

H.N.G. University, Patan
M.Sc.(C.A. & I.T.) SEMESTER - VII
701 : Distributed Operating System

Unit : 1

[25%]

Distributed Systems: Introduction, Example, Resource, Challenges

Networking and Internetworking: Introduction, Types Of Network, Network Principles, Internet Protocols, Case Study: Ethernet, Wifi, Bluetooth And Atm

Interprocess Communication: Introduction, The Api For The Internet Protocols, External Data Representation And Marshalling, Client Server And Group Communication, Case S tudy: Interprocess Communication In Unix

Unit : 2

[25%]

Distributed Objects And Remote Invocation : Introduction, Communication Between Distributed Objects, Remote Procedure Call, Events And Notification, Case Study: Java Rmi

Distributed File Systems: Introduction, File Service Architecture, Case Study: Sun Network File System, The Andrew File System, Enhancements And Further Developments

Name Services: Introduction, Name Services And The Domain Name System, Directory Services, Case Study: The Global Name Service, The X.500 Directory Service

Unit : 3

[25%]

Peer-To-Peer Systems: Introduction, Napster And Its Legacy, Peer -To-Peer Middleware, Routing Overlays, Overlay Case Studies: Pastry, Tapestry, Application Case Studies: Squirrel, Ocean store, Ivy

Transactions and Concurrency Control: Introduction, Transactions, Nested Transactions, Locks, Optimistic Concurrency Control, Timestamp Ordering, Comparison of Methods For Concurrency Control

Distributed Transactions: Introduction, Flat And Nested Distributed Transactions, Atomic Commit Protocols, Concurrency Control In Distributed Transactions, Distributed Deadlocks, Transaction Recovery

Unit : 4

[25%]

Mobile and Ubiquitous Computing: Introduction, Association, Interoperatio n, Sensing and Context Awareness, Security And Privacy, Adaptation, Case Study: Cooltown

Distributed Shared Memory: Introduction, Design and Implementation Issues, Sequential Consistency and Ivy Case Study, Release Consistency and Munin Case Study, Other Consistency Models

Web Services: Introduction, Web Services, Service Descriptions and Idl for Web Services, A Directory Service For Use With Web Services, Xml Security, Coordination Of Web Services, Applications Of Web Services.

Text Book:

1. George Coulouris, Jean Dollimore, Tim Kindberg, "Distributed Systems: Concepts and Design", 4th Edition, Pearson Education

Reference Books:

1. A.tS. Tanenbaum and M. V. Steen, "Distributed Systems: Principles and Paradigms", Second Edition, Prentice Hall, 2006
2. M.L.Liu, "Distributed Computing Principles and Applications", Pearson Addison Wesley, 2004
3. Mukesh Singhal, "Advanced Concepts In Operating Systems", McGrawHill Series in Computer Science, 1994
4. Nancy A. Lynch, "Distributed Algorithms", The Morgan Kaufmann Series in D ata Management System, Morgan Kaufmann Publishers, 2000

H.N.G. University, Patan
M.Sc.(C.A. & I.T.) SEMESTER - VII
702 : Software Testing & Quality Assurance

Unit : 1

[20%]

Software Quality: Definition, Defects, Faults, Failures, Software Quality Attributes - correctness, reliability, usability, integrity, portability, maintainability, interoperability.

Quality concepts: quality, quality control, quality assurance, cost of quality .

Quality assurance: SQA activities, Overview of Different Types of Software Review, Ishikawa's Seven Basic Tool.

Unit : 2

[20%]

Product Quality Metrics: MTTF, Defect Density, Customer Problems Metric, Customer Satisfaction Metrics, Function Points .

In-Process Quality Metrics: Defect Arrival Pattern, Phase-Based Defect Removal Pattern, Defect Removal Effectiveness .

Metrics for Software Maintenance: Backlog Management Index, Fix Response Time, Fix Quality, Software Quality Indicators .

Quality Standards – ISO 9000 & 9001, CMM, six sigma.

Unit : 3

[20%]

Testing Basics: Introduction, Basics of Software Testing, Testing Principles, Goals, Testing Life Cycle, Planning – forming a test team, develop test plan review, Test Cases design strategies , Testing level, Testing approach .

White box testing : static testing- static analysis tools, Structural testing- Unit/Code functional testing, Code coverage testing, Code complexity testing.

Black Box testing : Requirements based testing, positive and negative testing, Boundary value analysis, Equivalence partitioning, state/graph based testing, Model based testing and model checking.

Unit : 4

[30%]

Integration Testing: Top down and Bottom up integration, Bi-directional integration, System integration, Scenario Testing, Defect Bash .

