



DIGIDINE

USER MANUAL

CMPG 323/ ITRI624

23 OCTOBER 2025

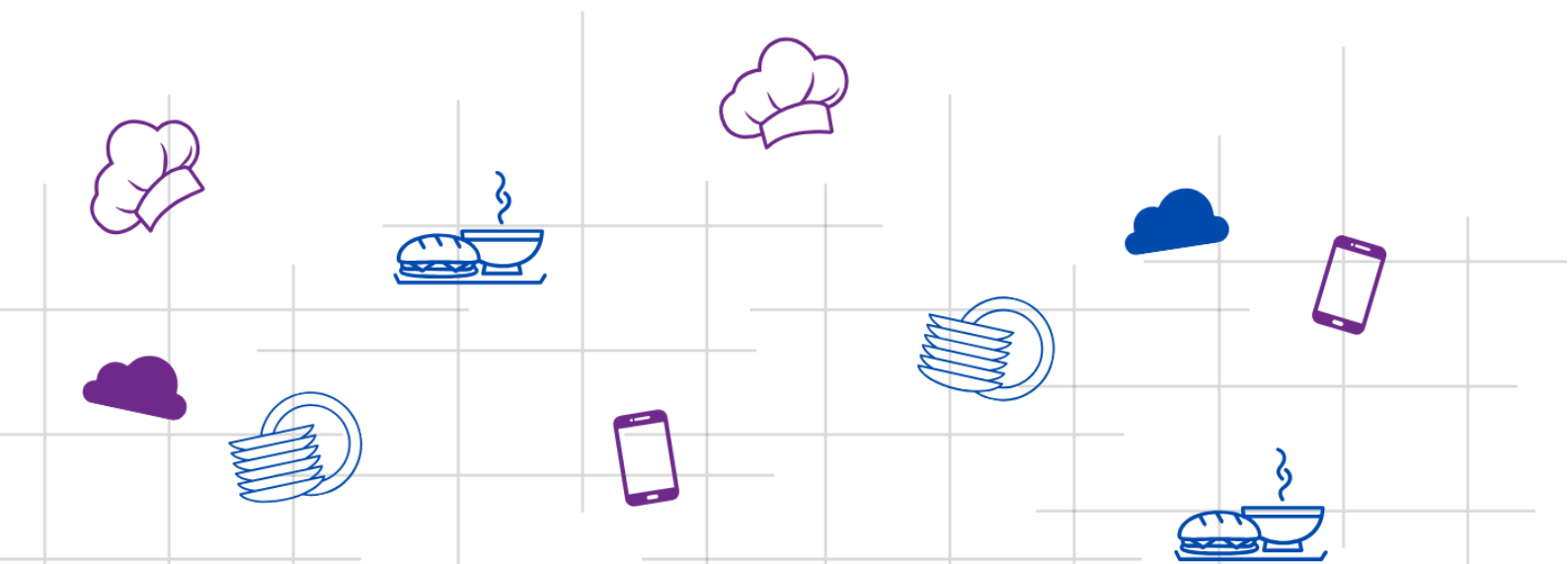


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1. Introduction

The DigiDine User Manual provides structured guidance for using the DigiDine Smart Dining Hall System, a web-based platform designed to digitize meal booking, ordering, and feedback processes at North-West University (NWU). This document serves as a guide for both students and catering staff, ensuring that users can interact with the system efficiently and confidently to enhance their dining hall experience.

1.1. Purpose of the Manual

The purpose of this manual is to guide end-users in understanding and operating the DigiDine system efficiently. It describes step-by-step procedures for account access, viewing menus, booking meals, customizing orders, and submitting feedback. For catering staff, it provides instructions on managing menus, monitoring bookings, and using analytics for better meal and inventory planning. The manual aims to support effective system use and promote a more organized dining hall operation.

1.2. Overview of the System

The DigiDine System is a web-based application developed to streamline and digitize dining hall operations at North-West University (NWU). It enhances communication between students and catering staff while promoting efficient meal planning, dietary transparency, and sustainable food management.

DigiDine consists of two main user interfaces, one for students and one for administrators, each tailored to specific user roles and responsibilities within the dining process.

For Students:

Students can access the system via a secure login portal using their university credentials. Once logged in, they are directed to a personalized Student Dashboard, where they can:

- View daily and weekly menus.
- Pre-book meals in advance.
- Manage and update their dietary preferences.
- Receive allergen information and meal recommendations aligned with their preferences.
- Submit feedback on meals to improve service quality.

For Administrators:

Administrators access a separate Admin Dashboard that provides tools for managing and monitoring dining hall operations. From this interface, administrators can:

- Add, change, or remove menu items and meal categories.
- Track and manage student meal orders in real time.
- Monitor food inventory levels and update stock information.

- Generate analytical and operational reports to assist with demand forecasting and inventory management.
- View statistical summaries for performance evaluation and decision-making.

2. Getting Started

This section helps users access and personalize their DigiDine accounts. It provides clear, step-by-step instructions for signing in and setting up profiles.

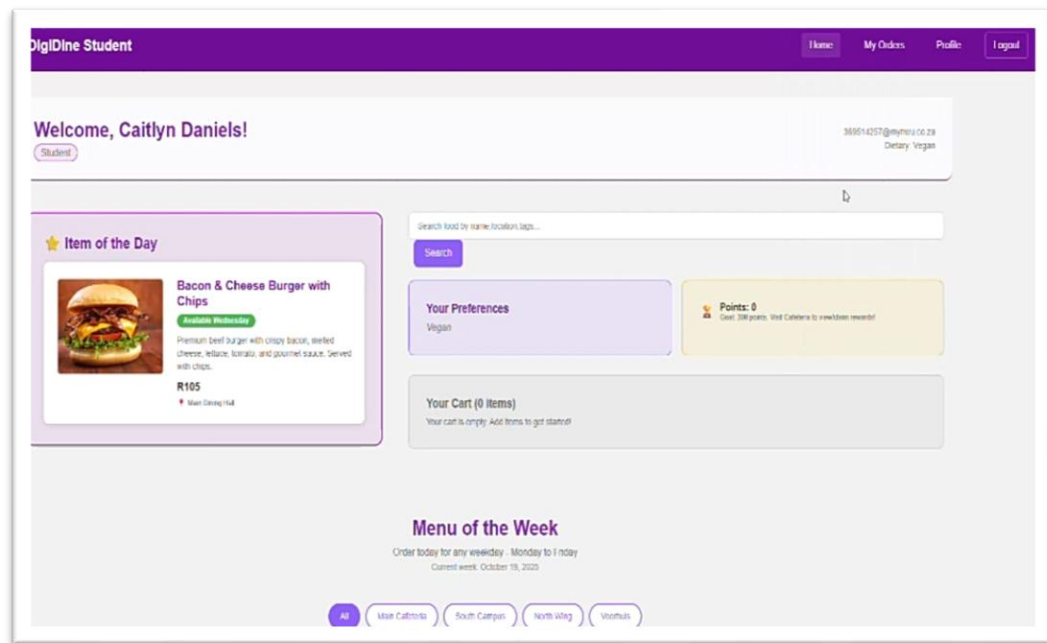
Instructions are divided for Students and Administrators to ensure each user group can easily follow their relevant steps.

