

CS7T4A

4/4 B.Tech. FIRST SEMESTER
Client/Server Computing
Elective – I
(Common to CSE/IT)

Credits: 4

Lecture: 4 periods/week

Tutorial: 1 period /week

Internal assessment: 30 marks

Semester end examination: 70 marks

Course Context and Overview: This course covers the evolution, impact and services available with Client/Server technology and distributed computing. The characteristics of clients and servers and the role of middleware will be discussed. Students will explore the various type of Client/Server implementations: SQL databases, transaction servers, distributed objects, groupware, Web applications and JAVA.

Prerequisite: NIL

Objectives:

This course introduces web services and their related technologies. The main objectives are:

1. To obtain a background on Service Oriented Architecture (SOA)
2. To obtain a working knowledge of the internet (as the underlying Web infrastructure) and the HTTP protocol, which is the driver behind all main web services.
3. To obtain an in depth understanding of the major classes of web service technologies (WSDL,UDDI,SOAP, RESTful)
4. To learn about current trends of services on the XML.

Learning Outcomes:

Ability to:

1. Understand virtualization of real environment
2. Understand and discuss the use of data base management system and data hierarchy in an organization.
3. Understand and identify software and hardware development environment as client and server.
4. Understand and determine database communication in client-server environment.
5. Learn and use client-server based software development tools.

UNIT I

Introduction to client server computing: Evolution of corporate computing models from centralized to distributed computing, client server models, benefits of client server computing, pitfalls of client server programming.

UNIT II

Evolution and Emergence of web services –Evolution of distributed computing, Coredistributed computing technologies – client/server, CORBA, JAVA RMI, Microsoft DCOM, MOM, Challenges in Distributed computing, role of J2EE and XML in distributed computing, emergence of Web Services and Service oriented Architectures(SOA).

UNIT III

Introduction to web services –The definition of web services, basic operational model of web services, tools and technologies enabling web services, benefits and challenges of using web services.

UNIT IV

Web Services Architecture – web services architecture and its characteristics, core buildingblocks of web services, standards and technologies available for implementing web services, web services communication, basic steps of implementing web services, developing web services enabled applications.

UNIT V

Core fundamentals of SOAP: SOAP Message structure, SOAP encoding, SOAP messageexchange models, SOAP communication and messaging, SOAP security.
Developing webservices using SOAP: Building SOAP web services, Developing SOAP web services usingJava, limitations of SOAP.

UNIT VI

Describing web services: WSDL, WSDL in world of web services, web services life cycle,Anatomy of WSDL definition document, WSDL bindings, WSDL tools, limitation of WSDL

UNIT VII

Discovering web services: Service discovery, role of service discovery in a SOA, servicediscovery mechanisms, UDDI, UDDI registries, uses of UDDI registry, programming with UDDI, UDDI data structure, support for categorization in UDDI registries, publishing API, publishing information to a UDDI registry, searching information in a UDDI registry, deleting information in UDDI registry, limitations of UDDI.

UNIT VIII

Web Services Interoperability: Means of ensuring Interoperability, overview of .NET andJ2EE.

Web Services Security: XML security framework, XML encryption, XML digital signature, XKMS structure, guidelines for signing XML documents.

Learning Resources

TEXT BOOKS:

- 1) Client/Server programming with Java and CORBA, Robert Orfali and Dan Harkey, John Wiley & Sons ,SPD 2nd Edition.
- 2) Developing Java Web services, R.Nagappan, R.Skoczylas, R.P.Sriganesh, Wiley India, 2008.
- 3) Developing Enterprise web services, S.Chatterjee, J Webber, Pearson Education, 2008.
- 4) XML Web services and The Data Revolution , FP Coyle, Pearson Education.

REFERENCES:

1. Building web services with Java, 2nd Edition, S. Graham and others, Pearson Edn, 2008
2. Java Web Services, D.A, Chappell & T. Jewell, O'Reilly, SPD