System, Testing :Functional , Non-functional testing, Design/Architecture verification, Deployment testing, Beta testing, Scalability testing, Reliability testing, Stress testing .

Acceptance testing : Acceptance criteria, test cases selection and execution .

Regression testing : Overview, Regression test process, Initial Smoke or Sanity test, Selection of regression tests, Execution Trace, Dynamic Slicing, Test Minimization , Tools for regression testing.

Ad hoc Testing : Pair testing, Exploratory testing, Iterative testing, Defect seeding.

Performance Testing: Introduction, Methodology, Tools, Process .

Unit : 5

[10%]

Eleven Step Testing Process: Assess Project Management Development Estimate and Status, Develop Test Plan, Requirements Phase Testing, Design Phase Testing, Program Phase Testing, Execute Test and Record Results, Acceptance Test, Report test results, testing software installation, Test software changes, Evaluate Test Effectiveness.

Testing Tools: Manual testing, Automated Testing Tools, overview of Testing tools (QTP, Rational Robot, Winrunner, Loadrunner), Manual testing Vs Automated testing .

Testing metrics: project , progress, productivity .

Text Books:

1. Software Testing: Principles and Practices
Author: Srinivasan Desikan, Gopaldaswamy Ramesh, Publication: Pearson Education
2. Effective Methods for Software Testing, 2nd Edition
Author: William E. Perry, Publication: Wiley India, 2006.
3. Software Quality
Authors: Mordechai Ben-Menachem / Garry S. Marliss, Publication: Thomson Learning

Reference Books:

1. Metrics and Models in Software Quality Engineering
Author: Stephen H. Kan, Publication: Addison Wesley
2. Software Testing Tools
Author: Dr. K.V.K.K Prasad, Publication: Dreamtech press

H.N.G. University, Patan
M.Sc.(C.A. & I.T.) SEMESTER - VII
703 : Advance Web Technology - I

Unit : 1

[20%]

Overview of .net framework: .net architecture, framework class library, Common Language Run Time, managed code, assemblies, Intermediate Language, Just In Time Compiler, common type system, common language specification, .Net Features

File I/O and Streams: Drive info class, Directory Info class, file and file Info, working with paths, Reading and Writing Files: Streams, Readers and Writers

Unit : 2

[20%]

Introduction to C#: Data Types (Boxing and UnBoxing), Operators, Access Specifier

OOPS Concepts: Class, Inheritance, Constructor, Destructor, Abstraction, interface, polymorphism (Over loading and over ridding), Garbage Collection, Array (One Dimensional and Two Dimensional), Jagged Array, Collection: Generic Collection (List), Non Generic Collection (Array list, Hash table,), Property, Delegates and events (Multicasting, Multicasting Event), Exception Handling, Introduction to Namespace: Creating & Using Namespace (DLL)

Unit : 3

[30%]

Architecture of ADO.Net, Comparison with ADO (Connected and Disconnected Architecture), .Net Data provider, Data Adapter, Data Set, Data Row, Data Column, Data Relation, command, Data Reader

Querying with LINQ:

LINQ to Objects: Traditional Query Methods, Replacing Traditional Queries with LINQ, Data Grouping, LINQ Operators, and LINQ joins, Paging using LINQ

LINQ to SQL:

Insert, Update And Delete Queries through LINQ

Unit : 4

[30%]

ASP.Net: ASP.NET Page Life Cycle, Server Controls: label, dropdown list box, validation controls, list box, text box, radio button, check box, Validation Controls, Request, Response and Server Object

State Management : session, cookie, View State, **Data Rendering Controls :** Grid View, Datalist, Repeater, List view, Binding and perform operations (Insert, Update, Delete) with Grid View, Creating and Using web services, Working with Master pages

Navigation Controls: Understanding Site Maps, SiteMapPath, Menu, Tree View

Rich Controls: File Upload, Calendar, Adrotator

Reference Books:

1. Complete Reference C# - Herbert schildt (TMH Publication)
2. Professional ASP.NET 4 in C# and VB
3. Complete reference Asp.Net - Herbert schildt (TMH Publication)
4. Asp.Net with Visual c#.Net 2003 - Wrox Publication
5. Visual c#.Net 2003 - Wrox Publication
6. Asp.net 4 Unleashed.

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M.Sc.(C.A. & I.T.) SEMESTER - VII
704 : Web Development using PHP

Unit : 1

[25%]

Building blocks of PHP: Basic syntax, Variables, Data Types, Operators and expressions, Constants. Flow Control: Switch flow, Loops, Code Block, Sending data to the browser.

Working With Arrays: Arrays, Creating array, Array related Functions.