2.1 Students

2.1.1. Sign-in process

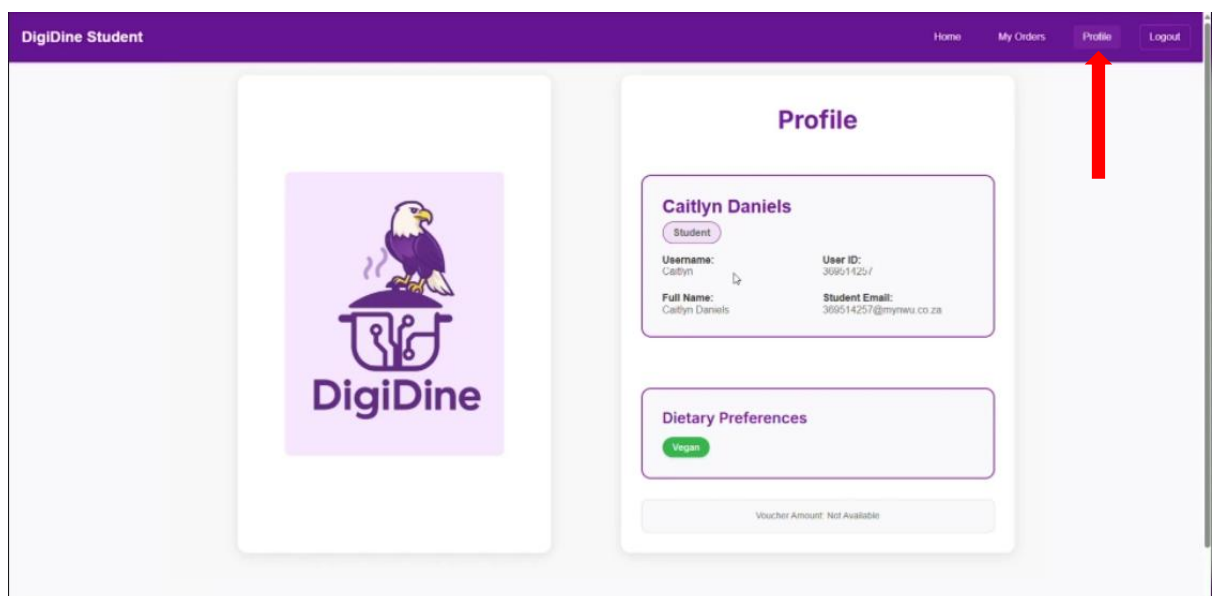
1. **Access the Home Page:**
Open the DigiDine website or application to reach the home screen.
2. **Enter Login Details:**
Enter your student number or registered email address and password.
3. **Authentication:**
The system checks the information provided to confirm your identity.
4. **Role Identification and Redirection:**
Once verified, the system recognizes you as a student and directs you to your Student Dashboard, where you can view menus, pre-book meals, and manage your dietary preferences.
5. **Home Screen Display:**
After successful login, your personalized home screen loads automatically, displaying your name, email, and the main menu options such as View Menu, Your Orders, and Preferences.

Student Home screen:



2.1.2 Profile Setup

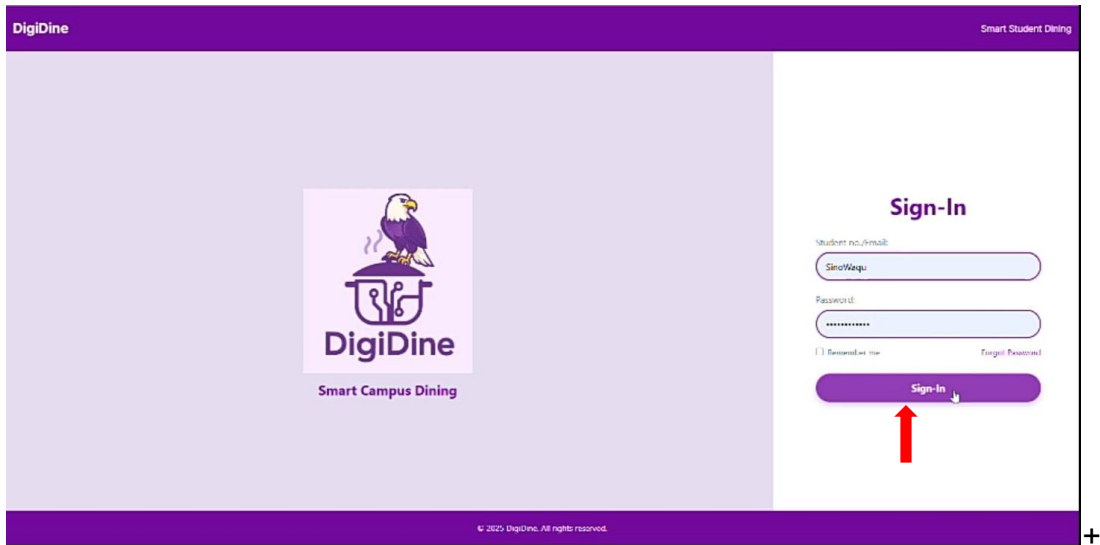
1. Go to the Profile section on the student's Home page.



2. Review your personal details such as your name, contact information, and dietary preferences.
3. You can make the necessary changes to your meal preference or allergen, then click save.
4. Your updates will be applied immediately, and future menus and notifications will automatically adjust to reflect your selections.

2.2. Administrators

2.2.1. Sign-in process



The image shows the DigiDine Sign-In page. On the left, there is a large purple area with the DigiDine logo (an eagle perched on a shield with a 'D' and 'S' inside) and the text 'Smart Campus Dining'. On the right, there is a white area with the title 'Sign-In'. Below the title, there are two input fields: 'Student no./email:' with the value 'SinoWagu' and 'Password:' with a masked password '*****'. There are links for 'Remember me' and 'Forgot Password?'. A red arrow points to the 'Sign-In' button.

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1. Access the Home Page:

Open the DigiDine website or application to reach the home screen.

2. Enter Login Details:

Enter your staff email address and password.

3. Authentication:

The system checks the information provided to confirm your identity.

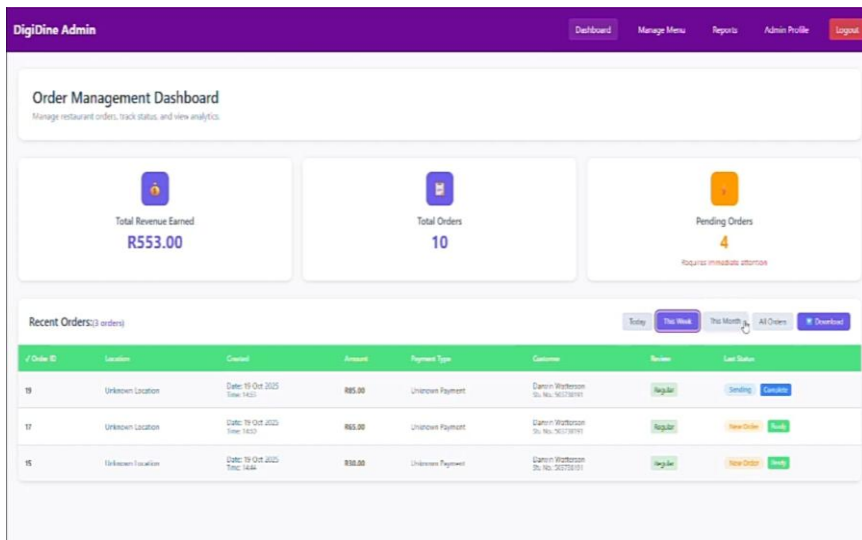
4. Role Identification and Redirection:

Once verified, the system redirects you to the Admin Dashboard, where you can manage menus, monitor orders, view statistics, generate reports, and access the inventory management view.

5. Home Screen Display:

Your Admin Dashboard will display key administrative tools and system insights relevant to your role.

Administrator home screen:

