

# Orange Supply Inventory Management System

## FEASIBILITY REPORT

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## Table of Contents

Executive Summary .....	4
Project Name .....	5
Project Sponsor .....	5
Team Members .....	5
Project Overview .....	5
Project Objectives .....	6
Project Scope .....	6
Assumptions/Dependencies/Constraints .....	7
Criteria of Success .....	8
Business Benefits .....	8
Requirements.....	9
Data Collection Approach: .....	9
Functional requirements: .....	9
Non-Functional requirements: .....	10
Use Case Analysis .....	11
Use Case Glossary .....	11
Critical Use Case Narratives .....	13
Data Flow Analysis .....	14
Context Diagram for Orange Supply Inventory Management System: .....	14
System Diagram (Level 0 Data Flow Diagram) .....	15
Primitive Data Flow Diagram .....	16
Entity Relationship Diagram .....	17
Fully Attributed Model.....	17
Entity Definition Matrix .....	18
Data Dictionary .....	18
Interface .....	21
Login Interface .....	21
Supervisor Menu Interface .....	22
Employee menu Interface.....	23
Main Menu Interface .....	24
Search Products Interface.....	25

Product Search Result Interface .....	26
Track Order Interface.....	27
System Architecture.....	28
Feasibility Analysis .....	29
Economic Feasibility.....	29
Operational Feasibility .....	34
Cultural Feasibility.....	37
Schedule Feasibility.....	37
Legal Feasibility .....	38
Implementation Plan .....	39
Resources .....	41

## Executive Summary

Syracuse University's dining services currently rely on a paper-based inventory management system for their five dining halls. This outdated approach has limitations in terms of efficiency, accuracy, and accessibility. To address these challenges and streamline the inventory management process, there is a need to upgrade the system to a digital platform that enables all five dining halls to access inventory information in real-time and implement a system that automates the order placement process when stock runs below a certain limit.

The project being suggested would be a relational database meant to transform the paper recording and reporting system utilized by the dining halls into a digital one. The system is meant to be more efficient and more secure and private. It should both save time for dining hall managers who need to use the system and remove the risk of having vulnerable paper documents out in the field.

Transitioning from a paper-based inventory management system to a digital system with real-time accessibility will enhance efficiency, accuracy, and accessibility for Syracuse University's dining halls. The upgrade will lead to improved inventory management, reduced food waste, and enhanced communication among dining halls. This system will benefit not only the dining hall staff but also the university by promoting sustainability, cost savings, and improved service quality.

The feasibility analysis covers the operational, technical, economic, schedule, legal, cultural feasibilities of the system and shows that the project is not only a necessity, but something realistic and beneficial to the company. Financially speaking the system is predicted to decrease food wastage by 40%. Based on the needs, feasibility report, and other included supporting documentation this project is recommended.

### Project Name

Orange Supply Inventory Management System

### Project Sponsor

Syracuse University

### Team Members

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### Project Overview

Syracuse University dining halls offer a wide array of culinary options to suit the tastes and dietary preferences of its diverse student population. With a focus on sustainability, health-conscious choices, and international flavors, Syracuse University dining halls provide students with an engaging and delicious dining experience. Whether it is made-to-order sandwiches, freshly prepared salads, hearty entrées, or tempting desserts, Syracuse University dining halls are committed to providing students with tasty and nutritious meals to fuel their academic pursuits.

The Syracuse Dining Hall Inventory Management System Upgrade project aims to modernize the current paper-based inventory management system used in the five dining halls of Syracuse University. The project will transition the inventory management system to a digital platform that allows real-time accessibility to inventory information and implements a system for automated order placement. The project will be undertaken by a cross-functional team consisting of IT specialists, inventory management experts, and dining hall staff.

#### **Existing paper-based inventory management system:**

- Paper-based inventory system: Syracuse University dining halls may currently utilize a manual, paper-based system for managing their inventory.
- Manual tracking: Inventory items such as food ingredients, supplies, and other resources may be recorded and tracked manually on paper.
- Paper-based forms: Dining hall staff may use paper-based forms or log sheets to record information such as incoming inventory, usage, and wastage.
- Manual calculations: Calculations for inventory counts, adjustments, and replenishment may be performed by hand using paper-based records.

### Areas in Need of Change:

- The paper-based inventory system at Syracuse University dining halls may be inefficient, requiring additional time and effort for manual recording, tracking, and calculations.
- Paper-based inventory systems may lack real-time visibility into inventory levels, leading to challenges in identifying stockouts or overstock situations in a timely manner.
- Paper-based systems may lack analytics and reporting capabilities, making it difficult to generate meaningful insights to optimize inventory management and make data-driven decisions.

### Project Objectives

#### To create an inventory management system that:

- Automates the process of placing orders.
- Increase operational efficiency of the Syracuse Dining Halls by implementing a digital inventory management system.
- Scalable and flexible inventory management system that can accommodate future growth and changes in inventory requirements, and adaptability to evolving business needs.
- Reduce human error.
- Improve tracking and reporting capabilities enabling better data-driven decisions.

### Project Scope

- Develop a comprehensive digital inventory management system that includes features such as real-time inventory tracking, order placement automation, reporting, and analytics.
- Provide access to the inventory management system for all five dining halls, allowing authorized personnel to view, update, and manage inventory data based on their roles and responsibilities.
- Migrate existing inventory data from paper-based or other legacy systems to the new digital system, ensuring data integrity and accuracy during the transition.
- Integrate the inventory management system with other relevant systems such as procurement, point-of-sale (POS), and accounting systems to streamline inventory-related processes and data exchange.
- Ensure that the inventory management system complies with relevant regulations and standards, and implement robust security measures to protect inventory data, prevent unauthorized access, and maintain data confidentiality and integrity.

## Assumptions/Dependencies/Constraints

### Assumptions:

- **Availability of Hardware and Network Infrastructure:** It is assumed that the necessary hardware and network infrastructure, such as servers, computers, routers, and internet connectivity, are available and functional to support the implementation and operation of the inventory management system.
- **Adequate Data Accuracy:** It is assumed that the existing inventory data, which will be migrated to the digital system, is accurate and reliable. Any data discrepancies or inconsistencies will be addressed during the data migration process.
- **User Training and Adoption:** It is assumed that the relevant personnel responsible for inventory management in Syracuse Dining Halls will receive adequate training on how to effectively use the inventory management system and adopt the new digital system in their daily operations.

### Dependencies:

- **Data Integration with Other Systems:** The successful integration of the inventory management system with other relevant systems, such as procurement, point-of-sale (POS), and accounting systems, may depend on the availability and compatibility of APIs, interfaces, or connectors provided by those systems.
- **User Cooperation and Participation:** The successful implementation and operation of the inventory management system may depend on the active cooperation and participation of the relevant personnel in Syracuse Dining Halls, including inventory managers, procurement staff, and other stakeholders, in providing accurate data, following system processes, and using the system effectively.

### Constraints:

- **Budget and Resources:** The implementation of the inventory management system may be constrained by the availability of budget and resources, including financial resources, personnel, and time, which may impact the scope, timeline, and functionalities of the system.
- **Existing Legacy Systems:** If there are existing legacy systems or processes in place for inventory management, the implementation of the digital inventory management system may face constraints in terms of system integration, data migration, and process changes.
- **Compliance and Security Requirements:** The inventory management system must comply with relevant regulations and security requirements, which may impose constraints on system design, data handling, and access control measures.
- **Organizational Policies and Procedures:** The implementation of the inventory management system may be constrained by organizational policies, procedures, and decision-making processes, which may impact system design, customization, and approval processes.

- **Time Constraints:** The implementation timeline of the inventory management system may be constrained by time limitations, such as seasonal operational demands, academic calendars, or other time-sensitive factors that may impact system deployment, testing, and training activities.

### Criteria of Success

To be considered a success, the project must:

- Be completed on time and without going over budget.
- Allow different types of access based on roles.
- Have an interface that feels intuitive for first time users.
- Allow for data input that will allow for quick and efficient transmission of hard copies to digital.

