

Viztech

(Centralized Bio-Metrics Verification)

Developed By The logo for Zealous Technologies, featuring a stylized purple flower-like icon to the left of the text "zealous" in a bold, lowercase sans-serif font, with "TECHNOLOGIES" in a smaller, uppercase sans-serif font below it.

<https://zealoustechnologies.com/>

Project Summary

VIZTECH is a secure, enterprise-grade biometric verification platform developed using C# and the .NET Framework. Its primary purpose is to digitize and automate client identity verification for Citibank by integrating directly with the National Database & Registration Authority (NADRA) API.

The system provides a web-based interface for real-time authentication of CNIC (Computerized National Identity Card) and fingerprints, replacing manual processes with a secure, instant digital workflow. It is designed to meet strict regulatory compliance standards while streamlining the onboarding and verification of financial clients.

Project Summary

Project Highlights

- Automates NIC and fingerprint verification via the NADRA API.
- Provides real-time identity authentication for financial institutions.
- Features a maker-checker approval system for secure user management.
- Includes centralized control for accounts, roles, and permissions.
- Built as a secure, scalable, and reliable enterprise platform.

Impact

- Reduces fraud through secure biometric authentication.
- Lowers manual workload by digitizing verification processes.
- Decreases turnaround time for client onboarding.
- Ensures operational accuracy and regulatory compliance.
- Supports data-driven decisions with detailed audit reports to analyze verification trends and operational bottlenecks through automated reports.

System Architecture

VIZTECH is built on a robust, enterprise-grade framework designed to bridge the gap between Citibank's service points and the National Database & Registration Authority (NADRA). Developed using ASP.NET MVC and the C# .NET Framework, the application is hosted on a Windows Server utilizing Internet Information Services (IIS) for high availability and secure request handling.

The workflow begins at the client level, where the application interfaces with biometric hardware through a specialized REST API service provided by the hardware vendor. This service captures fingerprint data and converts it into a Base64 string, which is then bundled into an XSD-formatted request containing the organization's franchise credentials. This request is securely transmitted to the NADRA API, which performs a 1:1 match against the central national database.

The backend infrastructure, supported by a SQL database, manages the system's "maker-checker" logic, role-based access controls, and comprehensive audit logging, ensuring that every verification attempt is authenticated, authorized, and recorded for regulatory compliance.

Key Functionality

- ❑ Manage accounts with roles and maker-checker approvals [Slide 10](#)
- ❑ Automate NIC and fingerprint verification via NADRA API [Slide 11](#)
- ❑ Generate detailed audit and activity reports
- ❑ Centralized user and permission management [Slide 14](#)
- ❑ Real-time verification with full compliance
- ❑ Secure, scalable, and reliable platform