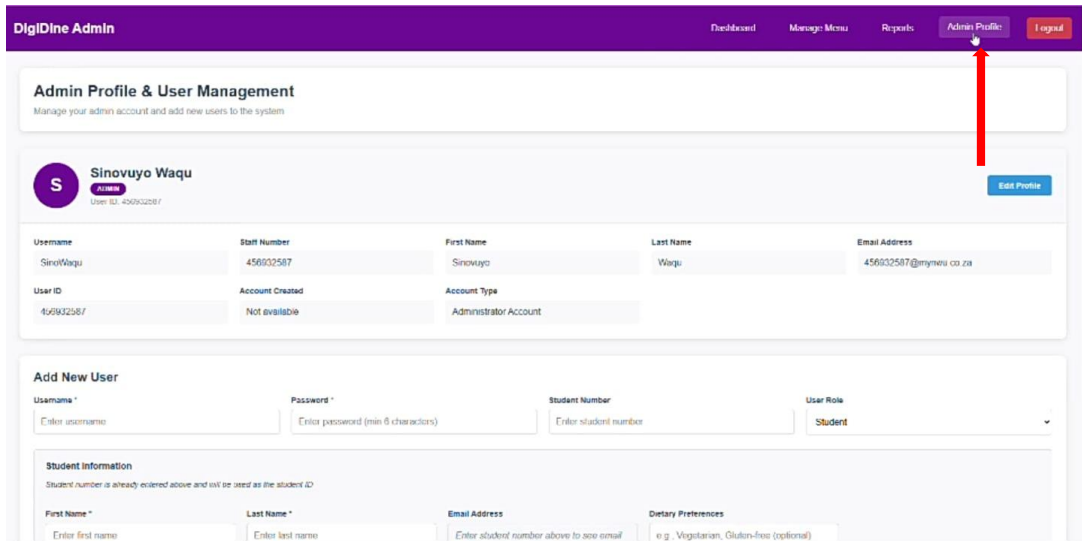


The image shows the DigiDine Admin Dashboard. At the top, there is a navigation bar with links for 'Dashboard', 'Manage Menu', 'Reports', 'Admin Profile', and 'Logout'. Below the navigation bar, there is a section titled 'Order Management Dashboard' with the subtitle 'Manage restaurant orders, track status, and view analytics'. This section contains three cards: 'Total Revenue Earned' with the value 'R553.00', 'Total Orders' with the value '10', and 'Pending Orders' with the value '4' and a note 'Requires immediate attention'. Below these cards, there is a table titled 'Recent Orders(3 orders)' with filters for 'Today', 'This Week', 'This Month', and 'All Orders', and a 'Download' button. The table has columns for 'Order ID', 'Location', 'Created', 'Amount', 'Payment Type', 'Customer', 'Status', and 'Last Status'. The table contains three rows of data.

Order ID	Location	Created	Amount	Payment Type	Customer	Status	Last Status
19	Unknown Location	Date: 19 Oct 2023 Time: 14:23	R85.00	Unknown Payment	Damon Watterson St. No. 30230901	Regular	Sending Cancelled
17	Unknown Location	Date: 19 Oct 2023 Time: 14:23	R85.00	Unknown Payment	Damon Watterson St. No. 30230901	Regular	New Order Ready
15	Unknown Location	Date: 19 Oct 2023 Time: 14:24	R100.00	Unknown Payment	Damon Watterson St. No. 30230901	Regular	New Order Ready

2.2.2 Profile Setup

1. Click on “Admin Profile” from the Admin Dashboard.



The screenshot shows the DigiDine Admin dashboard. The top navigation bar is purple with links for Dashboard, Manage Menu, Reports, Admin Profile, and Logout. The Admin Profile link is highlighted with a red arrow. Below the navigation bar, the main section is titled 'Admin Profile & User Management' with the subtitle 'Manage your admin account and add new users to the system'. The profile section for 'Sinovuyo Waqu' (User ID: 45632587) displays fields for Username, Staff Number, First Name, Last Name, Email Address, User ID, Account Created, and Account Type. Below this is the 'Add New User' section with fields for Username, Password, Student Number, and User Role (set to Student). A 'Student Information' section is also present, with a note that the student number is already entered above and will be used as the student ID. It includes fields for First Name, Last Name, Email Address, and Dietary Preferences.

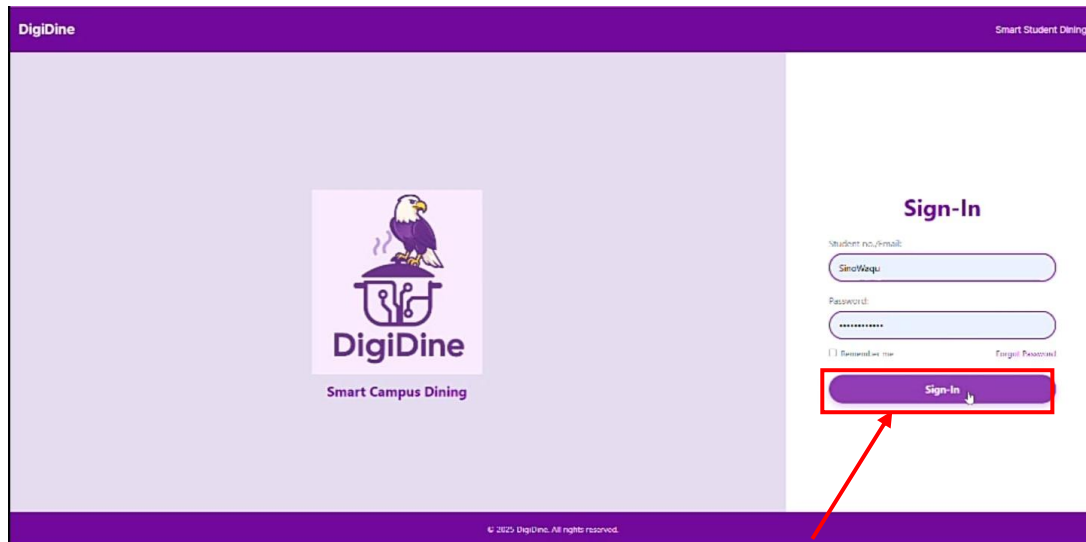
2. Within this section, you'll find two main options — Admin Profile and User Management.
3. Under Admin Profile, you can view your account details such as your username, user ID, staff number, account type, email address.
4. To make changes, click on “Edit Profile” and after making any changes, and select Save to apply the updates immediately.
5. Under “Add new user”, administrators can add new users to the DigiDine system.

3. Using the System

This section guides users through the main features and operations of the DigiDine system, including signing in, browsing menus, placing orders, and managing preferences.

3.1 Sign-In Instructions

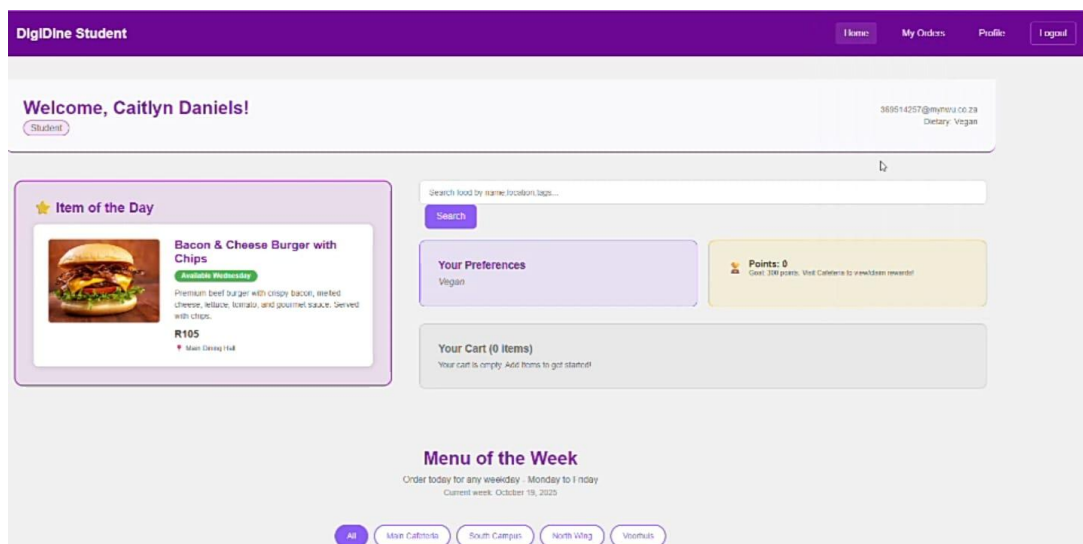
1. **Access the Login Page:** Open the DigiDine website to reach the sign-in page.
2. **Enter Credentials:**
 - Student ID or Email: Enter your student number or registered email address.
 - Password: Enter your password.
3. **Sign In:** Click the “Sign In” button to access your account.