### Business Benefits

#### The System Will:

- Digital inventory management systems provide real-time tracking of inventory levels, reducing the chances of manual errors and inaccuracies.
- It will streamline inventory processes by automating tasks such as data entry, stock tracking and order placement.
- Cost savings in terms of reduced storage space requirements, lower holding costs, and minimized wastage due to spoilage or obsolescence.
- Orders can be automatically placed based on predetermined inventory levels, reducing the chances of manual errors in order placement.
- Ensure that dining halls always have the necessary ingredients in stock, minimizing the chances of stockouts and disruptions in food service. This helps in providing consistent and reliable service to customers, resulting in improved customer satisfaction and loyalty.



## Requirements

### Data Collection Approach:

Technique	Description	Data type	People involved
Analyze existing inventory, bills and documents	Paper invoices and documents must be translated into the database, and inventory must be made available for scanning and uploading.	Quantitative and Qualitative.	Executive team
Requirement meeting	Reach out to supervisors and employees in the dining halls and conduct in-depth interviews to acquire a better grasp of their needs and expectations.	Quantitative and Qualitative.	Executive team

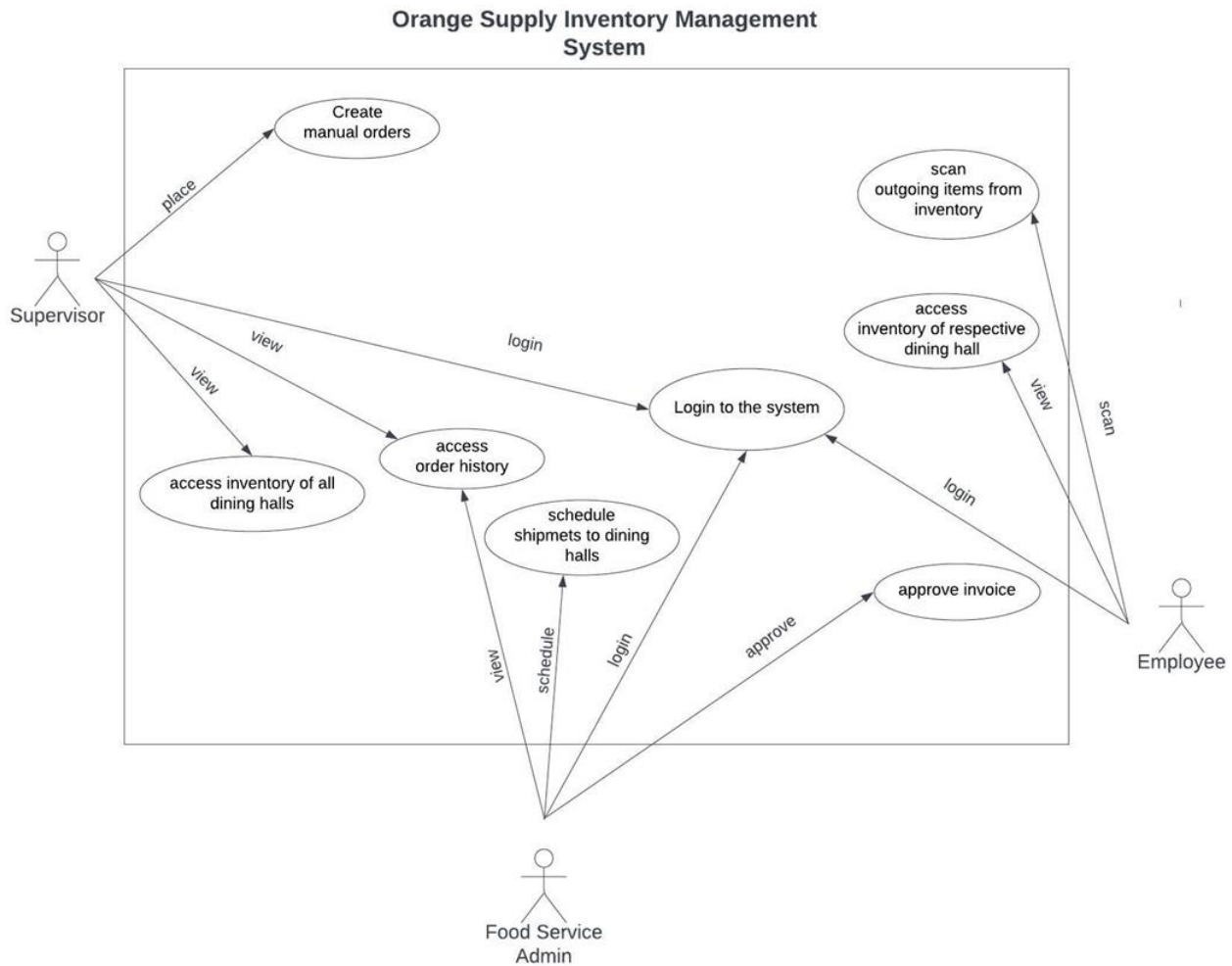
### Functional requirements

- Create a complete web-based inventory management system that can track inventory in real time.
- Create a scalable and adaptable inventory management system that can handle future growth and changes in inventory needs.
- Give all five dining halls access to the inventory management system, allowing authorized workers to see, edit, and manage inventory data based on their roles and responsibilities.
- Migrate existing inventory data from paper-based or other legacy systems to the new digital system while maintaining data integrity and accuracy.
- Connect the inventory management system to other systems.
- Ascertain that the inventory management system adheres to all applicable norms and requirements.
- Put in place strong security measures to preserve inventory data, prevent illegal access, and keep data confidential and intact.

### Non-Functional requirements

- The system should be efficient and user-friendly, saving time and effort on manual recording, tracking, and calculations.
- The system should give real-time visibility into inventory levels, enabling the early detection of stockouts or overstocks.
- The system should support analytics and reporting, providing valuable insights into inventory management and data-driven decisions.
- The system must be dependable and accurate to reduce human errors in inventory tracking and management.
- The system must be scalable and adaptive to changing business requirements.
- The system must adhere to all applicable legislation and standards, assuring legal and ethical compliance.
- To safeguard inventory data from illegal access or data breaches, the system should have strong security mechanisms in place.

## Use Case Analysis



## Use Case Glossary

Use-Case ID.	Use-Case Name	Use-Case Description	Actors
1.	Login to the system	The ability of the users to login into the system to access its features.	Supervisor, Employee, Food Service Admin
2.	Create manual orders	An interface that allows the supervisors to place orders manually, if needed.	Supervisor
3.	Access order history	The ability to access active and past order details and view their status.	Supervisor, Food Service Admin