New User creation Module

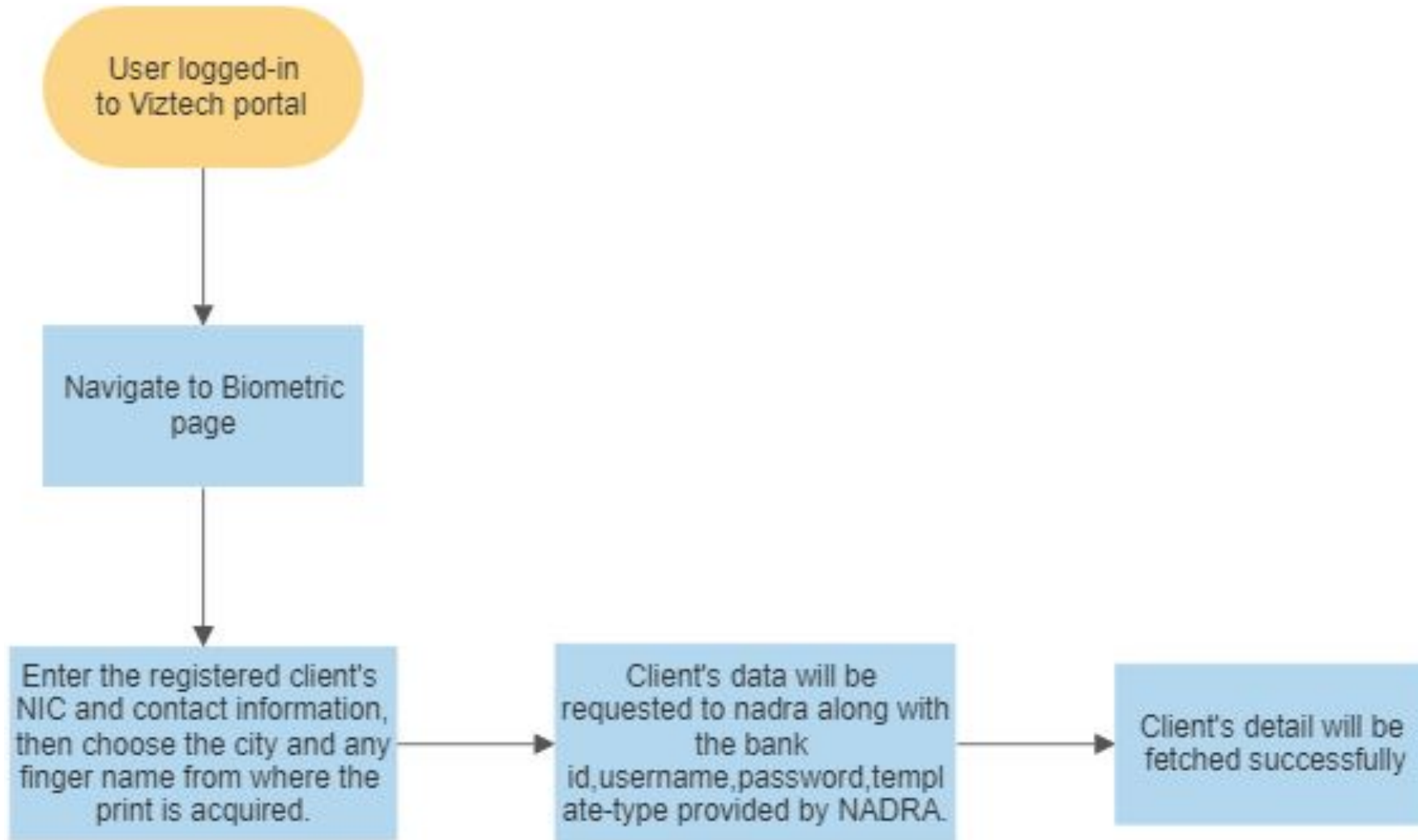
- ▶ User can be created and managed using the new proposed dynamic module.
- ▶ This new dynamic user creation module will be incorporated in the Viztech Portal.

System Modules:

Following are the procedures,

- ▶ User creation module
- ▶ Role creation module.
- ▶ Biometric Verification
- ▶ Generate report

System Architecture



How it works

- ▶ Applications reads fingerprint through rest Api service provided by the hardware vendor,
- ▶ Once fingerprint is scanned successfully application sends request to the NADRA Api and in result it show response respectively.

