

**NiceShopping Online Grocery**

**SOEN 357 Final Report**

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Section S

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## **Abstract**

This project aims to develop a user-centric online grocery platform addressing challenges like inconvenient in-store experiences, outdated interfaces, and unreliable inventory systems. Key features include personalized shopping recommendations, real-time inventory tracking, secure checkout, and flexible delivery scheduling. The platform's intuitive design enhances navigation, reduces cart abandonment, and improves customer satisfaction. Targeting busy professionals, families, and elderly individuals, it offers a seamless and stress-free shopping experience, fostering loyalty in the competitive online grocery market.

Github code repository: <https://github.com/V1C7ORWHY/SOEN357-PROJECT>

## **Introduction**

### **Problem Description**

The grocery shopping landscape faces challenges like time-consuming in-store experiences and accessibility issues for elderly individuals, busy professionals, and those with mobility limitations. The COVID-19 pandemic underscored the need for efficient online grocery solutions. However, existing platforms often suffer from poor user experience, outdated interfaces, unreliable inventory systems, and inefficient delivery scheduling, leading to customer frustration and lost sales opportunities.

### **Research Questions**

#### 1. User Experience Optimization

Question:

How can the grocery website's design improve ease of use for customers of varying technical skills?

Challenge:

Designing an interface that caters to a broad audience, balancing functionality and simplicity, especially for users who are not familiar with technologies.

#### 2. Customer Personalization and Recommendations

Question:

How can the website leverage user data to provide personalized shopping experiences that increase user satisfaction?

Challenge:

Integrating a recommendation system that suggests relevant products without overwhelming users, balancing personalization with privacy concerns.

#### 3. Performance and Loading Times

Question:

What optimizations can be made to reduce page load times and prevent lags in checkout, particularly during high-traffic times?

Challenge:

Maintaining fast, responsive pages that handle a large number of users without performance issues.

### **Research Object:**

<https://www.walmart.com/>

Good point: The image is too big, and users can know what products are on sale.

Improvement: Too much advertisement and recommendation, users can't catch the point.

<https://www.metro.ca/>

Good point: The color combination is good.

Improvement: The color is too monotonous. Sometimes, the homepage can feel cluttered with multiple banners, promotions, and pop-ups, making it hard for users to focus.

## Hypothesis

A grocery website designed with a focus on user-centric features (such as an intuitive interface, secure payment systems, real-time inventory tracking) will outperform competitors by enhancing the customer journey, and increasing customer loyalty. This improved experience is expected to elevate customer satisfaction, minimize cart abandonment, make shopping easier, and encourage customers to come back. Therefore, here are the outcomes that are expected upon implementing these features:

1. Personalized Shopping Experience: Incorporating personalized recommendations will make the platform more relevant to individual users, leading to higher engagement and more frequent purchases. By product recommendations based on users' purchase history and preferences, the website will increase average order value by 25%.
2. Intuitive User Interface and Smart Search Functionality: A user-friendly interface with efficient categorization and advanced search capabilities will decrease cart abandonment rates by 30%. Customers will be able to quickly find desired items, minimizing frustration and encouraging them to complete their purchases.

## Targeted users

Our intended users are online grocery shoppers across various demographics and age scales, particularly those seeking an efficient and user-friendly shopping experience. This includes busy adults who prioritize convenience, families looking for an easy way to manage their grocery lists, and elderly users unfamiliar with using the internet or computers and may face challenges with small texts and complex navigation. Additionally, consumers who value personalized shopping recommendations, such as history purchases and something familiar with purchased items, will benefit from a more responsive, adaptive interface. The design also aims to make online shopping easy and stress-free for new users.

## Related Work

### User Persona

#### PERSONA 1

Name: Dr. Thompson Green

Age: 32

Occupation: Chemical Scientist



##### Background:

Dr. Green dedicates extensive hours to complex physics experiments at his university's laboratory. His research often can't be interrupted, leading to irregular hours and extended periods in the lab. As a highly analytical individual, he appreciates systematic and efficient solutions to daily tasks.

##### Goals and Behaviors:

Minimize time spent on routine tasks outside research  
Maintain a reliable supply of necessity  
Access to nutritious meals that support long laboratory Sessions  
Predictable and reliable delivery scheduling.

Quote: Time in lab is precious. Grocery shopping wastes minutes.

#### PERSONA 2

Name: Alexandre Martinez

Age: 26

Occupation: Game Streamer



##### Background:

Alex maintains broadcasting gameplay for 8-10 hours daily to an audience of 50,000 followers. Working from home means irregular hours and limited time for errands. Alex doesn't have time to shop outside to sustain long streaming sessions.

##### Goals and Behaviors:

Minimize time away from streaming schedule  
Stock up on energy-sustaining snacks and meals  
Efficiently manage household essentials  
Access to late-night delivery options

Quote: Game at home, live at home.

