



KARONGI COLLEGE

Project Title: One Click Partition Creator and Storage Manager

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Course Instructor:

Submission Date:.../..../2025

1. Introduction

The **OneClick System** is a LAN-based storage partition management platform designed to simplify disk management tasks for administrators and authorized users within a local network. The system provides features for creating, modifying, and managing storage partitions across multiple machines, while also supporting **offline operation** and **automatic synchronization** through a centralized local server database.

The system was developed to address critical challenges in managing distributed machines, ensuring secure data consistency, and enabling administrators to control devices from a central environment efficiently.

2. Project Objectives

The primary objectives that guided the system's design, development, and testing were:

- To design and implement a **LAN-based storage partition manager** that works offline and synchronizes data locally.
- To enable administrators to create, modify, and manage partitions on both their own and users' machines within the LAN.
- To allow users to create and manage partitions on their own machines and other authorized devices on the same network.
- To ensure data consistency through a centralized **Local Server (XAMPP/MySQL)** database.
- To implement a secure **one-click cloud backup** triggered only by administrators when internet access is available.
- To provide a user-friendly interface for both admins and users to simplify complex storage management tasks.

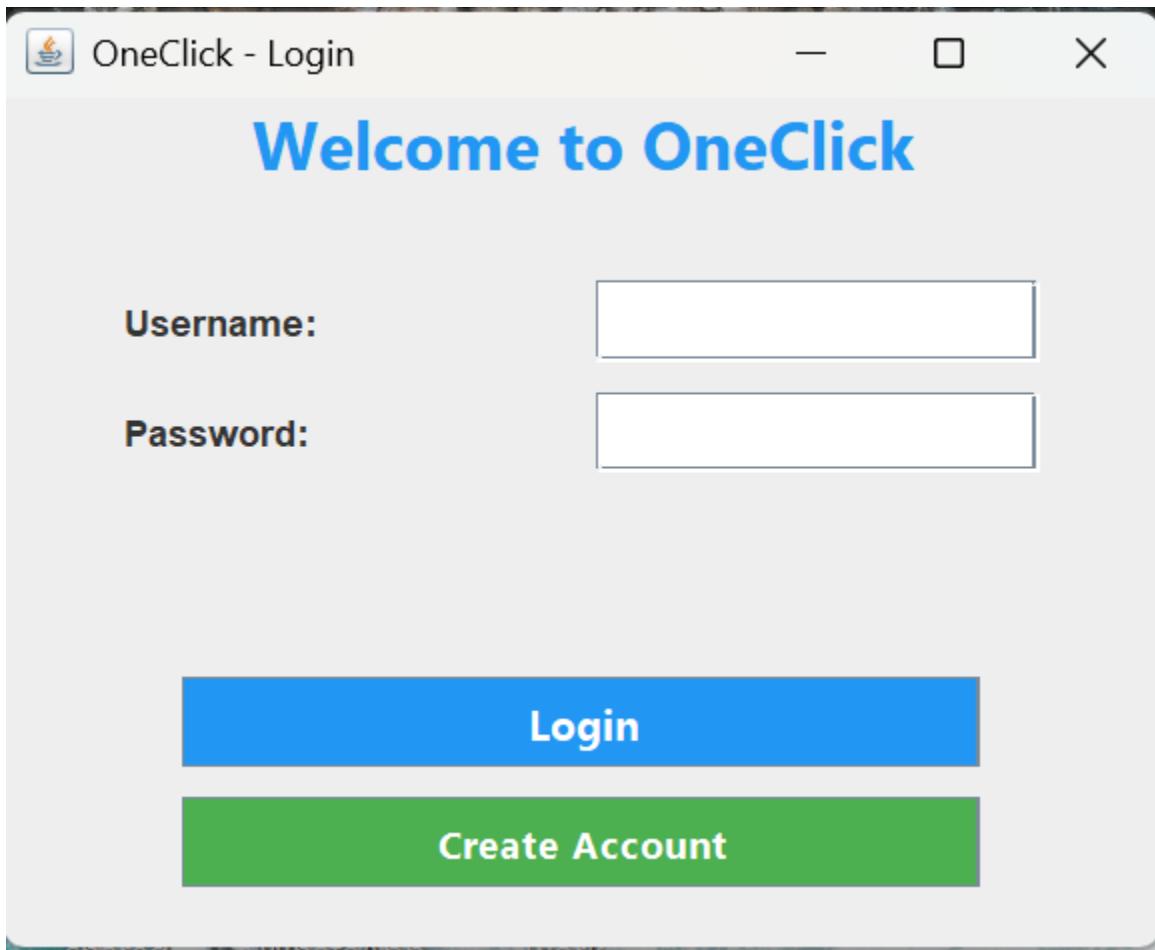
3. System Architecture

The OnClick System follows a **Client–Server architecture** with the following key components:

a) Frontend Interface

- Built as a lightweight user interface allowing admins and users to access system functionality.

- Designed for simplicity and ease of use.



b) Backend Logic

- Developed in **Java** (server-side/desktop logic) to manage core system functions.
- Handles CRUD (Create, Read, Update, Delete) operations for partitions, machines, users, and logs.

c) Centralized Database

- **Local Server (XAMPP/MySQL)** was used to store:
 - User accounts and roles
 - Machine configurations and details
 - Partition specifications and history
 - Activity logs
- Ensures data synchronization and consistency across the LAN.

d) LAN Connectivity

- The system is specifically engineered to function **offline** inside the Local Area Network.
- All connected client devices communicate with the central server using standard local network protocols.

e) One-Click Cloud Backup

- Backup is a manual, admin-only function performed only when internet connectivity is detected.
- Designed to protect critical system data by uploading snapshots to a designated cloud service.

4. System Modules and Implementation

The system was divided into distinct modules for efficient development and testing:

4.1 User Management Module (Developed by Gilbert)

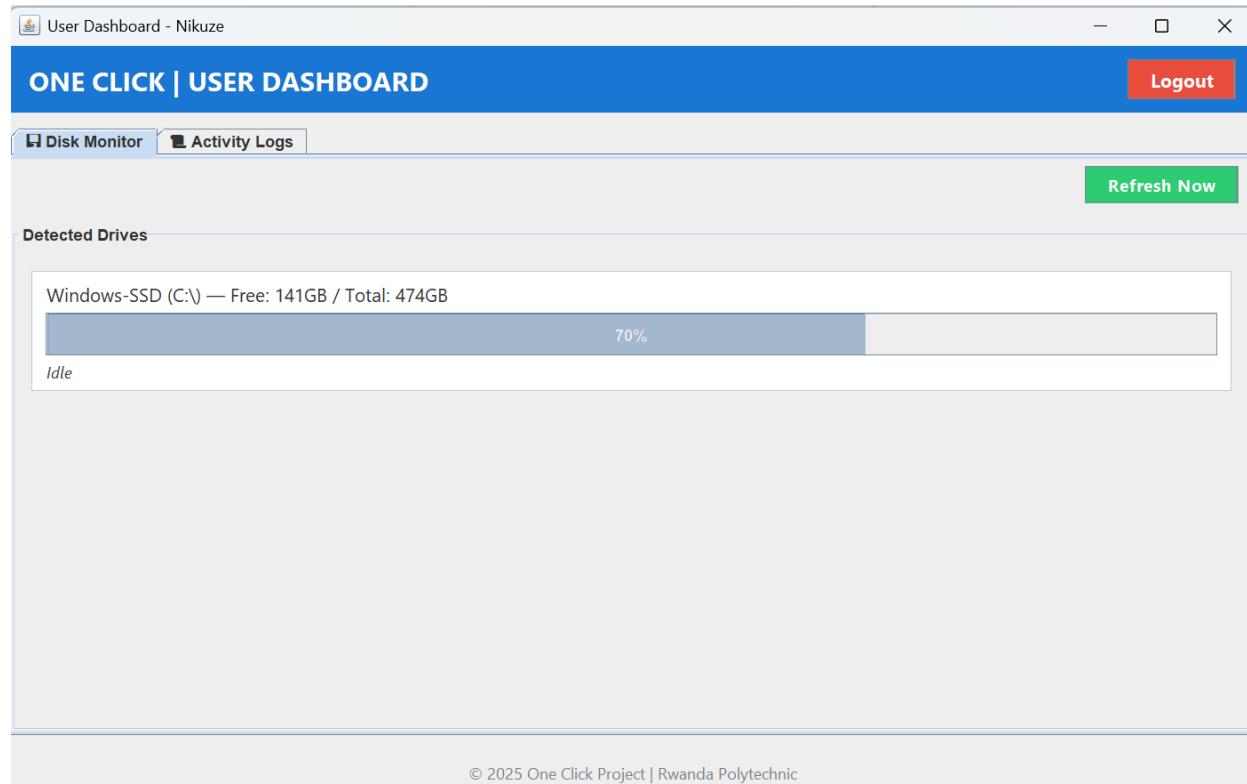
- **Roles: Admin** (Full control over users , back up and see logs)