3.2 Navigating the Main Features

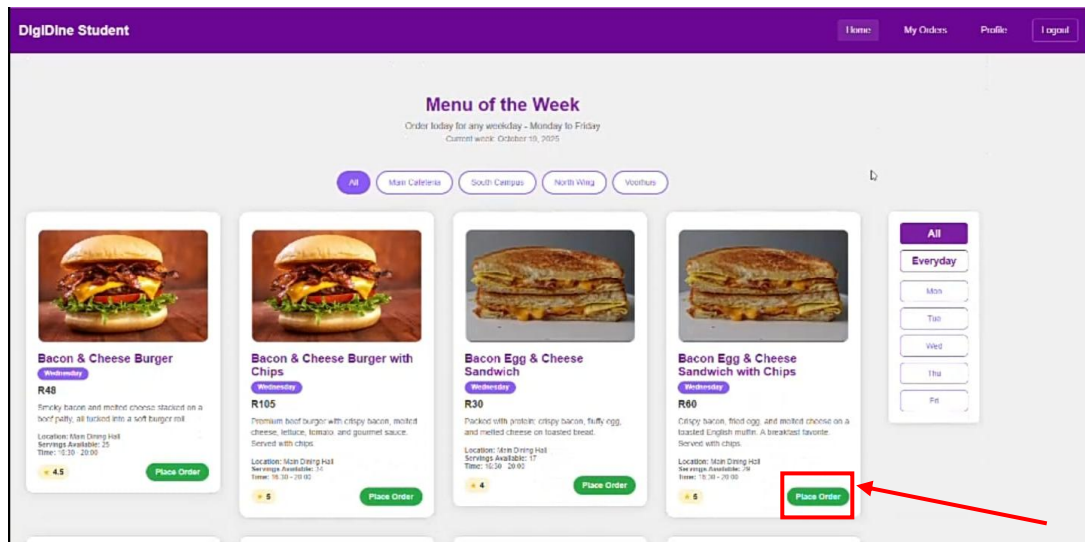
User Homepage

1. **Welcome Message:** After signing in, a personalized greeting with your name appears.
2. **Item of the Day:** A featured meal is displayed, along with its description and price.
3. **Search Bar:** Use the search bar to quickly find specific meals or filter by dietary preferences.
4. **Your Preferences:** View your saved dietary preferences (e.g., vegan).



Menu Overview

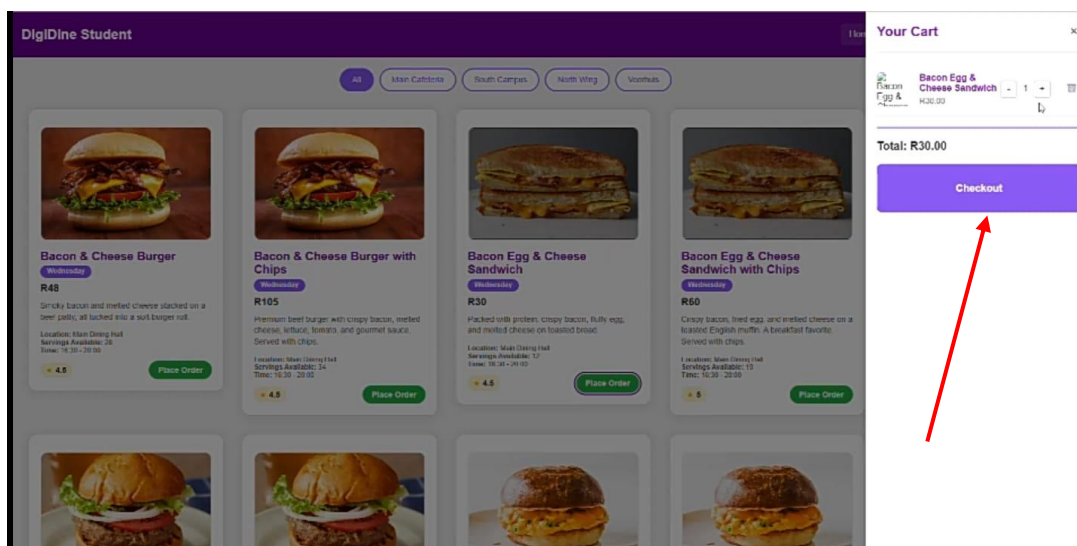
1. **Menu of the Week:** Browse through the weekly menu, organized by meal categories for easy navigation.
2. **Add to Cart:** Select desired meals and click "Add to Cart."



3.3 Ordering Meals

Placing an Order

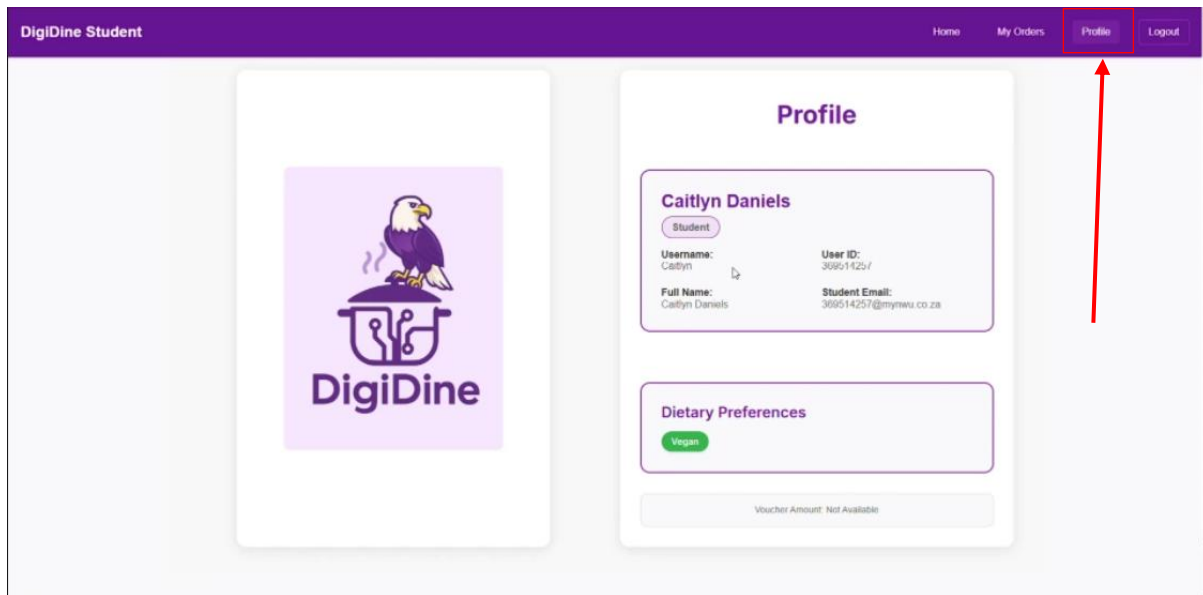
1. **Select Meals:** Browse menu items, view details, and add your preferred dishes to the cart.
2. **Checkout Process:** Click "Checkout" when ready to finalize your order.
3. **Order Summary:** Review all order details including selected items, quantities, and total cost before checking out when ready.



3.4 Managing Dietary Preferences

Updating Preferences

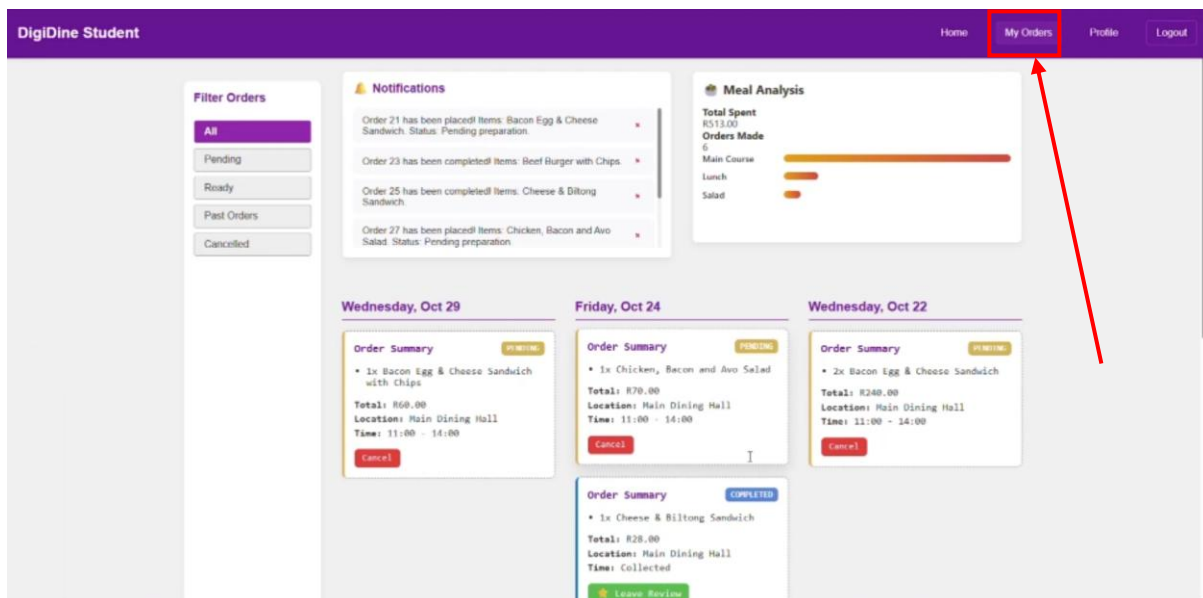
1. **Profile Section:** Navigate to your profile to view your dietary preferences and your personal information.



