UNIT V : Chapter 20, 26

2. C. Muthu, Programming with Java, Vijay Nicole imprints private Limited, 2004.

UNIT IV : Chapter 18

Reference Book

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

SEMESTER – II: CORE–VI: DISTRIBUTED OPERATING SYSTEMS

Course Code : 17PIT2C6
Hours/Week : 6
Credit : 5

Maximum Marks : 100
Internal Marks : 25
External Marks : 75

Objective To understand the concepts of Distributed Operating Systems

UNIT I

18 Hours

Fundamentals: Distributed Computing System – Evolution of Distributed Computing Systems – Distributed Computing System Models – Distributed Computing Systems Gaining Popularity – Distributed Operating Systems – Issues in Designing Distributed Operating System – Distributed Computing Environment Computer Networks: Protocols for Distributed Systems

UNIT II

18 Hours

Message Passing: Introduction – Features of Good Message Passing System – Issues in IPC by Message Passing – Buffering – Process Addressing – Failure Handling – Group Communication Remote Procedure Calls: Introduction – RPC Model – Implementing RPC Mechanism – Communication Protocols for RPCs

UNIT III

18 Hours

Distributed Shared Memory: Introduction – General Architecture of DSM Systems – Design and Implementation Issues of DSM – Granularity – Structure of Shared Memory Space – Consistency Models – Replacement Strategy – Thrashing – Heterogeneous DSM – Advantages of DSM Synchronization: Introduction – Handling Deadlocks in Distributed Systems

UNIT IV

18 Hours

Resource Management: Introduction – Features of Good Global Scheduling Algorithm – Task Assignment Approach – Load Balancing Approach – Load Sharing Approach Process Management: Process Migration – Threads

UNIT V

18 Hours

Distributed File Systems: Introduction – Features of Good Distributed File System – File Models – File Accessing Models – File Sharing Semantics – File Caching Schemes – File Replication – Fault Tolerance – Atomic Transactions

Text Book

Pradeep K. Sinha, *Distributed Operating Systems Concepts and Design*, PHI Learning Pvt. Ltd, 2013.

UNIT I : Chapter 1 & 2 (2.5.2)

UNIT II : Chapter 3 (3.1, 3.2, 3.3, 3.5, 3.8, 3.9, 3.10) & 4 (4.1, 4.2, 4.4, 4.11)

UNIT III : Chapter 5 & Chapter 6 (6.5.3) **UNIT IV** : Chapter 7 & Chapter 8

UNIT V : Chapter 9

Reference Book

Distributed Systems Principles and Paradigms, Andrew S. Tanenbaum, Maarten van Steen, 2nd Edition, 2007, Prentice-Hall, Inc.

SEMESTER – II: CORE – VII: SOFTWARE TESTING

Subject Code : 17PIT2C7
Hours/Week : 6
Credits : 4

Maximum Marks : 100
Internal Marks : 25
External Marks : 75

Objective

To realize the Software Development Phases, Models, and Software Testing Concepts, Types, Approaches, and Tools along with the Software Quality Assurance activities

UNIT I

18 Hours

Software Development Lifecycle Models: Phases of Software Project – Life Cycle Models –Testing Concepts, Issues, and Techniques: Purposes, Activities, Processes, and Context –Questions about Testing – Functional vs. Structural Testing–Coverage Based vs. Usage Based Testing – Test Activities, Management, and Automation: Test Planning and Preparation – Test Execution, Result Checking, and Measurement – Analysis and Follow up-Activities, People, and Management – Test Automation

UNIT II

18 Hours

White Box Testing: Meaning – Static Testing – Structural Testing – Challenges – Black Box Testing: Meaning – When & How to do Black Box Testing – Integration Testing: Meaning –Integration Testing as type of Testing – As a Phase of Testing – Scenario Testing – Defect Bash

UNIT III

18 Hours

System and Acceptance Testing: Overview – Functional vs. Non-Functional Testing – Functional System Testing – Non-Functional Testing – Acceptance Testing – Summary of Testing Phases – Performance Testing: Introduction – Factors Governing Performance Testing – Methodology – Tools – Process – Regression Testing: Meaning – Types – When & How to do Regression – Testing – Best Practices

UNIT IV

18 Hours

Testing of Object Oriented Systems: Introduction – Primer on Object – Oriented Software – Differences in OO Testing – Usability and Acceptance Testing: Meaning – Approach – Quality Factors for Usability – Aesthetics Testing – Accessibility Testing – Tools for Usability –Test Roles for Usability

UNIT V

18 Hours

Software Quality: Perspectives and Expectations-Quality Frame Works and ISO 9126 – Correctness and Defects – Historical Perspective of Quality – Quality Assurance: Classification – Defect Prevention – Defect Reduction – Defect Containment – Quality Assurance in Context: Handling Discovered Defect During QA Activities – QA Activities in Software Processes –Quality Engineering: Activities and Process – Quality Planning: Goal Setting and Strategy Formation-Quality Assessment and Improvement-Quality Engineering in Software Processes.