The screenshot shows the 'ONE CLICK | ADMIN DASHBOARD' interface. At the top, there's a navigation bar with 'Remote Partition' and 'Backup' buttons, and a 'Logout' button on the right. Below the bar, there's a sub-navigation with 'Users' (which is selected), 'Disk Monitor', and 'Logs'. A search bar labeled 'Search (username / role):' is present. The main area displays a table of user data:

#	Username	Role	Status	Edit	Delete
1	admin	ADMIN	Active	Edit	Delete
2	shishoza	USER	Active	Edit	Delete
3	shalom	ADMIN	Active	Edit	Delete
4	Nikuze	USER	Active	Edit	Delete

At the bottom left is a 'Refresh Users' button, and at the very bottom center is the copyright notice: '© 2025 One Click Project | Rwanda Polytechnic'.

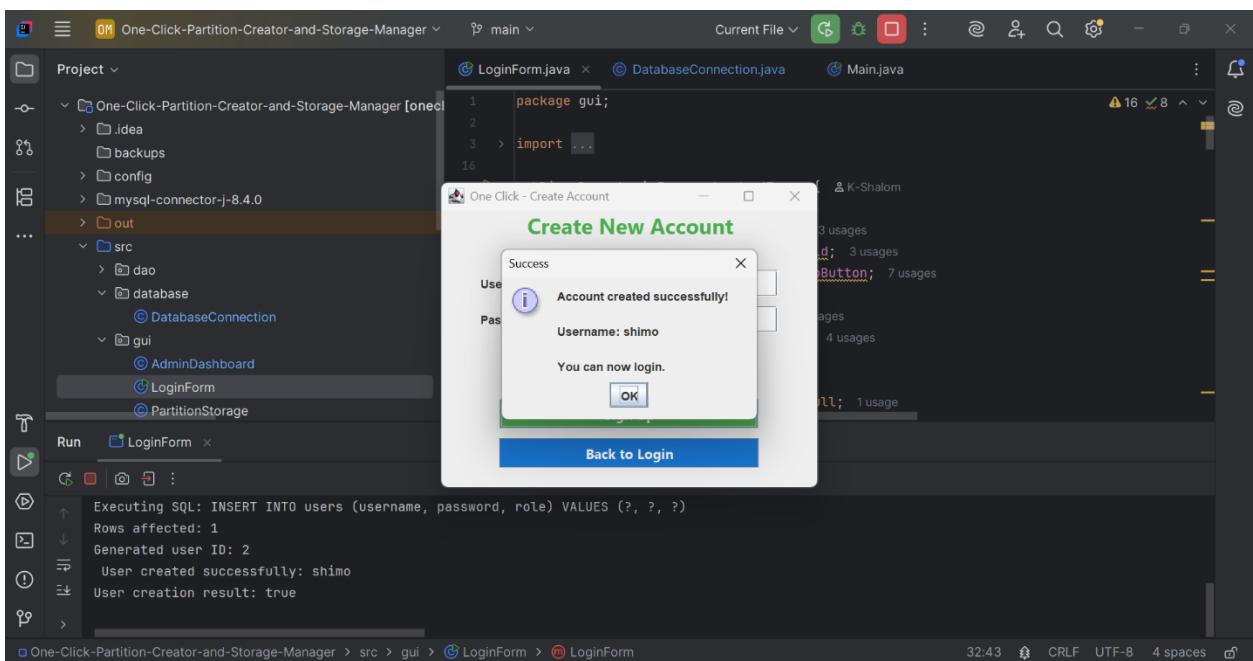
- **User** (Limited control to their own machines just make Partitions only.).



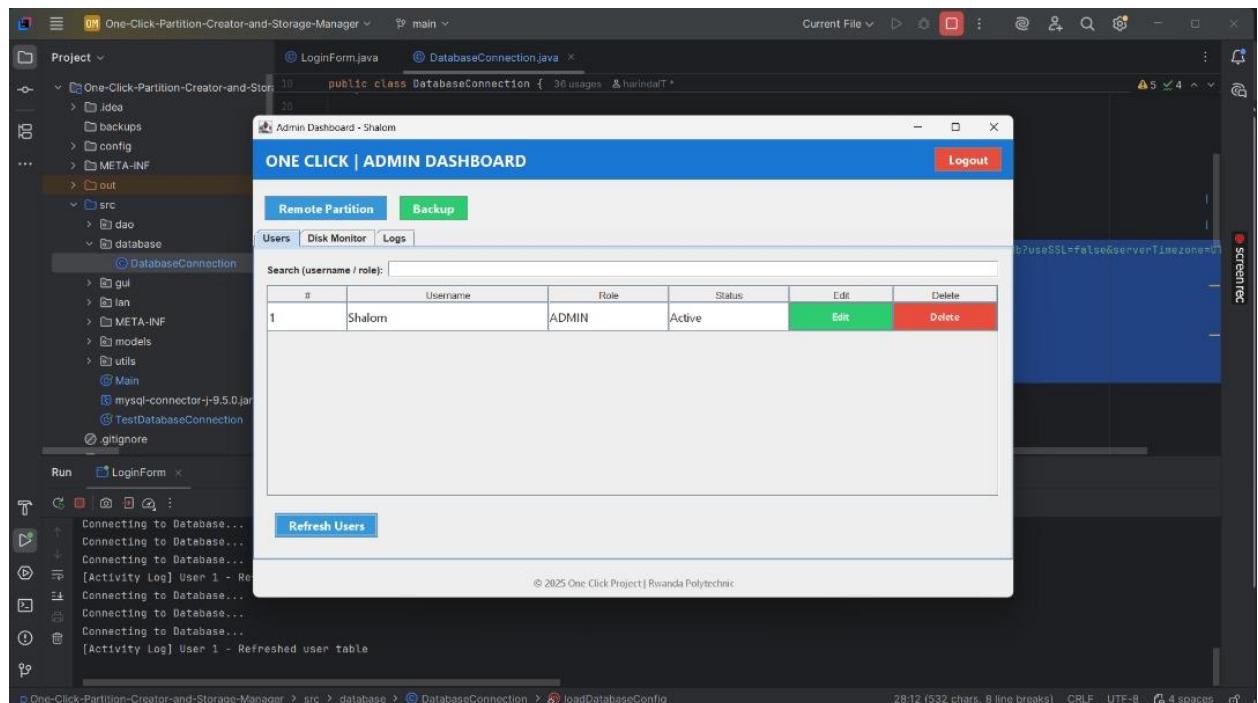
- Data validation and secure authentication mechanisms were implemented.

