**Software Development for Cloud Computing**

**Assignment 3**

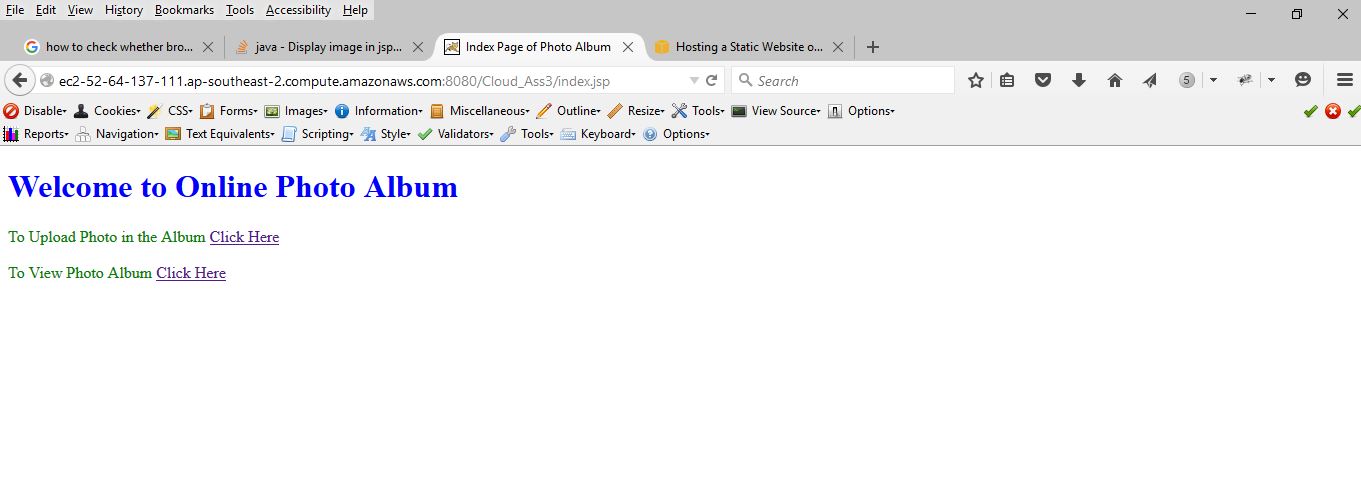
**Name - Ronak Shah**

**Student Id - 4949773**

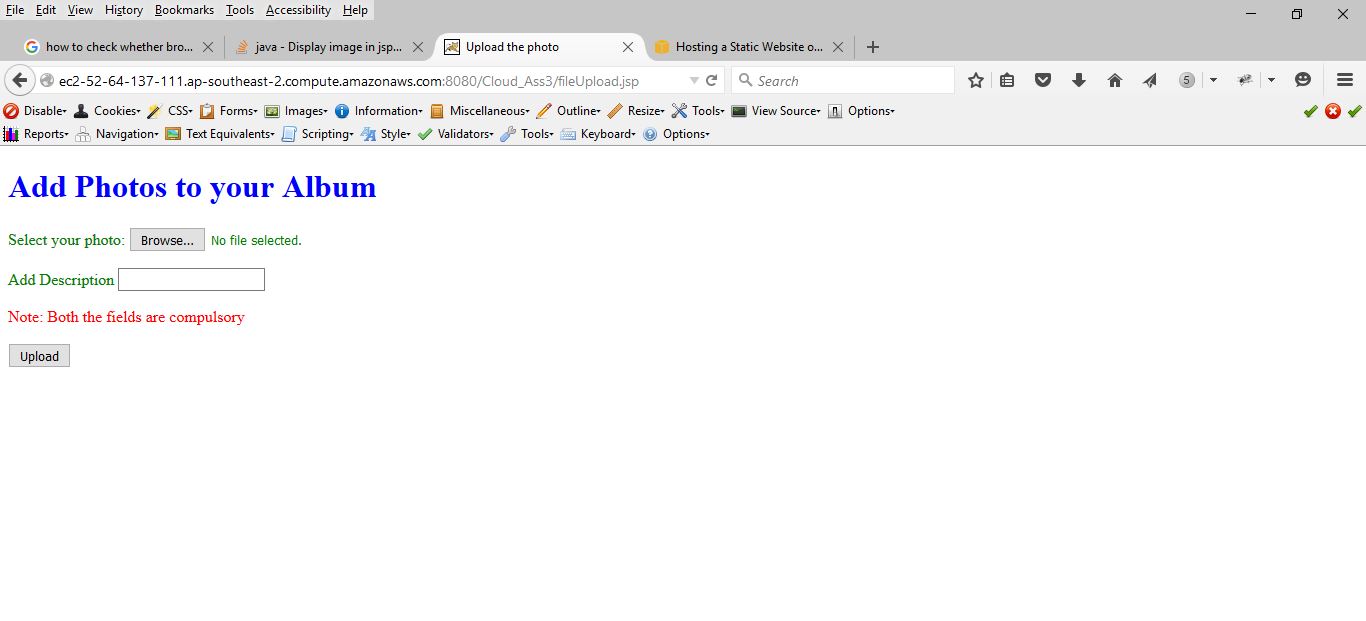
**Unit Code - COS80001**

**Title - Extend the Web album with Amazon RDS (Submission for Assignment 3)**

**index.jsp (picture)**

****

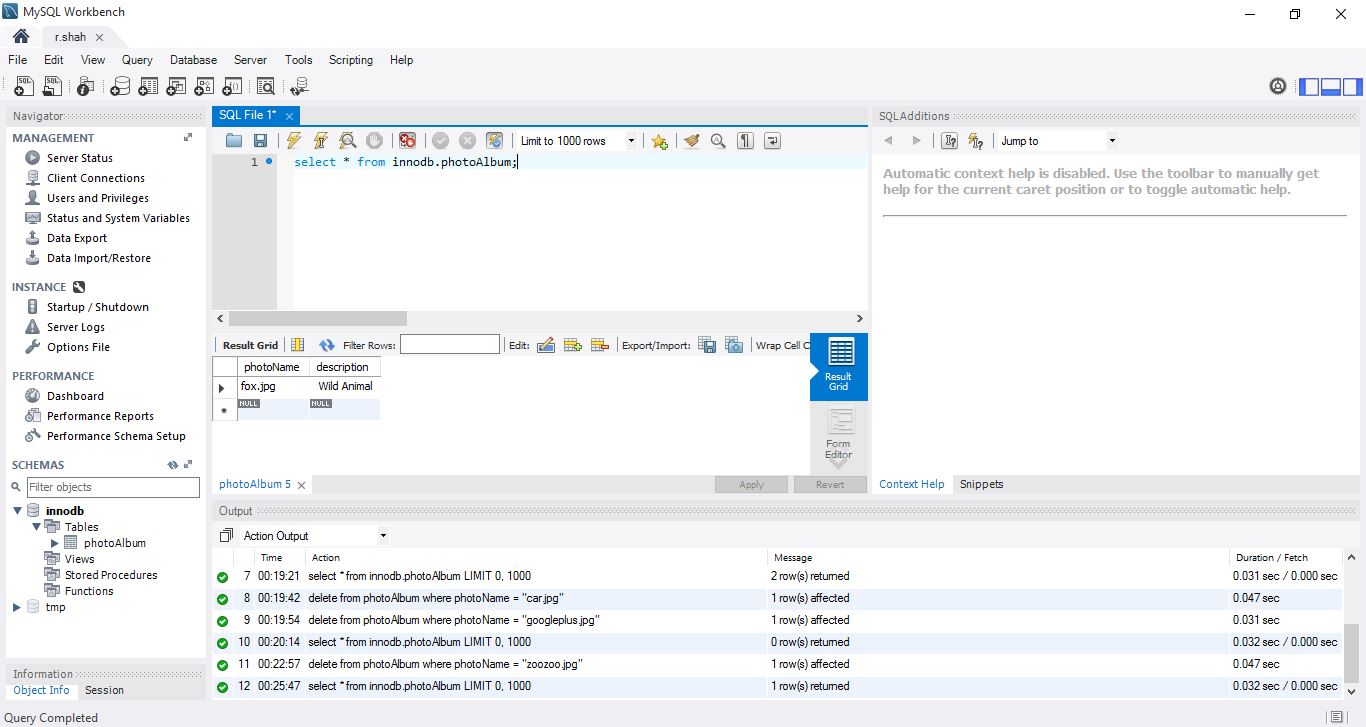
**fileUpload.jsp(picture)**

****

**filedownload.jsp (picture)**

****

**Mysql(picture)**

****

**Reflections**

* Assignment 1 was pretty straight forward and feifei helped us in the whole procedure.
* Assignment 2 was challenging as had no knowledge with jsp, but had used eclipse before and had done web programming so that experience did help, also assignment question had various links which were pretty straight forward and had to just use that code and worked fabulously.
* Assignment 3 was just an extension of Assignment 2 and similar to earlier assignments various links in the question did help also was stuck at one place because was using bucket name instead of database name, by carefully debugging I rectified my mistake and rest was easy.

