

## **Configuration Manual**

MSc Research Project MSc Cloud Computing

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> School of Computing National College of Ireland

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### National College of Ireland



#### **MSc Project Submission Sheet**

	School of Computing		
Student Name:	Preetham Babu Dinesh Babu		
Student ID:	21156514		
Programme:	Msc Cloud Computing	Year:	2022-2023
Module:	Msc Research Project		
Supervisor:	Punit Gupta		
Date:	15/12/2022		
Project Title:	Cloud Data Security Enhancements throu and Encryption System	gh the Bic	ometric
Word Count:	823 <b>Pag</b>	e Count:	8

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.



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

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Cloud Data Security Enhancements through the Biome and Encryption System	tric
Home User Login New User (Register Here)	
User Login Screen	
Username Password Upload Biometric Image Choose File No file chosen Login	

# 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.

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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.

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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.

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### **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.

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

MySQL Workbench, <a href="https://www.mysql.com/products/workbench/">https://www.mysql.com/products/workbench/</a>