

### **Practical 3 - Implementing the Servlet IO and File applications.**

#### **Theory –**

#### **MultipartConfig**

**fileSizeThreshold**

**location**

**maxFileSize**

**maxRequestSize**

**servletOutputStream class**

**ReadListener Interface**

**WriteListener Interface**

**3a.** Create a Servlet application to upload and download a file.

#### **i) Servlet application to upload file**

##### **Index.html**

```
<html>
<form action="FileUploadServlet" method="post" enctype="multipart/form-data">
    <h1>File Uploading</h1>
    Select File to Upload:<input type="file" name="file"><br>
    Destination <input type="text"
    value="C:\Users\ITCS\Documents\NetBeansProjects\Demo3_a\src\main\webapp\tmp"
    name="destination">
    <br>
    <input type="submit" value="FileUpload" name="upload">
</form>
</html>
```

##### **FileUploadServlet.java**

```
package fileservletapp;
import java.io.*;
import jakarta.servlet.*;
import jakarta.servlet.annotation.MultipartConfig;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.*;
@WebServlet("/FileUploadServlet")
@MultipartConfig
public class FileUploadServlet extends HttpServlet {
    @Override
    public void doPost(HttpServletRequest req, HttpServletResponse res) throws
    ServletException, IOException
    {
        res.setContentType("text/html");
        PrintWriter out = res.getWriter();
        String path=req.getParameter("destination");
        out.println(path);
    }
}
```

```

Part filePart=req.getPart("file");
String sfilePart=req.getPart("file").toString();
out.print("<br> filePart: "+sfilePart);
String filename=filePart.getSubmittedFileName();
out.print("<br><br><hr> file name: "+filename);
OutputStream os=null;
InputStream is=null;
try {
os=new FileOutputStream(new File(path+File.separator+filename));
is=filePart.getInputStream();
int read=0;
byte[] b=new byte[1024];
while ((read = is.read(b)) != -1) {
os.write(b, 0, read);
}
out.println("<br>file uploaded sucessfully...!!!");
out.close();
}
catch(FileNotFoundException e){out.print(e);}
} }

```

## ii) Servlet application to download file

### index.html

```

<html>
<head>
<title>File Download Page</title>
</head>
<body>
<h1>File Download Application</h1>
Click <a href="DownloadServlet?filename=Request Dispatcher.pdf">Request
Dispatcher</a>
<br/><br/>
Click <a href="DownloadServlet?filename=Cookies.pdf">Cookies</a>
</body>
</html>

```

~~~~~ DownloadServlet.java ~~~~~

```

package filedownloadapp;
import java.io.IOException;
import java.io.InputStream;
import java.io.PrintWriter;
import jakarta.servlet.*;
import jakarta.servlet.http.*;
import jakarta.servlet.annotation.*;
@WebServlet("/DownloadServlet")

```

```

public class DownloadServlet extends HttpServlet {
    @Override
    public void doGet(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("APPLICATION/OCTET-STREAM");
        String filename = request.getParameter("filename");
        ServletContext context = getServletContext();
        InputStream is = context.getResourceAsStream("/") + filename);
        //ServletOutputStream out = response.getOutputStream(); // any of the two works
        PrintWriter out=response.getWriter();
        response.setHeader("Content-Disposition","attachment; filename=\"\" + filename + "\"");
        //if comment this statement then it wl ask you about the editor with which you want to open
        the file
        int i;
        while ((i=is.read()) != -1) {
            out.write(i);
        }
        is.close();
        out.close();
    }
}

```

### 3b. Develop Simple Servlet Question Answer Application using Database.

In MySql command line client do the following

- a) Open your database using USE command
- b) Give the following commands

```
create table quiz (qno varchar(5) PRIMARY KEY, question varchar(100), op1  
varchar(50), op2 varchar(50), op3 varchar(50), op4 varchar(50), ans varchar(50));
```

```
insert into quiz values('001','What is the capital of India??','New  
Delhi','Kolkata','Chennai','Mumbai','1');
```

```
insert into quiz values('002','Who was the First President of India??','Dr. Rajendra  
Prasad','Dr. S. Radhakrishnan','RamNathKovind','V. V. Giri','1');
```

```
insert into quiz values('003','What is ORM','Object Ratio Mean','Object Rotation  
Measure','Object Relation Mapping','Oracle Request Management','3');
```

```
insert into quiz values('004','Unit of Energy is ____','Dozon','Kilo Meter  
,','Joul','Hertz','3');
```

```
insert into quiz values('005',' --- is the smallest memory  
unit.','bit','byte','KiloByte','GigaByte','1');
```

#### Index.html

```
<html><head><title>Quiz Application</title></head>  
<body>  
<h1>Welcome to Quiz Servlet </h1>  
<h1><a href="QuizServlet" >CLICK TO START QUIZ</a></h1>  
</body>  
</html>
```

#### QuizServlet.java

```
package MyPack;  
  
import java.io.IOException;  
import java.io.PrintWriter;  
import jakarta.servlet.ServletException;  
import jakarta.servlet.annotation.WebServlet;  
import jakarta.servlet.http.HttpServlet;  
import jakarta.servlet.http.HttpServletRequest;  
import jakarta.servlet.http.HttpServletResponse;  
import java.sql.*;  
  
@WebServlet(name = "QuizServlet", urlPatterns = {"/QuizServlet"})  
public class QuizServlet extends HttpServlet {
```