3.5 Order Management

Viewing Orders

1. **My Orders:** Go to the “My Orders” section to view your current and past orders.
2. **Filter Options:** Filter your orders by status (e.g., Pending, Ready, Past Orders, Cancelled).
3. **Order Details:** Click on a specific order to view detailed information such as items, prices, and order progress.



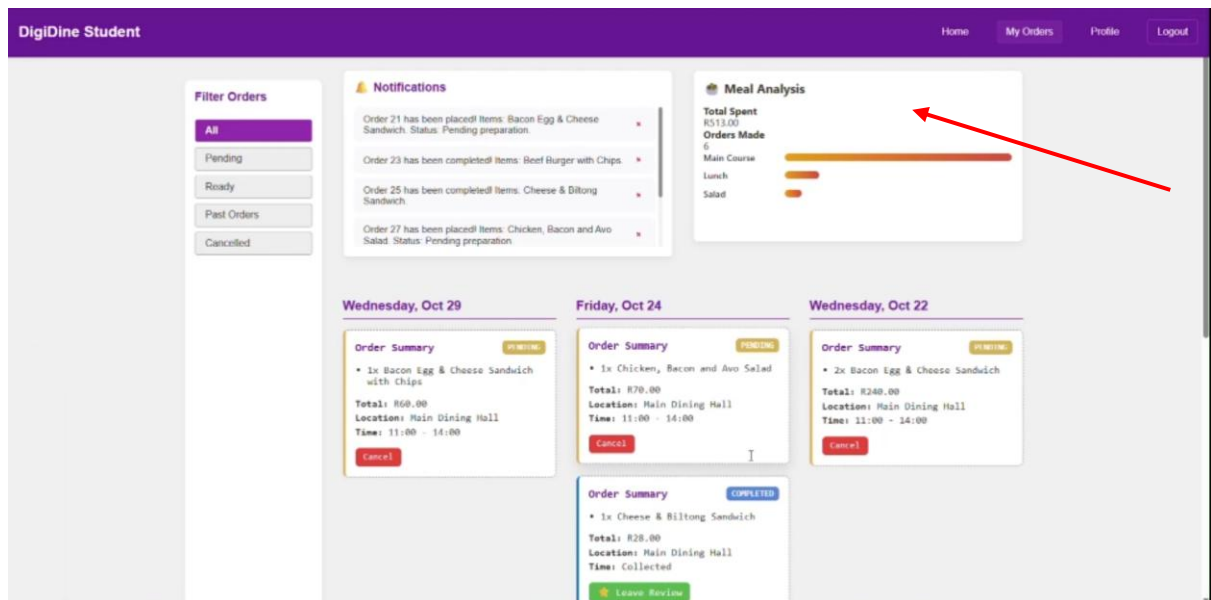
3.6 Notifications, Meal Analysis and Collection Code

Notifications

- **Alerts:** Check your notifications for updates on order status, special offers, or menu changes.

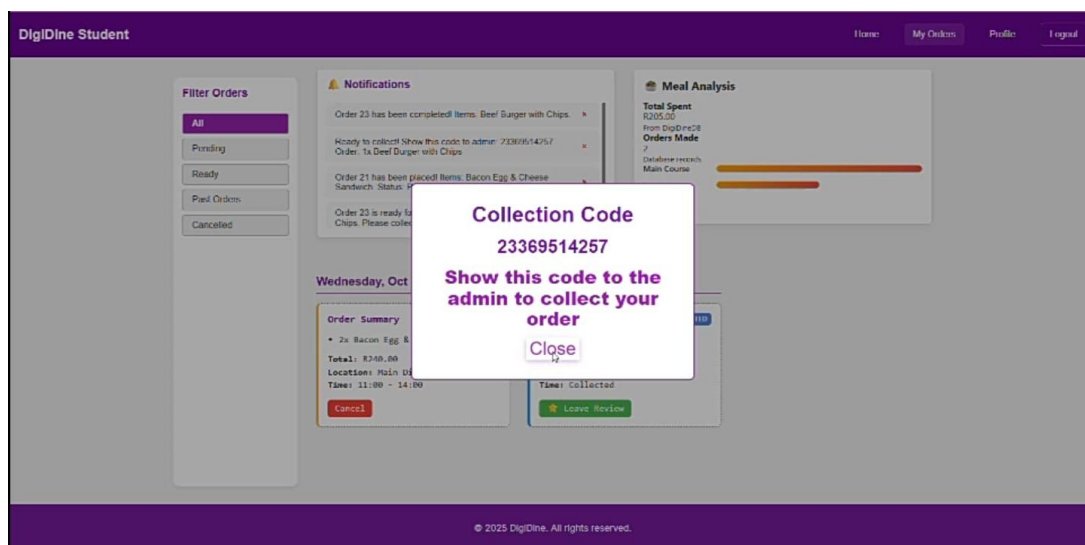
Meal Analysis

- **Insights:** Access a summary of your total spending, order history, and frequently ordered items to make more informed meal choices.



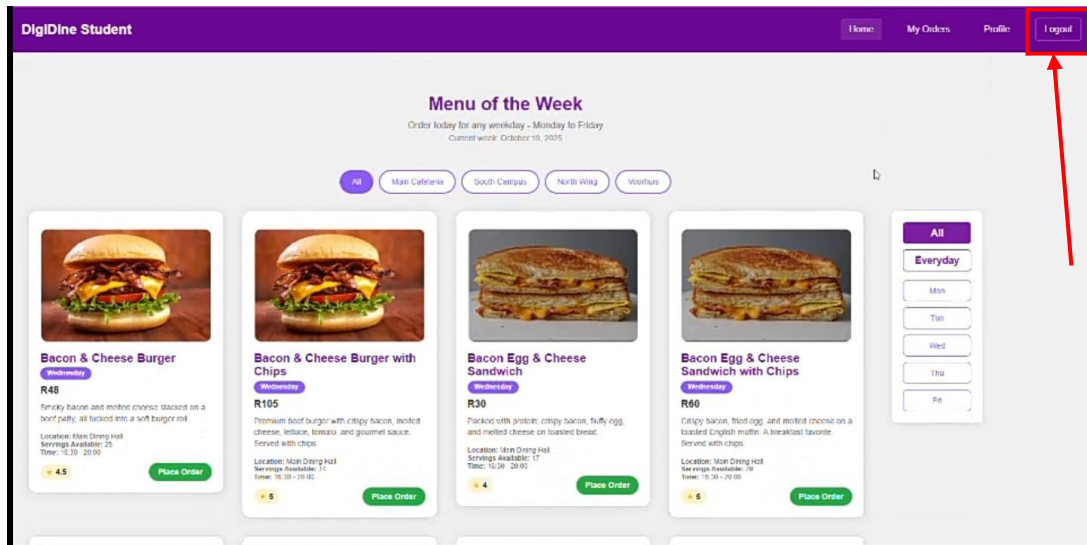
Collection Code

- When you are ready to pick up your order, click the "Collect" button, a collection code will be displayed on the screen.
- **Note:** This code is part of a handshake process that verifies your order with the admin. Please provide this code to the admin to complete your order pickup.



3.7 Logging Out

Click “Logout” to securely sign out of your DigiDine account and end your session safely.



4. Troubleshooting

This section outlines common issues users may encounter while using the system, along with recommended troubleshooting steps.

4.1 Unable to Sign In

- **Issue:** You are unable to log in to your account due to incorrect credentials.
- **Possible Cause:** Incorrect student number, email address, or password entered.
- **Solution:**
 1. Verify that you have entered the correct student number or email and password.
 2. Ensure that the Caps Lock key is not enabled.
 3. If you have forgotten your password, click the “Forgot Password” link on the login page to reset it.

4.2 Meal Not Loading

- **Issue:** Meal options do not display correctly on the screen.
- **Possible Cause:** Browser cache issues or unstable internet connection.
- **Solution:**
 1. Refresh the page to reload the meal options.
 2. Clear your browser cache and cookies.
 3. Confirm that your internet connection is stable.