Text Books

1. Srinivasan Desikan and Gopalaswamy Ramesh, *Software Testing Principles and Practices*, Pearson Education, 2007. UNIT I, II, III & IV
2. Jeff Tian, *Software Quality Engineering: Testing, Quality Assurance, And Quantifiable Improvement*, Wiley India Edition, 2006. UNIT I & V

Reference Book

Advanced Software Testing, Rex Black, Jamie L Mitchell, published by Rocky Nook, 2011

SEMESTER – II: CORE – VIII: ADVANCED JAVA PROGRAMMING LAB

Subject Code : 17PIT2C8P
Hours/Week : 6
Credits : 4

Maximum Marks : 100
Internal Marks : 20
External Marks : 80

1. Program to find area and circumference of a circle using class and object.
2. Program to find area & volume of rectangle using inheritance.
3. Program to illustrate the use of abstract methods using Eclipse
4. Program to prepare students mark sheet using package concept.
5. Program to demonstrate the multilevel inheritance using interface using Eclipse.
6. Program to create a thread using Thread class and Runnable interface using Eclipse.
7. Program to arrange the given names in alphabetical order and display the number of names in palindrome using Eclipse.
8. Program to demonstrate various Vector operations using Eclipse.
9. Program to print the contents of ArrayList in reverse order using Eclipse.
10. Program to list of all files and folder of a given directory using Eclipse.
11. Program to merge the two files using SequenceInputStream.
12. Program to find the machine and host IP address using Eclipse.
13. Program to copy one file into another using Eclipse
14. Program to send a file from one system to another using TCP/IP model.
15. Program to prepare EB-Bill using JDBC
16. Program to illustrate Border Layout & Grid layout managers.
17. Program to prepare bio data using swing controls and to store the details in database using JDBC.
18. Program to create a simple calculator using swing controls using Eclipse.
19. Program to prepare employee salary report using Table in swing.
20. Program to illustrate ScrollPane.
21. Program to illustrate TabbedPane.

SEMESTER – II: ELECTIVE – II: DATA MINING

Subject Code : 17PIT2CE2A
Hours/Week : 6
Credits : 4

Maximum Marks : 100
Internal Marks : 25
External Marks : 75

Objective

To impart and understand the data mining concepts, tasks and their techniques

UNIT I

18 Hours

Introduction: What is Data Mining – Data Mining Functionalities – Classification of Data Mining Systems – Data Mining Task Primitives – Major Issues in Data Mining – Data Mining Applications – Trends in Data Mining

UNIT II

18 Hours

Data Preprocessing: Why Preprocess the Data – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Warehouse: What is Data Warehouse – Data Warehouse Architecture – From Data Warehousing to Data Mining.

UNIT III

18 Hours

Mining Frequent Patterns: Basic Concepts – Efficient and Scalable Frequent Itemset Mining Methods – Classification: What is Classification – Classification by Decision Tree Induction – Bayesian Classification

UNIT IV

18 Hours

Cluster Analysis: What is Cluster Analysis – Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical Methods – Density- Based Methods

UNIT V

18 Hours

Graph Mining: Methods for Mining Frequent Sub graphs – Social Network Analysis – Spatial Data Mining – Multimedia Data Mining – Text Mining – Mining World Wide Web.

Text Book

Jiawei Han and Micheline Kamber, *Data Mining Concepts and Techniques*, Morgan Kaufmann Publishers, Second Edition, 2006.

UNIT I	: Chapter 1 & 11 (1.2, 1.4, 1.6, 1.7, 1.9, 11.1, 11.5)
UNIT II	: Chapter 2 & 3 (2.1, 2.3, 2.4, 2.5, 3.1, 3.3, 3.5)
UNIT III	: Chapter 5 & 6 (5.1, 5.2, 6.1, 6.3, 6.4)
UNIT IV	: Chapter 7 (7.1, 7.3, 7.4, 7.5, 7.6)
UNIT V	: Chapter 9 & 10 (9.1.1, 9.2, 10.2, 10.3, 10.4, 10.5)

Reference Book

Pang-Ning Tan, Vipin Kumar, Michael Steinbach, *Introduction to Data Mining*, Pearson Education Inc., 2006

SEMESTER – II: ELECTIVE – II: CRYPTOGRAPHY AND NETWORK SECURITY

Subject Code : 17PIT2CE2B
Hours/Week : 6
Credits : 4

Maximum Marks : 100
Internal Marks : 25
External Marks : 75

Objective To impart the basic knowledge of Cryptography and Network Security.