```

@Override
public void doGet(HttpServletRequest request, HttpServletResponse response)throws
ServletException, IOException {
    response.setContentType("text/html;charset=UTF-8");
    PrintWriter out = response.getWriter();
    out.println("<form method=post action=ShowResult>");
    try {
        Class.forName("com.mysql.cj.jdbc.Driver");
        Connection con =
        DriverManager.getConnection("jdbc:mysql://localhost:3306/logindb?autoReconnect=
        true&useSSL=false","root","tiger");
        Statement stmt = con.createStatement();
        ResultSet res = stmt.executeQuery("select * from quiz");
        out.println("<table border=1 >");
        int qno=0;
        while(res.next()){
            qno++;
            out.println("<tr><td>"+res.getString(1)+"</td>");
            out.println("<td>"+res.getString(2)+"</td></tr>");
            out.println("<tr><td><input type=radio name="+qno+"
            value=1>"+</td><td>"+res.getString(3)+"</td></tr>");
            out.println("<tr><td><input type=radio name="+qno+"
            value=2>"+</td><td>"+res.getString(4)+"</td></tr>");
            out.println("<tr><td><input type=radio name="+qno+"
            value=3>"+</td><td>"+res.getString(5)+"</td></tr>");
            out.println("<tr><td><input type=radio name="+qno+"
            value=4>"+</td><td>"+res.getString(6)+"</td></tr>");
        }
    } catch(ClassNotFoundException | SQLException e)
    {out.println(e);}
    out.println("</table>");
    out.println("<input type=reset >");
    out.println("<input type=submit value=SUBMIT >");
    out.println("</form>");
}
}

```

### ShowResult.java

```

package MyPack;

import java.io.IOException;
import java.io.PrintWriter;
import jakarta.servlet.ServletException;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;

```

```

import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import java.io.*;
import java.sql.*;

@WebServlet(name = "ShowResult", urlPatterns = {"/ShowResult"})
public class ShowResult extends HttpServlet {

    public void doGet(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        PrintWriter out = response.getWriter();
        try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection con =
                DriverManager.getConnection("jdbc:mysql://localhost:3306/quizdb?autoReconnect=true&useSSL=false", "root", "tiger");
            Statement stmt = con.createStatement();
            ResultSet res = stmt.executeQuery("select ans from quiz");
            int count = 0, qno = 0;
            while(res.next()){
                if(res.getString(1).equals(request.getParameter("q"+qno)))
                { count++;
                  out.println("<h1>Correct </h1>");
                }
                else {
                  out.println("<h1>Incorrect </h1>");
                }
            }
            out.println("<h1>Your Score is "+count+" </h1>");
        } catch (Exception e) {out.println(e);} } }

```

### 3c. Create simple Servlet application to demonstrate Non-Blocking Read Operation.

#### Index.html

```
<html>
<head>
<title>Non Blocking IO</title>
<meta charset="UTF-8">
<meta http-equiv="Refresh" content="0; URL=NonBlockingServlet">
</head>
<body>
</body>
</html>
```

#### NonBlockingServlet.java

```
package MyPack;

import java.io.*;
import java.net.*;
import java.net.HttpURLConnection;
import java.net.URL;
import java.util.logging.Level;
import java.util.logging.Logger;
import jakarta.servlet.*;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.*;

@WebServlet(name = "NonBlockingServlet", urlPatterns = {"/NonBlockingServlet"})
public class NonBlockingServlet extends HttpServlet {
    protected void service(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter()) {

            out.println("<h1>FileReader</h1>");
            String filename="/WEB-INF/BookList.txt";
            ServletContext c=getServletContext();
            InputStream in=c.getResourceAsStream(filename);
            String path;
            path =
                "http://" + request.getServerName() + ":" + request.getServerPort() + request.getContextPath() + "/"
                + ReadingNonBlockingServlet.class.getSimpleName();
            URL url=new URL(path);
            HttpURLConnection conn=(HttpURLConnection)url.openConnection();
            conn.setChunkedStreamingMode(2);
            conn.setDoOutput(true);
            conn.connect();
```

```

if(in!=null)
{
InputStreamReaderinr=new InputStreamReader(in);
BufferedReaderbr = new BufferedReader(inr);
String text="";
System.out.println("Reading started....");
BufferedWriter bw=new BufferedWriter(new
OutputStreamWriter(conn.getOutputStream()));
while((text=br.readLine())!=null){
out.print(text+"<br>");
try {
Thread.sleep(1000);
out.flush();
}
catch(InterruptedException){}
}out.print("reading completed....");
bw.flush();
bw.close();
}
}
}
}
}

```

#### **ReadingNonBlockingServlet.java**

```

import java.io.*;
import jakarta.servlet.AsyncContext;
import jakarta.servlet.ServletException;
import jakarta.servlet.ServletInputStream;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
@WebServlet(urlPatterns = {"/ReadingNonBlockingServlet"},asyncSupported = true )
public class ReadingNonBlockingServlet extends HttpServlet {
@Override
protected void service(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException
{ response.setContentType("text/html");
AsyncContext ac = request.startAsync();
ServletInputStream in=request.getInputStream();
in.setReadListener(new ReadingListener(in,ac));
}
}

```

#### **ReadingListener.java**

```

packageMyPack;

```



```
import jakarta.servlet.AsyncContext;
import jakarta.servlet.ServletInputStream;
import jakarta.servlet.ReadListener;
public class ReadingListener implements ReadListener
{ ServletInputStream input = null;
  AsyncContext ac = null;
  ReadingListener(ServletInputStream in, AsyncContext c) {
    input = in;
    ac = c;
  }
  @Override
  public void onDataAvailable() {
  }
  public void onAllDataRead()
  { ac.complete();
  }
  public void onError(Throwable t)
  { ac.complete();
    t.printStackTrace();} }
```