

# Configuration Manual

MSc Research Project  
MSc Cloud Computing

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**MSc Project Submission Sheet**



**School of Computing**

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**Programme:** Msc Cloud Computing **Year:** 2022-2023

**Module:** Msc Research Project

**Supervisor:** Punit Gupta

**Submission Due Date:** 15/12/2022

**Project Title:** Cloud Data Security Enhancements through the Biometric and Encryption System

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I hereby certify that the information contained in this (my submission) is information pertaining to research I conducted for this project. All information other than my own contribution will be fully referenced and listed in the relevant bibliography section at the rear of the project.

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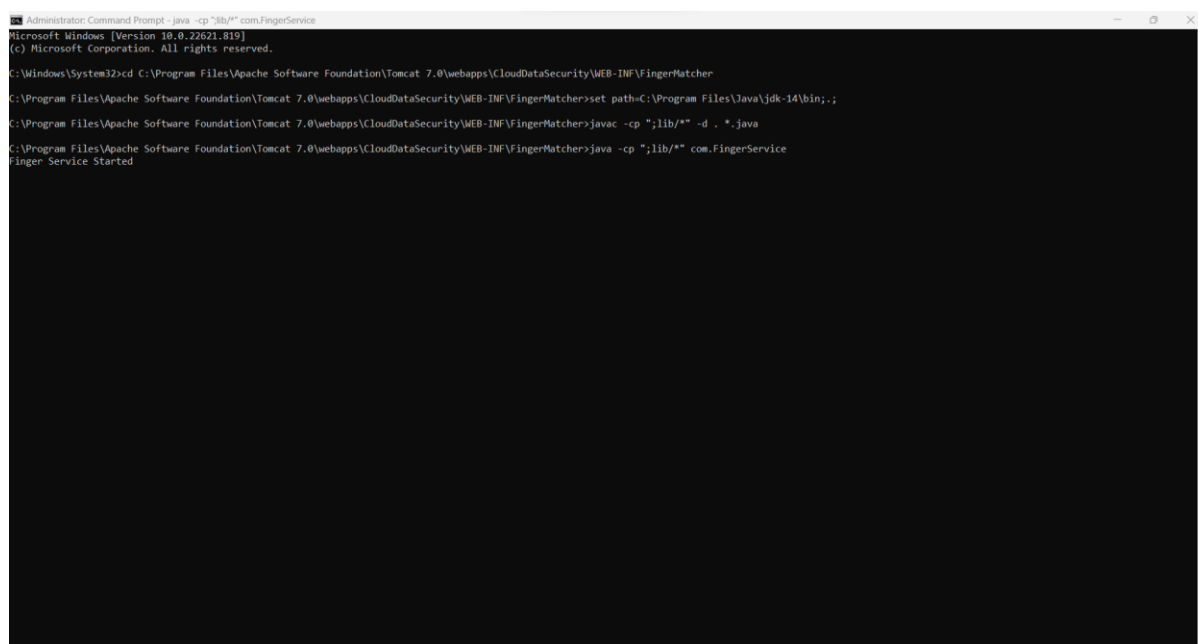
# Configuration Manual

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## 1 Running the Apache tomcat server and Fingermatch service for biometric login.

Initially we need to install java jdk v1.8 and jdk v14. The required aws jar files have to be imported and all the supporting files needs to be installed. Apache tomcat server needs to be installed in order to run it on local.

