

ASSIGNMENT NO.

AIM :

A Pizza shop chain wants to automate dishes served with schemes or without scheme and delivered by the nearest shop in a chain. Use pervasive computing paradime to develop a web-application using Embedded Java/ Python.

SOFTWARE REQUIREMENTS:

- Web Servers
- Eclipse tool

MATHEMATICAL MODEL :

Consider a set S consisting of all elements related to a program. The mathematical model is given as below,

$S = \{fs, e, X, Y, fme, DD, NDD, MemShared\}$

Where,

s = Initial State

e = End State

X = Input Given $\{X1, X2\}$ where, $X1$ = Username, $X2$ = Password

Y = Output Obtained $\{Y1, Y2\}$

where, $Y1$ = Login Sucessfull, $Y2$ = Incorrect Username or Password

fme = Function used $\{Login(), Register(), Order() \text{ and } Delivery()\}$

DD = Deterministic Data

NDD = Non-Deterministic Data

$MemShared$ = Processor core used by program.

THEORY :

1) HTML :

HTML stands for **H**ypertext **M**arkup **L**anguage, and it is the most widely used language to write Web Pages.

- Hypertext refers to the way in which Web pages (HTML documents) are linked together. Thus the link available on a webpage are called Hypertext.
- As its name suggests, HTML is a Markup Language which means you use HTML to simply "mark up" a text document with tags that tell a Web browser how to structure it to display. Originally, HTML was developed with the intent of defining the structure of documents like headings, paragraphs, lists, and so forth to facilitate the sharing of scientific information between researchers. Now, HTML is being widely used to format web pages with the help of different tags available in HTML.

2) Introduction to CSS

A CSS (cascading style sheet) file allows you to separate your web sites (X)HTML content from it's style. As always you use your (X)HTML file to arrange the content, but all of the presentation (fonts, colors, background, borders, text formatting, link effects & so on...) are accomplished within a CSS.

External Stylesheet

Next we will explore the external method. An external CSS file can be created with any text or HTML editor such as "Notepad" or "Dreamweaver". A CSS file contains no (X)HTML, only CSS. You simply save it with the .css file extension. You can link to the file externally by placing one of the following links in the head section of every (X)HTML file you want to style with the CSS file.

```
<link rel="stylesheet" type="text/css" href="Path To stylesheet.css" />
```

Or you can also use the @import method as shown below

3) JSP :

Java Server Pages (JSP) is a technology for developing web pages that support dynamic content which helps developers insert java code in HTML pages by making use of special JSP tags, most of which start with <% and end with %>. A JavaServer Pages component is a type of Java servlet that is designed to fulfill the role of a user interface for a Java web application. Web developers write JSPs as text files that combine HTML or XHTML code, XML elements, and embedded JSP actions and commands. Using JSP, you can collect input from users through web page forms, present records from a database or another source, and create web pages dynamically. JSP tags can be used for a variety of purposes, such as retrieving information from a database or registering user preferences, accessing JavaBeans components, passing control between pages and sharing inform Advantages of JSP:

Following is the list of other advantages of using JSP over other technologies:

- **vs. Active Server Pages (ASP):** The advantages of JSP are twofold. First, the

dynamic part is written in Java, not Visual Basic or other MS specific language, so it is more powerful and easier to use. Second, it is portable to other operating systems and non-Microsoft Web servers.

- **vs. Pure Servlets:** It is more convenient to write (and to modify!) regular HTML than to have plenty of println statements that generate the HTML.
- **vs. Server-Side Includes (SSI):** SSI is really only intended for simple inclusions, not for "real" programs that use form data, make database connections, and the like.
- **vs. JavaScript:** JavaScript can generate HTML dynamically on the client but can hardly interact with the web server to perform complex tasks like database access and image processing etc.
- **vs. Static HTML:** Regular HTML, of course, cannot contain dynamic information.

4) Accessing Databases from Servlets and JSP Pages

java.sql package: the DriverManager class and the Connection, the Statement, and the ResultSet interfaces.

The DriverManager Class

The DriverManager class is used to obtain a connection to a database. Database servers use their own proprietary protocols for communication, which are different from each other. However, you don't need to worry about these protocols because you can use "translators." These "translators" come in the form of JDBC drivers. Therefore, you only need to write your Java code once to access any database. JDBC drivers are available for most popular databases today. Oracle, Microsoft SQL Server, Sybase, DB2, MySQL, and so on. As long as you can find the JDBC driver for a database server, you can access the database from your Java code. The list of JDBC drivers can be found [here](#).

JDBC drivers normally come in a .jar file. The first thing you need to do once you have the driver is copy it into the WEB-INF/lib directory under your application directory.

Then, from your servlet/JSP page, you use the DriverManager class to load JDBC drivers. The JDBC driver must be located in the WEB-INF/lib directory under the application directory.

The Connection Interface

To access a database, first you need to establish a connection to the database server. In JDBC, a connection is represented by the Connection interface. An instance of a class that implements Connection is returned by a call to the getConnection() method of the DriverManager class.

The most frequently used method of the Connection interface is createStatement(), which returns a Statement object for sending SQL statements to the database.

The Statement Interface

You use the Statement interface method to execute an SQL statement and obtain the produced results. A Statement object is returned by the createStatement() method of the Connection interface.

The ResultSet Interface

The ResultSet interface represents a table-like database result set. A ResultSet object maintains a cursor pointing to its current row of data. Initially, the cursor is positioned before the first row. Therefore, to access the first row in the ResultSet, you use the next() method. This method moves the cursor to the next record and returns true if the next row is valid, and false if there are no more records in the ResultSet object.

5) Apache Tomcat Server :

Tomcat is an open source server from the Apache Software Foundation. It is a Web application server, which means that it comes ready to support programming using Java Server Pages (JSPs) and servlets. Since early 2000, Tomcat has served as the reference implementation for the latest Java Servlet and JSP specifications. Tomcat 5.5, the latest Tomcat version as of this writing, supports the latest Java Servlet 2.4 and Java Server Pages 2.0 standards. Tomcat also includes a limited Web server that can serve static Web pages when executed in stand-alone mode (by default). Because of a variety of open source libraries and extensions, Tomcat supports:

- Web services using the Apache Axis servlet
- Development frameworks, such as Apache Struts
- Templating engines, such as Apache Jakarta Velocity
- Object-relational mapping technology, such as Hibernate

This tutorial shows you how to use Tomcat to learn JSP, servlet, and Web services programming. Use of Struts, Velocity, and Hibernate with Tomcat is beyond this tutorial's scope. In the past, because a high level of expertise was required to configure and administer Tomcat, the primary Tomcat users were advanced server-side application developers. Now -- thanks to the maturing of Tomcat's GUI installer, the ability to install the server as a system service, and stabilization of the server's features -- even beginning Web developers can take advantage of this versatile server.

6) Google API for Maps (Source and Destination)

The Google Maps API makes it very easy for non-programmers to add maps to their web pages with only a small amount of programming. You can't get around JavaScript or HTML but the changes you need to make for some basic maps is minimal. One of the biggest advantages of using the Maps API is access to Fusion tables. On their own, Fusion tables can easily be turned into maps. From the API you can provide your audience with easy to access to data, including the ability to select subsets of your data to view.

This workshop assumes a basic ability to read JavaScript and an interest in learning to write a little JavaScript to create your maps. It also assumes an understanding of HTML and an interest in learning more. After all, the title of this workshop is "Integrating Map

APIs into your website". You will be making some maps, which can be saved in the T:\ drive on the machines in this lab.

CONCLUSION:

Thus we have studied and Implemented a web-application of pizza shop using Java.