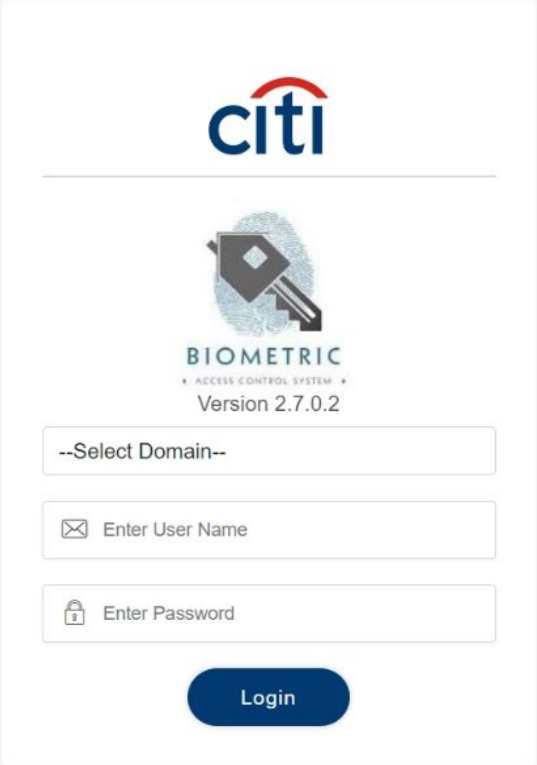
Hardware & Software Requirements

- Preferable development environment of the application would be ASP.NET MVC.
- For ASP.NET MVC application, a windows server with IIS manager installed is required in order to deploy the application.

Application	Specs	OS
Minimum	RAM: 8GB core: 4 : HDD (SSD) : 50GB	Any
Recommended	Ram : 16GB core : 8 : HDD(SSD) : 50/100GB	Any

Developed System Modules:

Login



The screenshot displays the login interface for the Citi Biometric Access Control System. At the top, the 'citi' logo is shown in blue with a red arc above the 'i'. Below the logo is a horizontal line. Underneath the line is a graphic of a fingerprint being scanned by a device, with the word 'BIOMETRIC' in bold capital letters below it. Below 'BIOMETRIC' is the text 'ACCESS CONTROL SYSTEM' in smaller capital letters, flanked by two small asterisks. Below that is the version number 'Version 2.7.0.2'. The login form consists of three input fields: the first is labeled '--Select Domain--', the second is labeled 'Enter User Name' with an envelope icon, and the third is labeled 'Enter Password' with a padlock icon. Below the input fields is a dark blue 'Login' button.

Developed System Modules:

Biometric Verification Request Form



Biometric System

Bio Activity Logs

Add User

Authorize User

Non Authorize User

REPORTS

Role Management

Users Login Log

Active Group

Deactive Group

Nadra Configuration

System-Setup

User : ADMIN

Logout

BIO-METRIC VERIFICATION

Home / Bio-Metric Verification

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Scan Finger Print



Get Finger Print

Provincial Area Details

☐ Azad Kashmir

☐ Balochistan

☐ Fata

☐ Gilgit-Baltistan

☐ Khyber-Pakhtunkhwa

☐ Punjab

☐ Sindh

Personal Details

Citizen Number

Enter Citizen Number

Contact Number

Enter Contact Number

Finger Index Details

☐ Right Thumb

☐ Right Index

☐ Right Middle

☐ Right Ring

☐ Right Little

☐ Left Thumb

☐ Left Index

☐ Left Middle

☐ Left Ring

☐ Left Little

Send Request

Developed System Modules:

Response from Nadra

Client : **Test User** Details



Name

Test User

Father/Husband Name

Testing Father

CNIC Number

42202-2021525

Present Address

Present Address

Permanent Address

Permanant Address

Date Of Birth

01/01/2000

Birth Place

Karachi, Pakistan

CNIC Expiry Date

01/01/2030

Activity Date Time

19/01/2023 3:49:29 pm

Close

Print

Developed System Modules:

Configuration Setup



- Biometric System
- Bio Activity Logs
- Add User
- Authorize User
- Non Authorize User
- REPORTS
- Role Management
- Users Login Log
- Active Group
- Deactive Group
- Nadra Configuration
- System-Setup

User : ADMIN Logout

Home / Nadra Configuration

NADRA CONFIGURATION

Manage Configuration

Franchise Id

User Name

Password

Template Type

Submit

Email Setup List

Copy CSV Excel PDF Print Column visibility

Search:

Franchise ID	User Name	Password	Template ID	Action
oL6Scav2Ovt9HdDnyMBFRQ==	Ay8P/58Y9c7QbCI0XR/suNKeeA473PIHEivcLvz7Qg=	8oyvSfqlw20NaFZCcx3jiMAFTIlxz8nYDUEnCWFfe2k4=	Z0YXzJQDUYHcoxQ0LCS0UX5sZHp8Ha6kvXuVUvmwv7U=	Edit

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Developed System Modules:

User Setup

The screenshot displays the 'MANAGE USER' interface of a system. The top navigation bar includes the 'citi' logo, a user profile 'User : ADMIN', and a 'Logout' button. The left sidebar lists various system modules: Biometric System, Bio Activity Logs, Add User, Authorize User, Non Authorize User, REPORTS, Role Management, Users Login Log, Active Group, Deactive Group, Nadra Configuration, and System-Setup. The main content area is titled 'MANAGE USER' and contains a 'Manage Login User' form. This form has three input fields: 'User Name' (placeholder: 'Enter Login User Name'), 'User ID' (placeholder: 'Enter Login User Id'), and 'User Type' (placeholder: 'Enter Login User Type'). Below these is a 'Role Name' dropdown menu with options: 'ISA_Maker', 'ISA_Checker', and 'ASU_OPS'. A 'Submit' button is located at the bottom of the form. To the right of the form is an 'Add New' button. Below the form is a 'List Of Users' section, which includes a toolbar with 'Copy', 'CSV', 'Excel', 'PDF', 'Print', and 'Column visibility' options, and a search bar. The table below the toolbar has columns: 'User Name', 'User Id', 'Type', 'Roles Assign', 'Status', and 'Action'.

User : ADMIN Logout

Home / Manage User

MANAGE USER

Manage Login User

Add New

User Name User ID User Type

Enter Login User Name Enter Login User Id Enter Login User Type

Role Name

ISA_Maker
ISA_Checker
ASU_OPS

Submit

List Of Users

Copy CSV Excel PDF Print Column visibility Search:

User Name	User Id	Type	Roles Assign	Status	Action
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Developed System Modules:

User Authorization



- Biometric System
- Bio Activity Logs
- Authorize User**
- Non Authorize User
- REPORTS
- Role Management
- Users Login Log
- Active Group
- Deactive Group
- Nadra Configuration
- System-Setup

User : ADMIN

Logout

Home / Authorize User

AUTHORIZE USER

Authorize User

Copy CSV Excel PDF Print Column visibility

Search:

Action	User Name	User Id	Type	Roles Assign	Status
	Test	2505Sui	Tester	ASU_OPS	Active
	Admin	Admin	SUPER ADMIN	ISA_Maker,ISA_Checker,ABC	Active
	Ali Rida	rr31892	<%	ISA_Maker,ISA_Checker,ABC	Active
	Dileep Kumar	DP38085	User	ISA_Maker,ISA_Checker,ASU_OPS,ABC	Active
	Tricia Tan	TT60446	EY VA Tester	ISA_Maker,ISA_Checker,ASU_OPS,ABC	Active
	Rong An Su	RS60434	USER	ISA_Maker,ISA_Checker,ASU_OPS	Active
	Rizwan UD	ru84258	USER	ISA_Maker	Active
	Maroti Gabor	MG85752	USER	ISA_Maker,ISA_Checker	Active
	Balazs Szabo	SB39843	USER	ABC,Test Function	Active
	Umaid Hassan	UH57679	USER	ISA_Maker,ISA_Checker,ASU_OPS,ABC	Active

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localhost:53314/Users/AuthorizeUser

Developed System Modules:

Unauthorized User



- Biometric System
- Bio Activity Logs
- Add User
- Authorize User
- Non Authorize User
- REPORTS
- Role Management
- Users Login Log
- Active Group
- Deactive Group
- Nadra Configuration
- System-Setup