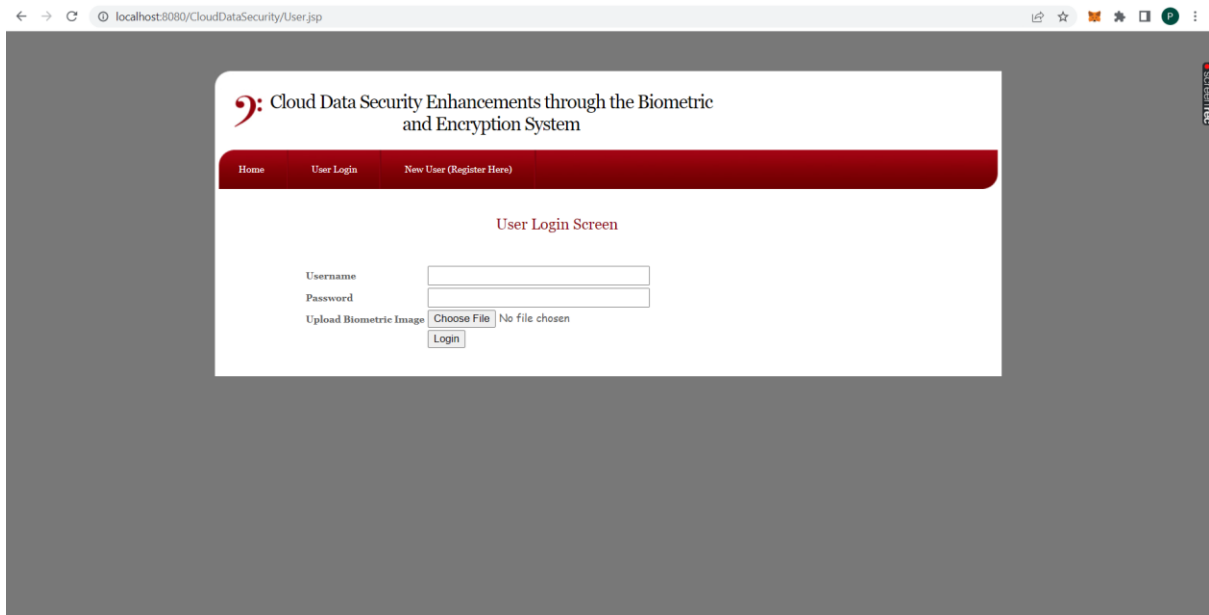
To run the code, We need to initiate Tomcat server. In order to match the biometric fingerprint for logging into the system, we need to run the Fingermatch service. Double click on Run.bat file in the FingerMatcher folder to get the below screen.



```
Administrator: Command Prompt - java -cp ".lib\*" com.FingerService
Microsoft Windows [Version 10.0.22621.819]
(c) Microsoft Corporation. All rights reserved.

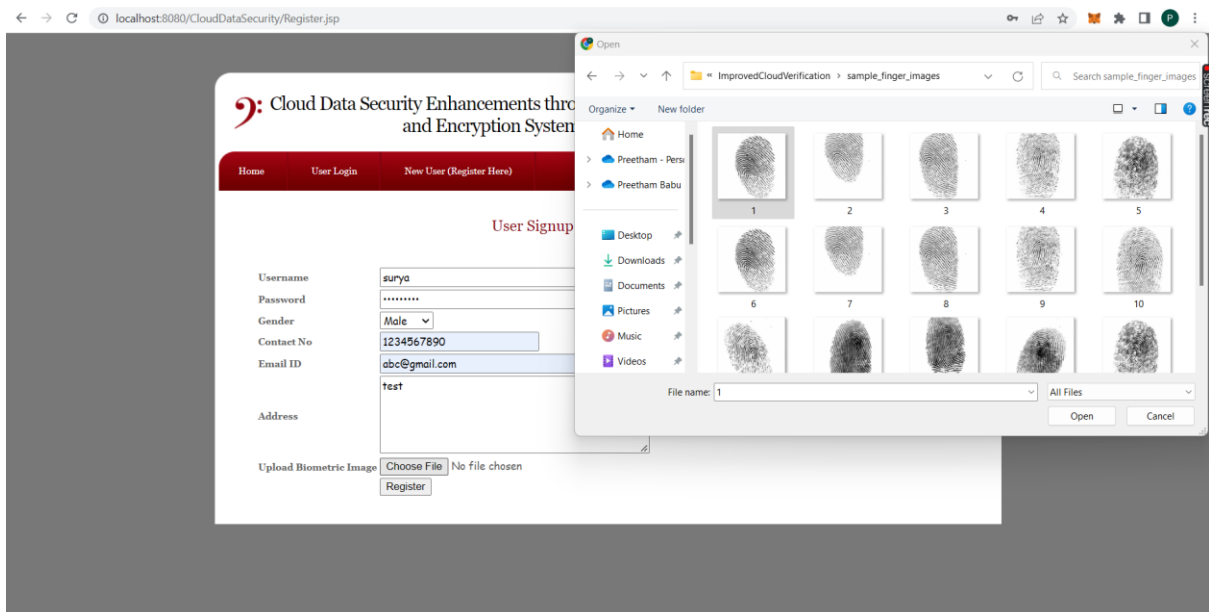
C:\Windows\System32>cd C:\Program Files\Apache Software Foundation\Tomcat 7.0\webapps\CloudDataSecurity\WEB-INF\FingerMatcher
C:\Program Files\Apache Software Foundation\Tomcat 7.0\webapps\CloudDataSecurity\WEB-INF\FingerMatcher>set path=C:\Program Files\Java\jdk-14\bin;.
C:\Program Files\Apache Software Foundation\Tomcat 7.0\webapps\CloudDataSecurity\WEB-INF\FingerMatcher>javac -cp ".lib\*" -d . *.java
C:\Program Files\Apache Software Foundation\Tomcat 7.0\webapps\CloudDataSecurity\WEB-INF\FingerMatcher>java -cp ".lib\*" com.FingerService
Finger Service Started
```