UNIT I

18 Hours

Overview: Computer Security Concepts- The OSI Security Architecture -Security Attacks -Security Services - Security Mechanisms - A Model for Network Security - Classical Encryption Techniques: Symmetric Cipher Model - Substitution Techniques -Transposition Techniques - Rotor Machines - Steganography

UNIT II

18 Hours

Block Ciphers and the Data Encryption Standard: Block Cipher Principles - The Data Encryption Standard - A DES Example - The Strength of DES - Differential and Linear Cryptanalysis - Block Cipher Design Principles - Advanced Encryption Standard - Finite Field Arithmetic - AES Structure - AES Transformation Functions - AES Key Expansion -An AES Example - AES Implementation

UNIT III

18 Hours

Block Cipher Operation: Multiple Encryption and Triple DES - Electronic Code Book -Cipher Oriented Storage Devices - Public-key Cryptography and RSA: Principles of Public-key Cryptosystems - The RSA Algorithm

UNIT IV

18 Hours

Cryptographic Hash Functions: Applications of Cryptographic Hash Functions - Two Simple Hash Functions - Requirements and Security - Hash Functions Based on Cipher Block chaining -Secure-Hash Algorithm (SHA) - SHA-3 - Message Authentication Codes - Message Authentication Requirements - Message Authentication Functions - Requirements for Message Authentication Codes - Security for MACS - MACs Based on Hash Functions: HMAC

UNIT V

18 Hours

Digital Signatures - Key Management and Distribution: Symmetric Key Distribution using Symmetric Encryption - Symmetric Key Distribution using Asymmetric Encryption -Distribution of Public keys - X.509 Certificates - Public-Key Infrastructure - User Authentication: Kereberos.

Textbook

William Stallings, “Cryptography and Network Security Principles and Practice”, Fifth Edition, Pearson Education Inc., First Impression 2011.

UNIT I	:	Chapter 1: 1.1 - 1.6, Chapter 2: 2.1 - 2.5
UNIT II	:	Chapter 3: 3.1 - 3.6, Chapter 5: 5.1 - 5.6
UNIT III	:	Chapter 6: 6.1 - 6.7, Chapter 9: 9.1 - 9.2
UNIT IV	:	Chapter 11:11.1 - 11.6, Chapter 12: 12.1 - 12.4, 12.6
UNIT V	:	Chapter 13: 13.1. Chapter 14: 14.1 to 14.5, Chapter 15: 15.3

Reference Book

William Stallings, “Network Security Essentials Applications and Standards”, Third Edition, Pearson Education Inc., Fifth Impression 2011

SEMESTER – III: CORE – IX: MOBILE STANDARD AND ARCHITECTURE

Course Code : 17PIT3C9

Hours/ Week : 6

Credit : 5

Maximum Marks : 100

Internal Marks : 25

External Marks : 75

Objective

To understand the knowledge of mobile applications and standards

UNIT I

18 Hours

Android development basics – Honey Comb, Ice Cream Sandwich and Jelly Bean features – Hardware Tools – Software Tools – Tuning up your hardware – Installing and configuring your support tools – Getting the Java Development Kit – Acquiring the Android SDK – Getting the total Eclipse – Navigating the Android SDK – Targeting Android platforms

UNIT II

18 Hours

Starting a new project in Eclipse – Understanding the build target and min SDK version settings – Setting up an emulator – Creating launch configurations – Running the Hello android app – Understanding project structure – Developing the user interface – Adding an image to your application – Creating a launcher icon for the application

UNIT III

18 Hours

Fragments – Adding fragments dynamically – Life Cycle of a fragment – Interactions between fragments – Calling built-in applications using Intents – Understanding the Intent object – Using Intent filters – Adding categories – Understanding the components of a screen – Linear Layout – Absolute Layout – Table Layout – Relative Layout – Frame Layout

UNIT IV

18 Hours

Using Basic views – TextView View – Button – Image Button – EditText – CheckBox – Toggle Button – Radio Button – Radio Group View – Progress Bar View – AutoComplete TextView View – Using Picker Views – Time picker view – Date picker view