4.2 Machine Management Module (Developed by Shalom)

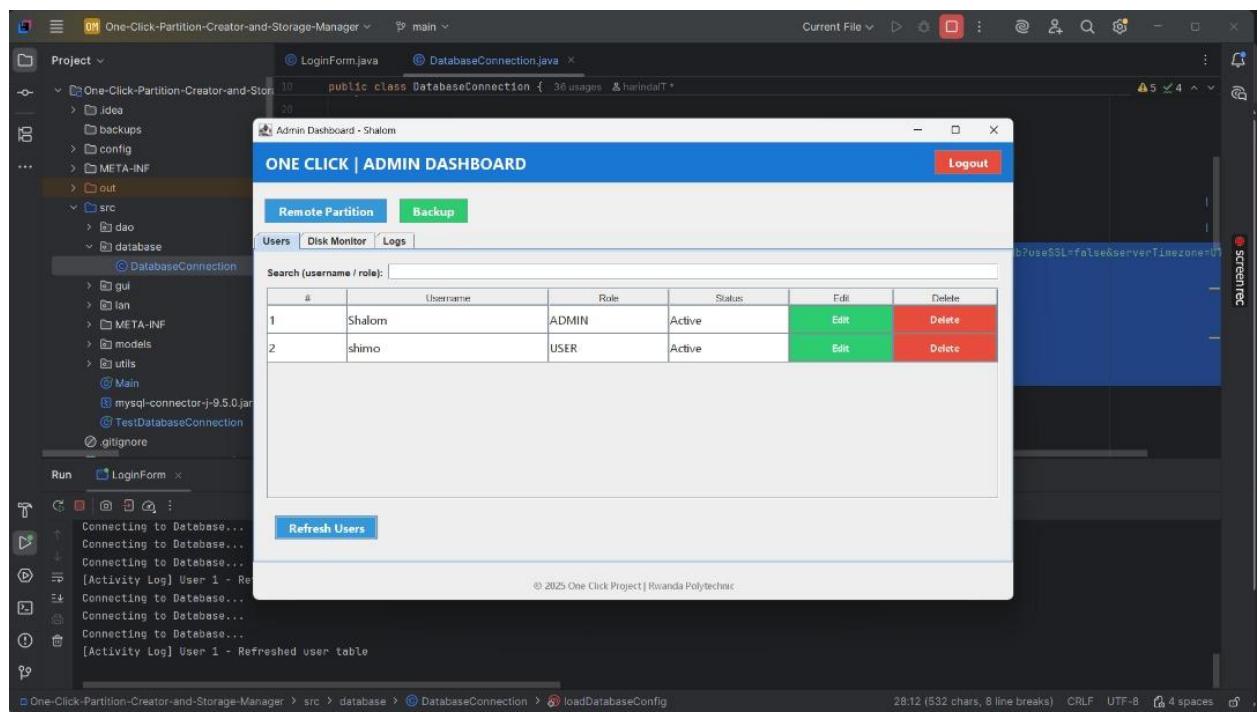
- Allows registration and tracking of machines connected to the LAN.
- User registered :



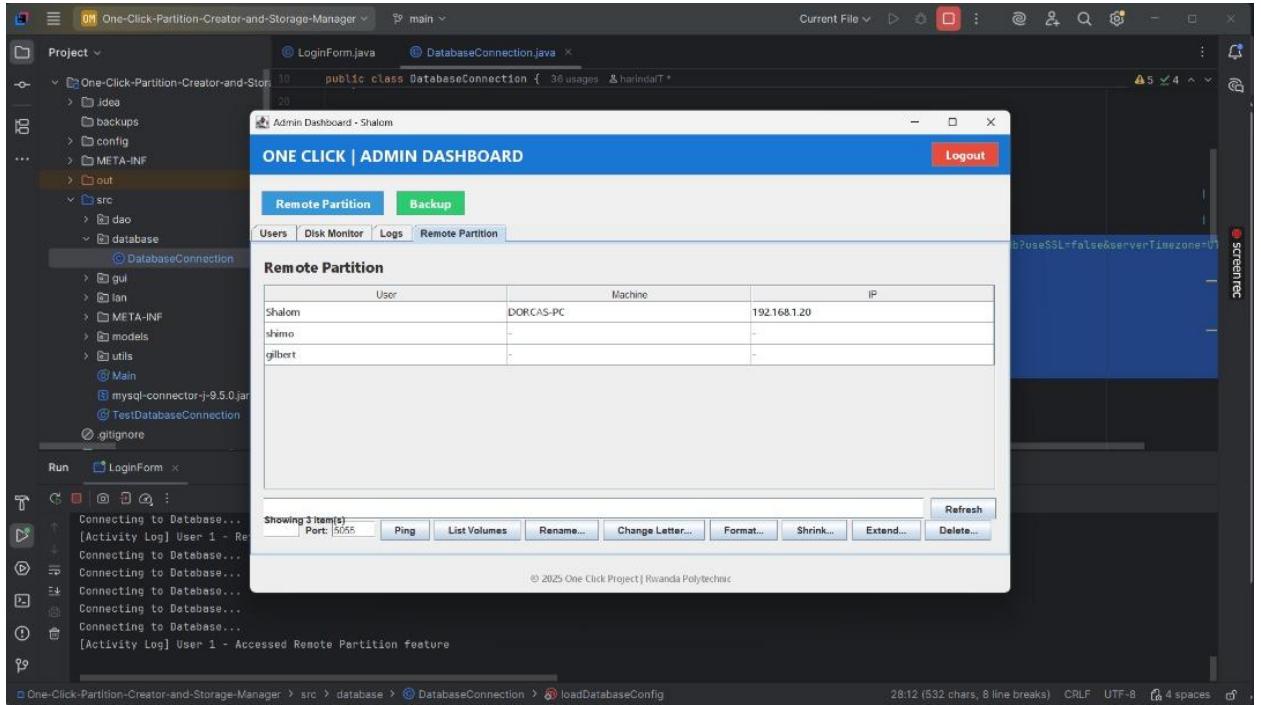
- And admin directly sees the new user on his dashboard
- Before other user:



After other user:



- Admins can view machine details (IP, Hostname) and assign users.



- Machines are uniquely identified within the database.

4.3 Partition Management Module (Developed by Shimo)

- This is the core functionality of the system.
- Admins can create, resize, rename, and delete partitions remotely on authorized machines.

Admin Dashboard - admin

ONE CLICK | ADMIN DASHBOARD

Logout

Remote Partition Backup

Users Disk Monitor Logs Remote Partition

Remote Partition

User	Machine	IP
admin	DO	10.86.93.228
admin	DES	10.86.93.165
shishoza	DES	10.86.93.75
shishoza	DO	10.86.93.228
shalom	DES	10.86.93.75
Nikuze	-	-

Showing 6 records

Port: 5055 Ping List Volumes Rename... Change Letter... Format... Shrink... Extend... Delete... Refresh

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Logs are stored in the MySQL database for monitoring and auditing.

A modal dialog titled "Delete Volume" is open, asking for the "Drive letter to delete (e.g. E)".

Admin Dashboard - admin

ONE CLICK | ADMIN DASHBOARD

[Logout](#)

[Remote Partition](#) [Backup](#)

[Users](#) [Disk Monitor](#) [Logs](#) [Remote Partition](#)

Remote Partition

User	Machine	IP
admin	DO	10.86.93.228
admin	DES	10.86.93.165
shishoza	DES	10.86.93.75
shishoza	DO	10.86.93.228
shalom	DES	10.86.93.75
Nikuze	-	-

Shrink Volume

Drive letter to shrink (e.g. D):

[OK](#) [Cancel](#)

[Ping](#) [List Volumes](#) [Rename...](#) [Change Letter...](#) [Format...](#) [Shrink...](#) [Extend...](#) [Delete...](#) [Refresh](#)

Showing 0 items

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Logs are stored in the MySQL database for monitoring and auditing.

Admin Dashboard - admin

ONE CLICK | ADMIN DASHBOARD

[Logout](#)

[Remote Partition](#) [Backup](#)

[Users](#) [Disk Monitor](#) [Logs](#) [Remote Partition](#)

Remote Partition

User	Machine	IP
admin	DO	10.86.93.228
admin	DES	10.86.93.165
shishoza	DES	10.86.93.75
shishoza	DO	10.86.93.228
shalom	DES	10.86.93.75
Nikuze	-	-

Delete Volume

Drive letter to delete (e.g. E):

[OK](#) [Cancel](#)

[Ping](#) [List Volumes](#) [Rename...](#) [Change Letter...](#) [Format...](#) [Shrink...](#) [Extend...](#) [Delete...](#) [Refresh](#)

Showing 0 items

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Logs are stored in the MySQL database for monitoring and auditing.

- Users can manage partitions only on their own assigned machines.