## User Journey

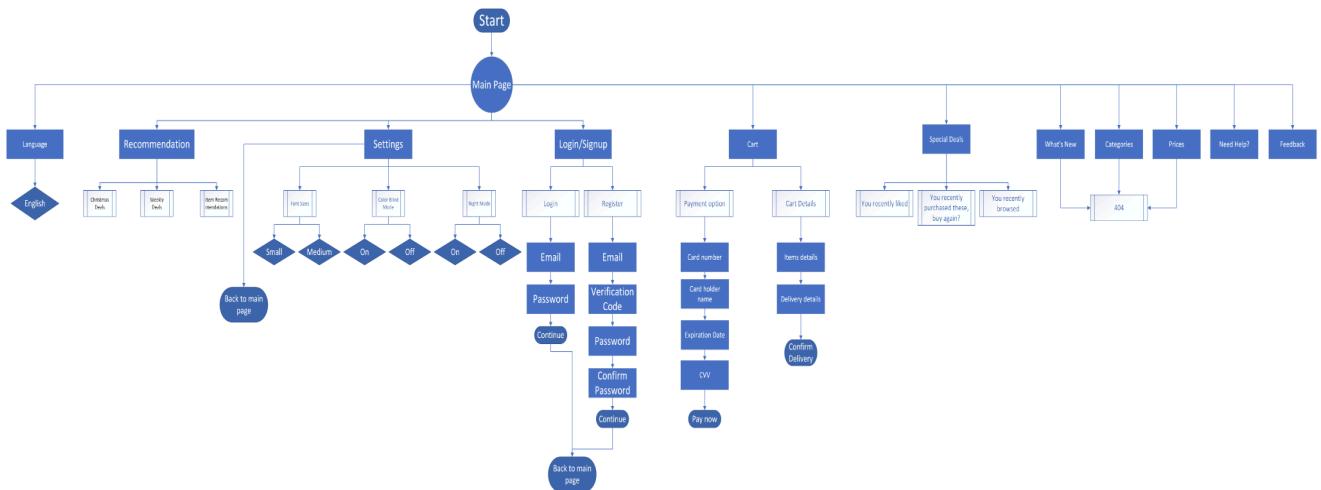
Alexandre Martinez - Game Streamer

Stage	Think	Does	Feels
Discovery	"I need a way to get groceries without interrupting my streams."	Searches for 24/7 delivery services while on stream break	Hopeful
Research	"Which service can deliver during my off-stream hours?"	Compares delivery times and reviews on different platforms	Skeptical
Sign Up	"Will this actually work with my schedule?"	Creates account, sets up streaming schedule preferences	Cautiously optimistic
First Order	"I need energy drinks and quick meals for tomorrow's stream."	Orders essential streaming snacks and energy drinks	Excited
Regular Use	"This is actually saving me so much time!"	Sets up recurring orders for streaming essentials	Relieved
Loyalty	"I can focus entirely on my content now."	Recommends service to other streamers	Satisfied

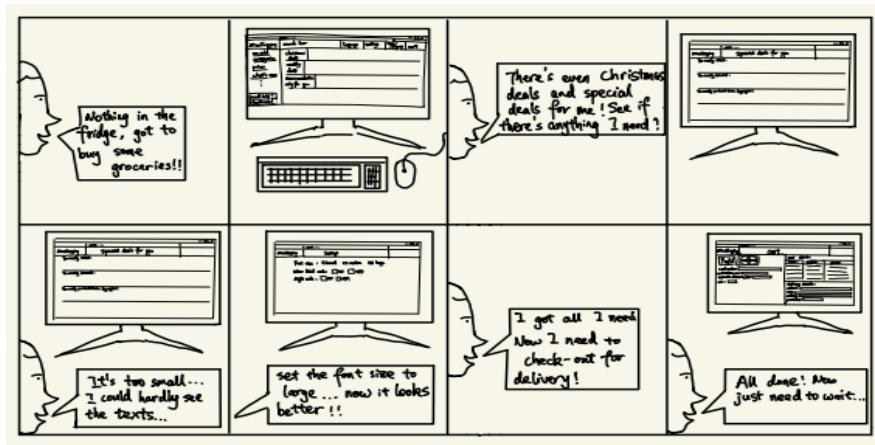
Dr. Thompson Green - Chemical Scientist

Stage	Think	Does	Feels
Discovery	"I need precise delivery timing around my experiments."	Researches grocery services with scheduled delivery	Analytical
Research	"Which service offers the most precise delivery windows?"	Compares delivery accuracy ratings and scheduling options	Critical
Sign Up	"Can I integrate this with my lab schedule?"	Creates account, inputs detailed delivery preferences	Methodical
First Order	"I need to test the delivery precision."	Places small test order during experiment break	Cautious
Regular Use	"The delivery timing aligns perfectly with my breaks."	Sets up systematic ordering schedule	Confident
Loyalty	"This has optimized my lab schedule significantly."	Shares system with other lab researchers	Satisfied

## User Flowchart



## User Storyboard



## Sketches

Main page:

www...		search bar	language	settings	log in	sign up	cart
NiceShopping	on-sale categories	christmas deals					
	prices	weekly deals					
	what's new	recommendation only for you					
	:						
	need help?						
	feedback!						