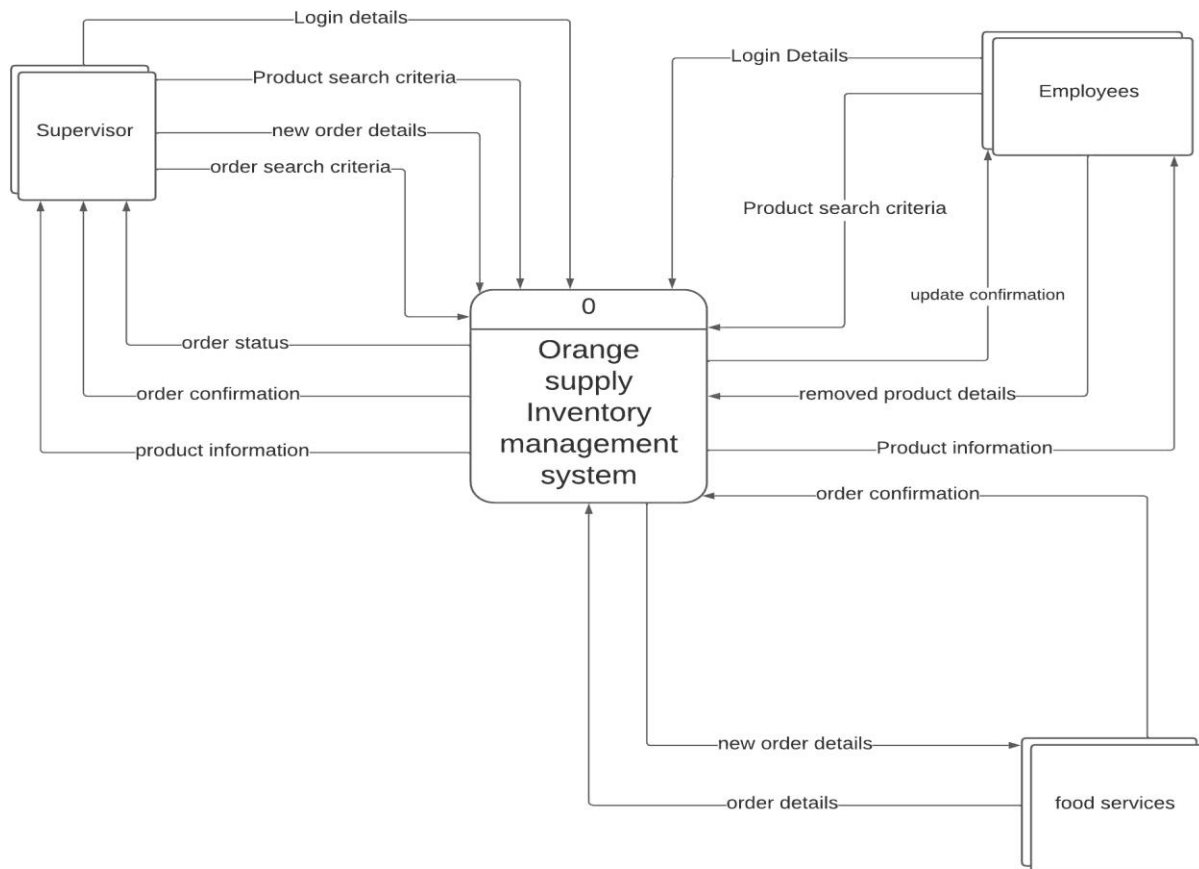
4.	Access inventory of all dining halls	The ability to access inventory details of all dining halls.	Supervisor
5.	Schedule shipments to dining halls	An interface that allows the admin to schedule shipments to dining halls.	Food Service Admin
6.	Approve Invoice	An interface that allows the supervisor to approve invoices of orders.	Food Service Admin
7.	Access inventory of respective dining hall	The ability to access inventory details of their respective dining halls.	Employee
8.	Scan outgoing items from inventory	The ability to scan outgoing items from inventory and update in the database	Employee

## Critical Use Case Narratives

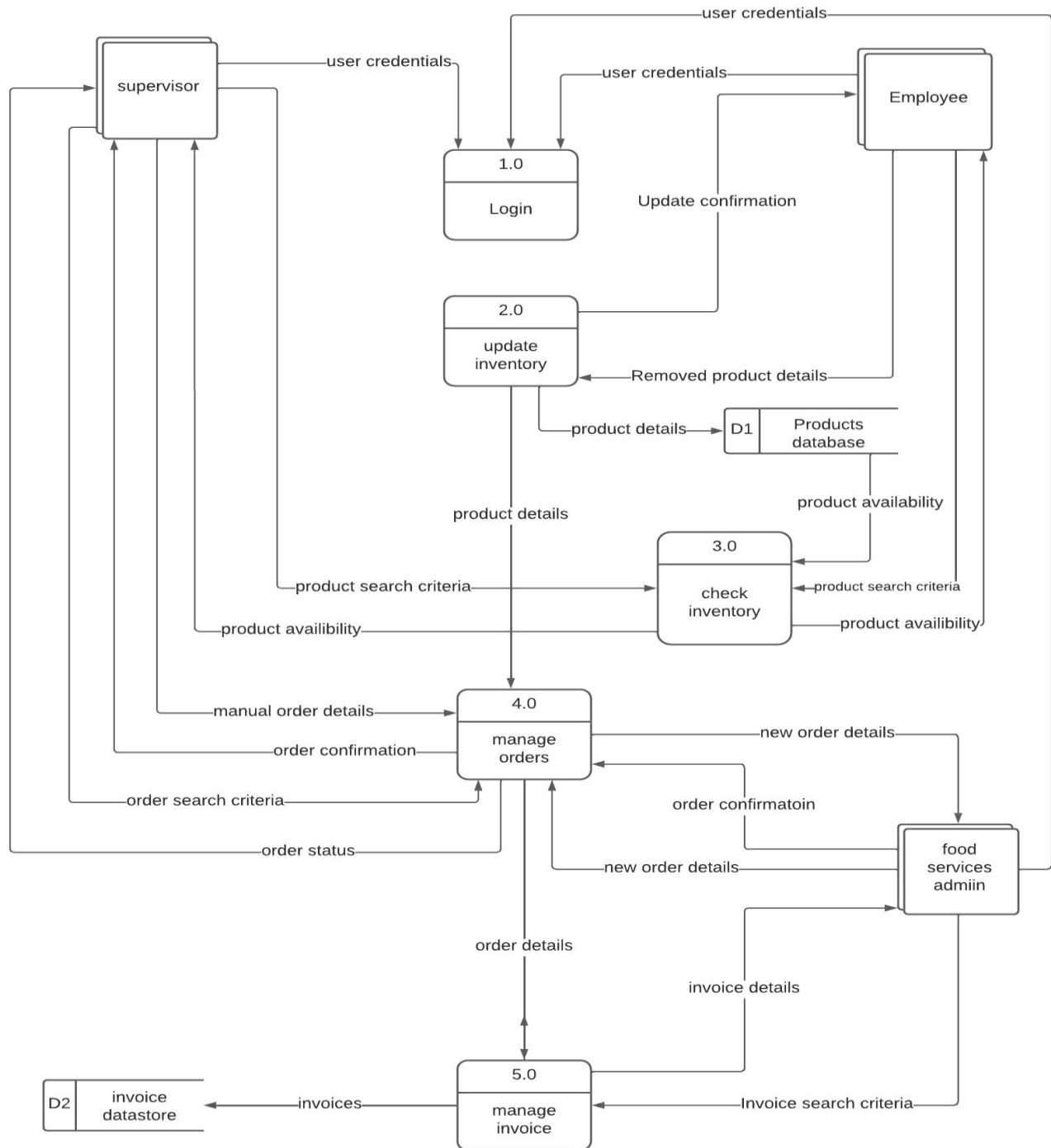
Use Case Name	Create Manual Orders
Use Case ID	1
Priority	High
Source	Requirement
Primary Business Actor	Supervisor
Other Participating Actors	None
Description	Use case referring to the creation of new orders.
Precondition	The supervisor logs into the system and navigates to the order creation page.
Trigger	The supervisor has gathered product name and count and it must be entered into the system.
Successful Completion	<ol style="list-style-type: none"> <li>1. The supervisor selects the product to be ordered and mentions the count into the corresponding fields and hits enter.</li> <li>2. The system sends back a message saying that the order has been placed.</li> </ol>
Alternative	If any field is left blank when the supervisor hits enter the display will remain on the same screen and return a message requesting the blank field be filled.
Conclusion	When the action completed message is sent the use case has been concluded.
Post Condition	The order is placed, and order details are stored in the database.
Business Rules	Create orders is a function of the Supervisor only.
Implementation Constraints and Specs	Should be a separate interface from the access order history screen.
Assumptions	The supervisor has selected the dining hall for which he/she is placing the order.

