

# Introduction to Computer Science

## CS50

FULL NAME: **ALEJANDRO SUAREZ**

PROJECT'S TITLE: **PRIMA WRAP PRODUCT LABEL PRINTING**

GITHUB AND EDX: **ALEPODJ**

CITY AND COUNTRY: **NIAGARA FALLS, ON, CANADA**

DATE: **27/12/2024**

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Prima Wrap, is a family-owned business in Niagara Falls, Ontario, Canada. For years, they relied on an old Microsoft Access app that had been created long ago for inventory and label printing. While it served its purpose, it was becoming increasingly difficult to manage their expanding SKU database and print labels for their inventory system.

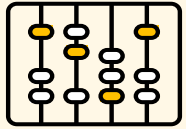
As a friend of the family, i found out about this predicament and decided to create a modern application tailored to their needs. Using a combination of JavaScript, HTML, CSS, and Python, I developed an application that connects directly to their product SKU database and with just a few clicks, they can now print labels using ZPL, streamlining their inventory management process. No more manual data entry, unless absolutely necessary or printing errors. Each label includes essential information about the product, such as its name, SKU, and prices. In essence, this application has become an indispensable tool for Prima Wrap, allowing them to focus on selling their unique products.

In the search of a final project idea for CS50, this opportunity presented itself and there's nothing more rewarding than knowing that it has made a positive impact on a business, especially being able to apply previous and current knowledge acquired on CS50 training, in the real world