UNIT V

18 Hours

Using List Views to Display Long Lists - ListView View - Using the Spinner View - Using Image Views to Display Pictures - Gallery and ImageView Views – ImageSwitcher - GridView - Using Menus with Views - Creating the Helper Methods- Options Menu - Context Menu - Some Additional Views - AnalogClock and DigitalClock Views – WebView

Text Books

1. Michael Burton, Donn Felker, “*Android Application Development for Dummies*”, 2nd Edition, 2012

UNIT I : Chapter 1, 2 UNIT II : Chapter 3, 4

2. Wei Meng Lee, “*Beginning Android 4 Application Development*”, Wiley Publications

UNIT III : Chapter 2, 3 UNIT IV & V : Chapter 4, 5

Reference Book

Wei Meng Lee, *Beginning Android Application Development*, Wiley Publishing, Inc, 2011.

SEMESTER – III: CORE –X: WEB SERVICES

Subject Code : 17PIT3C10

Hours/Week : 6

Credits : 5

Maximum Marks : 100

Internal Marks : 25

External Marks : 75

Objective

To understand the XML Revolutions and Technologies in practice and impart the significances of SOAP for Web Services

UNIT I

18 Hours

Evolution and Emergence of web services: What is distributed computing? – Importance of distributed computing – Client-Server applications – CORBA – Java RMI – DCOM – Message oriented middleware – The Role of J2EE and XML in distributed computing – Emergence of web services – Introduction to web services: What are web services? – Motivation and Characteristics – Why use web services? – Basic Operational model of web services – CORE Web services standards – Key Benefits of web services.

UNIT II

18 Hours

Web services architecture and technologies: Web services architecture and its CORE building blocks – Tools of the Trade: SOAP – WSDL – UDDI – Implementing web services – Developing web services enabled applications –Developing Web services using SOAP – XML based protocols and SOAP – Anatomy of a SOAP message – SOAP encoding – Building SOAP web services.

UNIT III

18 Hours

Description and discovery of web services – Web Services Description Language – WSDL in the world of web services – Anatomy of a WSDL definition document – WSDL bindings – WSDL tools – Future of WSDL – Limitations of WSDL – Universal Description, Discovery and Integration (UDDI) – UDDI registries – Programming with UDDI – Inquiry API – Publishing API – Implementations of UDDI – Limitations of UDDI.

UNIT IV

18 Hours

Exploring Java Web services developer pack – Introduction to the Java Web Services Developer Pack – Java Web Services Developer Pack – Java XML Pack – Java APIs for XML – Java WSDP registry server – ANT Build tool – Downloading the web services pack – XML processing and data binding with Java APIs – XML Basics – Java API for XML Processing – JAXP – uses for JAXP – JAXP API model – Java Architecture for XML Binding

UNIT V

18 Hours

Security in Web Services: Web Services Security – Challenges of securing web services – XML encryption – XML signatures – Security Assertions Markup Language – XML access control markup language.

Text Book

Ramesh Nagappan, Robert Skoczylas, Rima Patel Sriganesh, “Developing Java Web Services”, Wiley Publication.

UNIT I : Chapter 1, 2

UNIT II : Chapter 3, 4

UNIT III : Chapter 5

UNIT IV : Chapter 7, 8

UNIT V : Chapter 13

Reference Book

Developing Enterprise Web Services - An Architect's Guide – Sandeep Chatterjee, James Webber, Pearson Education– Second Indian Reprint 2005.

SEMESTER – III: CORE – XI: CLOUD COMPUTING

Course Code : 17PIT3C11
Hours/ Week : 6
Credit : 4

Maximum Marks : 100
Internal Marks : 25
External Marks : 75

Objective

- To understand the basic concepts of Cloud Computing
- To understand the types of Cloud, its architecture and its applications
- To impart the knowledge of cloud computing infrastructure, platform and service

UNIT I

18 Hours

PRINCIPLES OF PARALLEL AND DISTRIBUTED COMPUTING: Eras of Computing - Parallel vs. Distributed Computing - Elements of Parallel Computing - What is Parallel Processing?- Hardware Architectures for Parallel Processing - Approaches to Parallel Programming - Levels of Parallelism - Laws of Caution - Elements of Distributed Computing - General Concepts and Definitions - Components of a Distributed System - Architectural Styles for Distributed Computing - Technologies for Distributed Computing - Remote Procedure Call - Distributed Object Frameworks - Service Oriented Computing