User Dashboard - Nikuze

ONE CLICK | USER DASHBOARD

[Logout](#)

[Disk Monitor](#) [Activity Logs](#)

[Refresh Now](#)

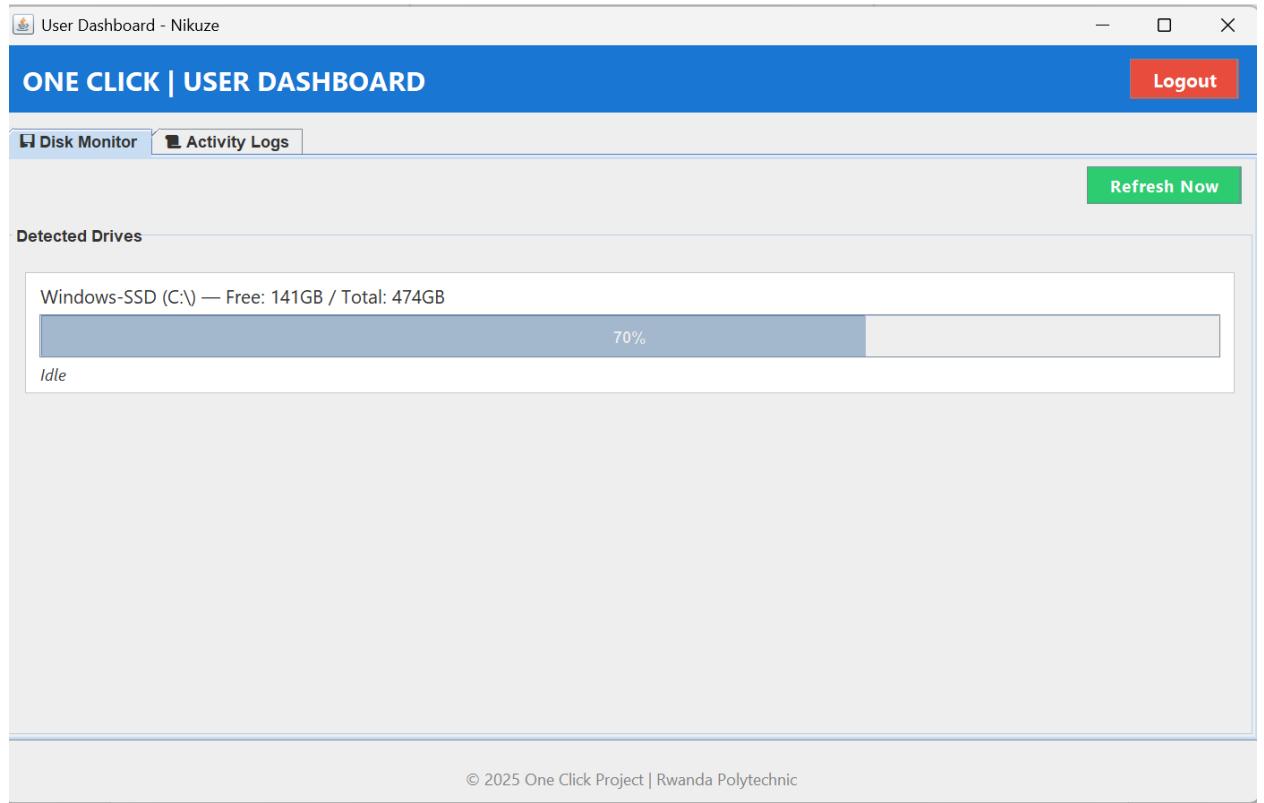
Detected Drives

Windows-SSD (C:\) — Free: 141GB / Total: 474GB

70%

Idle

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User Dashboard - Nikuze

ONE CLICK | USER DASHBOARD

[Logout](#)

[Disk Monitor](#) [Activity Logs](#)

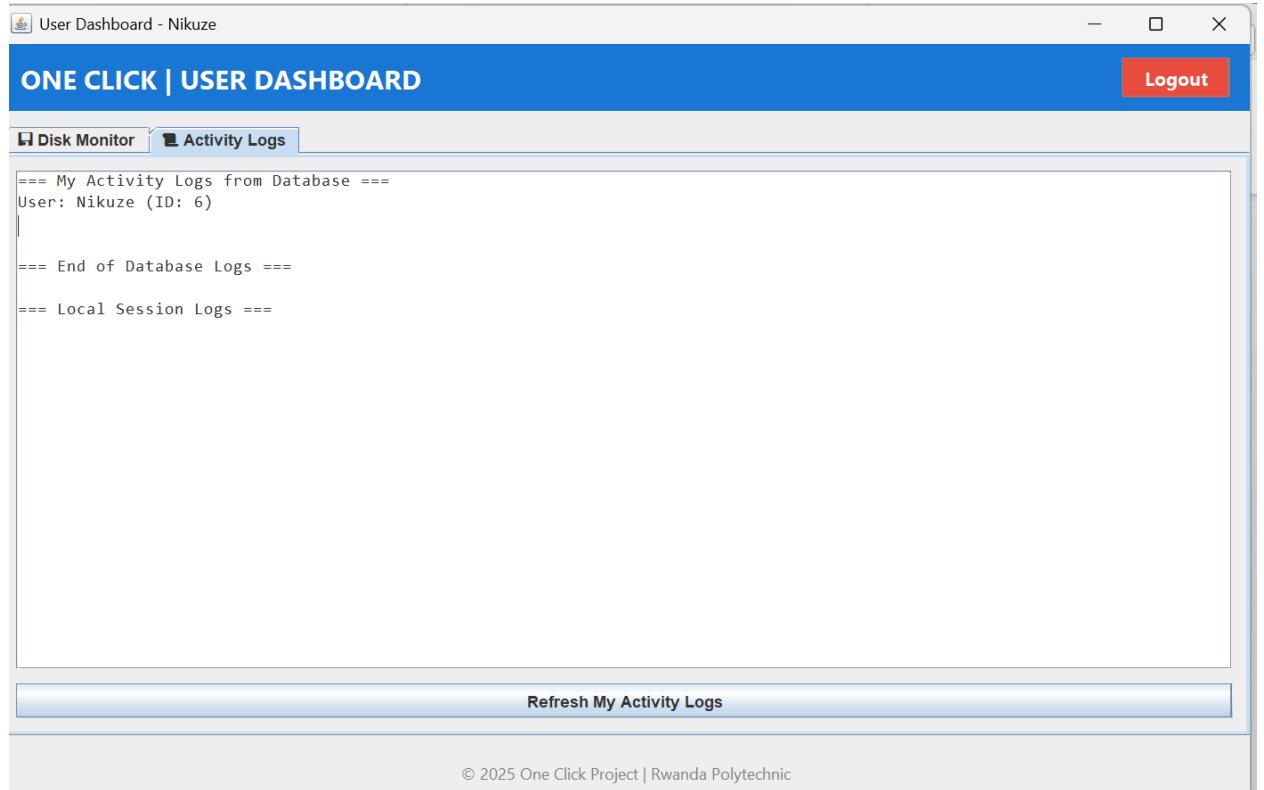
==== My Activity Logs from Database ===
User: Nikuze (ID: 6)

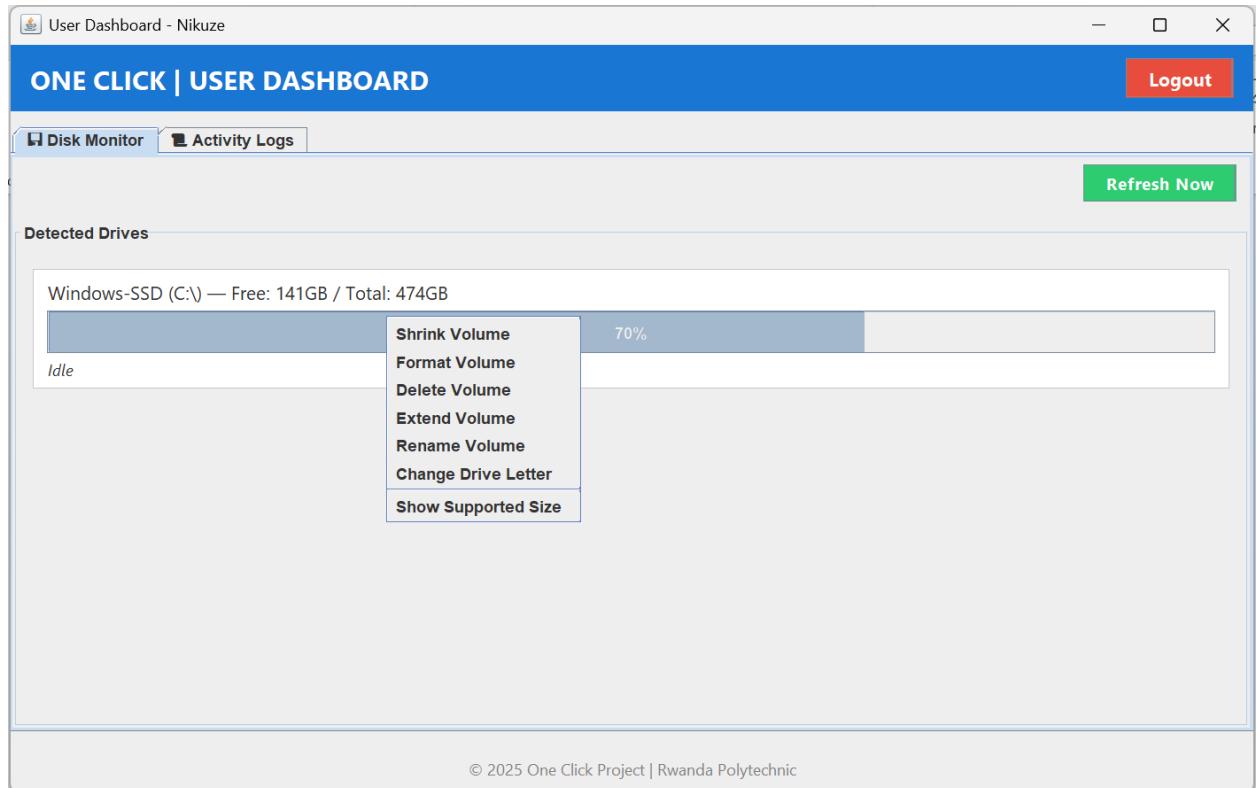
==== End of Database Logs ===

==== Local Session Logs ===

[Refresh My Activity Logs](#)

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- All partition actions are meticulously logged for auditing purposes.

