

2019-20-Project BCA

CS 15: Computer Networks

Unit I:

Introduction: Uses of Computer Networks - Network Hardware – LAN, MAN and WAN- Network Software - Reference Models- Example Networks.

Unit II:

Physical Layer: The Theoretical Basis For Data Communication - Guided Transmission media - Wireless Transmission - Communication Satellites- Public Switched Telephone Network- The Mobile Telephone System

Unit III:

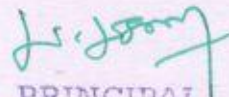
Data Link Layer: Data Link Layer Design Issues - Error Detection and Correction – Elementary data link protocols - Sliding Window Protocols – Example Data Link Protocols.

Unit IV:

Network Layer: Network Layer Design Issues- Routing Algorithms-Congestion Control Algorithms- Quality of Service –Internetworking.**Transport Layer:** Transport Services – Elements of transport protocols – Performance issues.

Unit V:

Application layers: Domain name system – Electric mail – The World Wide Web.
Network security: Cryptography- Symmetric-Key algorithms- Public-Key algorithms – Digital signature.



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CS 16: Web Programming

Unit I:

INTRODUCTION: Internet Principles – Basic Web Concepts – Client/Server model
– retrieving data from Internet – HTML and Scripting Languages – Standard
Generalized Markup Languages – Next Generation – Internet – Protocols and
Applications.

Unit II:

COMMON GATEWAY INTERFACE PROGRAMMING: HTML forms – CGI
Concepts – HTML tags Emulation – Server – Browser Communication – E-mail generation
– CGI client Side applets – CGI server applets – authorization and security.

Unit III:

SCRIPTING LANGUAGES: Dynamic HTML-Cascading style sheets-Object model and
Event model- Filters and Transitions-Active X Controls-Multimedia-Client side script -
VB Script programming – Forms – Scripting Object.

Unit IV:

SERVER SIDE PROGRAMMING: XML – Server side includes – communication – DTD
– Vocabularies – DOM methods – Firewalls – Proxy Servers.

Unit V:

SERVELETS AND JSP: JSP Technology Introduction-JSP and Servlets- Running JSP
Applications Basic JSP- JavaBeans Classes and JSP-Tag Libraries and Files- Support for
the ModelView-Controller Paradigm- Case Study- Related Technologies.

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CS 11: Database Management Systems

Unit I:

OVERVIEW OF DATABASE SYSTEMS: Managing Data – A Historical Perspective – File Systems Versus a DBMS – Advantages of a DBMS – Describing and Storing Data in a DBMS – Queries in a DBMS – Transaction Management – Structure of a DBMS – People Who Work with Databases. INTRODUCTION TO DATABASE DESIGN: Database Design and ER Diagrams – Entities, Attributes, and Entity Sets – Relationships and Relationship Sets – Additional Features of ER Model – Conceptual Design With the ER Model.

Unit II:

THE RELATIONAL MODEL: Introduction to the Relational Model – Integrity Constraints over Relations – Enforcing Integrity Constraints – Querying Relational Data – Logical Database Design: ER to Relational – Introduction to Views – Destroying / Altering

Tables and Views. RELATIONAL ALGEBRA AND CALCULUS: Preliminaries – Relational Algebra: Selection and Projection – Set Operations – Renaming – Joins – Division Relational Calculus: Tuple Relational Calculus – Domain Relational Calculus

Unit III:

SQL: QUERIES, CONSTRAINTS, TRIGGERS: The Form of a Basic SQL Query – UNION, INTERSECT, and EXCEPT – Nested Queries – Aggregate Operators – Null Values – Complex Integrity Constraints in SQL – Triggers and Active Databases –

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Designing Active Databases

Unit IV:

SCHEMA REFINEMENT AND NORMAL FORMS: Introduction to Schema Refinement – Functional Dependencies – Reasoning about FD's – Normal Forms – Properties of Decompositions – Normalization – Schema Refinement in Database Design – Other Kinds of Dependencies

Unit V:

OVERVIEW OF TRANSACTION MANAGEMENT: The ACID Properties – Transactions and Schedules – Concurrent Execution of transactions – Lock Based Concurrency Control – Performance of Locking – Transaction Support in SQL – Introduction to Crash Recovery. SECURITY AND AUTHORIZATION: Introduction to Database Security - Access Control – Discretionary Access Control – Mandatory Access Control – Security for Internet Applications – Additional Issues Related to Security.

CS 12: Software Engineering

Unit I:

Introduction to Software Engineering: Some Definitions – Some Size factors – Quality and Productivity Factors – Managerial Issues. Planning a Software Project: Defining the Problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – Other Planning Activities.

Unit II:

Software Cost Estimation: Software Cost Factors – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs.

Unit III:

Software Requirements Definitions: The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

Unit IV:

Software Design: Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-Time


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and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections
- Design Guidelines.

Unit V:

Verification and Validation Techniques: Quality Assurance – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification. Software Maintenance: Enhancing Maintainability During Development – Managerial Aspects of Software Maintenance – Configuration Management – Source-Code Metrics – Other Maintenance Tools and Techniques.

CS 13: Dot Net Programming

Unit I:

Introduction: .Net Framework- Components of the .Net framework - Introduction to Visual Basic.Net- Features of VB.Net -VB.Net - Program Structure – VB.Net Integrated Development Environment- Types of VB.Net Applications VB.Net Basics: Identifiers- Keywords- Data Types- Variables- Constants and Enumerations- Modifiers- Operators – Statements & Directives.

Unit II:

Control Structures: Decision Making Statement - Loops- Loop Control Statements. Arrays: Arrays- Strings - VB.Net-Collections. Functions & Sub Procedures: Defining a


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Function – Function Returning a Value – Recursive Function – Param Arrays – Passing Arrays as Function Arguments - Sub Procedures.

Unit III:

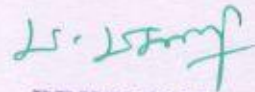
Object Oriented Programming Paradigm: Classes & Objects- Interfaces – Delegate – Events - Event Handling - Exception Handling- File Handling.

Unit IV:

.Net Controls: Vb.Net Tool Box- Forms- Textbox- Label- Button- List Box- ComboBox- RadioButton- Check Box- PictureBox - ScrollBar – TrackBar – Container Controls. Advanced Controls: Progress Bar- DateTimePicker – Tree View – The TreeNode Class – ListView -ImageList –Tooltip – Rich Textbox –Timer Control – MDI Form

Unit V:

Dialog Boxes and Menus: Dialog Box- Modal Forms – Menus – Adding Cut, Copy and Paste Functionalities in a Form – Anchoring and Docking Controls in a Form. Database Access: Introduction to ADO.Net – ADO.Net Object Model – Connecting to a SQL Server Database – Crystal Reports



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