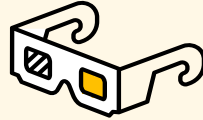
# Core Technologies

HTML5



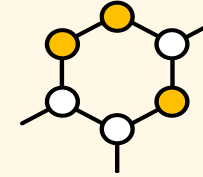
Basic Structure

CSS3



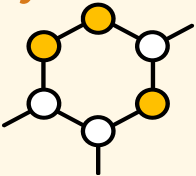
Visuals

JavaScript



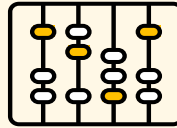
Frontend Logic

Python3



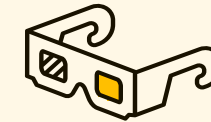
Backend Logic

SQL



Data

ZPLII



Printing

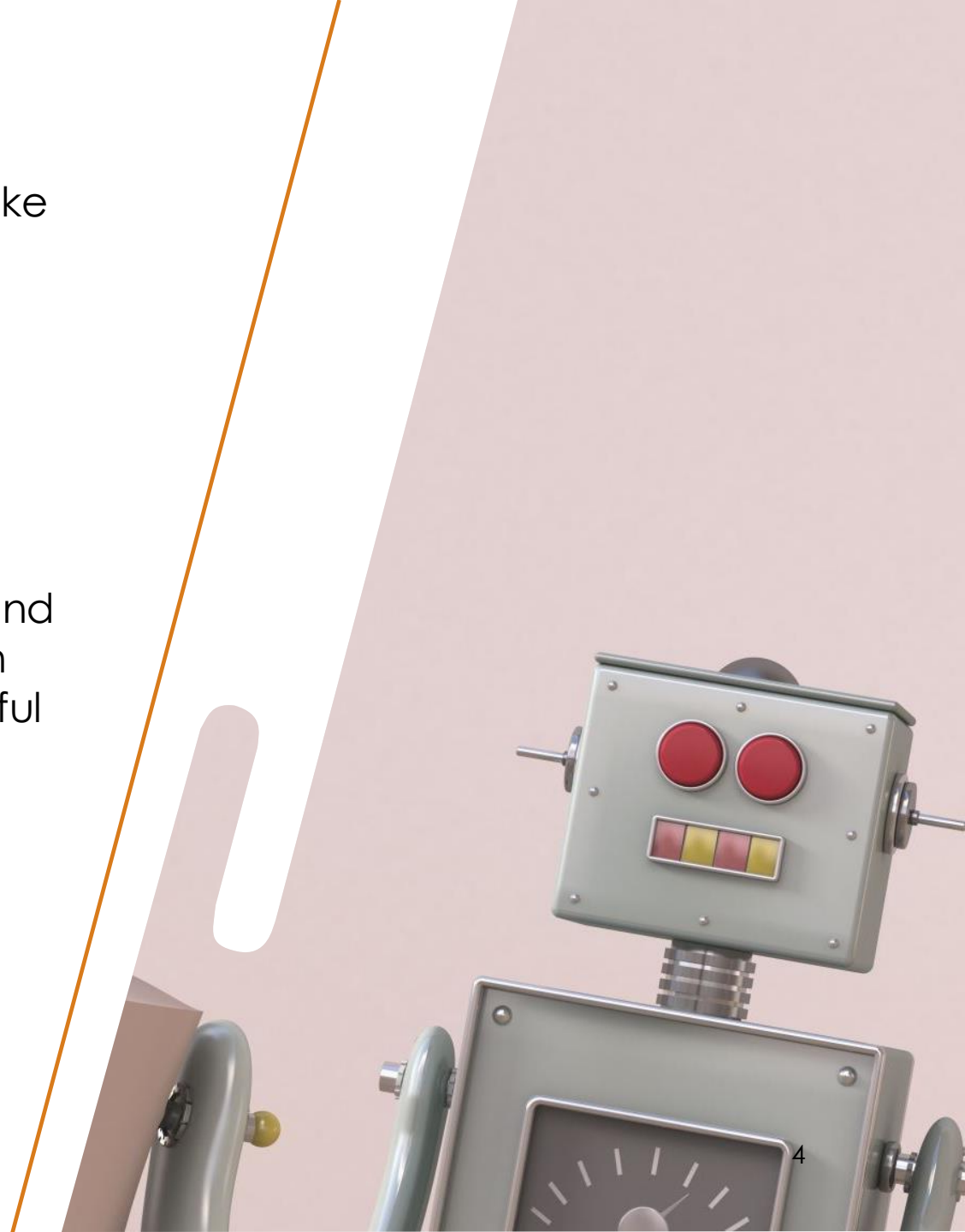
# Python Eel Library

Eel is a little Python library for making simple Electron-like offline HTML/JS GUI apps, with full access to Python capabilities and libraries.

Eel hosts a local webserver, then lets you annotate functions in Python so that they can be called from JavaScript and vice versa.

Eel is designed to take the hassle out of writing short and simple GUI applications. If you are familiar with Python and web development, Eel is rather simple yet powerful