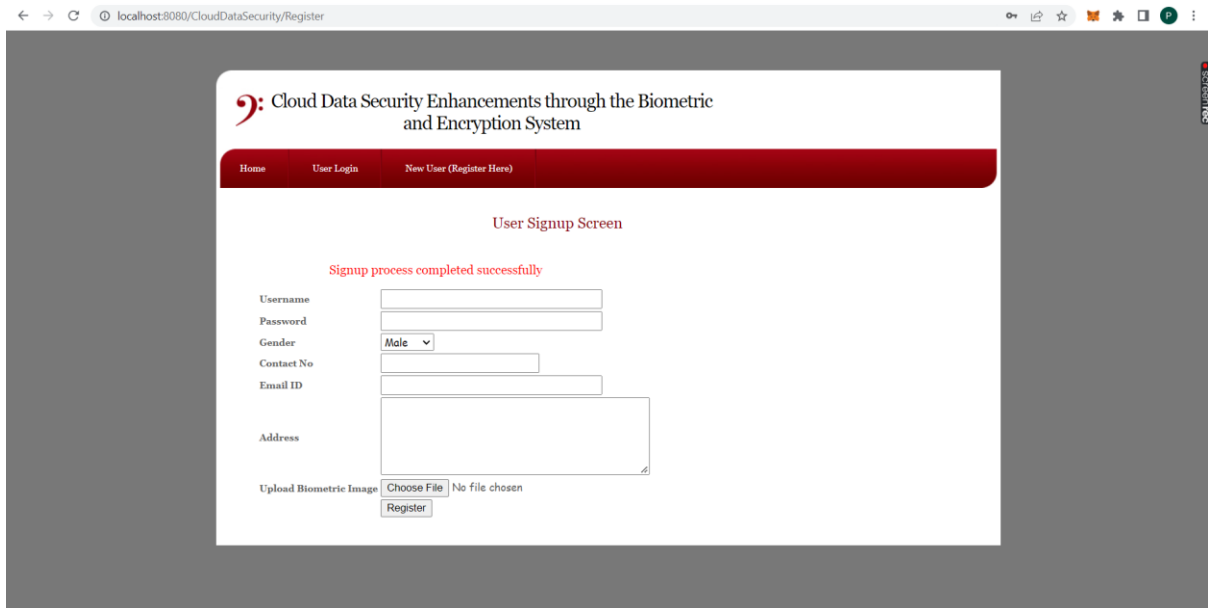
Enter the URL after initiating the tomcat server <http://localhost:8080/CloudDataSecurity/> to get the cloud server home page.



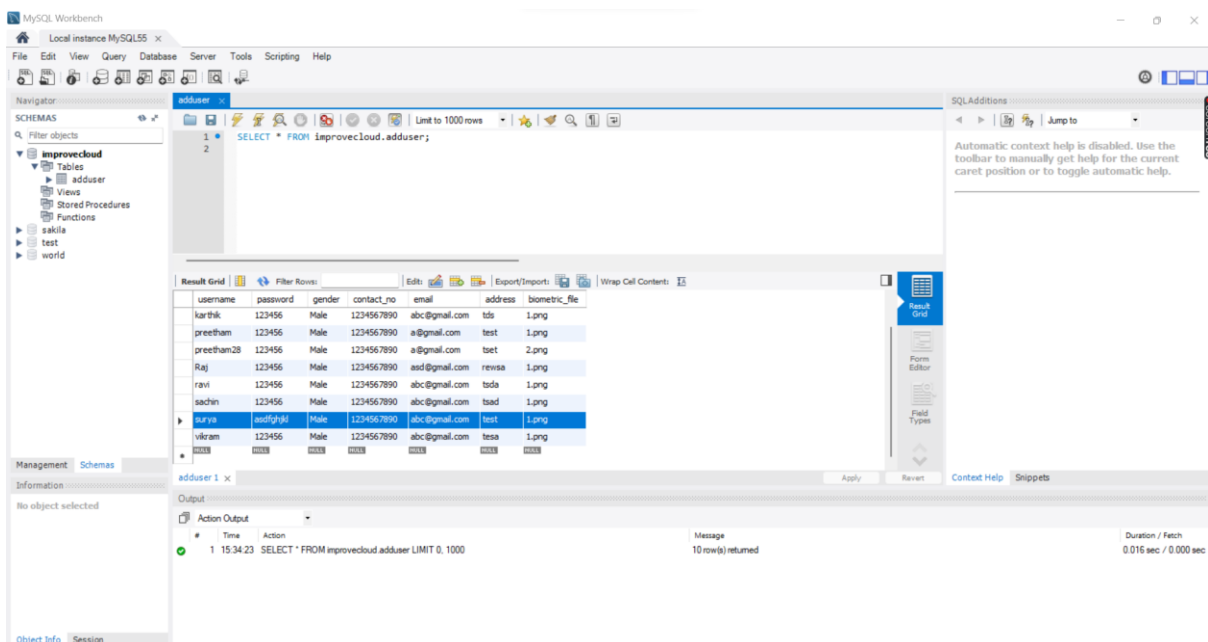
## 2 Registering with the New User and logging into the system.