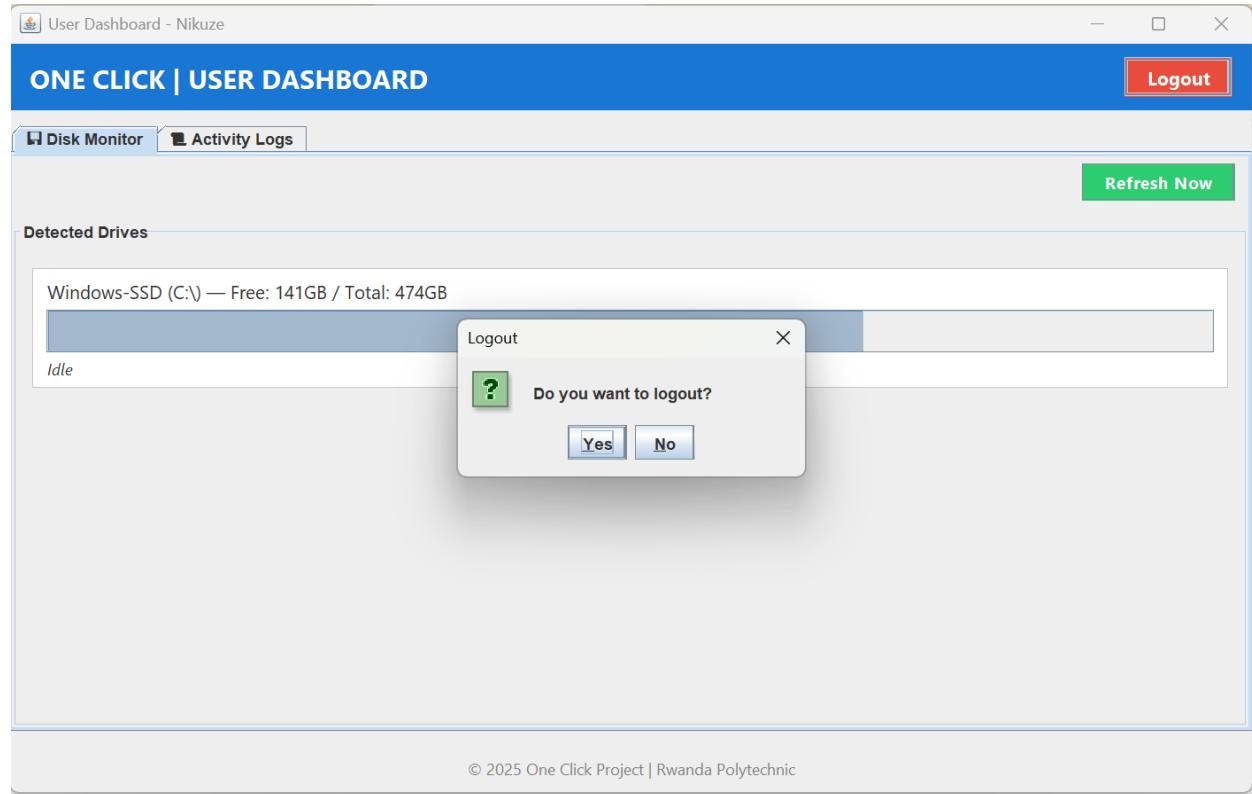
The screenshot shows the Admin Dashboard interface. At the top, there's a blue header bar with the title "ONE CLICK | ADMIN DASHBOARD" and a "Logout" button. Below the header, there are three tabs: "Remote Partition" (selected), "Backup", and "Logs". The "Logs" tab is currently active, showing a detailed log of database activity. The log entries are as follows:

```
[2025-11-23 11:02:23.0] User: admin | Machine: DORCAS-PC | Action: Synchronized 4 partition(s) with database
[2025-11-23 11:02:22.0] User: admin | Machine: DORCAS-PC | Action: User logged in successfully
[2025-11-23 11:00:01.0] User: shishoza | Machine: DESKTOP-U6GP85L | Action: Refreshed activity logs
[2025-11-23 10:59:20.0] User: shishoza | Machine: DESKTOP-U6GP85L | Action: Create Volume X on Disk 0 (1.95GB)
[2025-11-23 10:58:12.0] User: admin | Machine: DORCAS-PC | Action: Accessed Remote Partition feature
[2025-11-23 10:58:02.0] User: shishoza | Machine: DESKTOP-U6GP85L | Action: Synchronized 3 partition(s) with database
[2025-11-23 10:57:56.0] User: shishoza | Machine: DESKTOP-U6GP85L | Action: User logged in successfully
[2025-11-23 10:57:17.0] User: admin | Machine: DORCAS-PC | Action: Deleted user: mubane
[2025-11-23 10:45:12.0] User: admin | Machine: DORCAS-PC | Action: Accessed Remote Partition feature
[2025-11-23 10:45:10.0] User: admin | Machine: DORCAS-PC | Action: Accessed Remote Partition feature
[2025-11-23 10:45:06.0] User: admin | Machine: DORCAS-PC | Action: Synchronized 5 partition(s) with database
[2025-11-23 10:45:05.0] User: admin | Machine: DORCAS-PC | Action: User logged in successfully
[2025-11-23 10:23:58.0] User: admin | Machine: DORCAS-PC | Action: Accessed Remote Partition feature
[2025-11-23 10:23:48.0] User: admin | Machine: DORCAS-PC | Action: Synchronized 4 partition(s) with database
[2025-11-23 10:23:48.0] User: admin | Machine: DORCAS-PC | Action: User logged in successfully
==== End of Database Logs ====
==== Local Session Logs ====
[22:05:20] Loaded 101 activity logs from database
```

At the bottom of the dashboard, a green "Refresh Activity Logs" button is located. At the very bottom, a copyright notice reads "© 2025 One Click Project | Rwanda Polytechnic".

4.4 Activity Log Module (Developed by Shishoza)

- Tracks all significant events within the system:
 - Login/Logout activities



ONE CLICK | ADMIN DASHBOARD

[Logout](#)[Remote Partition](#)[Backup](#)[Users](#)[Disk Monitor](#)[Logs](#)

```
[2025-11-23 11:02:23.0] User: admin | Machine: DORCAS-PC | Action: Synchronized 4 partition(s) with database
[2025-11-23 11:02:22.0] User: admin | Machine: DORCAS-PC | Action: User logged in successfully
[2025-11-23 11:00:01.0] User: shishoza | Machine: DESKTOP-U6GP85L | Action: Refreshed activity logs
[2025-11-23 10:59:20.0] User: shishoza | Machine: DESKTOP-U6GP85L | Action: Create Volume X on Disk 0 (1.95GB)
[2025-11-23 10:58:12.0] User: admin | Machine: DORCAS-PC | Action: Accessed Remote Partition feature
[2025-11-23 10:58:02.0] User: shishoza | Machine: DESKTOP-U6GP85L | Action: Synchronized 3 partition(s) with database
[2025-11-23 10:57:56.0] User: shishoza | Machine: DESKTOP-U6GP85L | Action: User logged in successfully
[2025-11-23 10:57:17.0] User: admin | Machine: DORCAS-PC | Action: Refreshed activity logs
[2025-11-23 10:45:12.0] User: admin | Machine: DORCAS-PC | Action: Accessed Remote Partition feature
[2025-11-23 10:45:10.0] User: admin | Machine: DORCAS-PC | Action: Refreshed activity logs
[2025-11-23 10:45:06.0] User: admin | Machine: DORCAS-PC | Action: Refreshed activity logs
[2025-11-23 10:45:05.0] User: admin | Machine: DORCAS-PC | Action: User logged in successfully
[2025-11-23 10:23:58.0] User: admin | Machine: DORCAS-PC | Action: Accessed Remote Partition feature
[2025-11-23 10:23:48.0] User: admin | Machine: DORCAS-PC | Action: Synchronized 4 partition(s) with database
[2025-11-23 10:23:48.0] User: admin | Machine: DORCAS-PC | Action: User logged in successfully
== End of Database Logs ==

== Local Session Logs ==
[22:05:20] Loaded 101 activity logs from database
```

Logout?