UNIT II

18 Hours

INTRODUCTION -Cloud Computing at a Glance -The Vision of Cloud Computing - Defining a Cloud - A Closer Look - Cloud Computing Reference Model - Characteristics and Benefits - Challenges Ahead - Historical Developments - Distributed Systems - Virtualization - Web 2.0 -Service-Oriented Computing - Utility-Oriented Computing - Building Cloud Computing Environments- Application Development - Infrastructure and System Development

UNIT III

18 Hours

CLOUD COMPUTING ARCHITECTURE: Introduction - Cloud Reference Model - Architecture-Infrastructure / Hardware as a Service - Platform as a Service - Software as a Service - Types of Clouds - Public Clouds - Private Clouds - Hybrid Clouds - Community Clouds - Economics of the Cloud - Open Challenge - Cloud Definition Cloud Interoperability and Standards - Scalability and Fault Tolerance – Contents - Security, Trust, and Privacy - Organizational Aspects

UNIT IV

18 Hours

INFRASTRUCTURE AS A SERVICE: Virtual Machines provisioning and Migration Services – Virtual Machine Provisioning and manageability – Virtual Machine Migration Services -Secure Distributed Data Storage in Cloud Computing – Cloud Storage from LANs to WANs - Technologies for Data Security in cloud Computing. PLATFORM AND SOFTWARE AS A SERVICE: Dynamic ICT services – Importance of quality and Security in clouds – Dynamic Data center – Producing Business-ready, Dynamic ICT Services

UNIT V

18 Hours

MONITORING AND MANAGEMENT: An Architecture for Federated Cloud Computing - Introduction- A Typical Use Case – The Basic Principles of Cloud Computing – A Model for Federated Cloud Computing. SLA Management in Cloud Computing: Traditional Approaches to SLO

Management - Types of SLA – Life Cycle of SLA. GOVERNANCE AND CASE STUDIES: Data Security in the Cloud – The current state of data security in the cloud – Cloud Computing and Data Security Risk

Text Books

1. Rajkumar Buyya, Christian Vecchiola, S. ThamaraiSelvi, “Mastering Cloud Computing”, McGraw Hill Education (India) Private Limited Publications, First Reprint, 2013

UNIT I : Chapter 2.1 to 2.5

UNIT II : Chapter 1.1 to 1.3

UNIT III : Chapter 4.1 to 4.5

2. Rajkumar Buyya, James Broberg and Andrzej Goscinski, “Cloud Computing Principles and Paradigms”, Wiley Publications, 2013

UNIT IV : Chapter 5.3 & 5.4, Chapter 8.2 & 8.3 & Chapter 11.3, 11.4, 11.5

UNIT V : Chapter 15.1 to 15. 4, 16.2 to 16.4, 23.2, 23.4

Reference Book

Michael Miller, “Cloud Computing Web Based Applications that change the way you work and collaborate online”, Pearson Education, 2009

SEMESTER – III: CORE – XII A: MOBILE APPLICATION DEVELOPMENT LAB

Course Code : 17PIT3C12P1
Hours/Week : 3
Credit : 2

Maximum Marks : 50
Internal Marks : 10
External Marks : 40

1. Develop an android application for passing the data using intent.
2. Develop an android application to perform addition of two numbers using table layout.
3. Develop an android application to open a new activity while clicking a button.
4. Develop an android application to create a login form using TextView, EditText and Button control.
5. Develop an android application to create list view with check box values.
6. Develop an android application to know the current state of toggle button.
7. Develop an android application to upload the file using progress bar control.
8. Develop an android application to design auto complete with suggestions.
9. Develop an android application to create date and time picker dialog.
10. Develop an android application to load the list while clicking another list using list view.
11. Develop an android application to create simple photo gallery using Image View.
12. Develop an android application to handle the click events of floating context menu.

SEMESTER – III: CORE –XII B: WEB SERVICES LAB

Course Code : 17PIT3C12P2
Hours/Week : 3
Credit : 2

Maximum Marks : 50
Internal Marks : 10
External Marks : 40

1. Develop a JAX-WS web service and client
2. Develop a JAX-WS web service for factorial application
3. Develop a web service component using C# and .NET
4. Develop a .NET Client to access J2EE web service
5. Develop a J2EE client to access .NET web service
6. Develop a JAX-WS web service for designing simple calculator
7. Develop a JAX-WS web service with database connectivity
8. Develop a JAX-RS web service and client

SEMESTER – III: ELECTIVE – III: BIG DATA ANALYTICS

Course Code : 17PIT3CE3A
Hours/ Week : 6
Credit : 4

Maximum Marks : 100
Internal Marks : 25
External Marks : 75

Objective

To understand the basic concepts about Big Data, Cloud, Map Reduce and Hadoop

UNIT I

18 Hours

Grasping the fundamentals of big data – The evolution of data management – Defining big data – Building a successful big data management architecture – Examining big data types – Defining structured data – Defining unstructured data – putting big data together