4.3 Error During Checkout

- **Issue:** An error occurs while processing payment during checkout.
- **Possible Cause:** Incorrect or invalid payment details.
- **Solution:**
 1. Check that your payment information is entered correctly.
 2. If the issue persists, try using a different payment method.
 3. Contact Support if the problem continues.

4.4 Dietary Preferences Not Saving

- **Issue:** Changes to dietary preferences are not being saved in your profile.
- **Possible Cause:** Changes were not confirmed before exiting the page.
- **Solution:**
 1. After updating your dietary preferences, click the “Save” button to apply changes.
 2. Log out and sign back in to refresh your profile.
 3. If the issue persists, contact Support.

4.5 Order Status Not Updating

- **Issue:** The order status remains unchanged after placing an order.
- **Possible Cause:** System or network delay.
- **Solution:**
 1. Refresh the Orders View page.
 2. If the order status still does not update, contact Support for assistance.

4.6 Unable to Add Items to Cart

- **Issue:** You cannot add a meal to your cart.
- **Possible Cause:** Session timeout or browser-related issue.
- **Solution:**
 1. Refresh the page and try adding the item again.
 2. Log out and sign back in to start a new session.
 3. If the problem persists, clear your browser cache and retry.

4.7 Slow Loading or Freezing

- **Issue:** Pages take a long time to load or the system becomes unresponsive.
- **Possible Cause:** Poor internet connection or too many background applications running.
- **Solution:**
 1. Check your internet connection and reconnect if needed.
 2. Close unused browser tabs or applications.
 3. Try accessing DigiDine from a different browser or device.

4.8 Notifications Not Appearing

- **Issue:** You are not receiving order or system notifications.
- **Possible Cause:** Notifications may be disabled or blocked by the browser.
- **Solution:**
 1. Ensure browser notifications are enabled for the DigiDine website.
 2. Check your profile settings to confirm that notifications are turned on.
 3. Refresh the page or log out and log back in.

4.9 Payment Not Reflected

- **Issue:** Payment has been made, but the order does not appear in your order history.
- **Possible Cause:** Payment processing delay or system synchronization issue.
- **Solution:**
 1. Wait a few minutes and refresh the My Orders section.
 2. Check your payment confirmation email or bank statement.
 3. If payment was processed but not reflected, contact Support with your payment reference.

4.10 Page Not Displaying Properly on Mobile

- **Issue:** Some content or buttons appear misaligned or cut off when using a mobile device.
- **Possible Cause:** Screen size compatibility or outdated browser version.
- **Solution:**
 1. Rotate your device or switch to landscape mode.
 2. Update your mobile browser to the latest version.
 3. If the issue continues, use a desktop or tablet for optimal performance.

4.11 Session Timeout

- **Issue:** You are automatically logged out after a short period of inactivity.
- **Possible Cause:** System security feature or expired session token.
- **Solution:**
 1. Sign in again to resume activity.
 2. Save your progress frequently if performing long actions.
 3. avoid leaving the system idle for extended periods.

5. FAQs

This section provides answers to common questions to help you navigate the DigiDine system with ease.

1. **What is DigiDine?**

DigiDine is a digital dining management system designed to simplify meal booking and management for students and administrators. It allows students to pre-book meals, manage dietary preferences, and view available menus, while administrators can update menus, manage orders, and generate reports.

2. **How do I log in to the system?**

Go to the DigiDine Home page and enter your registered email or student number along with your password. Click Login to access your personalized dashboard.

If you are an administrator, you'll be directed to the Admin Dashboard; students will be redirected to the Student Dashboard

3. **How can I update my profile information?**

Navigate to the Profile section in your dashboard. You can edit your personal details, dietary preferences, or allergen information. Remember to save your changes before exiting.

4. **Can I cancel a meal booking?**

Yes. Go to the Orders section in your Student Dashboard. Locate the meal booking you wish to cancel. A cancel order button will be displayed if you are trying to cancel your order before it is ready or before the cut-off time specified by the dining service.

5. **How do administrators update menus?**

From the Admin Dashboard, navigate to the Menu Management section. Here, administrators can add new items, update existing menus, or remove outdated dishes. All changes are reflected in the student dashboard immediately after saving.

6. **Is my information secure?**

Yes. DigiDine uses secure authentication and role-based access to protect user data. Personal information and dietary preferences are stored safely and are only accessible by authorized users.

6. Contact Information

For any questions, clarifications, or additional information regarding DigiDine system, please contact:

- **Lecturers:**
Ms. Charmain Lebelo (34687602@mynwu.ac.za) – Program manager
Mr. Given Mnisi (34292748@mynwu.ac.za) – Program manager
Mr. Henri van Rensburg (Henri.vanRensburg@nwu.ac.za) - Portfolio manager
Prof. Neels Kruger (Neels.Kruger@nwu.ac.za) - Portfolio manager



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TECHNICAL MANUAL

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1. Introduction

DigiDine is a digital web ordering system designed for the North-West University (NWU) student dining halls. It enables students to browse menus and place meal orders through an intuitive user interface. DigiDine also provides the dining hall staff with efficient order-tracking and reporting capabilities, for better demand forecasting and reduced food wastage.

The dining halls at NWU provide students with nutritious meals and a sense of community on campus. However, the existing manual ordering process has led to long queues and at times, inconsistent meal availability. DigiDine addresses these problems by using modern web technologies to build an application accessible via any browser on any mobile device, to improve the current ordering process.

1.1. Purpose of the Manual

The purpose of this manual is to give developers, system administrators and technical support staff a detailed technical guide to the DigiDine system. The aspects covered in this document include:

- The system architecture
- The system setup, configuration and maintenance
- The necessary hardware and software required to operate the system
- Troubleshooting instructions
- Future system upgrades

1.2. Overview of the System Architecture

The DigiDine system uses a three-layer architectural model consisting of:

- **Client / Frontend** - The user web interface developed using CSS and JavaScript technologies over the React framework.
- **Server / Backend** – Handles the business logic, authentication and communication between the frontend and the database. The layer is built using Node.js, with RESTful APIS that deal with client requests.
- **Database** – Stores data such as user credentials, menu items, orders and transaction records in a database hosted on SQL Server Management Studio.

Other additional system components include:

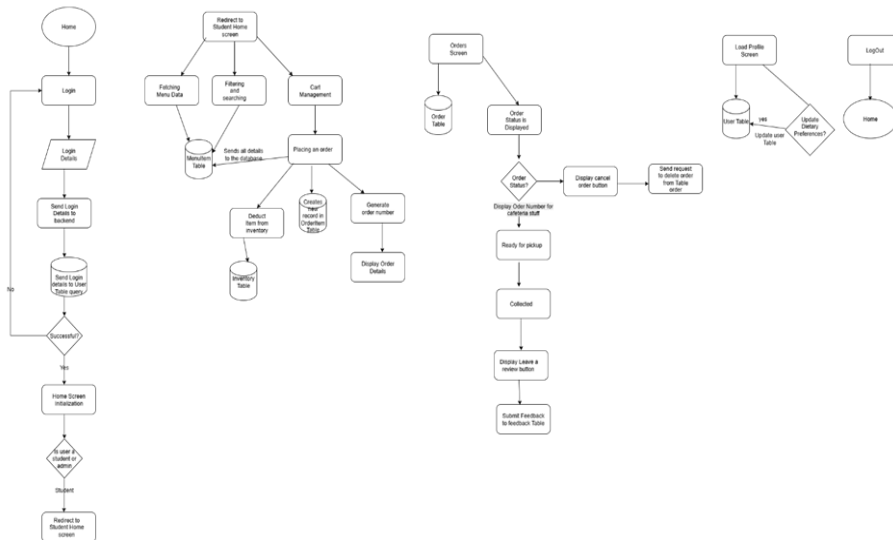
- **User Authentication Service** – Offers role-based access control for students or admin and manages secure login sessions using a browser's session handling.
- **Menu Management Service** – Enables admin staff to manage menu items.
- **Order Processing Service** – Allows students to make orders and dining hall staff to view and manage these orders

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Please add a section for future development, this will be everything that couldn't be done now. This will be things such as cloud deployment/hosting, if implemented getting access to the nwu database so that students and staff can log in with their NWU credentials