In Conclusion Questions are organized pretty well and if followed accordingly it is pretty easy. It’s a great reference point.

**List of Programs**

**index.jsp**

<%@ page language=*"java"* contentType=*"text/html; charset=ISO-8859-1"*

pageEncoding=*"ISO-8859-1"*%>

<!DOCTYPE html>

<html lang = *"en"*>

<!-- This page shows option to upload photo to the album or view photo alblum -->

<head>

<meta charset = *"utf-8"*/>

<meta name = *"description"* content = *"Main Page"*/>

<meta name = *"author"* content = *"Ronak Shah"*/>

<title> Index Page of Photo Album </title>

</head>

<body >

<style>

<!-- **Style** **of** **the** **Page** -->

**body** {background-color:*lightgray*;

text-align : *center*;}

**h1** {color:*blue*;}

**p** {color:*green*;}

</style>

<h1>Welcome to Online Photo Album</h1>

<p>To Upload Photo in the Album

<a href=*"fileUpload.jsp"*>Click Here</a>

</p>

<p>To View Photo Album

<a href=*"fileDownload.jsp"*>Click Here</a>

</p>

</body>

</html>

**fileUpload.jsp**

<%@ page language=*"java"* contentType=*"text/html; charset=ISO-8859-1"*

pageEncoding=*"ISO-8859-1"*%>

<!DOCTYPE html>

<html lang = *"en"*>

<!-- This page shows option to upload the photo by browsing in the computer and upload it in bucket -->

<head>

<meta charset = *"utf-8"*/>

<meta name = *"description"* content = *"fileUpload Page"*/>

<meta name = *"author"* content = *"Ronak Shah"*/>

<title> Upload the photo </title>

</head>

<body>

<style>

<!-- **Style** **of** **the** **Page** -->

**body** {background-color:*lightgray*;

text-align : *center*;}

**h1** {color:*blue*;}

**p** {color:*green*;}

**span** {color:*red*;}

</style>

<h1> Add Photos to your Album</h1>

<!-- This helps to browse in the computer -->

<form ENCTYPE = *"multipart/form-data"* ACTION = *"connection.jsp"* METHOD= *post*>

<p> Select your photo:

<input name=*"file"* type=*"file"* required = *"required"*>

</p>

<p>Add Description

<input name=*"desc"* type=*"text"* required = *"required"* >

</p>

<span>Note: Both the fields are compulsory</span>

<p>

<input type=*"submit"* value=*"Upload"*>

</p>

</form>

</body>

</html>

**connection.jsp**

<%@ page language=*"java"* contentType=*"text/html; charset=ISO-8859-1"*

pageEncoding=*"ISO-8859-1"*%>

<!DOCTYPE html>

<html lang = *"en"*>

<!-- This page shows option to upload the photo by browsing in the computer and upload it in bucket -->

<head>

<meta charset = *"utf-8"*/>

<meta name = *"description"* content = *"connection page"*/>

<meta name = *"author"* content = *"Ronak Shah"*/>

<title> Uploading result </title>

</head>

<body>

<style>

<!-- **Style** **of** **the** **Page** -->

**body** {background-color:*lightgray*;

text-align : *center*;}

**h1** {color:*blue*;}

**p** {color:*green*;}

**span** {color:*red*;}

</style>

<%@ page import=*"java.io.\*"*%>

<%@ page import=*"java.io.ByteArrayInputStream"*%>

<%@ page import=*"java.io.InputStream"*%>

<%@ page import=*"com.amazonaws.auth.BasicAWSCredentials"*%>

<%@ page import=*"com.amazonaws.services.s3.AmazonS3"*%>

<%@ page import=*"com.amazonaws.services.s3.AmazonS3Client"*%>

<%@ page import=*"com.amazonaws.services.s3.model.CannedAccessControlList"*%>

<%@ page import=*"com.amazonaws.services.s3.model.ObjectMetadata"*%>

<%@ page import=*"java.sql.Statement"*%>

<%@ page import=*"java.sql.Connection"*%>

<%@ page import=*"java.sql.PreparedStatement"*%>

<%@ page import=*"java.sql.DriverManager"*%>

<%

String save\_file = "";