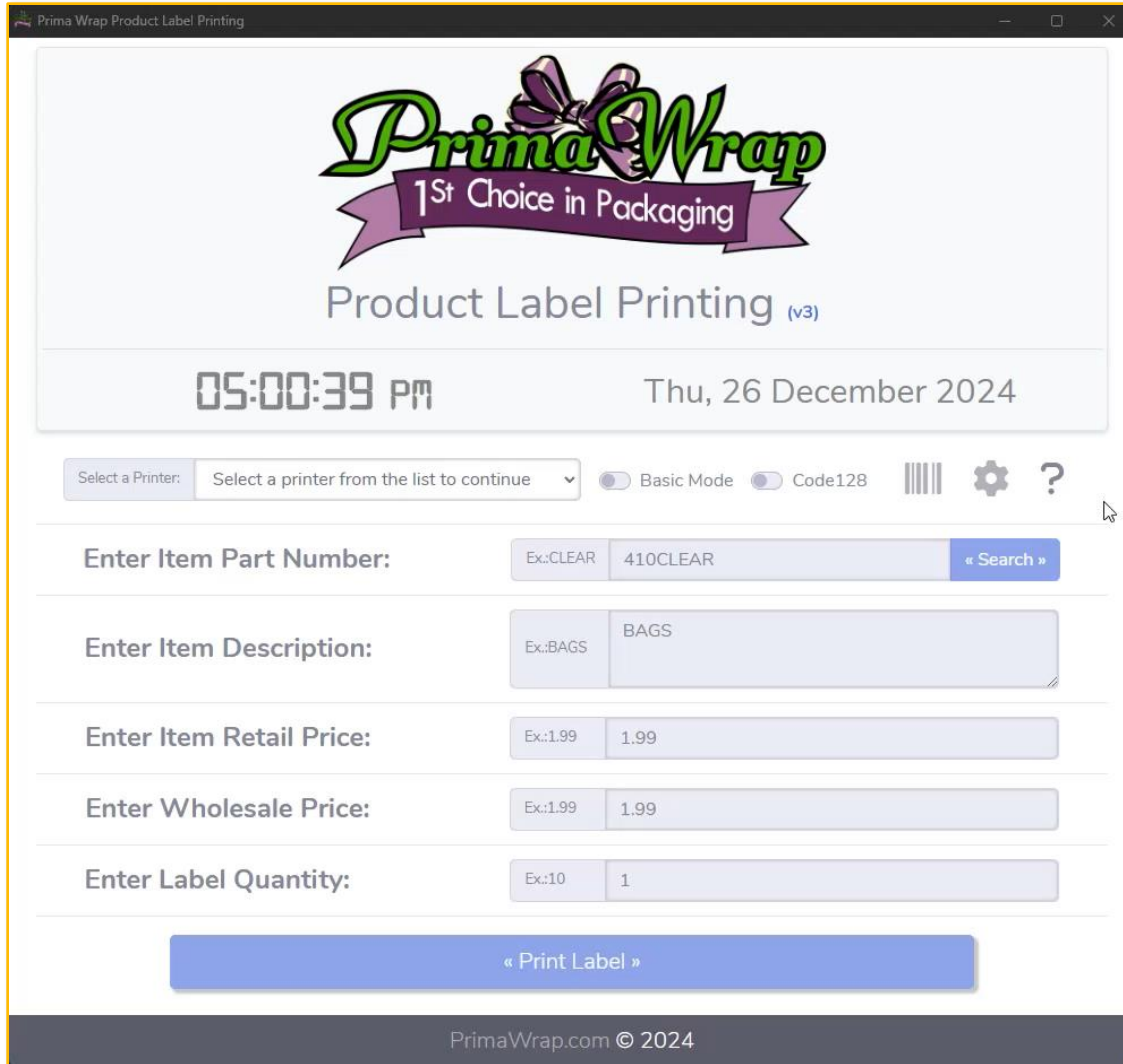
<https://github.com/python-eel/Eel>





# Features (1)

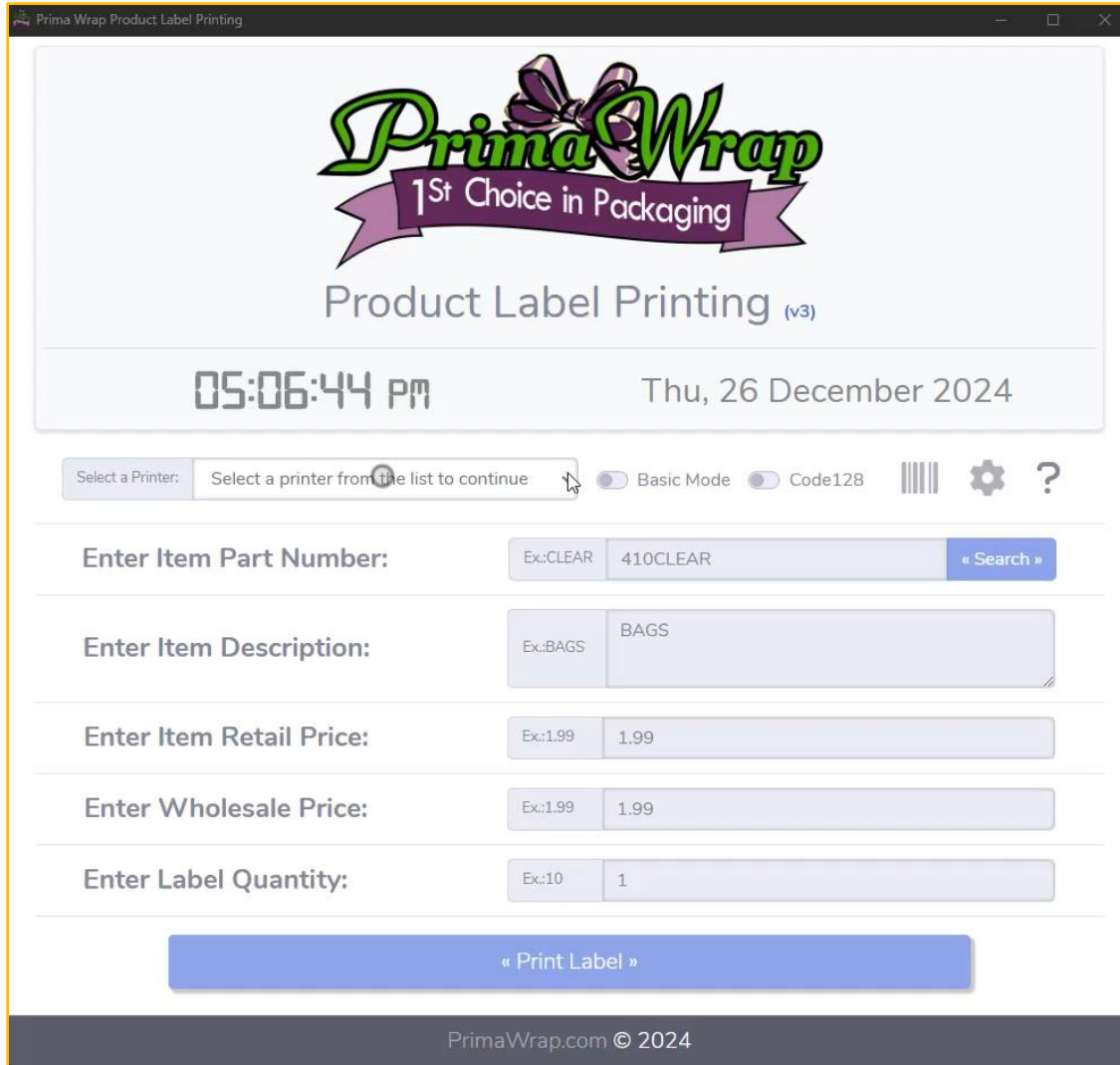
- Ease of use and tailored self-support with a descriptive tour feature that walks the user through the application