UNIT II

18 Hours

Operational databases – RDBMSs are important in a big data environment – Non relational data bases – Key-value pair databases – Document databases – Columnar databases – Graph databases – Spatial databases – Map reduce fundamentals – Tracing the origins of map reduce – Understanding the map function – Adding the reduce function – putting map and reduce together – Optimizing map reduce tasks

UNIT III

18 Hours

Exploring the world of Hadoop – Explaining Hadoop – Understanding HDFS – Hadoop map reduce – The Hadoop foundation and eco system – Building a big data foundation with the Hadoop eco system - Managing resources and applications with Hadoop YARN – Storing big data with HBASE – Mining big data with Hive – Interacting with the Hadoop eco system

UNIT IV

18 Hours

Defining big data analytics – Using big data to get results – Modifying Business Intelligence products to handle big data – Exploring unstructured data – Understanding Text Analytics – Analysis and Extraction techniques – Text Analytics tools for big data

UNIT V

18 Hours

Integrating data sources – Identifying the data you need – Understanding the fundamentals of big data integration – Defining traditional ETL – Understanding ETL – Using Hadoop as ETL – Using Streaming data – Using Complex Event Processing – Differentiating CEP from streams

Text Book

Judith Hurwitz, Alan Nugent, Dr.Fern Halper, Marcia Kaufman, “*Big Data for Dummies*”, A Wiley Brand

UNIT I	: Chapter 1, 2	UNIT II	: Chapter 7, 8
UNIT III	: Chapter 9, 10	UNIT IV	: Chapter 12, 13
UNIT V	: Chapter 15, 16		

Reference Book

Bart Baesens, Analytics in a Big Data World, Kindle Edition, 2014

SEMESTER -- III: ELECTIVE – III: TCP/IP PROGRAMMING

Course Code : 17PIT3CE3B
Hours/ Week : 6
Credit : 4

Maximum Marks : 100
Internal Marks : 25
External Marks : 75

Objective To study about the basic concepts of TCP/IP programming and to implement the protocol

UNIT I

18 Hours

TCP/IP Protocol Suite – IP Address – Introduction – Classful Addressing – Subnetting and Supernetting – Classless Addressing – Variable Length Blocks – # Subnetting – Delivery # – Forwarding – Routing.

UNIT II

18 Hours

ARP and RARP: ARP – ARP Package – RARP. Internet Protocol: Datagram – Fragmentation – Options – Checksum – IP Package – ICMP – # Types of Message # – Message Format – Error Reporting – Debugging Tools – ICMP Package.

UNIT III

18 Hours

IGMP: Group Management – IGMP Messages – IGMP Operation – Encapsulation – IGMP Package. User Datagram Protocol (UDP): Process to Process Communication – # User Datagram # – Checksum – UDP operation – Use of UDP - UDP Package.

UNIT IV

18 Hours

Transmission Control Protocol (TCP): TCP Services – TCP Features – Segment – TCP Connection – State Transition Diagram - Flow Control - Error Control – Congestion Control – TCP Timers – Options – TCP Package.

UNIT V

18 Hours

Domain Name Space (DNS): Name Space – DNS – Distributed of Name Space – DNS Message – Types of Records – Compression. TELNET: Concept – NVT – NVT Character Set – FTP – TFTP – SMTP: Architecture – User Agent – SNMP: # Concept – Management Component #

#.....# Self-study portion

Text Book

Behrouz A. Forouzan, TCP/IP Protocol Suite, Third Edition, Tata McGraw Hill Education Private Ltd., (Seventh Reprint Edition 2006)

UNIT I : Chapter 2.3, 4.1, 4.2, 4.4, 5.1, 5.2, 6.1-6.3

UNIT II : Chapter 7.1-7.3, 8.1-8.5, 9.1-9.3, 9.6, 9.7

UNIT III : Chapter 10.1-10.5, 11.1-11.6

UNIT IV : Chapter 12.1-12.11

UNIT V : Chapter 17.1-17.3, 17.6 -17.8, 18.1-18.3, 19.1, 19.2, 20.1, 20.2, 21.1, 21.2

Reference Book

Douglas E. Comer and David L. Stevens, Internetworking with TCP/IP Volume II, Third Edition, PHI Private Limited 2005.