User : ADMIN

Logout

Home / Non Authorize User

NON AUTHORIZE USER

List Of Non Authorize User

Copy CSV Excel PDF Print Column visibility Search:

Action	User Name	User Id	Type	Roles Assign	Status
☒	jesse	JC60455	%3Cscript%3Ealert%281%29%3C%2Fscript%3E	ISA_Maker,ISA_Checker,ABC	DeActive
☒	Janice	YT60456	USER	ISA_Maker,ISA_Checker,ASU_OPS,ABC	DeActive
☒	Test50	Tester50	Test Add id	ISA_Maker,ISA_Checker,ASU_OPS,ABC	DeActive
☒				ABC	DeActive
☒	123	123	12	ISA_Checker,ABC	DeActive
☒	Maroti Gabor	Maroti Gabor	USER	ISA_Maker,ISA_Checker	DeActive
☒	Ivett Kiss	ik01426	USER	ISA_Maker,ISA_Checker	DeActive
☒	<%	pd46990	USER	ISA_Maker,ISA_Checker,ASU_OPS,ABC	DeActive
☒	Rana Ghulam Murtaza	RM59111	USER	ISA_Maker,ISA_Checker,ASU_OPS	DeActive
☒	Gohar Javed	gj1111	USER	ISA_Maker,ISA_Checker	DeActive

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Developed System Modules:

Group Management



- Biometric System
- Bio Activity Logs
- Add User
- Authorize User
- Non Authorize User
- REPORTS
- Role Management
- Users Login Log
- Active Group
- Deactive Group
- Nadra Configuration
- System-Setup

User : ADMINLogout

GROUP DETAILSHome / Group Details

From Date: dd/mm/yyyyTo Date: dd/mm/yyyyFetch

Group Details

Copy CSV Excel PDF Print Column visibility

Search:

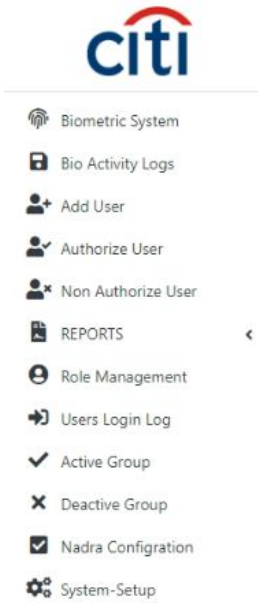
Group Name	Assigned Role	Maker	Checker	Maker Time	Checker Time	Activity
Test Function	UserAddUser AuthorizeUserDetails NonAuthorizeUser BioSys REPORTS		Admin1		02/03/2022 12:30:49 pm	New Role Added
Test Function	UserAddUser AuthorizeUserDetails NonAuthorizeUser BioSys REPORTS		Admin1		02/03/2022 12:29:25 pm	New Role Added
Test Function	UserAddUser AuthorizeUserDetails NonAuthorizeUser BioSys REPORTS		Admin1		02/03/2022 12:27:35 pm	New Role Added
Test Function	UserAddUser AuthorizeUserDetails NonAuthorizeUser BioSys REPORTS		Admin1		02/03/2022 12:26:41 pm	New Role Added

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zealous
TECHNOLOGIES

Developed System Modules:

Group Authorization



User : ADMIN

Logout

Home / Active Group Roles

ACTIVE GROUP ROLES

Active Roles

Copy CSV Excel PDF Print Column visibility

Search:

Actions	Role Name	Role Description	Assign Roles
 	ASU_OPS	READWRITE: Report generate and bio matrix verification group	BioSys,REPORTS,CustRpt.UserLogDetails
 	ISA_Checker	READWRITE: ISA Checker group to create, modify and terminate users with report function.	UserAddUser,AuthorizeUserDetails,NonAuthorizeUser,REPORTS,GIDAGroupDetails,GIDAUserDetails,ActivityPrt,RoleModification,ActiveGroup,DeActiveGroup
 	ISA_Maker	READWRITE: ISA Maker group to create, modify and terminate users with report function.	UserAddUser,AuthorizeUserDetails,NonAuthorizeUser,BioSys,REPORTS,RoleModification,ActiveGroup,DeActiveGroup,NadraConfiguration,SystemSetup,GIDAGroupDetails,GIDAUserDetails,CustRpt,ActivityPrt