The screenshot displays the 'Prima Wrap Product Label Printing' application window. At the top, the logo features the text 'Prima Wrap' in a stylized green font with a purple ribbon graphic, followed by '1st Choice in Packaging' on a purple banner. Below the logo, the text 'Product Label Printing (v3)' is visible. A status bar shows the time '05:00:39 PM' and the date 'Thu, 26 December 2024'. The interface includes a 'Select a Printer:' dropdown menu with the text 'Select a printer from the list to continue', a 'Basic Mode' toggle, a 'Code128' toggle, a barcode icon, a settings gear icon, and a help question mark icon. The main form contains five input fields: 'Enter Item Part Number:' with a placeholder 'Ex.:CLEAR' and the value '410CLEAR', a '« Search »' button, 'Enter Item Description:' with a placeholder 'Ex.:BAGS' and the value 'BAGS', 'Enter Item Retail Price:' with a placeholder 'Ex.:1.99' and the value '1.99', 'Enter Wholesale Price:' with a placeholder 'Ex.:1.99' and the value '1.99', and 'Enter Label Quantity:' with a placeholder 'Ex.:10' and the value '1'. A large blue button labeled '« Print Label »' is positioned at the bottom of the form. The footer of the application window reads 'PrimaWrap.com © 2024'.

# Features (2)

- Basic and Expert modes to provide flexibility to all kind of users, but also to make the application smarter overall



The screenshot shows the 'Prima Wrap Product Label Printing' application window. At the top, there is a logo for 'Prima Wrap' with the tagline '1st Choice in Packaging' and the text 'Product Label Printing (v3)'. Below the logo, a status bar displays the time '05:06:44 PM' and the date 'Thu, 26 December 2024'. The main interface includes a 'Select a Printer:' dropdown menu with the text 'Select a printer from the list to continue', a 'Basic Mode' toggle switch, a 'Code128' toggle switch, a barcode icon, a settings gear icon, and a help question mark icon. The form contains five input fields: 'Enter Item Part Number:' with a placeholder 'Ex.:CLEAR' and a value '410CLEAR', 'Enter Item Description:' with a placeholder 'Ex.:BAGS' and a value 'BAGS', 'Enter Item Retail Price:' with a placeholder 'Ex.:1.99' and a value '1.99', 'Enter Wholesale Price:' with a placeholder 'Ex.:1.99' and a value '1.99', and 'Enter Label Quantity:' with a placeholder 'Ex.:10' and a value '1'. A large blue button labeled '« Print Label »' is positioned below the input fields. The footer of the application displays 'PrimaWrap.com © 2024'.