## Data Flow Analysis

### Context Diagram for Orange Supply Inventory Management System

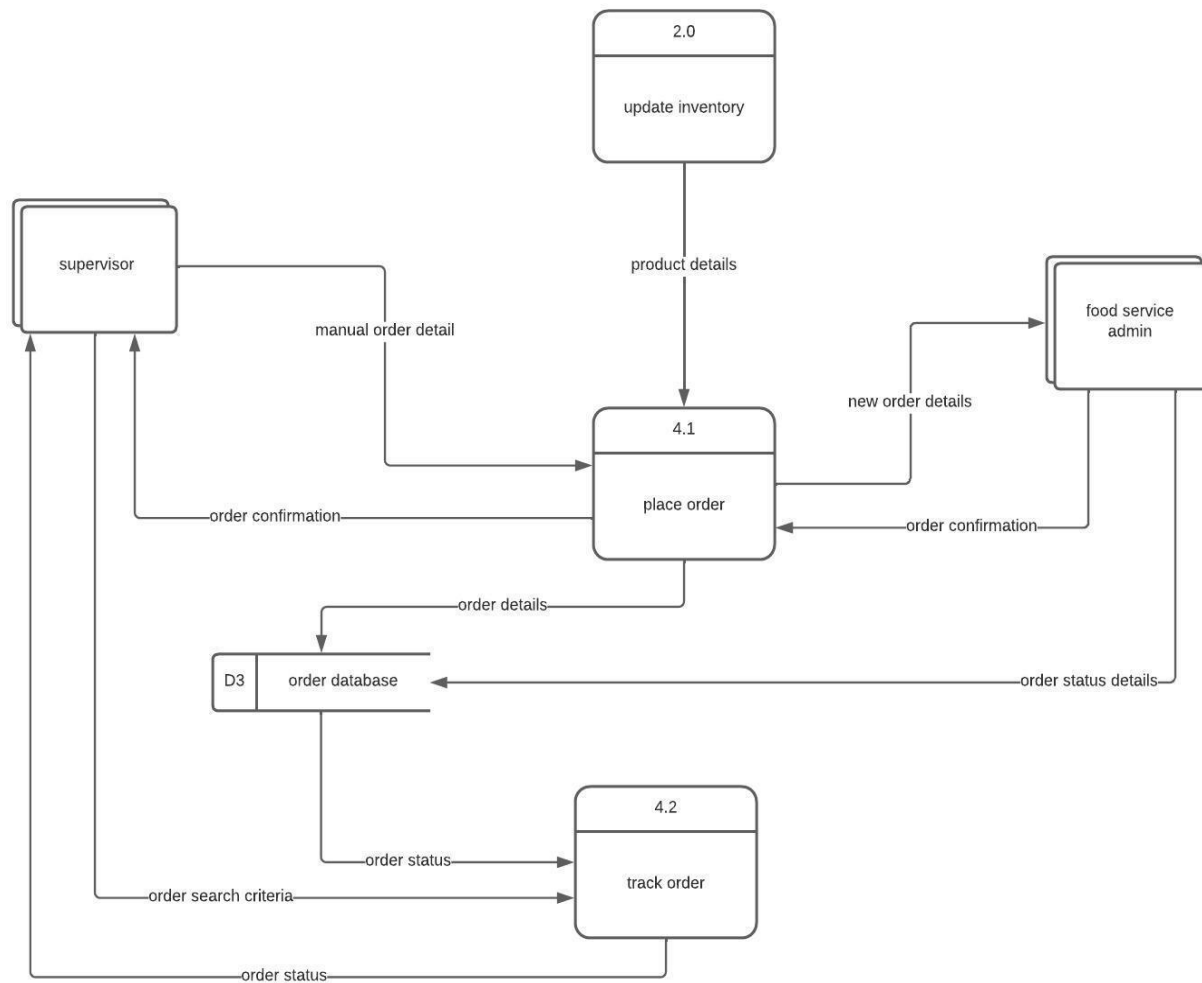


System Diagram (Level 0 Data Flow Diagram)



## Primitive Data Flow Diagram

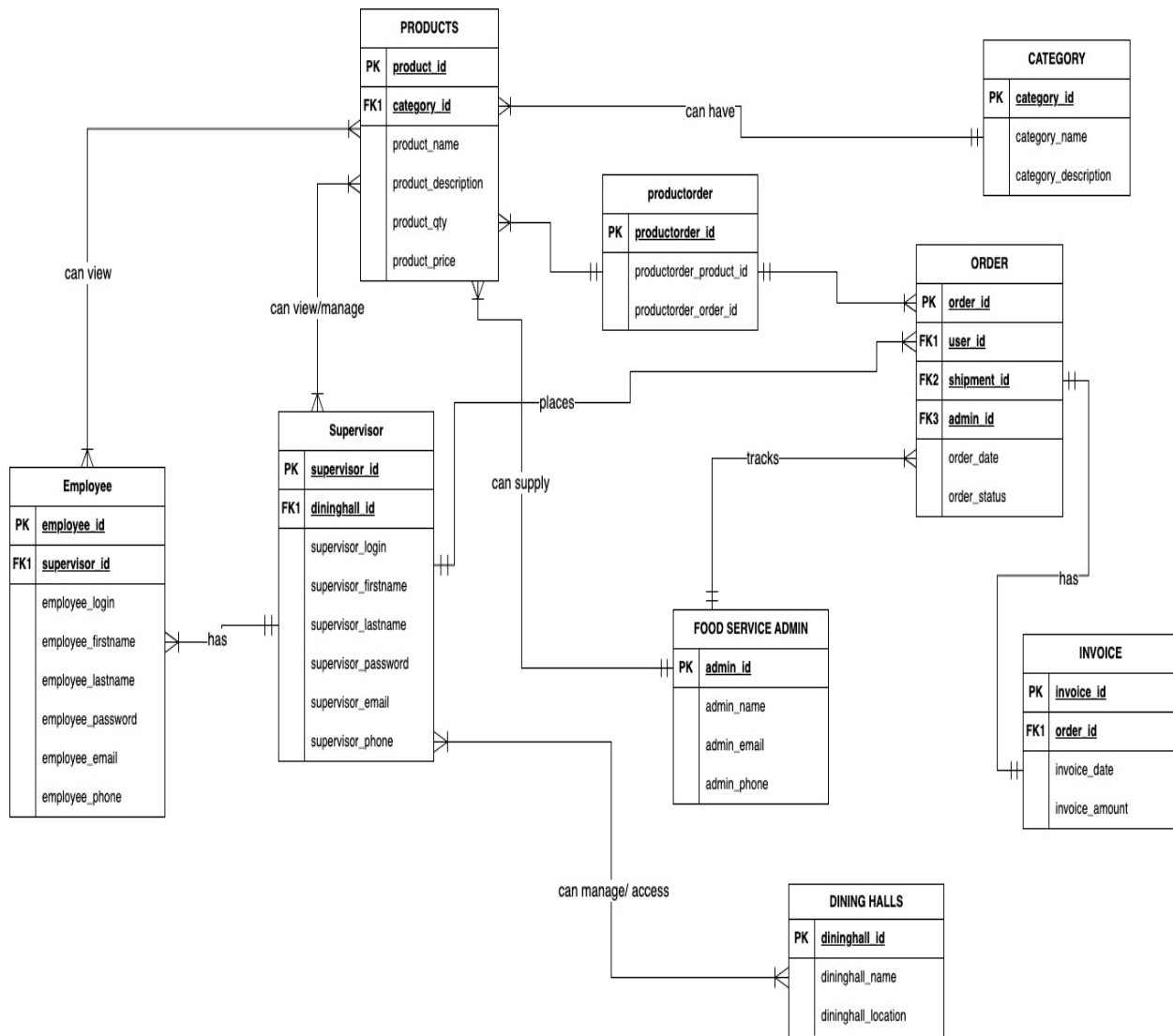
### Process 4.0: Manage Orders





## Entity Relationship Diagram

### Fully Attributed Model



## Entity Definition Matrix

Entity Definition	Business Definition
Dining Halls	Dining Hall information
Employee	Details of Employees working at the dining hall
Supervisor	Details of the supervisor assigned to the dining hall
Products	Information of the products supplied by the vendors at the dining hall
Category	Categories of products
Order	Details of the order placed by a dining hall
Invoice	Invoice details of the orders placed
Food Service Admin	Responsible for tracking the order and making the payments
Product-Order	Bridge table between Product and Order to simplify Many-to-Many Relationship

## Data Dictionary

### Employee:

Name	Data Type
employee_id	Integer
employee_login	Varchar
employee_firstname	Varchar
employee_lastname	Varchar
employee_password	Varchar
employee_email	Varchar
employee_phone	Integer

**Supervisor:**

Name	Data Type
supervisor_id	Integer
supervisor_login	Varchar
supervisor_firstname	Varchar
supervisor_lastname	Varchar
supervisor_password	Varchar
supervisor_email	Varchar
supervisor_phone	Integer

**Products:**

Name	Data Type
product_id	Integer
product_name	Varchar
product_description	Varchar
product_qty	Integer
product_price	Integer