String desc = "";

Statement stat = **null**;

Connection connec = **null**;

PreparedStatement preStat = **null**;

String content\_type = request.getContentType();

// Means response that we are going to send to the client is one of the MIME type

**if**((content\_type != **null**) && (content\_type.indexOf("multipart/form-data")>=0)){

// Means if content\_type has some value then only we will proceed

DataInputStream in = **new** DataInputStream(request.getInputStream());

// DIS helps to write and read primitive data type to a media such as file

**int** length = request.getContentLength();

//gives length of the content

**byte** data\_bytes[] = **new** **byte**[length];

**int** bytes\_read = 0;

**int** total\_bytes\_read = 0;

**while** (total\_bytes\_read < length){

bytes\_read = in.read(data\_bytes, total\_bytes\_read, length);

total\_bytes\_read += bytes\_read;

}

// contents in the file is read in string

String file = **new** String(data\_bytes);

desc = file;

save\_file = file.substring(file.indexOf("filename=\"")+10);

save\_file = save\_file.substring(0, save\_file.indexOf("\n"));

save\_file = save\_file.substring(save\_file.lastIndexOf("\\")+ 1, save\_file.indexOf("\""));

**int** last\_index = content\_type.lastIndexOf("=");

String boundary = content\_type.substring(last\_index + 1, content\_type.length());

**int** position;

position = file.indexOf("filename=\"");

position = file.indexOf("\n", position) + 1;

position = file.indexOf("\n", position) + 1;

position = file.indexOf("\n", position) + 1;

**int** boundary\_location = file.indexOf(boundary, position) - 4;

**int** start\_position = ((file.substring(0, position)).getBytes()).length;

**int** end\_position = ((file.substring(0, boundary\_location)).getBytes()).length;

String name = save\_file;

File files = **new** File(save\_file);

FileOutputStream file\_out = **new** FileOutputStream(files);

file\_out.write(data\_bytes, start\_position, (end\_position - start\_position));

//get photo descccription from the form

desc = desc.substring(desc.indexOf("name=\"desc\"")+12);

desc = desc.substring(0,desc.indexOf("------"));

**try** {

Class.forName("com.mysql.jdbc.Driver");

// connect to database

connec = DriverManager

.getConnection("jdbc:mysql://rshah.c8zjbixrssjy.ap-southeast-2.rds.amazonaws.com/innodb",

"rshah", "bhavna07");

stat = connec.createStatement();

// Insert data in the database

preStat = connec.prepareStatement("insert into innodb.photoAlbum values ('"+ name

+ "', '" + desc + "')");

// This statement will excute the above statement

preStat.executeUpdate();

%>

<!-- Links to go back and download photo -->

<a href=*"index.jsp"*>Go Back</a></br>

<a href=*"fileDownload.jsp"*>View Photo Album</a>

<%

} **catch** (Exception ex) {

**throw** ex;

} **finally** {

connec.close();

}

// bucket name

String bucket\_name = "r.shah";

**byte**[] content = **new** **byte**[(**int**) files.length()];

**try** {

//set the credentials

AmazonS3 client = **new** AmazonS3Client(

**new** BasicAWSCredentials("AKIAIQK2HLYNPERVYG5Q",

"RppGRXgNfyYFDod8lCJpoWpPRZWG8P99xkd3dAXE"));

InputStream in\_stream = **new** FileInputStream(files);

ObjectMetadata meta\_data = **new** ObjectMetadata();

meta\_data.setContentLength(content.length);

meta\_data.setContentType("application/jpg");

client.putObject(bucket\_name, name, in\_stream, meta\_data);

client.setObjectAcl(bucket\_name, name, CannedAccessControlList.PublicRead);

%>

</br>

<span>Congratulation</span>

<p>Successfully uploaded to S3 bucket and even database is updated !cheers</p>

<%

}// if error occurs it will catch the exception

**catch** (Exception ex) {

System.out.println(ex);

}

file\_out.flush();

file\_out.close();