# Features (3)

- Expert ZPL-PNG-ZPL mode, this provides even more freedom of use and an advance feature for unique scenarios

Prima Wrap Product Label Printing

**Prima Wrap**  
1st Choice in Packaging  
Product Label Printing (v3)

05:16:11 PM Thu, 26 December 2024

Select a Printer: MF260 Series Basic Mode Code128

Enter Item Part Number: Ex.:CLEAR ENTER INFORMATION MANUALLY... « Search »

Enter Item Description: Ex.:BAGS

Enter Item Retail Price: Ex.:1.99

Enter Wholesale Price: Ex.:1.99

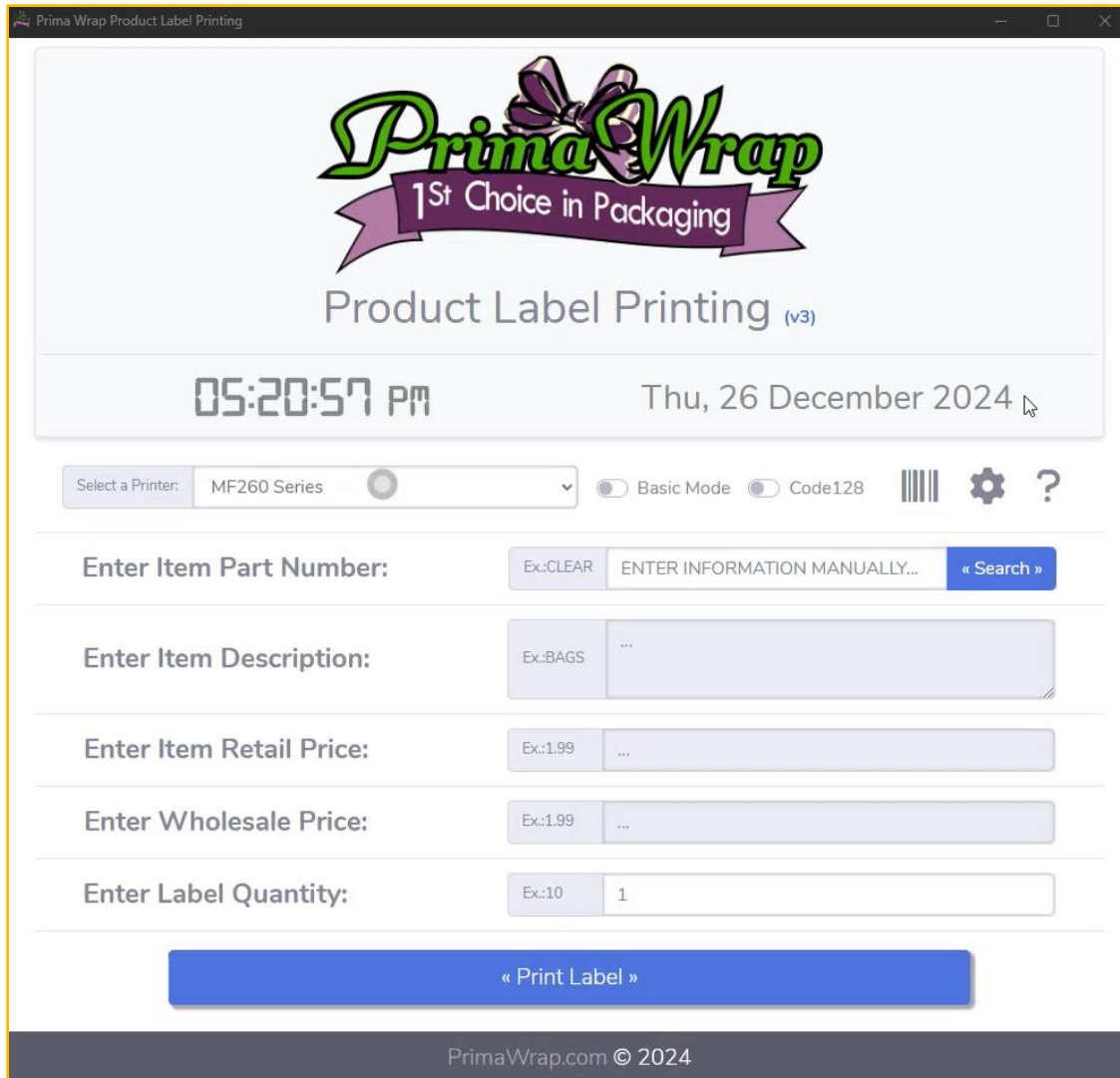
Enter Label Quantity: Ex.:10 1

« Print Label »

PrimaWrap.com © 2024

# Features (4)

- Self-support via Settings, providing the user with one click troubleshooting options using the power of ZPLII commands