Click on New User(Register Here). Enter the Username, Password, Gender, Contact No., Email ID, Address and the Biometric Image. Click on Register after filling all the details.

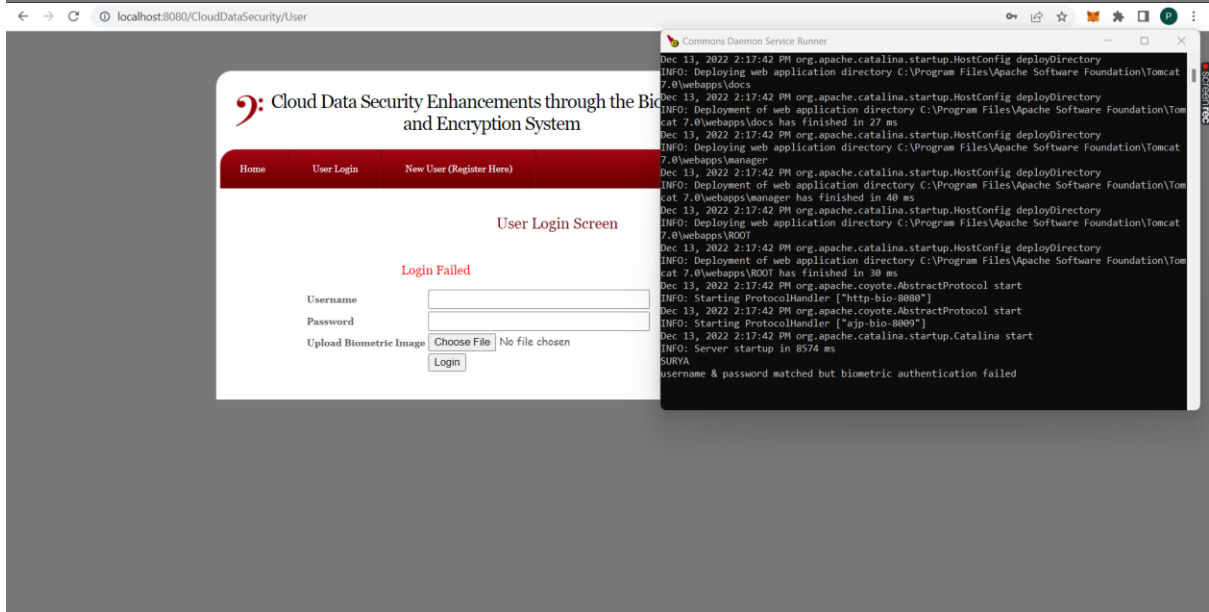
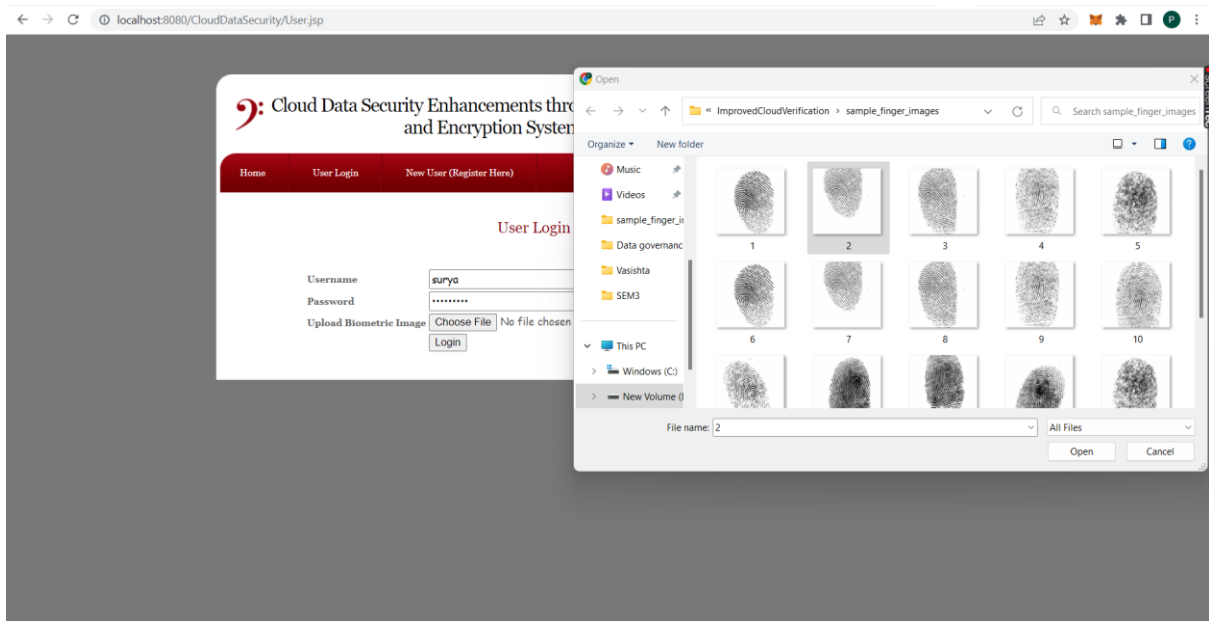