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Developed System Modules:

User Activity Report



- Biometric System
- Bio Activity Logs
- Add User
- Authorize User
- Non Authorize User
- REPORTS
- Role Management
- Users Login Log
- Active Group
- Deactive Group
- Nadra Configuration
- System-Setup

User : ADMIN

Logout

USER DETAILS REPORT

Home / User Details Report

From Date: dd/mm/yyyy

To Date: dd/mm/yyyy

Fetch

User Details Report

Copy CSV Excel PDF Print Column visibility

Search:

User Name	Assign Group	Maker	Checker	Maker Time	Checker Time	Action	Activity
Test500-tu500	ISA_Maker,ISA_Checker,ASU_OPS,ABC	Admin1		02/03/2022 12:19:17 pm		Make	No New Change and Active the User
Laraib123-Laraib123	ISA_Maker,ISA_Checker,ASU_OPS	ab13345				Check	Active the User & No New Change
Laraib123-Laraib123	ISA_Maker,ISA_Checker,ASU_OPS	RU88888		06/10/2020 11:50:49 am		Make	Added a New User With Roles ISA_Maker,ISA_Checker,ASU_OPS

Developed System Modules:

Group Activity Report



-  Biometric System
-  Bio Activity Logs
-  Add User
-  Authorize User
-  Non Authorize User
-  REPORTS
-  Role Management
-  Users Login Log
-  Active Group
-  Deactive Group
-  Nadra Configuration
-  System-Setup

User : ADMIN

Logout

GROUP DETAILS

Home / Group Details

From Date: dd/mm/yyyy

To Date: dd/mm/yyyy

Fetch

Group Details

Copy CSV Excel PDF Print Column visibility

Search:

Group Name	Assigned Role	Maker	Checker	Maker Time	Checker Time	Activity
Test Function	UserAddUser AuthorizeUserDetails NonAuthorizeUser BioSys REPORTS		Admin1		02/03/2022 12:30:49 pm	New Role Added
Test Function	UserAddUser AuthorizeUserDetails NonAuthorizeUser BioSys REPORTS		Admin1		02/03/2022 12:29:25 pm	New Role Added
Test Function	UserAddUser AuthorizeUserDetails NonAuthorizeUser BioSys REPORTS		Admin1		02/03/2022 12:27:35 pm	New Role Added
Test Function	UserAddUser AuthorizeUserDetails NonAuthorizeUser BioSys REPORTS		Admin1		02/03/2022 12:26:41 pm	New Role Added

Showing 1 to 4 of 4 entries

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Developed System Modules:

User Last Login Report



- Biometric System
- Bio Activity Logs
- Add User
- Authorize User
- Non Authorize User
- REPORTS
- Role Management
- Users Login Log
- Active Group
- Deactive Group
- Nadra Configuration
- System-Setup

User : ADMIN

Logout

USER LOGIN LOGOUT DETAILS

Home / User Login Logout Details

From Date

dd/mm/yyyy

To Date

dd/mm/yyyy

Fetch

User Login Logout Details

Copy CSV Excel PDF Print Column visibility

Search:

User Id	Action Type	Time	User Type
Admin	LOGIN	18/01/2023 4:30:50 pm	SUPER ADMIN
Admin	LOGIN	18/01/2023 4:30:39 pm	SUPER ADMIN
Admin	LOGIN	14/11/2022 3:53:36 pm	SUPER ADMIN
Admin	LOGIN	14/11/2022 3:36:06 pm	SUPER ADMIN

THE END