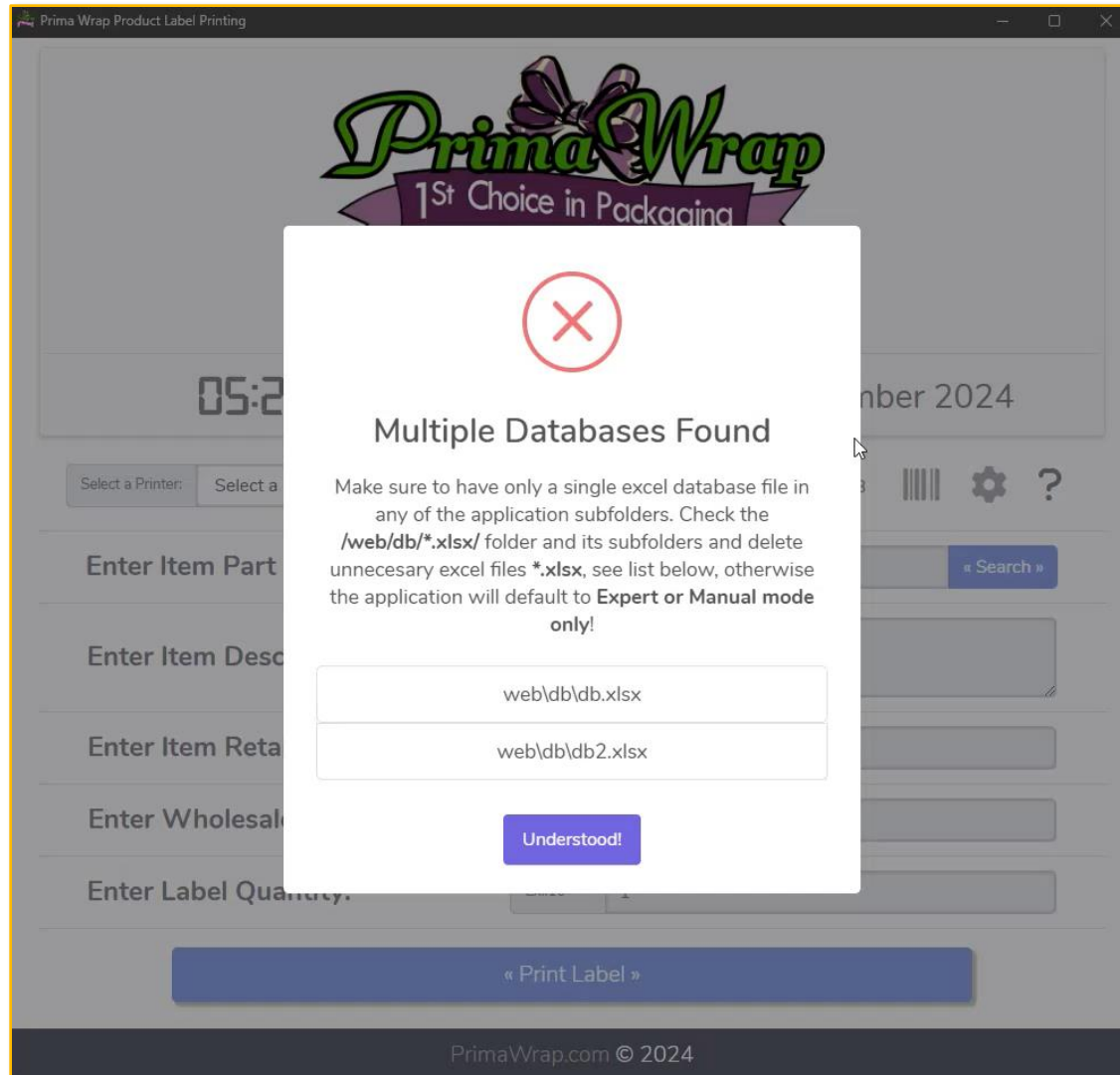


The screenshot shows the 'Prima Wrap Product Label Printing' application window. At the top, there is a logo for 'Prima Wrap' with the tagline '1st Choice in Packaging' and the text 'Product Label Printing (v3)'. Below the logo, the current time '05:20:57 PM' and date 'Thu, 26 December 2024' are displayed. A settings bar includes a printer selection dropdown set to 'MF260 Series', toggle switches for 'Basic Mode' and 'Code128', a barcode icon, a gear icon for settings, and a question mark icon for help. The main form contains five input fields: 'Enter Item Part Number' with a 'Search' button, 'Enter Item Description', 'Enter Item Retail Price', 'Enter Wholesale Price', and 'Enter Label Quantity'. Each field has a small example text (Ex.:) and a clear button. At the bottom, there is a large blue button labeled '« Print Label »' and a footer with 'PrimaWrap.com © 2024'.