SEMESTER - - III: EXTRA CREDIT - I: INFORMATION SECURITY

Subject Code : 17PIT3EC1
Hours/week : --
Credits : 5

Maximum Marks : 100
Internal Marks : --
External Marks : 100

Objective

To provide knowledge on various security problems that arises on Operating system, Database, Network & Administration.

UNIT I

Is there a security problem in computing: what does secure mean? – Attacks - the meaning of computer Security-Computer Criminals-Method of defense. Program security: Secure programs-Non malicious program Errors-Viruses and other malicious Code-Targeted Malicious Code-Controls against program threats

UNIT II

Protection in general purpose operating system: Protected objects & methods of Protection-Memory & Address Protection-Control of access to general Objects-File protection mechanisms-user authentication

UNIT III

Database security: Security Requirements-Reliability & Integrity-Sensitive Data-Inference-Multilevel Databases-Proposals for multilevel security

UNIT IV

Security in networks: Threats in Network-Network Security Controls-Firewalls

UNIT V

Administering security: Security Planning-Risk Analysis-Organizational Security Policies-Physical Security

Textbook

C.P. PFLEEGER & S.L. FLEEGER, Security in computing, Pearson education, 4th edition, 2011

UNIT I : Chapter 1.1, 1.2, 1.3, 1.4, 1.5 & Chapter 3.1, 3.2, 3.3, 3.4, 3.5

UNIT II : Chapter 4.1, 4.2, 4.3.4.4, 4.5

UNIT III : Chapter 6.2, 6.3, 6.4, 6.5, 6.6, 6.7

UNIT IV : Chapter 7.2, 7.3, 7.4

UNIT V : Chapter 8.1, 8.2, 8.3, 8.4

Reference Book

Mark Rhodes - Ousley, *Information Security the Complete Reference*, Second Edition, McGraw-Hill 2013

SEMESTER – IV: CORE XIII: OPEN SOURCE TECHNOLOGY

Subject Code : 17PIT4C13
Hours / Week : 6
Credits : 5

Maximum Marks : 100
Internal Marks : 25
External Marks : 75

Objective

To learn the basics of Linux and Apache Web Server, PHP scripting language and deploying application on Apache Web Server, MySql databases

UNIT I

18 Hours

Introduction: Open Source Software. Web Explained: Working – Serving up static and dynamic data – Serving up content with embedded HTML – Security

UNIT II

18 Hours

Introduction: Linux Distributions – Linux Partitions - Basic File System Essentials - Security – Shell – commands: file commands, directory commands, file access permissions – owner, groups, permissions, ownership – processes – process oriented commands - vi editor

UNIT III

18 Hours

Introduction to MY SQL: The SHOW DATABASES and CREATE DATABASE commands – The USE command – CREATE TABLE and SHOW TABLES command – DESCRIBE command – INSERT, SELECT, UPDATE, AND DELETE commands – Some Administrative details – Table Joins – Loading and Dumping a Database

UNIT IV

18 Hours

PHP: Introduction: Embedding PHP into HTML- configuration – Language syntax – variables, data types, web variables, operators, flow-control constructs, writing PHP functions – Built-in PHP functions – Important functions – array functions, string functions – other functions – PHP and MySQL – MySQL functions

UNIT V

18 Hours

Object Oriented Concepts - Classes and Objects in PHP - Declaring Methods - Declaring Properties - Declaring Constants - Inheritance - Abstract Classes - Constructors - Destructors - Form Handling - Processing Forms - Form Validation

Text Book

James Lee and Brent Ware, Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP, Dorling Kindersley(India) Pvt. Ltd., 2008

UNIT I : Chapter 1

UNIT II : Chapter 2

UNIT III : Chapter 3

UNIT IV : Chapter 5

UNIT V : Chapter 12

Reference Book

J. Hajiram Beevi, Khairunnisa, S. Munavara Banu, Primer on PHP, Published by Yazhini Publications, 2016

SEMESTER - IV: CORE XIV: OPEN SOURCE TECHNOLOGY LAB

Subject Code : 17PIT4C14P

Hours/Week : 6

Credit : 5

Maximum Marks : 100

Internal Marks : 20

External Marks : 80

1. Write a shell script to find the details of a user session.
2. Write a shell script to change the extension of a given file.
3. Write a shell script to check if an employee should retire or should continue in service. (Assume the retirement age as 60 years.)
4. Write a shell script which accepts the name of the file from standard input and then performs the following operations:
 - Enter 5 names in a file
 - Sort the names in the existing file
 - List unsorted and sorted files
 - Quit
5. Create a MySQL database and a table and execute queries to read, add, remove and modify a record from the created table.
6. Create two MySQL tables Age info and Addresses as follows:
 - Fields in Age are as follows:
 - lastname - char(20)
 - firstname - char(20)
 - age - int(11)
 - Fields in Age are as follows:
 - lastname - char(20)
 - address - char(40)
 - state - char(2)
 - Fields in Addresses are as follows:
 - firstname - char(20)
 - city - char(20)
 - pincode - int(6)