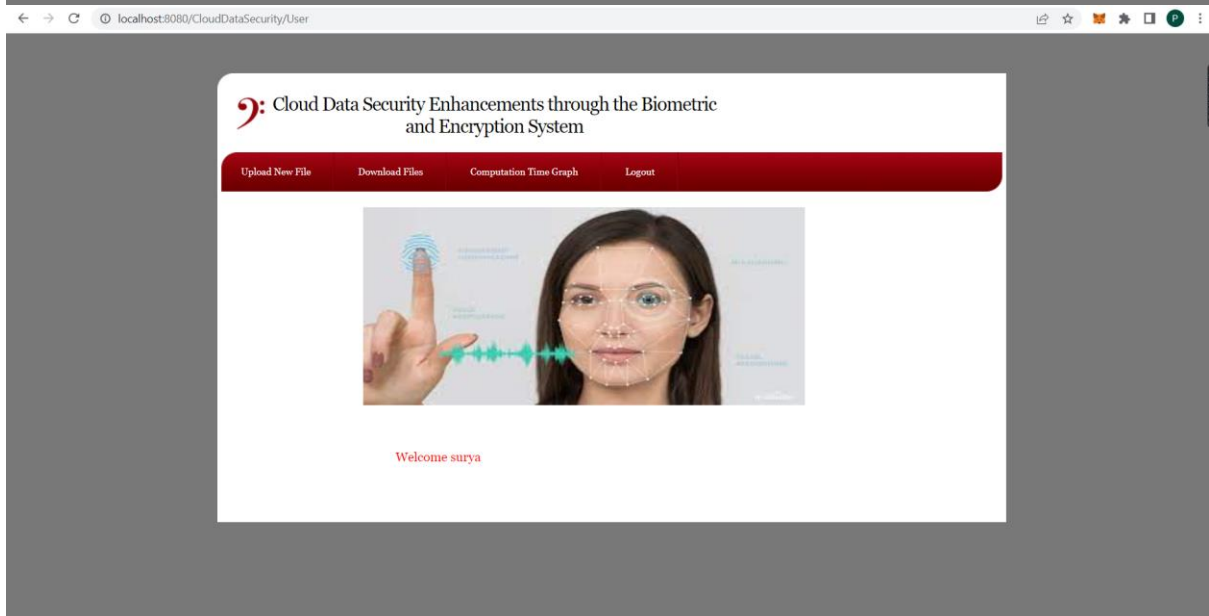
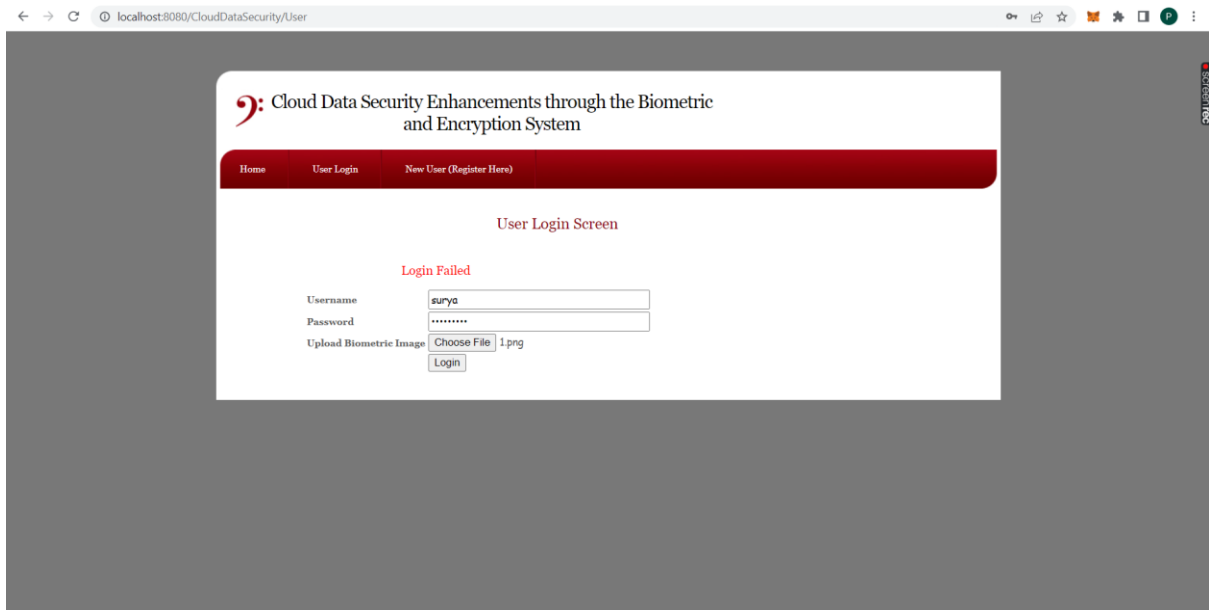
A database entry will be created for the signed-up user. Click on User login to login to the system. Enter the valid username, password and select the biometric image used for signing up. By selecting different biometric image user will not be able to login to the system. To match the fingerprint we have added API which are compatible with java 14 and Amazon API are compatible with java 1.8. So for finger print we have designed separate process application which will communicate with Amazon application using network connection. So, in order to run this project we need to install java 1.8 and java 14 jdk versions. The below screenshots shows the process to login to the system.