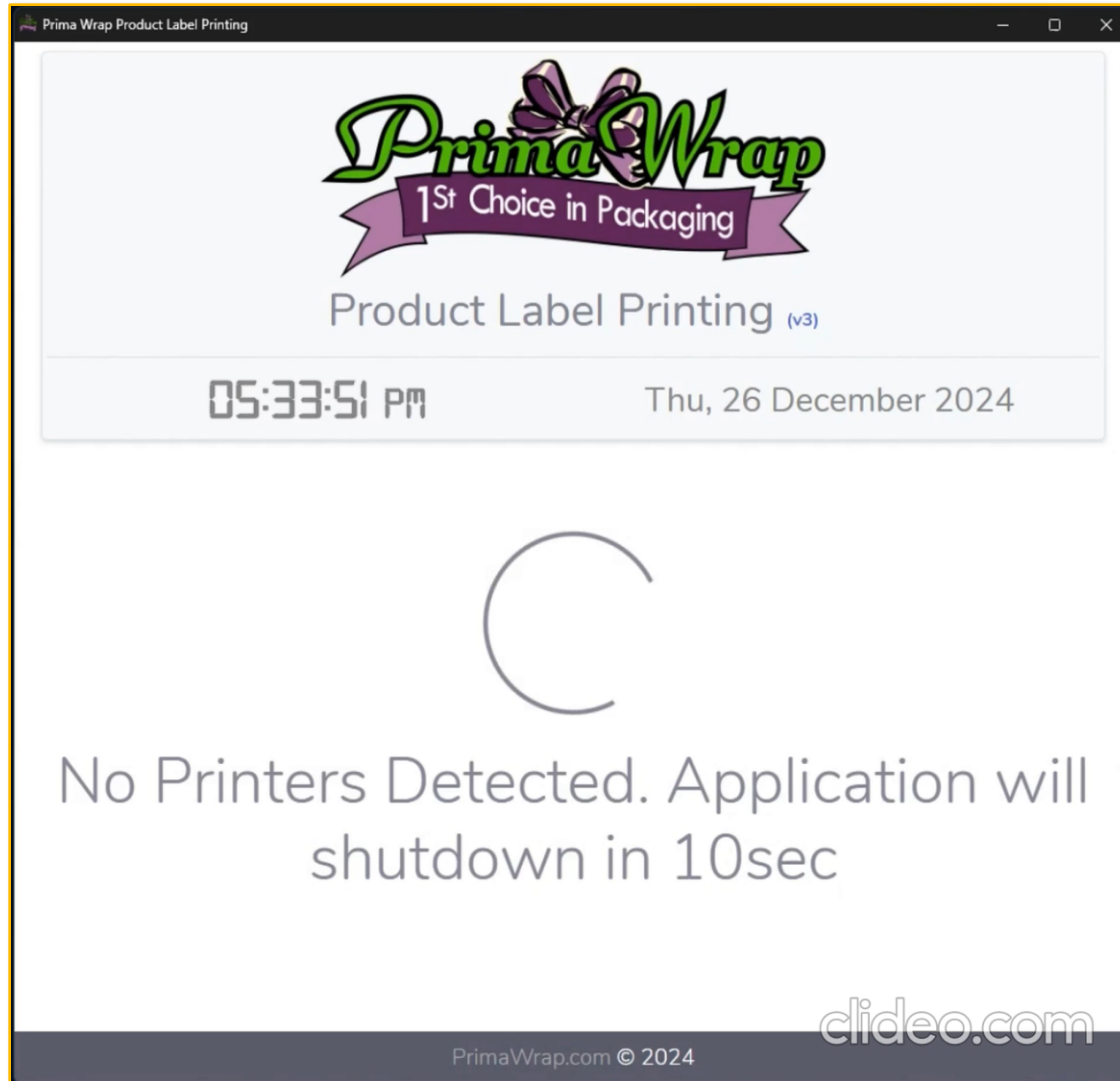
# Features (5)