**Food Service Admin:**

Name	Data Type
admin_id	Integer
admin_name	Varchar
admin_email	Varchar
admin_phone	Integer

**Dining Halls:**

Name	Data Type
dininghall_id	Integer
dininghall_name	Varchar
dininghall_location	Varchar

**Invoice:**

Name	Data Type
invoice_id	Integer
invoice_date	Date
invoice_amount	Money

**Order:**

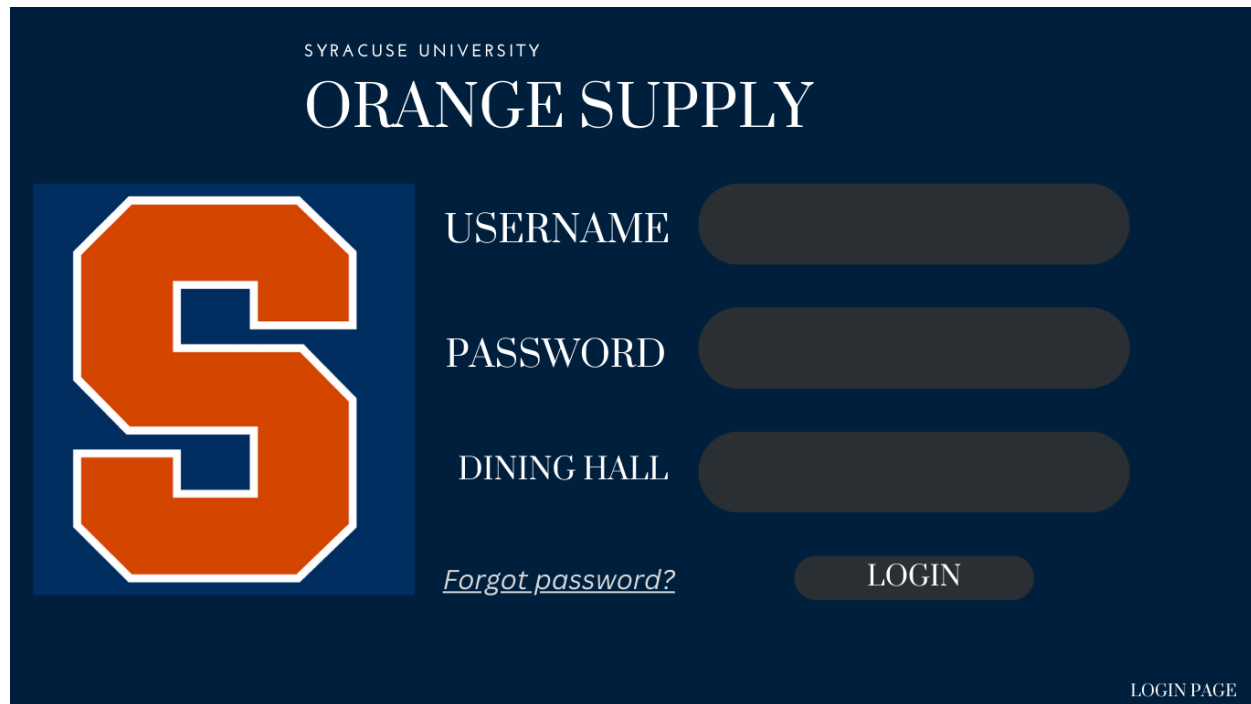
Name	Data Type
order_id	Integer
order_date	Date
order_status	Varchar

**Category:**

Name	Data Type
category_id	Integer
category_name	Varchar
category_description	Varchar

## Interface

### Login Interface



The screenshot shows the login interface for the Orange Supply system. It features a dark blue background with the Syracuse University logo (a large orange 'S' with a white outline) on the left. To the right of the logo, the text 'SYRACUSE UNIVERSITY' is displayed above 'ORANGE SUPPLY'. Below this, there are three input fields labeled 'USERNAME', 'PASSWORD', and 'DINING HALL'. A link for 'Forgot password?' is located below the 'DINING HALL' field. A 'LOGIN' button is positioned to the right of the 'DINING HALL' field. In the bottom right corner, the text 'LOGIN PAGE' is visible.

- Supervisors, food services, and employees use this interface to access a dining hall's inventory management system.
- The login and password are the same as the university's NET ID.
- The dining hall field will display the names of all dining halls as well as "ALL" alternatives for users to choose from.
- The employee must select the dining hall where they work in the dining hall field.
- Supervisors can log in to any dining hall.
- To login, food services administrators must pick the "ALL" option from the dining hall box.
- If a user forgets their password, they can reset it by clicking on the forgot password link.

## Supervisor Menu Interface



- Supervisors utilize this interface to navigate across the system.
- To search for a product in the inventory, the user must select the search products option.
- To place an order, the user must select the put manual order option.
- To check the status of an incoming order, the user must pick the track order option.

## Employee Menu Interface



- Employees utilize this interface to navigate the system.
- Employees can only use the system to check product details and availability, and to do so, they must select the search products options.

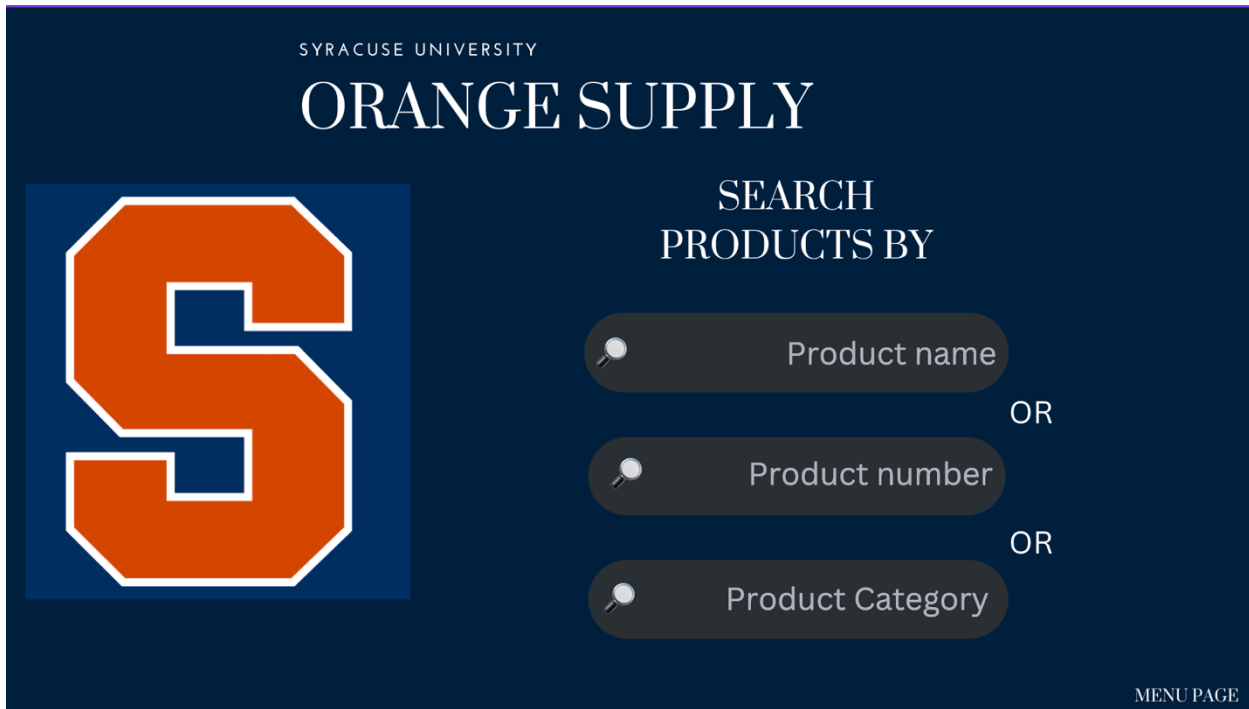
## Admin Menu Interface



- The food services administrator uses this interface to navigate the systems.
- All supervisor orders are sent to food services administration.
- Food services admin then checks and places all orders with vendors by choosing the place order field.
- The food services administrator obtains vendor confirmation and updates the order details using update orders.
- Using the manage invoice field, food service administrators can examine and manage all bills.