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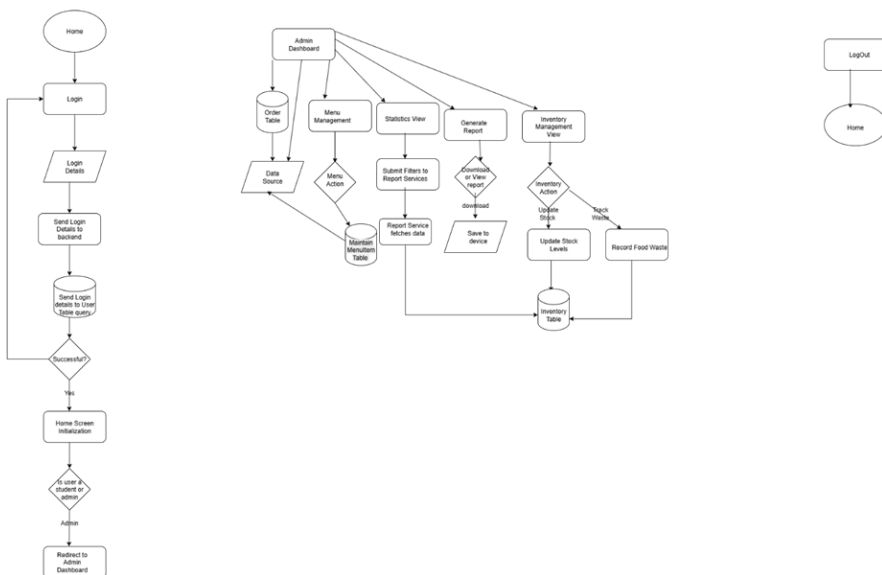
Data flow diagram for the Student Dashboard

Student Side



Data flow diagram for the Admin Dashboard

Admin Dashboard



2. System requirements

This section outlines what components are needed, for both the client and server side of the DigiDine system to operate effectively.

2.1. Hardware Requirements

The table below provides the hardware components required to run the system:

Component	Recommended Specification
CPU	4 Cores @ 3.5GHz
RAM	8 GB
Storage	256 GB SSD
Network Interface Card (NIC)	1 Gbps
Client/User Device (i.e. smartphone, tablet, PC)	1280x720 screen resolution or more

2.2. Software Requirements

The table below provides the software components required to run the system:

Component	Recommended Specification
Operating System	Windows 11
Database Management System	SQL Server Management Studio
Browser	Chrome Version 141, Safari Version 17.3 or Firefox Version 144

3. Frontend Overview

3.1. Technologies Used

The DigiDine Hall system's frontend is built using modern web technologies that ensure high performance, responsiveness, and compatibility across various devices and platforms. The technologies applied include:

- **HTML5** – Establishes the overall page structure and provides the semantic foundation for all interface elements used throughout the system.

- **CSS3 (Tailwind CSS)** – Responsible for layout styling and ensuring the interface remains consistent, responsive, and user-friendly across devices such as computers, tablets, and smartphones. Tailwind CSS is applied to speed up design development through prebuilt utility classes.
- **JavaScript (ES6)** – Adds interactivity, handles user actions, and enables dynamic content rendering through asynchronous requests to the backend.
- **AJAX/Fetch API** – Facilitates smooth communication with the server, allowing real-time updates to menus, orders, and notifications without requiring page reloads.

3.2. User Interface Components

DigiDine Hall provides a clean and responsive user interface for both students and administrative staff, designed for easy navigation and accessibility. The main interface components are as follows:

- **Login Page:**
Provides secure system access. Once credentials are validated, the user is directed to either the student portal or the admin dashboard based on their assigned role.
- **Student Dashboard (Main Menu):**
Displays daily and weekly dining hall menus. Students can browse available meals, apply filters for dietary preferences, search for specific items, and view nutritional or allergen information.
- **Cart and Checkout:**
Allows students to add meals to their cart, place orders, and receive a unique order number for collection. Real-time stock and availability are displayed during the ordering process.
- **Order Tracking and History:**
Enables students to view their current and past orders, check statuses, cancel unprepared orders, and access pickup details.
- **Profile Management Page:**
Provides options for students to view and update personal information and dietary preferences, ensuring a personalized dining experience.
- **Admin Dashboard:**
Displays key statistics such as total orders, recent transactions, and revenue summaries, helping staff monitor operations effectively.
- **Menu Management Page:**
Allows administrators to create, edit, or remove menu items and manage inventory levels.
- **Feedback and Rating Section:**
Lets students rate meals and provide feedback to improve menu planning and meal quality in future dining cycles.

The system's interface maintains consistent navigation and real-time updates, offering users a reliable and efficient experience across all supported devices.

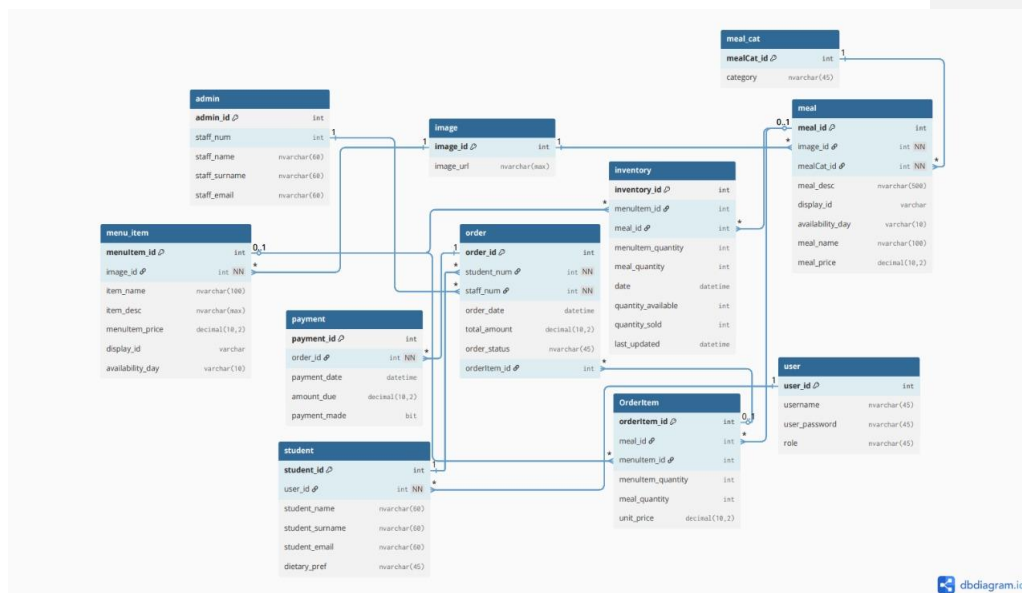
4. Backend Overview

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4.1. Database Structure

The database structure defines how data is stored, organized, and related within the system. It ensures data consistency, integrity, and efficiency across all operations. The system uses a relational database model with well-defined tables, primary and foreign keys to maintain relationships between entities such as users, orders, and inventory. This section outlines the key database tables, their attributes, and relationships to help developers understand data flow and dependencies within the system.

The Entity Relationship Diagram is provided below.



The following section outlines the database schema.

Commented [CD4]: Backend, please verify that this schema is still correct, add changes where needed

1. User Table

This table stores general information for all users.

- user_id: **INT** (Primary Key, PK)
- username: **NVARCHAR**
- user_password: **NVARCHAR**
- role (student/admin): **NVARCHAR**

Commented [OM5R4]: No, it's not, but I've corrected it.

2. Student Table

This table stores specific details for student users.

- student_ID: **INT** (PK)
- user_ID: **INT** (Foreign Key, FK, references User(user_id))

- student_name: **NVARCHAR**
- student_surname: **NVARCHAR**
- student_Email: **NVARCHAR**
- dietary_pref: **NVARCHAR**

3. Admin Table

This table stores specific details for admin users.

- admin_ID: **INT** (PK)
- staff_Num: **INT** (FK, references User(user_id))
- staff_Name: **NVARCHAR**
- staff_Surname: **NVARCHAR**
- staff_Email: **NVARCHAR**

4. Image Table

This table stores image information.

- image_ID: **INT** (PK)
- image_URL: **NVARCHAR**

5. Meal Category Table

This table organizes meals into categories.

- mealCategory_ID: **INT** (PK)
- category: **NVARCHAR**

6. Meal Table

This table holds information about each meal.