Write MySQL query to:
Find out the names of the cities where the people live whose age is less than 40 years
Display the last names and the pin code of the people who age is more than 50 years
where the last names and first names match.
7. Write a program to illustrate the use of conditional statements in PHP.
8. Develop a PHP program to find the factorial of a number.
9. Design a web page to generate the multiplication table for a given number.
10. Write a server side PHP program that displays marks, total, grade of a student in tabular format by accepting user inputs for name, number and marks from a HTML form.
11. Write a PHP program to access the data stored in a MySQL table.
12. Write a PHP program interface to create a database and to insert a table into it.
13. Write a PHP program using classes to create a table.
14. Write a PHP program to upload a file to the server.
15. Write a PHP program to create a directory, and to read contents from the directory.

SEMESTER – IV: PROJECT

Subject Code : 17PIT4PW
Hours / Week : 18
Credits : 14

Maximum Marks : 300
Internal Marks : --
External Marks : 300

Objective

Students carry out a project in software development companies

SEMESTER – IV: EXTRA CREDIT - II: ENTERPRISE RESOURCE PLANNING

Subject Code : 17PIT4EC2

Hours/week : --

Credits :

Maximum Marks : 100

Internal Marks : --

External Marks : 100

Objective To understand the basic concepts about enterprise resource planning

UNIT I

Introduction to ERP: Introduction- Evolution of ERP-What is ERP-Reasons for the growth of the ERP market-The Advantage of ERP-Why do Many ERP implementations fail? - Why Are ERP Packages Being Used Now? Enterprise - An Overview: Introduction-Integrated Management Information-Business Modeling-Integrated Data Model.

UNIT II

ERP and Related Technologies: Introduction-Business Processing Reengineering(BPR)- Management Information System(MIS)-Decision Support System(DSS)-Executive Information System(EIS)-Data Warehousing-Data Mining-On-line Analytical Processing(OLAP)-Supply Chain Management ERP A Manufacturing Perspective: Introduction - ERP-CAD/CAM-Material Requirement Planning(MRP)-Bill of Material(BOM) - Closed Loop MRP-Manufacturing Resource Planning (MRP-II) - Distribution Requirements Planning(DRP) - JIT and Kanban - Computer-Aided-Design/Computer-Aided-Manufacturing(CAD/CAM)-Product Data Management(PDM)-Data Management-Benefits of PDM-Make-to-Order(MTO) and Make-to-Stock(MTS)-Assemble-to-Order(ATO)-Engineer –to-Order(ETO)-Configure-to-Order(CTO).

UNIT III

ERP Modules: Introduction-Finance-Plant Maintenance-Quality Management-Materials Management Benefits of ERP: Introduction-Reduction of Lead-Time-On-time Shipment-Reduction in Cycle Time-Improved Resource Utilization-Better Customer Satisfaction-Improved Supplier Performance-Increased Flexibility-Reduced Quality Costs-Improved Information Accuracy and Decision-making Capability.

UNIT IV

ERP Market: Introduction-SAP AG-Baan Company-Oracle Corporation-PeopleSoft-JD Edwards World Solution Company-System Software Associates, Inc. (SSA)-QAD. ERP Implementation Life cycle: Introduction-Pre-evaluation Screening- Package Evaluation-Project Planning Phase-Gap Analysis-Reengineering-Configuration-Implementation Team Training-Testing-Going Live-End-user Training-Post-implementation(Maintenance mode).

UNIT V

Vendors, Consultants and Users: Introduction-In-house Implementation—Pros and Cons-Vendors-Consultants-End-users. Future Directions in ERP: Introduction-New Markets-New Channels-Faster Implementation Methodologies-Business Models and BAPIs-Convergence on Windows NT-Application Platforms-New Business Segments-More Features...-Web Enabling-Market Snapshot

Text Book

Alexis Leon, Enterprise Resource Planning, Tata McGraw- Hill Publishing Company Limited, Eleventh Reprint 2004.

UNIT I : Chapters 1 & 2
UNIT III : Chapter 5 & 6
UNIT V : Chapters 9 & 10

UNIT II : Chapters 3 & 4
UNIT IV : Chapter 7 & 8