Logout?

Yes

No

[Refresh Activity Logs](#)



OneClick - Login

Welcome to OneClick

User

Message



Password



Welcome Admin: admin!

OK

Login

Create Account



OneClick - Login

Welcome to OneClick

User

Message



Password

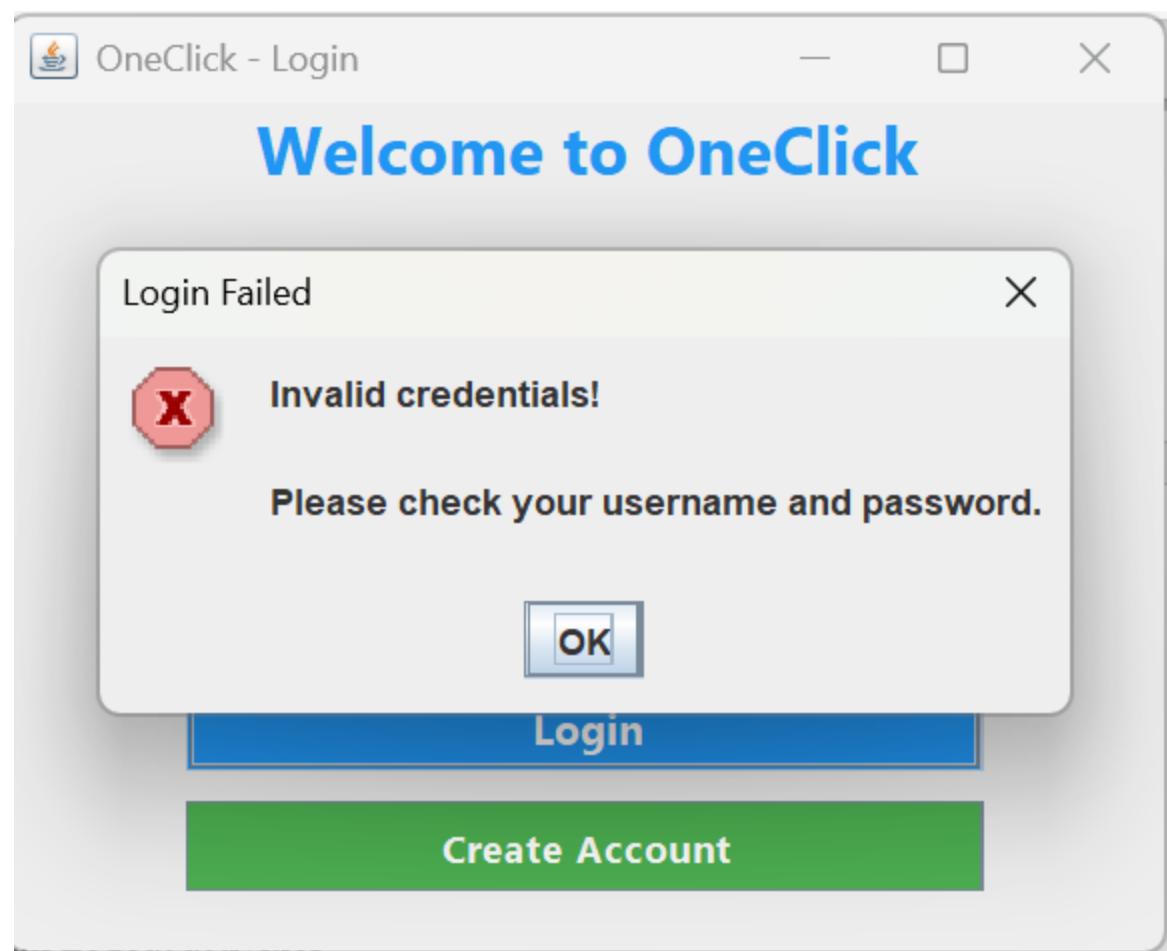


Welcome User: Nikuze!

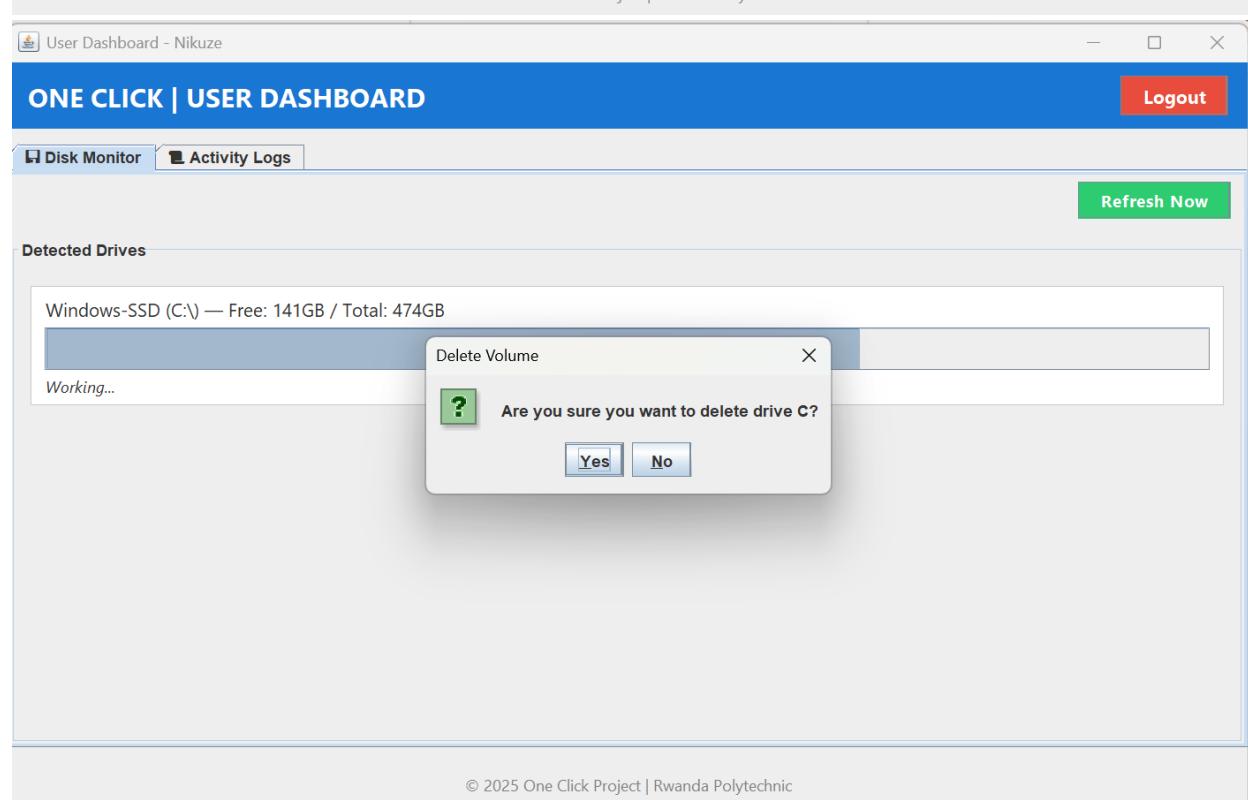
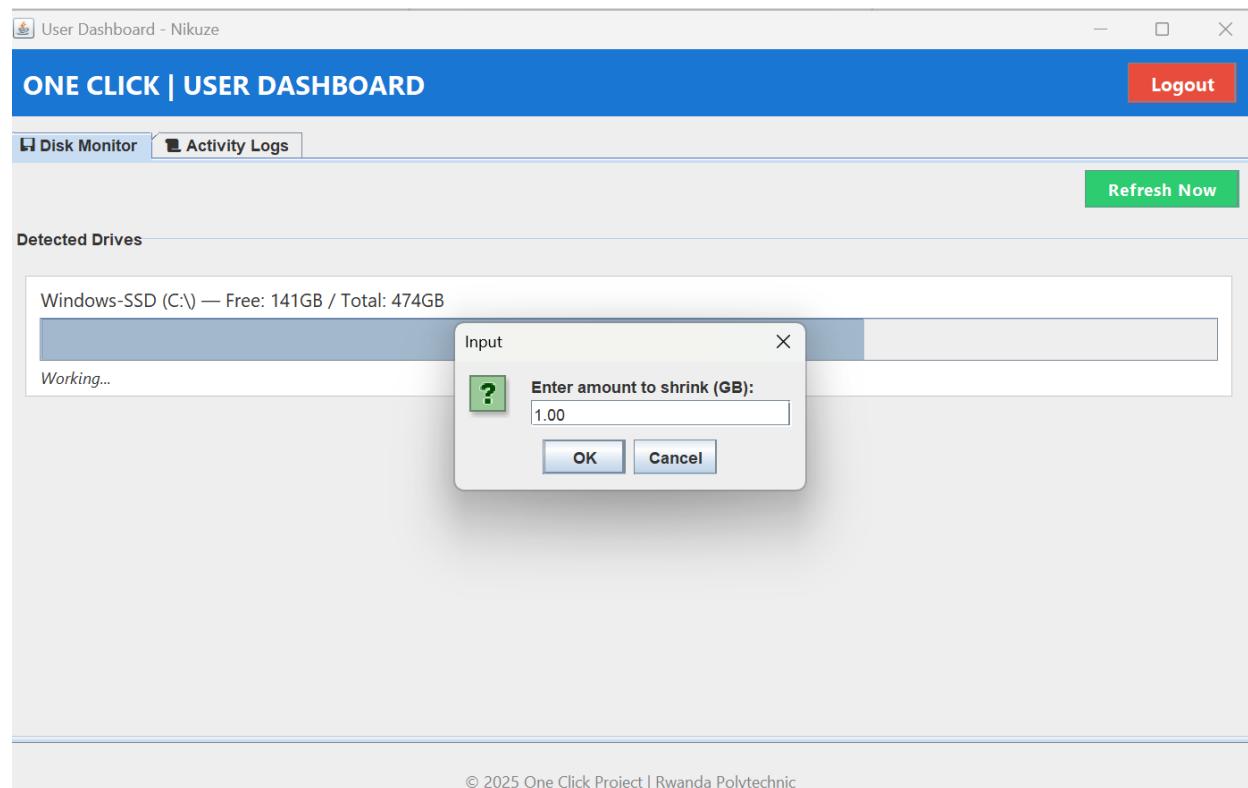
OK