Login/Signup page:

www...		Log in / signup
NiceShopping	Already have an account ?	First time ?
	<input type="text"/> email address:	<input type="text"/> email address:
	<input type="text"/> password :	<input type="text"/> verification code:
		<input type="text"/> password :
		<input type="text"/> conform password:
	<input type="button" value="continue"/>	<input type="button" value="continue"/>

Special deal page:

www...		Special deals for you
NiceShopping	You recently liked:	
	You recently browsed:	
	You recently purchased these, buy again?	

Settings page:

www...		Settings
NiceShopping	Font size :	<input type="checkbox"/> small <input type="checkbox"/> medium <input type="checkbox"/> large
	Colour blind mode:	<input type="checkbox"/> ON <input type="checkbox"/> OFF
	Night mode:	<input type="checkbox"/> ON <input type="checkbox"/> OFF

Check-out page:

www...		cart.
NiceShopping		cart details:
	PayPal   Mastercard	Items:   number:   prices:
	card number: _____	
	card holder name: _____	
	expiration date (mm/yy): _____	
	CVV: _____	
		delivery details:
		address: _____
		city: _____
		country: _____
		postal code: _____

## Wireframe

Main page:

NiceShopping

Enter something you are looking for:

Language | Settings | Login/Signup | Cart

- On-sold
- Categories
- Prices
- What's new
- Need Help?
- Feedback?

**Christmas deals**

**Weekly deals**

**Recommendation only for you**

Login/Signup page:

NiceShopping

Login/Signup

Already have an account?

Email Address:

Password:

Continue

First time?

Email Address:

Verification code:

Password:

Confirm Password:

Continue

Special deal page:

NiceShopping

Special deals for you | Language | Settings | Login/Signup | Cart

- On-sold
- Categories
- Prices
- What's new
- Need Help?
- Feedback?

You recently liked

You recently browsed

You recently purchased these, buy again?

Settings page

NiceShopping

Settings

Font Size:  Small  Medium  Large

Colour Blind Mode  ON  OFF

Night Mode  ON  OFF

Check-out page:

NiceShopping

Cart

Card Number

Items	Number	Prices

Address   
City   
Country   
Postal Code

Card Number   
Card Holder Name   
Expiration Date (MM/YY)   
CVV

PayPal Mastercard

Visual Design & Typography in final design

<span style="background-color: #00B12B; border: 1px solid #00A62D; padding: 2px 5px;"></span>	06B12B	100 %	<input checked="" type="radio"/>	—
<span style="background-color: #3EB5FF; border: 1px solid #00A62D; padding: 2px 5px;"></span>	3EB5FF	100 %	<input checked="" type="radio"/>	—
<span style="background-color: #000000; border: 1px solid #00A62D; padding: 2px 5px;"></span>	000000	100 %	<input checked="" type="radio"/>	—
<span style="background-color: #FFFFFF; border: 1px solid #00A62D; padding: 2px 5px;"></span>	FFFFFF	100 %	<input checked="" type="radio"/>	—
<span style="background-color: #FF2D55; border: 1px solid #00A62D; padding: 2px 5px;"></span>	FF2D55	100 %	<input checked="" type="radio"/>	—
<span style="background-color: #FFE100; border: 1px solid #00A62D; padding: 2px 5px;"></span>	FFE100	100 %	<input checked="" type="radio"/>	—
<span style="background-color: #00A62D; border: 1px solid #00A62D; padding: 2px 5px;"></span>	0A62D6	100 %	<input checked="" type="radio"/>	—

A**b**c**d**e**f**g  
Ab**c**de**f**g

**1234567**  
1234567

We used bright and contrasting colors to enhance visual effects. The font is inter, this font is very neat and clean, users can see it clearly, and bold is used on the current page to tell people who are looking at this prototype.

## Methods

The project utilized a range of tools and technologies to ensure a robust and user-centric implementation.

**Web development** was carried out using HTML and CSS for structuring and styling the website, with JavaScript enabling dynamic and interactive features.

For **UI and UX design**, Figma and Photoshop were employed to create intuitive and visually appealing interfaces that prioritize usability.

To support **e-commerce integration**, Stripe and PayPal were used to provide secure payment options, ensuring a safe and seamless transaction process for users. These tools and methods were chosen to address the project's goals of creating a functional, accessible, and engaging online grocery platform.