Inserting a biometric image other than that of the registered one will display error during login as shown in the images below.

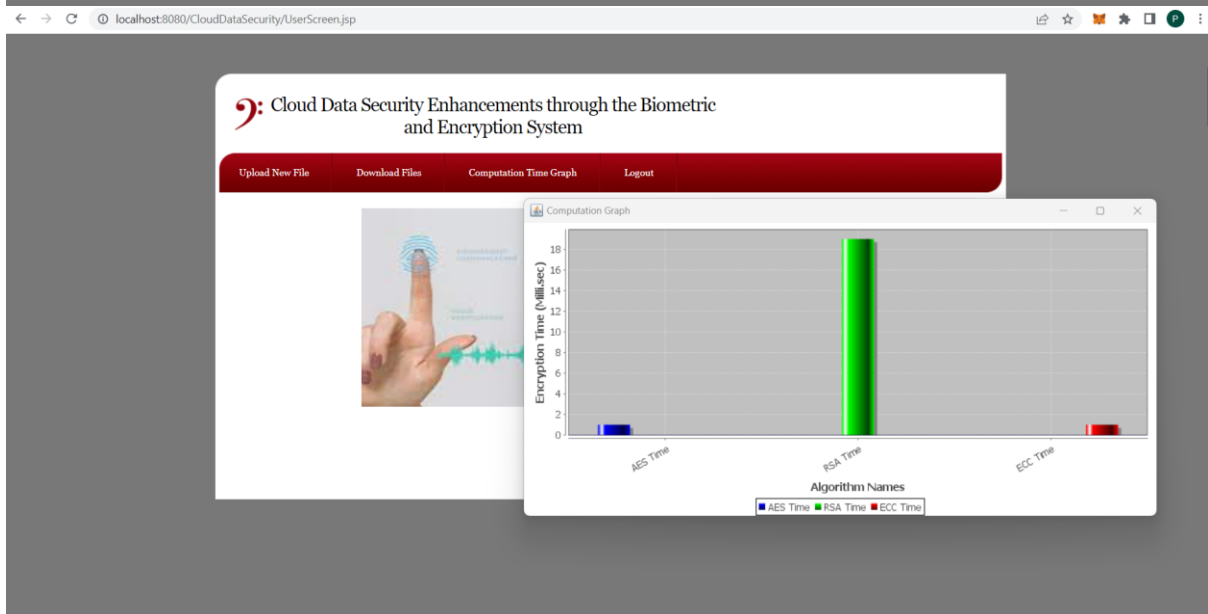
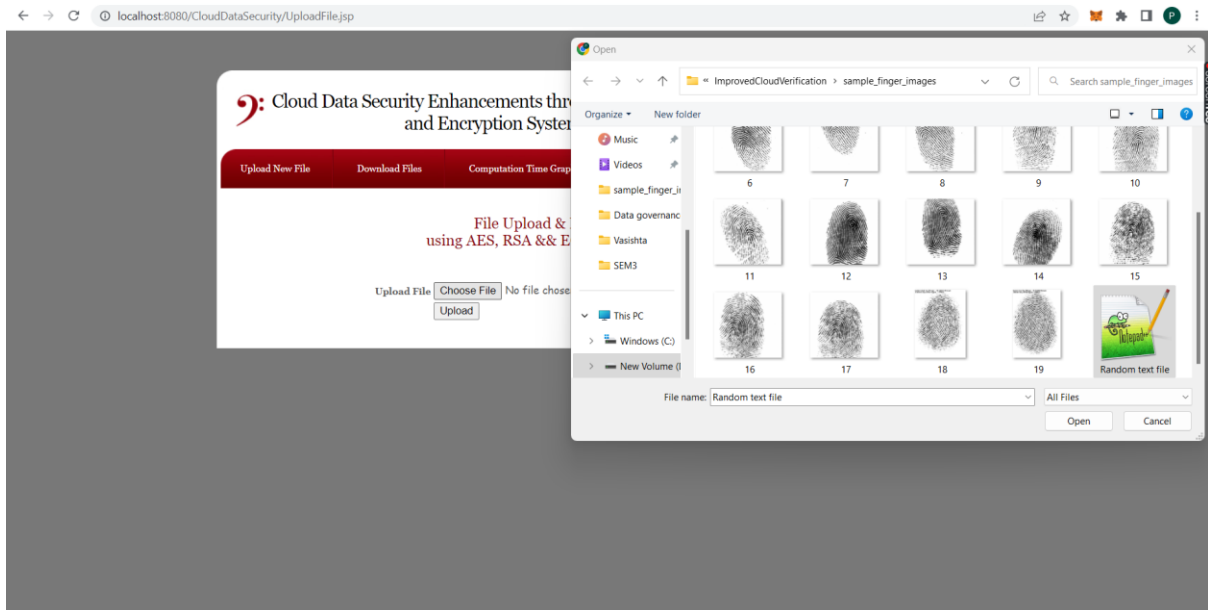


Uploading a correct biometric image in the login page will allow the user to login to the portal as shown in the images below.



### 3 Uploading File to Cloud using Encryption algorithms.

After uploading the proper biometric image and successfully logging in, "Click on Upload New file" to upload the user data into the cloud.