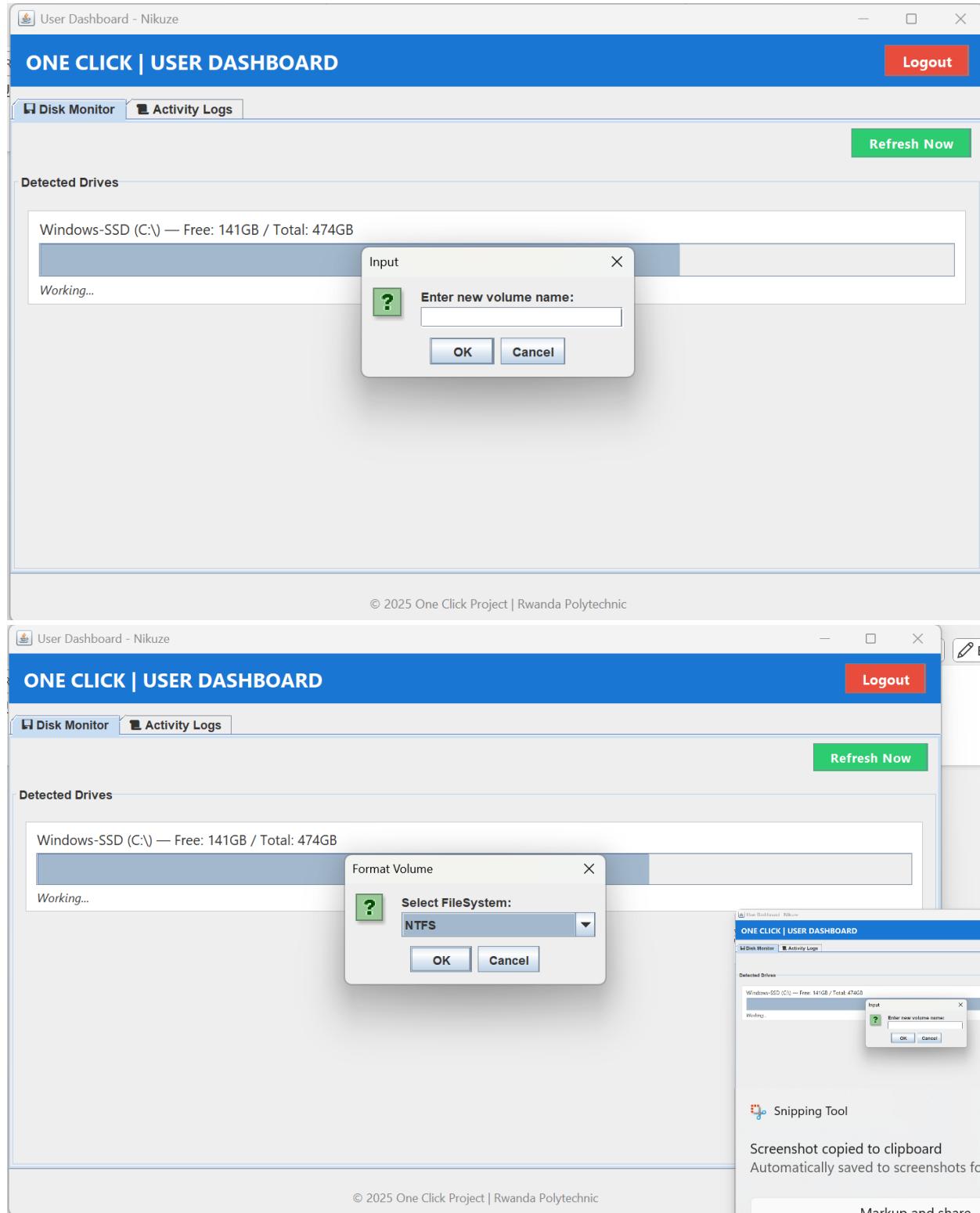
Login

Create Account



- Partition modifications (creation, deletion, resize)





- Machine and user updates
- Logs are stored in the MySQL database for monitoring and auditing.

The screenshot shows the phpMyAdmin interface for the 'activity_logs' table in the 'onclick_db' database. The table contains 25 rows of data, each representing an action taken by a user on a specific machine. The columns are: log_id, user_id, machine_id, action, and log_date. The actions listed include User logged in successfully, Synchronized partition(s) with database, Accessed Remote Partition feature, Deleted user, User logged in successfully, Synchronized partition(s) with database, Accessed Remote Partition feature, Accessed Remote Partition feature, Deleted user, User logged in successfully, Synchronized partition(s) with database, Accessed Remote Partition feature, Create Volume X on Disk 0 (1.95GB), Refreshed activity logs, User logged in successfully, and Synchronized partition(s) with database.

4.5 Local Synchronization

- All device operations are saved locally and immediately synced with the centralized MySQL database over the LAN.

The screenshot shows the 'Admin Dashboard' window of the 'One-Click-Partition-Creator-and-Storage-Manager' application. The dashboard has tabs for Remote Partition, Backup, Users, Disk Monitor, Logs, and Remote Partition. The 'Remote Partition' tab is active, displaying a table with three entries: Shalom (Machine: DORCAS-PC, IP: 192.168.1.20), shimo (Machine: -, IP: -), and gilbert (Machine: -, IP: -). Below the table is a toolbar with buttons for Refresh, Ping, List Volumes, Rename..., Change Letter..., Format..., Shrink..., Extend..., and Delete... . The left sidebar shows the project structure with files like LoginForm.java, DatabaseConnection.java, and DatabaseConnection.java. The bottom status bar shows the file path as One-Click-Partition-Creator-and-Storage-Manager/src/database/DatabaseConnection.java, line 2812, and encoding as UTF-8.

- This mechanism is crucial for ensuring the system's robust offline operation capability.

4.6 Cloud Backup Module (Developed by Emillien)

- An Admin-only feature that uploads a snapshot of the database or critical machine statistics to the cloud.
- It is triggered manually by the administrator to control and minimize unnecessary external internet usage.

