

Dharmsinh Desai University, Nadiad
Faculty of Technology
Computer Engineering Department

B.Tech. CE Sem – VI
Subject: Service Oriented Architecture

Practical List

Practical-1

Aim: Introduction to XML.

Describe the following in detail (Hand Written):

HTML vs. XML
Rules of XML
Methods of Parsing
DOM Classes

Application Source Code (Hand Written)

Attach proper screenshots for following application

- i) Opening XML Document
- ii) Navigating through the XML Document

Practical-2

Aim: Learning the use of GetElementsByTagName, GetElementById, SelectNodes, SelectSingleNode methods of XmlDocument Class.

Describe the following in detail (Hand Written):

Properties of XmlNode Class
GetElementsByTagName, GetElementById, SelectNodes, SelectSingleNode methods of XmlDocument Class

Application Source Code (Hand Written)

Attach proper screenshots for following application

- i) Looking for specific elements and nodes using GetElementsByTagName, GetElementById, SelectNodes, SelectSingleNode methods

Practical-3

Aim: Modification of simple XML Document by Adding, Removing and Updating details.

Describe the following in detail (Hand Written):

Handling of White Spaces in XML
Events of XML Document Class

Application Source Code (Hand Written)

Attach proper screenshots for following application

- i) Modifying XML Documents (including DOM event handlers)
- ii) Handling White Spaces

Practical-4

Aim: Validating XML Documents against DTDs and XSD Schemas

Describe the following in detail (Hand Written):

- 1) DTD
 - a. Introduction, inline and external DTD, rules for defining elements, attributes, constraints; data types
- 2) XSD
 - a. Introduction, inline and external DTD, rules for defining elements, attributes, constraints; data types
- 3) XMLReader Class and its important properties and methods
- 4) XMLReaderSettings Class and its important properties and methods

Application Source Code (Hand Written)

Attach proper screenshots for following application:

- i) Design a Windows Forms Application to read an XML file and validate it against given external DTD or XSD.
- ii) Design a Windows Forms Application to read an XML file, validate it against external DTD/XSD and display it on console window using XMLReader class.
- iii) Modify the application developed in Practical-3 for validating XML while updating/inserting employee records against DTD/XSD (Using combination of DOM and XMLReader classes)

Practical-5

Aim: Introduction to XPath, XSLT and XML Serialization.

Describe the following in detail (Hand Written):

Overview and need of XPATH and XSLT

Syntax of apply templates, xsl-if, xsl-choose

What is Serialization? Need of Serialization. Types of Serialization

Application Source Code (Hand Written)

Attach proper screenshots for following applications:

- i) Converting XML to
 - 1. Html Table format
 - 2. Html using apply templates
 - 3. Html using xsl-if
 - 4. Html using xsl:choose
- ii) Use of XslCompiledTransform Class to develop a Windows Form application which takes xml file, xslt file and html file names from the user. It will apply xsl transformation to xml file and the html output is stored in given html file.
- iii) Develop a Windows Form application to take XML file name and XPath expression as input and display all the matching node in a text box.
- iv) Develop a Windows Form application that uses XmlSerializer class to do the serialization of the Employee object to XML file and deserialize the XML data from file to Employee object.

Practical-6

Aim:

- i) Develop a WCF service using Visual Studio wizard and test it using built-in WCF testing client.**
- ii) Develop a *Calculator* WCF service which exposes four operations (add, sub, mul, div). Host it in a Windows Form application. Write a Windows Form application to consume all the four operations provided by Calculator service.**

Describe the following in detail (Hand Written):

- i) WCF Introduction, WSDL, SOAP
- ii) Metadata Exchange Protocol, Message Communication Pattern
- iii) WCF Service behaviour, WCF Bindings

Application Source Code and its output (Print copies)

Practical-7

Aim:

i) Develop a WCF service exposing CRUD operations for Employee record. Define tcp and named pipe MEX endpoints. Also define one business endpoint to consume the service over HTTP protocol. Host the service on console application. Design and develop a Windows form client to consume this web service.

Describe the following in detail (Hand Written):

- i) TCP binding, Named pipe binding, basic HTTP binding, WS HTTP binding
- ii) Types of behaviours in WCF

Application Source Code and its output (Print copies)

Practical-8

Aim:

i) Develop a Calculator WCF Service exposing arithmetic operations using Data Contract. Define http, tcp and named pipe business and MEX endpoints in the Windows Console Host. Design and develop a Windows form client to consume this web service.

ii) Develop a Book order WCF service exposing placing a book order operation. Use Message Contract to send/receive the Book object. Define http, tcp and named pipe business and MEX endpoints in the Windows Console Host. Design and develop a Windows form client to consume this web service.

Describe the following in detail (Hand Written):

- i) Data contract, Message contract

Application Source Code and its output (Print copies)

Practical-9

Aim:

i) Develop a basic Web API service for managing Product information (CRUD operations). (Note: Maintain static product list on the server).

ii) Understanding routing mechanism in Web API. Experimenting with convention-based routing and attribute based routing.

Describe the following in detail (Hand Written):

- i) Introduction to Web API

- ii) Introduction to RESTful service
- iii) HTTP verbs
- ii) Format of HTTP request header and HTTP response
- iii) Routing mechanism in Web API

Application Source Code and its output (Print copies)

Practical-10

Aim:

- i) Understanding and experimenting “Parameter binding” in Web API (Product Application).
 - a) passing primitive type data from HTTP request URI and HTTP request body.
 - b) passing complex type data from HTTP request URI and HTTP request body.
- ii) Understanding and experimenting with four different action-method return types (Product Application).
 - a) void
 - b) primitive/complex data type
 - c) HttpResponseMessage
 - d) IHttpActionResult

Describe the following in detail (Hand Written):

- i) Parameter binding in Web API
- ii) Action method return types in Web API

Application Source Code and its output (Print copies)

Practical-11

Aim:

- i) Developing Windows Form client application for the service developed in Practical-09. Provide user interface for CRUD operations on Product.

Describe the following in detail (Hand Written):

- i) Asynchronous programming using async and await.
- ii) HttpClient class

Application Source Code and its output (Print copies)