## Evaluation

The image displays six screenshots of the NiceShopping prototype, arranged in a grid-like fashion. The screenshots illustrate the following features:

- Home Page:** Shows a grid of items under "Christmas Deals" (Item 1, Item 2, Item 3) and "Weekly Deals" (Item 1, Item 2, Item 3). A sidebar includes "Special Deals", "Prices", "What's New", "Need Help?", and "Feedback".
- Settings Page:** Features a background image of fresh vegetables. It includes a "Font Size" dropdown with "Small", "Medium", and "Large" options, a "Color Blind Mode" switch (ON/OFF), and a "Night Mode" switch (ON/OFF).
- Login / Signup Page:** Shows two side-by-side forms: "Already have an account?" and "First time?". Both forms require "Email Address", "Password", and "Verification Code".
- Cart Page:** Shows a grid of items with columns for "Items", "Number", and "Prices". It includes sections for "Delivery Details" (Address, City, Country, Postal Code) and a "Confirm Delivery" button.
- Payment Options Page:** Shows payment method selection (PayPal, Credit Card) and fields for "Card Number", "Card Holder Name", "Expiration Date (MM/YY)", and "CVV". A "Pay Now" button is present.
- 404 - Page Not Found:** Displays a message stating "The page you are looking for does not exist." with a "Return to home" link.

## Results

### Pages and Functionality:

- Homepage: Displays products and deals.
- Settings Page: Allows users to customize their experience, such as font size, color-blind mode, and night mode.
- Login/Signup Page: Provides options for account creation and login with fields for email, verification codes, and password.

### Design and Aesthetics:

- Responsive layout across devices, with semantic HTML and accessible design elements.
- A clean CSS structure, with enhancements like semi-transparent backgrounds, hover effects, and color-coded radio buttons.

### Backend Integration:

- A switch from MySQL to CSV for data handling, ensuring simpler file-based operations but not implemented yet.
- The project demonstrates a functioning MVC structure, effectively separating logic, views, and data layers.

### Error Handling:

- A 404 error page with transparent styling ensures consistent branding even for missing pages.

## Discussion

The project effectively addressed critical challenges in online grocery shopping, providing a user-friendly and accessible alternative to existing platforms. Key differentiators include enhanced personalization features and efficient navigation. However, certain limitations remain, such as the need for larger-scale testing and integration with a database to further enhance features and the overall shopping experience.

### Strengths

- **Accessibility:** Features like font size adjustments, a color-blind mode, and clear labels accommodate diverse user needs.
- **Aesthetic Appeal:** Semi-transparent backgrounds and smooth hover effects contribute to a modern and polished design.
- **Error Page Design:** A transparent error page ensures visual consistency across the site.

### Weaknesses

- **Visual Feedback:** Dynamic elements like animations or progress indicators during form submissions could improve interactivity.
- **Navigation Flow:** Simplifying navigation with a persistent header or footer would enhance the user journey.
- **Settings Page Usability:** The absence of a "Save" button or confirmation on the settings page may confuse users.

## **Implementation Challenges**

While the front-end development was successfully completed, we encountered challenges integrating MySQL with Eclipse. As a temporary workaround, we planned to handle data persistence by reading and writing to files. Although file operations have not yet been implemented, this approach provides a feasible solution until database integration can be revisited.

## **Future Work**

Future iterations could explore:

- **AI-Driven Chatbots:** For enhanced customer support and real-time assistance.
- **Predictive Analytics:** To optimize inventory management and improve shopping recommendations.

## **Conclusion**

In summary, this project designed and implemented an online grocery platform prioritizing user satisfaction and accessibility. The combination of intuitive design, user friendly interface, and user-centered considerations proved effective in addressing common user frustrations. Future work will focus on establishing a real database for user signup/login, implementing more pages, scaling the platform and incorporating additional features to further enhance the shopping experience.

## **Appendix - How to run the code**

Step 1: install node.js <https://nodejs.org/en>

Step 2: download the files on github (zip file or normal file, both are fine)

Step 3: In the terminal go to the directory where app.js is.

...\\Java-workspace\\GroceryShop\\src\\main\\javascript (E.g: cd

\\Java-workspace\\GroceryShop\\src\\main\\javascript)

Step 4: Run node.js, the terminal should look something like this:

...\\Java-workspace\\GroceryShop\\src\\main\\javascript>node app.js

## **References**

[1]Walmart, "Walmart Online Shopping," Walmart. [Online]. Available: <https://www.walmart.com/>. [Accessed: Nov. 29, 2024].

[2]Metro, "Metro Grocery Store," Metro. [Online]. Available: <https://www.metro.ca/>. [Accessed: Nov. 29, 2024].