- meal_ID: **INT** (PK)
- image_ID: **INT** (FK, references Image(image_ID))
- mealCategory_ID: **INT** (FK, references MealCategory(mealCategory_ID))
- meal_description: **NVARCHAR**
- display_id: **VARCHAR**
- availability_day: **VARCHAR**
- meal_name: **NVARCHAR**
- meal_price: **DECIMAL(10,2)**

7. Menu_Item Table

This table defines individual menu items, which can be part of a meal.

- menuItem_ID: **INT** (PK)
- image_ID: **INT** (FK, references Image(image_ID))
- item_name: **NVARCHAR**
- Item_description: **NVARCHAR**
- menuItem_price: **DECIMAL(10,2)**

- display_id: **VARCHAR**
- availability_status: **VARCHAR**

8. Order Table

This table records each order placed by a student.

- order_ID: **INT** (PK)
- student_Num: **INT** (FK, references Student(student_ID))
- staff_Num: **INT** (FK, references Admin(admin_ID))
- order_Date: **DATETIME**
- total_Amount: **DECIMAL(10,2)**
- order_Status: **NVARCHAR**
- orderItem_ID: **INT** (FK, references OrderItem(orderItem_ID))

9. OrderItem Table

This **junction table** connects an order to the specific menu items within that order.

- orderItem_ID: **INT** (PK)
- meal_ID: **INT** (FK, references Meal(meal_ID))
- menuItem_ID: **INT** (FK, references MenuItem(menuItem_ID))
- menuItem_Quantity: **INT**
- meal_Quantity: **INT**
- unit_Price: **DECIMAL(10,2)**

10. Payment Table

This table stores payment details for each order.

- payment_ID: **INT** (PK)
- order_ID: **INT** (FK, references Order(order_ID))
- payment_Date: **DATETIME**
- amount_Due: **DECIMAL(10,2)**
- payment_Made: **BIT**

11. Inventory Table

This table appears to track inventory levels.

- inventory_ID: **INT** (PK)
- menuItem_ID: **INT** (FK, references MenuItem(menuItem_ID))
- meal_ID: **INT** (FK, references Meal(meal_ID))
- menuItem_Quantity: **INT**
- meal_Quantity: **INT**
- date: **DATETIME**
- quantity_available **INT**
- Quantity_sold **INT**
- Last_updated **DATETIME**

4.2. API Specifications

The API (Application Programming Interface) serves as the communication bridge between the front-end and the back end of the system. It handles all data requests, authentication, and interactions with the database through secure endpoints. This section details the API structure, including endpoint descriptions, request and response formats, HTTP methods used, and authentication mechanisms. It provides developers with a clear understanding of how different components of the system interact and how to extend or debug the API when necessary.

Key API endpoints

/api/auth/login

- **Purpose:** Authenticates users (students or admins) using their credentials.
- **Function:** Verifies login details

/api/menu

- **Purpose:** Retrieves the list of available meals or menu items.
- **Function:** Allows students to view all meals with details such as name, price, ratings, and availability.

/api/order

- **Purpose:** Handle order creation and management.
- **Function:** Saves order details, updates inventory, and records transaction information

/api/inventory

- **Purpose:** Manages stock levels for ingredients and meals.
- **Function:** Allows admins to update, track, or adjust inventory based on usage and waste.

/api/report

- **Purpose:** Generates reports on orders, menu items, and feedback.
- **Function:** Fetches and aggregates data for administrative review and business insights.

/api/user/profile

- **Purpose:** Retrieves and updates user profile details.
- **Function:** Ensures users can view or modify their personal information securely.

Commented [CD6]: I think maybe list the most important API endpoints here and say what they do

5. Authentication and Authorization Details

DigiDine Hall incorporates basic security mechanisms to protect user data, prevent unauthorized access, and maintain system integrity. The following measures are implemented:

Authentication:

- User authentication is performed by querying the MySQL database for matching credentials.

Role-Based Access Control (RBAC):

- Access is restricted based on user roles:
 - Students can browse menus, make and track orders, and manage their profiles.
 - Administrators can manage menus, process orders, and view system analytics.

Encrypted Communication (HTTPS):

- All user data, including login details and order transactions, is transmitted over HTTPS, ensuring data privacy during transmission.

User Credential Storage:

- User credentials are stored in the MySQL database.

Session Management:

- Sessions are managed using default browser functionality (e.g., Chrome's session handling).

Data Validation and Sanitization:

- Both client- and server-side validation protect against SQL injection, cross-site scripting (XSS), and other malicious input attacks.

Compliance with POPIA:

- The system follows South Africa's Protection of Personal Information Act (POPIA) to ensure all personal data is processed, stored, and used responsibly.

6. Troubleshooting

6.1. Common Technical Issues & Solutions

- **API returns a 500 error**

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Problem - xxxxxxxx
Solution -xxxxxxx

Do something like that

Problem: the API returns a 500 error; this usually indicates a backend service failure or an unhandled exception.

Solution: Developers should start by checking the server logs to locate the stack trace and verify that all required endpoint parameters are correctly passed.

- **Data is not updating in the database**

Problem: data is not updating in the database; it could be due to a failed ORM transaction or a missing commit statement.

Solution: Reviewing backend service logs and confirming active database connections can help identify and fix the issue.

- **Slow response times**

Problem: In cases of slow response times, performance bottlenecks often result from inefficient queries or missing database indexes.

Solution: Developers should profile queries and apply indexing where necessary to optimize performance.

- **Inventory does not sync with orders**

Problem: When the inventory does not sync with orders, the likely cause is an error in the asynchronous update logic or a missing trigger after order confirmation.

Solution: The developer should inspect the code handling inventory updates to ensure it executes correctly upon order completion.

- **Report fails to generate**

Problem: a report fails to generate, this may be due to an error in the aggregation queries or missing table joins.

Solution: Reviewing SQL queries and confirming that all required tables (Order, MenuItem and Inventory) are properly referenced will typically resolve the problem.

- **Frontend does not display updated data**

Problem: The frontend does not display updated data, the cause might be caching issues or the absence of a re-fetch mechanism.

Solution: Implementing a state refresh after API responses or forcing a re-render will ensure that new data is displayed properly

- No data l

6.2 Maintenance of the system

To maintain system stability and consistency:

- Commit and push updates through Git to ensure proper version control.
- Schedule weekly database backups to prevent data loss.
- Review logs regularly to identify recurring errors or performance issues.

- Perform dependency updates at least once per quarter to reduce security risks and maintain compatibility with frameworks and libraries.

7. Future Developments

Several enhancements could be made to DigiDine in the future as the system continues to evolve and cater to the growing demands of the NWU student community.

- **Mobile Application Development** – A mobile application that can work on both Android and iOS which complements the DigiDine web platform. The application will improve user convenience by providing quicker access to the meal ordering services.
- **Integration with NWU's Student Information System (SIS)** – Automatic user verification using their university credentials, simplifying login access.
- **Multilingual Support** – Language options such as English, Afrikaans and Setswana for the diverse student community at NWU.
- **Chat-bot** – Deploying a chat-bot integrated with the DigiDine web platform that answers FAQs, gathers feedback and reports issues.
- **Cloud hosting** – DigiDine can move from being locally hosted to deployment to a cloud infrastructure such as Microsoft Azure, ensuring long-term scalability.
- **Password Recovery Feature** – By clicking “Forgot password?” on the login page, a user can securely reset their passwords through a supported verification process, such as a One-Time Pin (OTP) email.
- **Password Hashing** – Passwords can be stored in the database as encrypted strings obtained from hashing algorithms (e.g. SHA-256). In case the database is compromised, the original passwords cannot be easily recovered.
- **Screen Responsiveness** – Ensure that DigiDine webpages automatically adjust to the screen sizes of different devices (e.g. smartphones, laptops). This update enhances user experience.

Appendices

Appendix A. Glossary of Terms

AJAX – Asynchronous JavaScript and XML

API – Application Programming Interface

CSS – Cascading Style Sheets

HTML – Hypertext Markup Language

HTTPS – Hypertext Transfer Protocol Secure

SQL – Structured Query Language

XML – Extensible Markup Language

XSS – Cross Site Scripting

Appendix B. Additional Resources

Important links:

GitHub: <https://github.com/NWU-DigiDine>

React Framework Setup: <https://react.dev/learn/setup>

SQL Server Management Studio Setup: <https://learn.microsoft.com/en-us/ssms/>