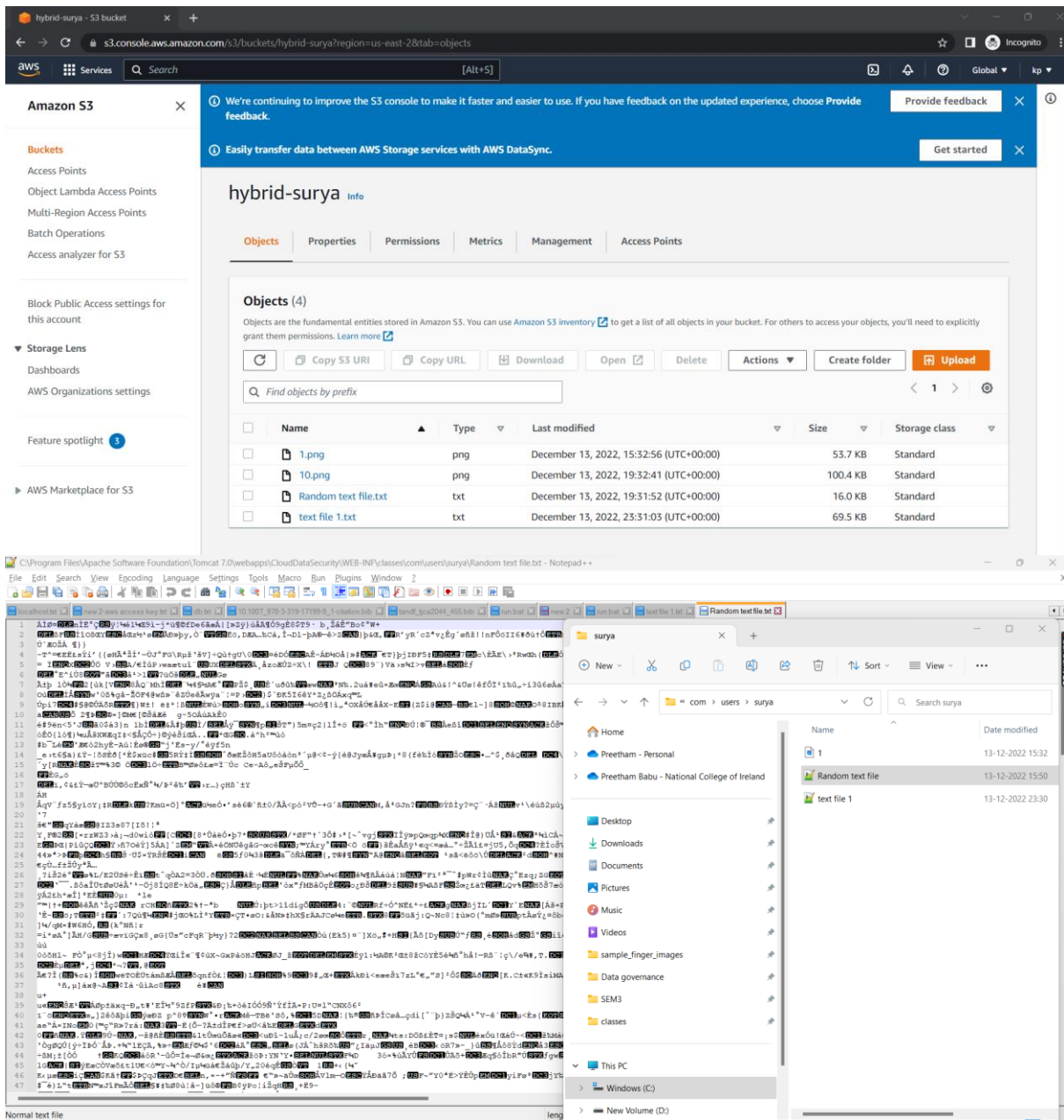
In the above screen, we have taken a random text file for uploading to the cloud and this file will be stored in Amazon S3 bucket in an encrypted format. The amazon s3 bucket will be linked to AWS user by inserting unique access key and secret key which is generated for the user. There are encryption algorithms used for comparison.

1. AES - Advanced Encryption Standard.
2. RSA - Rivest–Shamir–Adleman.
3. ECC – Elliptical Curve Cryptography.

The time taken by the each encryption system for uploading the file to the cloud is shown in bar graph as shown in the screenshot above. The computation time for encryption depends on the file size.

The files which are uploaded can be seen on AWS S3 bucket under the name “hybrid-*\*username\**”. The below images show the encryption of the file.





## 4 Decryption of the files.

We may then click the "Download Files" option to download the decrypted file after the files have been encrypted.

We may examine and read the correctly decrypted file as soon as it has been downloaded.

**Cloud Data Security Enhancements through the Biometric and Encryption System**

Upload New File    Download Files    Computation Time Graph    Logout

**View Uploaded File Data Screen**

Username	Uploaded Filename	Download File
surya	1.png	Click Here to Download
surya	Random text file.txt	Click Here to Download
surya	text file 1.txt	Click Here to Download

**References**

(Vazan, 2022), <https://sourceafis.machinezoo.com/>

Java JDK 1.8 and 14, <https://www.oracle.com/ie/java/technologies/downloads/>

Apache Tomcat, <https://tomcat.apache.org/>

MySQL Workbench, <https://www.mysql.com/products/workbench/>