}

%>

</body>

</html>

**fileDownload.jsp**

<%@ page language=*"java"* contentType=*"text/html; charset=ISO-8859-1"*

pageEncoding=*"ISO-8859-1"*%>

<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">

<html>

<head>

<meta http-equiv=*"Content-Type"* content=*"text/html; charset=ISO-8859-1"*>

<title>Photo Album</title>

</head>

<body>

<style>

<!-- **Style** **of** **the** **Page** -->

**body** {background-color:*lightgray*;

text-align : *center*;}

**table**{align:*center*;}

**h1** {color:*blue*;}

**p** {color:*green*;}

**span** {color:*red*;}

</style>

<table border=*1*>

<tr>

<%@page import = *"java.io.ByteArrayInputStream"*%>

<%@page import = *"java.io.File"*%>

<%@page import = *"java.util.List"*%>

<%@page import = *"com.amazonaws.auth.AWSCredentials"*%>

<%@page import = *"com.amazonaws.auth.BasicAWSCredentials"*%>

<%@page import = *"com.amazonaws.util.StringUtils"*%>

<%@page import = *"com.amazonaws.services.s3.AmazonS3"*%>

<%@page import = *"com.amazonaws.services.s3.AmazonS3Client"*%>

<%@page import = *"com.amazonaws.services.s3.model.Bucket"*%>

<%@page import = *"com.amazonaws.services.s3.model.CannedAccessControlList"*%>

<%@page import = *"com.amazonaws.services.s3.model.GeneratePresignedUrlRequest"*%>

<%@page import = *"com.amazonaws.services.s3.model.GetObjectRequest"*%>

<%@page import = *"com.amazonaws.services.s3.model.ObjectListing"*%>

<%@page import = *"com.amazonaws.services.s3.model.ObjectMetadata"*%>

<%@page import = *"com.amazonaws.services.s3.model.S3ObjectSummary"*%>

<%@page import = *"com.amazonaws.ClientConfiguration"*%>

<%@page import = *"com.amazonaws.Protocol"*%>

<%@ page import=*"java.sql.Statement"*%>

<%@ page import=*"java.sql.Connection"*%>

<%@ page import=*"java.sql.ResultSet"*%>

<%@ page import=*"java.sql.PreparedStatement"*%>

<%@ page import=*"java.sql.DriverManager"*%>

<!-- Heading of the table -->

<th>Photo</th>

<th>Name</th>

<th>Description</th>

</tr>

<%

Connection connec = **null**;

Statement stat = **null**;

PreparedStatement preStat = **null**;

ResultSet result = **null**;

Class.forName("com.mysql.jdbc.Driver");

// connecting to database

connec = DriverManager

.getConnection("jdbc:mysql://rshah.c8zjbixrssjy.ap-southeast-2.rds.amazonaws.com/innodb",

"rshah", "bhavna07");

//select query to get name and description from the table

preStat = connec.prepareStatement("SELECT photoName, description from innodb.photoAlbum");

//Results of the SQl query

result = preStat.executeQuery();

// Enter the Credentials

String access\_key = "AKIAIQK2HLYNPERVYG5Q";

String secret\_key = "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";

AWSCredentials credential = **new** BasicAWSCredentials(access\_key, secret\_key);

// Creates connection to interact with the server

ClientConfiguration client\_config = **new** ClientConfiguration();

client\_config.setProtocol(Protocol.HTTP);

AmazonS3 conn = **new** AmazonS3Client(credential, client\_config);

conn.setEndpoint("s3-ap-southeast-2.amazonaws.com");

//List<Bucket> buckets = conn.listBuckets();

// Gets the list of object in the bucket and print it out

ObjectListing object = conn.listObjects("r.shah");

**do** {

// loop through to get all images

**for** (S3ObjectSummary objects : object

.getObjectSummaries()) {

out.print("<tr><td><img src=\"https://s3-ap-southeast-2.amazonaws.com/r.shah/"

+ objects.getKey() + "\"/></td>");

result = preStat.executeQuery();

out.print("<td>" + objects.getKey() + "<\td>" );

**while** (result.next()) {

String photo\_name = result.getString("photoName");

String desc = result.getString("description");

// check photo name, helps to get description

**if**(objects.getKey().equals(photo\_name)){

// Description

out.print("<td>" + desc +"</td></tr>");

}

}

}

object = conn.listNextBatchOfObjects(object);

} **while** (object.isTruncated());

%>

<!-- Links to go back and upload photo -->

<a href=*"index.jsp"*>Go Back</a></br>

<a href=*"fileUpload.jsp"*>Upload Photo in Album</a>

</table>

</body>

</html>