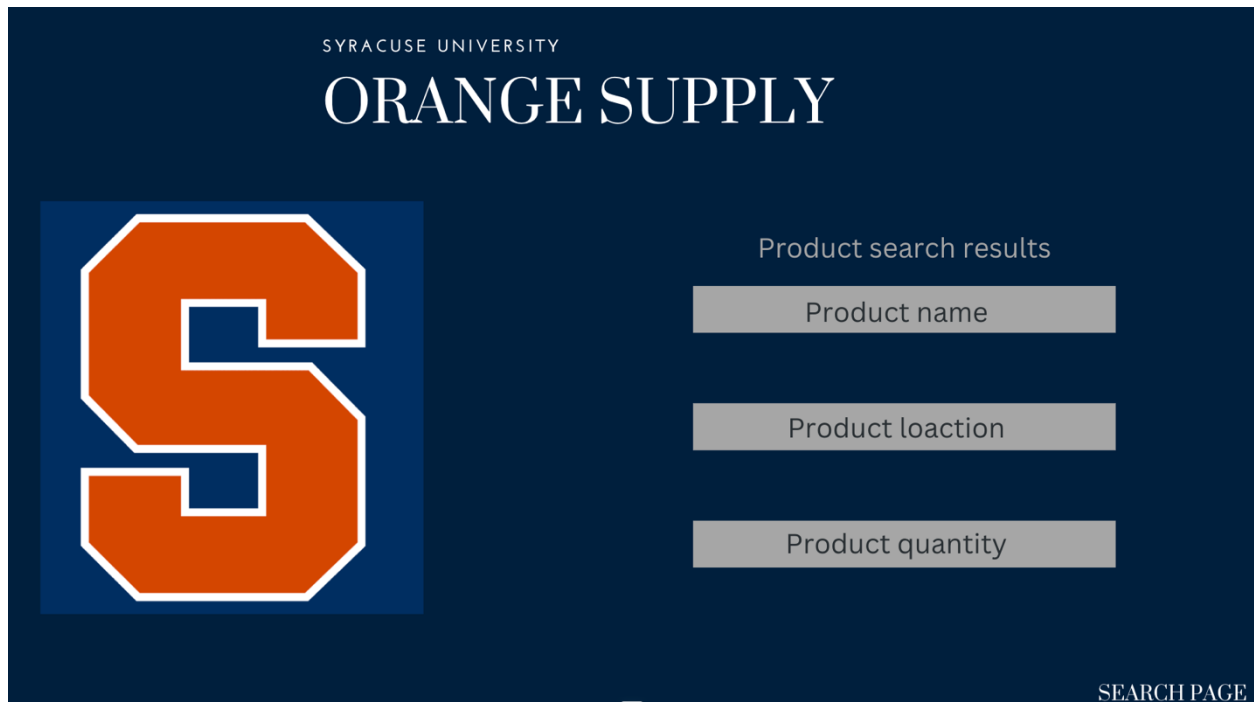
## Search Products Interface



The screenshot shows a dark blue interface for Syracuse University's Orange Supply. At the top, it says "SYRACUSE UNIVERSITY" and "ORANGE SUPPLY" in white. On the left is a large orange "S" logo. To the right, under the heading "SEARCH PRODUCTS BY", there are three search fields, each with a magnifying glass icon and the text "Product name", "Product number", and "Product Category" respectively. The fields are separated by "OR" text. In the bottom right corner, there is a link that says "MENU PAGE".

- Users are directed to this interface after selecting search products.
- Users of this interface are employees and supervisors.
- Users can search for a product by typing the product name in product name field.
- Users can search for a product by typing product number in the product number field.
- Users can search for a product by searching through the product category.

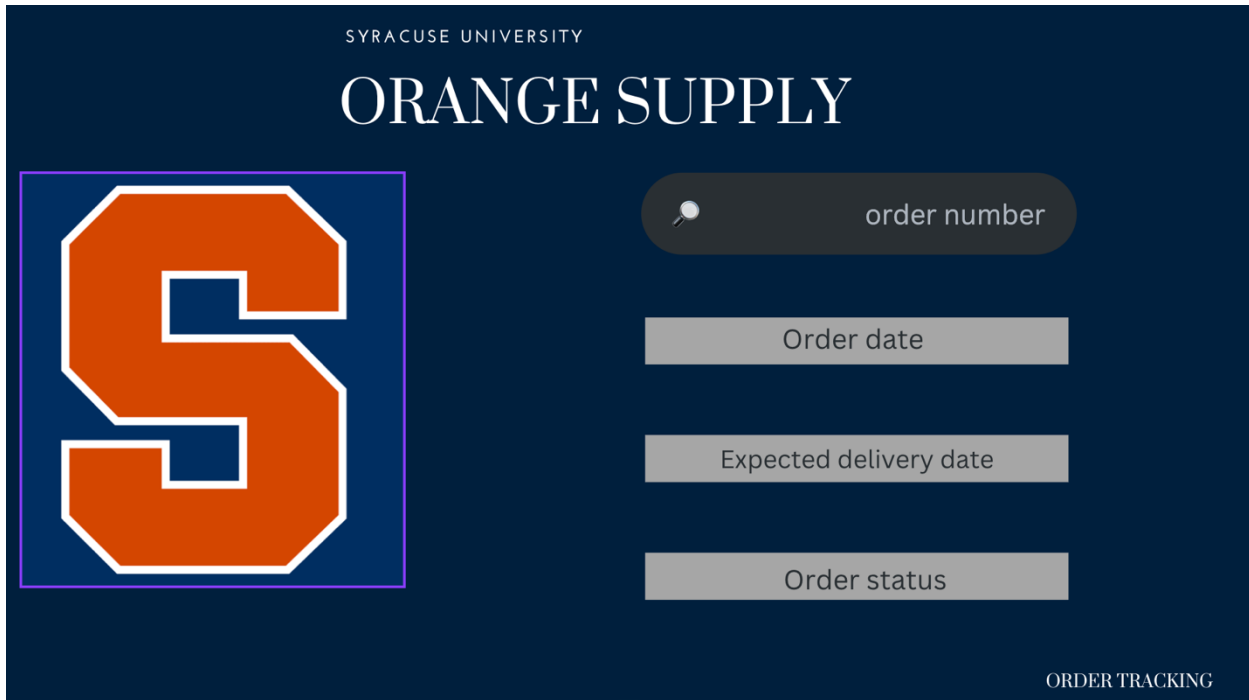
## Product Search Result Interface



The screenshot shows a dark blue interface for Syracuse University's Orange Supply. At the top, it says "SYRACUSE UNIVERSITY" and "ORANGE SUPPLY". On the left is a large orange "S" logo with a white outline. On the right, under the heading "Product search results", there are three light gray rectangular boxes stacked vertically, labeled "Product name", "Product loaction", and "Product quantity". The text "SEARCH PAGE" is in the bottom right corner.

- This interface displays the result of product search.