Working with Function: Function, Calling Function, Defining Function, Returning the Values from user defined function, Variable Scope, Argument.

Working with Strings, Date and Time Functions: formatting String with PHP, Date and Time Function, String Manipulation and Investigating Strings with PHP.

Working with Forms: Creating form, Handling form, Validating form data, Accessing form data, use of Hidden fields to save State, Redirecting user, file Upload and Sending Mail on Form Submission.

Working with Cookies and User Session: Introduction of Cookie, Setting a Cookie with PHP, Introduction of Session and Improving Session Security, Starting a Session, Working with Session Variables, Passing Session Id in the query String, Destroying Session and Unsetting Variables.

Unit : 2

[30%]

Error Handling and Debugging: General error types and debugging, displaying PHP errors, Adjusting Error Reporting, Creating Custom error handler, PHP debugging techniques .

Filter: Types of Filter, Functions of Filter, Validate the data with filter option and sanitize .

Understanding the Database Design Process : The importance of good database design, Types of Table Relationship, Understanding Normalization .

Learning Basic SQL Command: Table Creation, Insert row, Select Command Using Where Clause, Update and Delete Command, Replace Command, String Function, Date and Time Functions, Stored Procedures, Join, Indexing and Sorting query.

Using MySQL with PHP: Connecting to MySQL and selecting the database, executing simple queries, retrieving query results, counting return Records, updating, Record Addition, Viewing Record, and Deletion Record with PHP.

MYSQL Error Handling: SQL and MySQL debugging techniques.

Connecting database with DSN : ODBC Connectivity Function.

Unit : 3

[30%]

Working with files: Include Files with INCLUDE, creating and deleting files, opening a file for reading, writing or Appending, Reading from files, Validating Files.

Working with Directories: Directory related function.

Working with Images: Image related function. Miscellaneous function.

Introduction to OOP: Introduction, the basic, auto loading objects, Class, Extends, Constructs, Scope Resolution Operator, Parent, serializing object, The magic objects sleep and awake, reference inside the constructor, comparing objects. Visibility, overloading, object interface, pattern, magic method, reflection, extending exception.

Unit : 4

[15%]

Introduction to Joomla: Introduction to Joomla including 1.0,1.5 and 1.6, Site -wide settings and user management, Setting up and organizing menus and navigation, Managing content articles, Working with Joomla components, Using Joomla modules and plugins, Choosing and configuring Joomla templates.

Text Book:

1. Beginning PHP 5 by Wrox.
2. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education.

Reference Books:

1. PHP and MySQL for dynamic Web Sites: Visual Quickpro Guide, Second Edition by Larry.
2. Programming PHP By Rasmus Lerdorf, Kevin Tatroe, Peter MacIntyre.
3. The Complete Reference PHP by Steven Holzner
4. Joomla : Bible, Wiley India Pvt. Ltd – Ric Shreves

H.N.G. University, Patan
M.Sc.(C.A. & I.T.) SEMESTER - VII
705 : Data Mining

Unit : 1

[25%]

Introduction: What motivated data mining? Why it is important? Data Mining-one kind of data? Data mining functionalities? Are all patterns interesting? Classification of data mining, Data mining task primitive, integration of data mining system with a database or data warehouse system, major issues in data mining.

Data Processing: Why process the data? Descriptive data summarization, data cleansing, data integration and transformation, data reduction, data discretization and concept hierarchy generation.

Unit : 2

[25%]

Data warehouse and OLAP Technology: What is data warehouse? A multidimensional data model, data warehouse architecture, data warehouse implementation, from data warehousing to data mining.

Data Generalization : Attribute oriented Induction.

Mining frequent patterns, Associations, and correlation : Basic concepts and a road map, efficient and scalable frequent item-set mining method, mining various kind of association rule, from association mining to correlation analysis, constraints based association mining.

Unit : 3

[25%]

Classification and prediction : what is classification ? what is prediction? Issues regarding classification and prediction, classification by decision tree, rule based classification, prediction, accuracy and error measures, evaluating the accuracy of a classifier or predictor

Cluster analysis : is cluster analysis? Types of data in cluster analysis, a categorization of major clustering method, partitioning method, Hierarchical method.

Unit-4

[25%]

Mining Object, Spatial, Multimedia, Text, and web data : Spatial data mining, Multimedia data mining, Text mining, Mining the world wide web

Application and Trends in Data Mining: Data mining application, Data mining system products and research prototypes, additional themes on data mining, social impacts of data mining, Trends in data mining.

Text Book:

1. Data Mining, concept and techniques by Jiawei Han and Micheline Kamber.

Reference Book:

1. Data Mining by Reema Theraja.