Admin Dashboard - admin

ONE CLICK | ADMIN DASHBOARD

[Logout](#)

[Remote Partition](#) [Backup](#)

[Users](#) [Disk Monitor](#) [Logs](#)

Search (username / role):

#	Username	Role	Status	Edit	Delete
1	admin	ADMIN	Active	Edit	Delete
2	shishoza	USER	Active	Edit	Delete
3	shalom	ADMIN	Active	Edit	Delete
4	Nikuze	USER	Active	Edit	Delete

[Refresh Users](#)

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Admin Dashboard - admin

ONE CLICK | ADMIN DASHBOARD

Logout

Remote Partition Backup

Users Disk Monitor Logs

Search (username / role):

#	Username
1	admin
2	shishoza
3	shalom
4	Nikuze

Edit User

Username: shishoza

New Password:

Role: USER

(Leave password empty to ...)

Save Changes Cancel

Refresh Users

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	Edit	Delete
Edit	Edit	Delete

Admin Dashboard - admin

ONE CLICK | ADMIN DASHBOARD

Logout

Remote Partition Backup

Users Disk Monitor Logs

Search (username / role):

#	Username	Role	Status	Edit	Delete
1	admin			Edit	Delete
2	shishoza			Edit	Delete
3	shalom			Edit	Delete
4	Nikuze			Edit	Delete

Confirm Deletion

Are you sure you want to delete user 'Nikuze'?

This action cannot be undone!

Yes No

Refresh Users

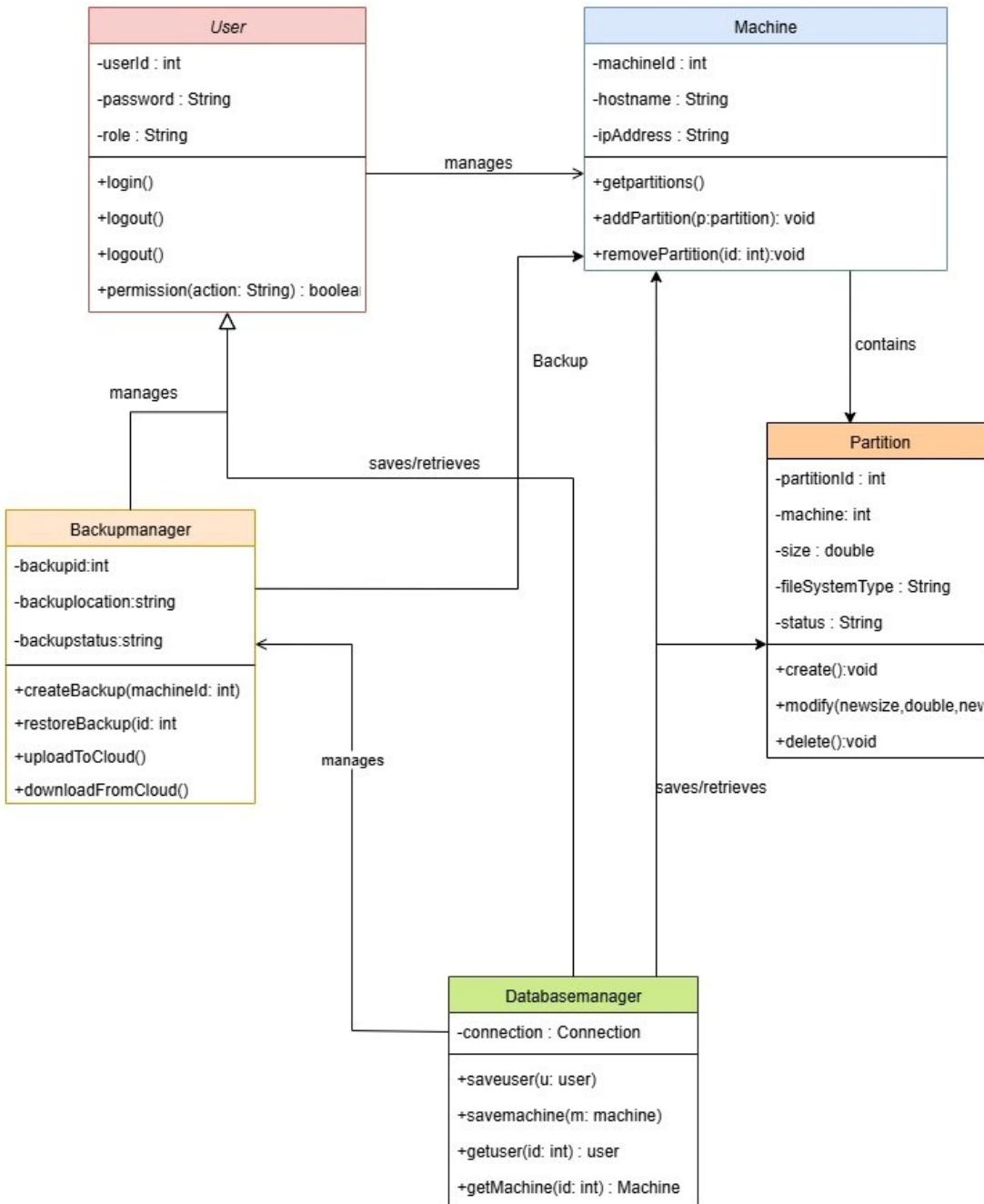
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5. Database Design

The system utilizes a relational database structure, managed via **MySQL/MariaDB on the XAMPP local server**, ensuring high performance and data integrity. Key tables include:

Table Name	Description	Key Fields
USERS	Stores account and role information.	user_id, username, role, password
MACHINES	Stores physical machine information and ownership.	machine_id, owner_id, hostname, IP, status
PARTITIONS	Stores details of managed partitions.	partition_id, machine_id, size, type, status
ACTIVITY_LOGS	Records all system actions for auditing.	log_id, user_id, action, target, timestamp

All entities were normalized to avoid redundancy and improve system performance.



6. Testing and Validation

The system underwent rigorous testing across multiple phases to validate all objectives:

6.1 Unit Testing

Each module was tested in isolation to verify its independent functionality: User CRUD operations, machine registration, partition handling, and activity logging.

6.2 Integration Testing

Modules were combined and tested together to ensure: Smooth communication between components and correct real-time syncing with the MySQL database

6.3 LAN Functionality Testing

The system was tested extensively under various **offline LAN conditions** to verify local data consistency and communication reliability.

6.4 Backup Testing

The admin-triggered cloud backup feature (developed by Emillien) was tested for successful snapshot creation and upload under limited and sporadic internet access conditions.

Module	Input	Expected output
Login	<ul style="list-style-type: none">➤ With correct credentials➤ With wrong credentials	<ul style="list-style-type: none">➤ Access dashboard role based➤ Getting Error message
Disk partition	<ul style="list-style-type: none">➤ When user shrink➤ Admin can shrink	<ul style="list-style-type: none">➤ The disk will be shrunk and that activity will be recorded in database.➤ Also his disk and any other disk he is editing also that activity is recorded in database.
LAN Based	<ul style="list-style-type: none">➤ After user registration	<ul style="list-style-type: none">➤ Admin will see on his dashboard the user name , PC name and

		its IP addresss. And this activity is done offline.
Backup	➤ Admin whenever he or she gets internet	➤ All activities that have been recorded in the database will be synchronized . it will make back up automatically.
Logout	➤ If any user clicks on logout button	➤ The system will confirm if he or she surely wants to logout and if it is yes it will be back in login form and saves all activities done by that use in the database.

7. Challenges Encountered

The development team successfully navigated several technical challenges:

- **XAMPP/MySQL database configuration and connectivity issues** in a multi-client LAN environment.
- Ensuring consistent and reliable data synchronization during offline mode and resolving conflicts upon re-synchronization.
- Handling machine permissions and secure remote execution in a Java-based LAN setting.
- Designing a simplified, intuitive, yet powerful interface for non-technical administrators and users.

8. Achievements

The OnClick System successfully achieved all initial project objectives, demonstrating its readiness for deployment:

- ✓ Full offline LAN operation capability.

- ✓ Real-time data synchronization with the centralized Local Server (XAMPP/MySQL) database.
- ✓ Implementation of secure remote partition management controls.
- ✓ Robust, trackable system activity logs.
- ✓ Successfully implemented Admin-controlled cloud backup functionality.
- ✓ Clear and enforced separation of roles (Admin vs. User).

9. Conclusion

The OnClick System successfully provides a complete, robust, **LAN-based solution** for managing storage partitions. Its modular architecture, centralized **MySQL database on XAMPP**, and secure synchronization mechanisms allow both administrators and users to manage machines efficiently within a local network environment. The project demonstrates strong teamwork and effective use of modern technologies (**Java, MySQL**) and practical problem-solving skills, achieving all initial objectives and providing a solid foundation for future enhancements.