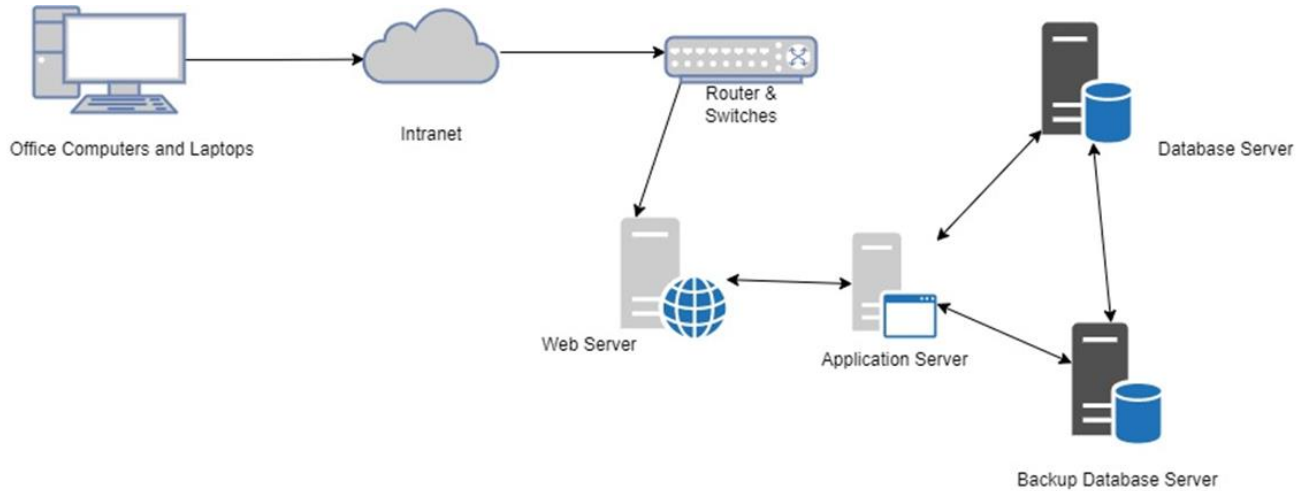
## Track Order Interface



The screenshot shows a dark blue interface for tracking orders. At the top, it says "SYRACUSE UNIVERSITY" and "ORANGE SUPPLY". On the left is a large orange "S" logo with a white outline. On the right, there is a search bar labeled "order number" with a magnifying glass icon. Below the search bar are four gray boxes labeled "Order date", "Expected delivery date", and "Order status". The text "ORDER TRACKING" is in the bottom right corner.

- Supervisors use this interface to track incoming orders.
- To find the order status, users must enter the order number and click the search icon.
- Below the search order number box, the order date, projected delivery date, and current order status will be displayed.

## System Architecture



The system architecture is designed considering that the application will be accessed only on the university premises, over the systems connected to the university's wireless network. The architecture allows for computer client access to the university's users (dining halls), eliminating the need for a firewall. The web server and database servers are connected transitively via an application server, which communicates bi-directionally with both the web and database server. The web server will only redirect the HTTP requests to the application server. A backup database server is included to backup data in case of any mishap. Data will be replicated after certain intervals to maintain data consistency across both servers.

## Feasibility Analysis

### Economic Feasibility

The economic feasibility for this project is based largely on the premises that the project is essentially a requirement, that the company is relatively small, and that as a nonprofit relatively small financial gains should be acceptable. The development plan involves building a physical infrastructure for the organization and hiring consultants to implement and train based on the project software. The costs include the physical hardware, the personnel, and the training for the in-house staff to be able to run the system on their own. There will be no additional workforce required to perform tasks after the enablement of this system.

System benefits in addition to modernizing the company include financial benefits from employee productivity improvements as well as material cost saving. As the included tables will show the system's benefits will outweigh the costs by an estimated \$ 65,693.07. The payback analysis shows a payback time of 1 year 8 months. The ROI of the system lifetime which is based on the 3-year peak lifetime of the system is 60.49% with a yearly ROI of 20.6%. Based on these figures the economic feasibility of the project does appear sound.

#### Development Costs Equipment Costs

Equipment Cost	Quantity	Cost Each	Cost Total
Database Server	2	\$ 4,000.00	\$ 8,000.00
Web Server	1	\$ 4,000.00	\$ 4,000.00
Application Server	1	\$ 4,000.00	\$ 4,000.00
Internal Router	1	\$ 200.00	\$ 200.00
Backup Power Generator	1	\$ 5,000.00	\$ 5,000.00
Server Rack	6	\$ 200.00	\$ 1,200.00
Windows Server Licensing	1	\$ 6,000.00	\$ 6,000.00

<b>Switches</b>	<b>40</b>	<b>\$ 40.00</b>	<b>\$ 1,600.00</b>
<b>Barcode Scanner</b>	<b>12</b>	<b>\$ 90.00</b>	<b>\$ 1080.00</b>
<b>Total</b>			<b>\$ 31,080.00</b>

#### Personnel Costs

<b>Personnel</b>	<b>Quantity</b>	<b>Time (Months)</b>	<b>Cost</b>	<b>Total Cost</b>
<b>Developer</b>	<b>1</b>	<b>1</b>	<b>100/hr</b>	<b>\$ 15,500.00</b>
<b>System Admin</b>	<b>1</b>	<b>1</b>	<b>60/hr</b>	<b>\$ 9,300.00</b>
<b>Network Architect</b>	<b>1</b>	<b>1</b>	<b>65/hr</b>	<b>\$ 10,075.00</b>
<b>Database Developer</b>	<b>1</b>	<b>1</b>	<b>70/hr</b>	<b>\$ 10,850.00</b>
<b>Training</b>	<b>1</b>	<b>0.5</b>	<b>60/hr</b>	<b>\$ 4,650.00</b>
<b>Total</b>				<b>\$ 50,375.00</b>

#### Total Development Costs

<b>Development Cost</b>	
<b>Personnel</b>	<b>\$ 50,375.00</b>

<b>Equipment</b>	<b>\$ 31,080.00</b>
<b>Total</b>	<b>\$ 81,455.00</b>

Company Spending

<b>Employee Costs</b>	<b>Hourly</b>	<b>Quantity</b>	<b>Total Hours (1,860 yearly hours)</b>
<b>Supervisors</b>	<b>35/hr</b>	<b>10</b>	<b>18,600</b>
<b>Employee</b>	<b>16/hr</b>	<b>50</b>	<b>93,000</b>
<b>Admin</b>	<b>40/hr</b>	<b>2</b>	<b>3,720</b>
<b>Total</b>			<b>115,320</b>

<b>Material Costs</b>	<b>Cost</b>	<b>Monthly Use</b>	<b>Total Yearly Use</b>	<b>Total Cost</b>
<b>Case of Paper</b>	<b>\$ 30.00</b>	<b>3.125</b>	<b>37.5</b>	<b>\$ 1,125.00</b>
<b>Inkjet</b>	<b>\$ 40.00</b>	<b>300 (prints)</b>	<b>3,600 (prints)</b>	<b>\$ 4,212.00</b>
<b>Total</b>				<b>\$ 5,337.00</b>

Net Present Value

Cash Flow Description	Year 0	Year 1	Year 2	Year 3
Development Cost	81,455.00			
Operation and Maintenance	0	8,228.80	9,021.68	9,914.56
Discount Factors for 12%	1.000	.893	.797	.712
Present value of annual costs	81,455.00	7,347.78	7,190.28	7,059.17
Total Present Value of Lifetime Costs	103,052.23			
Benefits Derived from New System	0	70,252.00	70,252.00	70,252.00
Discount Factors for 12%	1.000	.893	.797	.712
Present Value of Benefits	0	62,735.04	55,990.84	50,019.42
Total Present Value of Lifetime Benefits	168,745.3			
Net Present Value	65,693.07			



## Return on Investment

Lifetime ROI - 60.49%      Yearly ROI - 20.6%

Cash Flow Description	Year 0	Year 1	Year 2	Year 3
Development Cost	81,455.00			
Operation and Maintenance	0	8,228.80	9,021.68	9,914.56
Discount Factors for 12%	1.000	.893	.797	.712
Time-Adjusted Costs (Regarding Present Value)	81,455.00	7,347.78	7,190.28	7,059.17
Cumulative Time-Adjusted Costs over Lifetime	81,455.00	88,802.78	95,993.06	103,052.23
Benefits Derived from Operation of New System	0	70,252.00	70,252.00	70,252.00
Discount Factors for 12%	1.000	.893	.797	.712
Time-Adjusted Benefits (Current of Present Value)	0	62,735.04	55,990.84	50,019.42
Cumulative Time-Adjusted Benefits over Lifetime	0	62,735.04	118,725.88	168,745.3

<b>Cumulative Lifetime Time-Adjusted Costs and Benefits</b>				<b>65,693.07</b>
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### Operational Feasibility

Operational feasibility determines the effectiveness of the Inventory Management System after it is developed for the Food Services. There is one operational change with this new system, the use of a barcode scanner to scan products. We have proposed the use of Wireless scanners, which are being used across different stores and have proved to be useful.

We measure whether the developed system meets the requirements and whether it has provided benefits to the company, employees, and the customers.

No	Current paper-based system	New System Features	Requirements
1	To place new orders for the inventory, supervisors must place a call	System allows the supervisors to place orders according to their needs and automatically when the quantity of a product goes below a certain value	The system should accept and place orders to simplify ordering process
2	The current system requires supervisors to access the storage room to check for items in their inventory	A view inventory functionality is given to the supervisors to check for item count in their inventory	Supervisors must be able to see the details of their inventory
3	The current system requires supervisors to place a call to other halls/cafes to check for availability of items in their inventory	A view inventory functionality is given to the supervisors to check for items in the inventory of other halls	Supervisors must be able to see the inventory details of the selected hall/cafes

4	The current system requires employees to access the storage room to check for items in their inventory	A view inventory functionality is given to the employees to check for item count in their inventory	Employees must be able to see the details of their inventory
5	The supervisor checks the files to access details of previous and current orders	The system displays the list of orders placed and active orders	The system should allow the supervisor to check for orders based on the order number or order status
6	The current system requires admin to contact each supervisor and inform them about scheduled deliveries	The new system provides a feature to the admin to schedule deliveries and allows supervisors to track those deliveries	The system should allow the supervisor to schedule deliveries and supervisors to track the deliveries
7	The current system requires supervisors/employees to go about the hall to check for remaining stocks in the inventory	The new system provides a feature to scan the barcode of the product using scanner to update the outgoing product in the inventory	The new system should allow the employee to scan the items and update the database accordingly

We also assess the following factors to determine operational feasibility:

**Management Support:** The proposed system has support from the managers and supervisors as it results in time management and simplifies the process of inventory management. It also reduces the manual effort of the employees. Moreover, it helps in reducing wastage of items in the inventory.

**Workforce Reduction:** The proposed system is meant to reduce manual work done by the employees and would not result in any employee layoffs/reduction. It would ensure better utilization of the workforce.

**User Training:** The department would require a one-time training course for the users of the new system. This training would help them understand the navigation of pages, and controls of the system.

**User Involvement:** The users would be involved in planning the system as their input would be taken while designing the system.

**Performance:** The proposed system will provide authorized access to the users of the system, and digitize the current paper-based system, which will reduce the man hours by a significant number. Overall, this will improve the performance of the system.

### Technical Feasibility

To implement the Inventory Management System, Orange Supply needs technical resources to develop, test and install the system. Currently the company functions using a file-based system. Thus, there is a need for purchasing technical resources required to build and run this system.

**Physical infrastructure:** The company needs to purchase the physical hardware required for the system. The components include:

Database Server (Quantity=2)

Web Server (Quantity=1)

Application Server (Quantity=1)

Router (Quantity=1)

Scanner (Quantity=1)

Switches (Quantity=40)

License (Quantity=1)

All the above components would be required to build a secure web interface and to store the data.

**Technical Expertise:** The organization needs to hire consultants and a technical team to develop the system. This team would include the following members:

Consultant Developer

Database Administrator

Network Architect

Tester

Training staff

**Future Expansion:** The current usage of this application is small-scale, but we can add additional resources and features in the future for incorporating changes. According to the scope of the requirements, physical infrastructure can be installed easily. For any application specific changes, the IT team at the university will handle them.

**Compatibility:** The developed system will be compatible with the other existing systems of the company. This system will not alter the working of any other system of the company. Also, it would be compatible with the latest systems.

### Cultural Feasibility

One of the most important aspects to consider under feasibility is cultural feasibility as it helps us understand how our system will be received. We need to understand if the potential users of this system, i.e., the supervisors, employees and admins will be comfortable with this proposed system. From their perspective, the job should become easier and there should be little resistance with proper training for interacting with the system.

Also, we must ensure that the supervisors are willing to update the missing data, if any. This is required for the system to work efficiently and as expected. Their work is simplified, and there is the least human interaction required, which saves human efforts. Thus, there should not be much resistance from the users for the new system.

To ensure that the cultural changes are adapted smoothly, we need to provide proper training to the system users. Continuous monitoring of the cultural feasibility can allow for quick adjustments to reduce the risk that the project will fail due to cultural resistance. Therefore, proper feedback process and demo to users can allow for constant feedback of cultural feasibility throughout the implementation process.

### Schedule Feasibility

The schedule has been made considering the need, importance, and availability of resources. Also, since the whole current process is being revamped it will not hamper the schedule of the employees.

Speeding up the project would increase the personnel costs of the project, which will not be feasible. To launch the website, it must be tested properly, which cannot be rushed. Also, the time required to train the supervisors and employees has been taken into consideration. Since external entities are involved, the time to acquaint them with the new system has also been allotted so as not to have them clueless about it.

### Legal Feasibility

Certain legal issues to take into consideration are:

- The management at Orange Supply is legally allowed to develop a completely new system for better functionality and efficiency.
- All partnerships towards the designing and development of a new solution will be approved by its legal department.
- Any addition to the vendor data will be consented by the vendor prior to addition.
- Orange Supply will be responsible for any issues that arise out of this new system and will fall under the jurisdiction of the courts of New York State.
- The system will be designed with utmost security and any breach will be notified to the top management within 24 hours of the incident.
- A complete auditing system will be installed to trace back changes and security issues.
- The system allows for easy partnering with new clients in the future.

### Implementation Plan

#### Development

The development of the Orange Supply Inventory Management System will involve building a digital system that can be accessed by all five dining halls. The system will include a trigger that will automatically place orders when stock runs out after a certain limit.

The development plan will involve the following steps:

- Build a relational database system that can handle the inventory management of all five dining halls.
- Build a web-facing interface that can be accessed by all dining halls.
- Build an in-house CPU client-facing interface that can be used by the inventory management team to input inventory data and set up the just-in-time inventory system.
- Utilize Microsoft SQL Server to build the database since it will mesh well with the system already running off Microsoft Servers.

The GUI will focus on simplicity due to the wide-ranging power of the computers utilizing the system and the desire for easy loads and fast load times.

- Design a GUI that is compatible with most operating systems and browsers, including computers with low processing power.
- Build a GUI that is simple and easy to use, with forms designed to look like the existing paperwork utilized at Syracuse Dining Hall.
- Test the system in iterations, starting with sample data entry to ensure that the system functions properly.

#### Testing

The testing phase of the implementation plan will involve the following steps:

- Test the system in iterations as the entities are being constructed and relations between them are being built.
- Test the GUI by entering sample data to ensure that it works correctly.
- Test the data flow, security operability, and network functioning of the system once the development has been completed and the system has been installed.

### Deployment

The deployment of the Orange Supply Inventory Management System will involve the following steps:

- Perform testing on the completed system to ensure that it is functional and successful.
- Initiate a pilot group of employees, including at least one member of each job title, to start utilizing the system.
- The pilot group should represent about a third of the employees.
- Once the pilot group has successfully started utilizing the system, the last two-thirds of the employees will have a direct cutover to using the system.
- Train all commercials in a short 2-hour training session, which should be sufficient given the simplicity of the system.
- Commercials will be responsible for training supervisors in the pilot group and training the general employees will be the responsibility of the supervisors.

### Training

The training phase of the implementation plan will involve the following steps:

- Proper documentation of the development of the system will be provided.
- Proper documentation on the architecture of the system will be provided.
- A data dictionary for the code will be provided.
- 5 hours of formal training on the system will be conducted by the development team and attended by the Syracuse University's IT team.
- The IT team should be familiar with the operation of the system and relatively comfortable with troubleshooting issues as needed.
- The development team will train all commercial staff in a short 2-hour training session.
- Commercials will be responsible for training supervisors in the pilot group and training the general employees will be the responsibility of the supervisors.

### Maintenance and Support

The development team will provide support for the first six months after deployment and training. Support requests will only be accepted from Syracuse University's IT team. Requests will only be handled from Monday to Friday, 9:00am to 5:00pm. Support requests must follow a decided upon format. An automated email will inform the requester that the request has been received. The development team will make contact within 24 hours of the request. The development team will troubleshoot at Syracuse University's location only if necessary.



## Resources

- Shelly Cashman Series (12<sup>th</sup> Edition). System Analysis and Design, Scott Tilley