- Friendly error handling and seamless fallbacks, provide the user clear indications and path forward during issues



# Features (6)

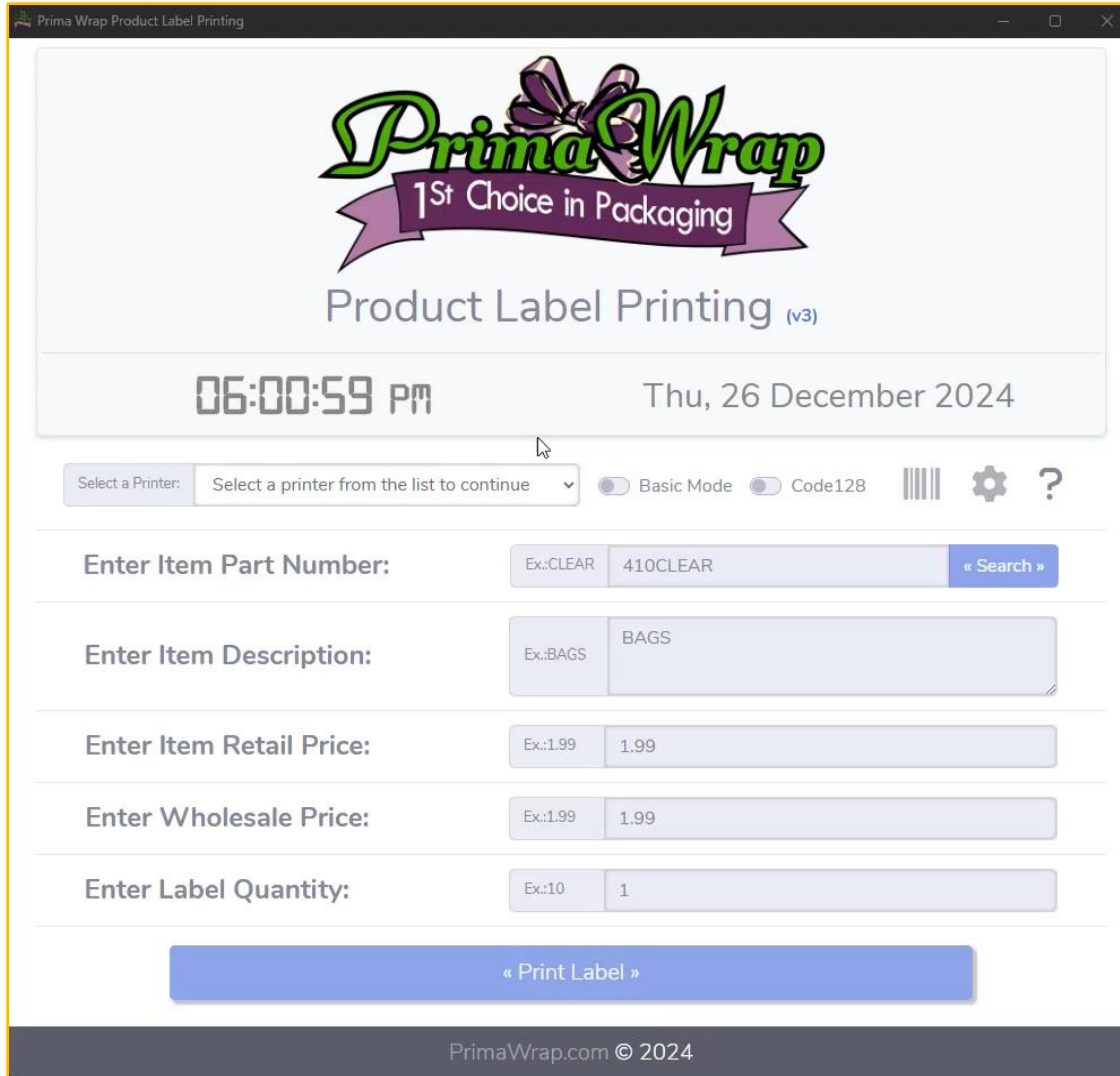
- Critical error handling and seamless fallbacks, provide the user clear indications and path forward during issues





# Features (7)

- Auto-magically creating suggestions as the user types and auto-populating fields if they exist, or fallback to manual

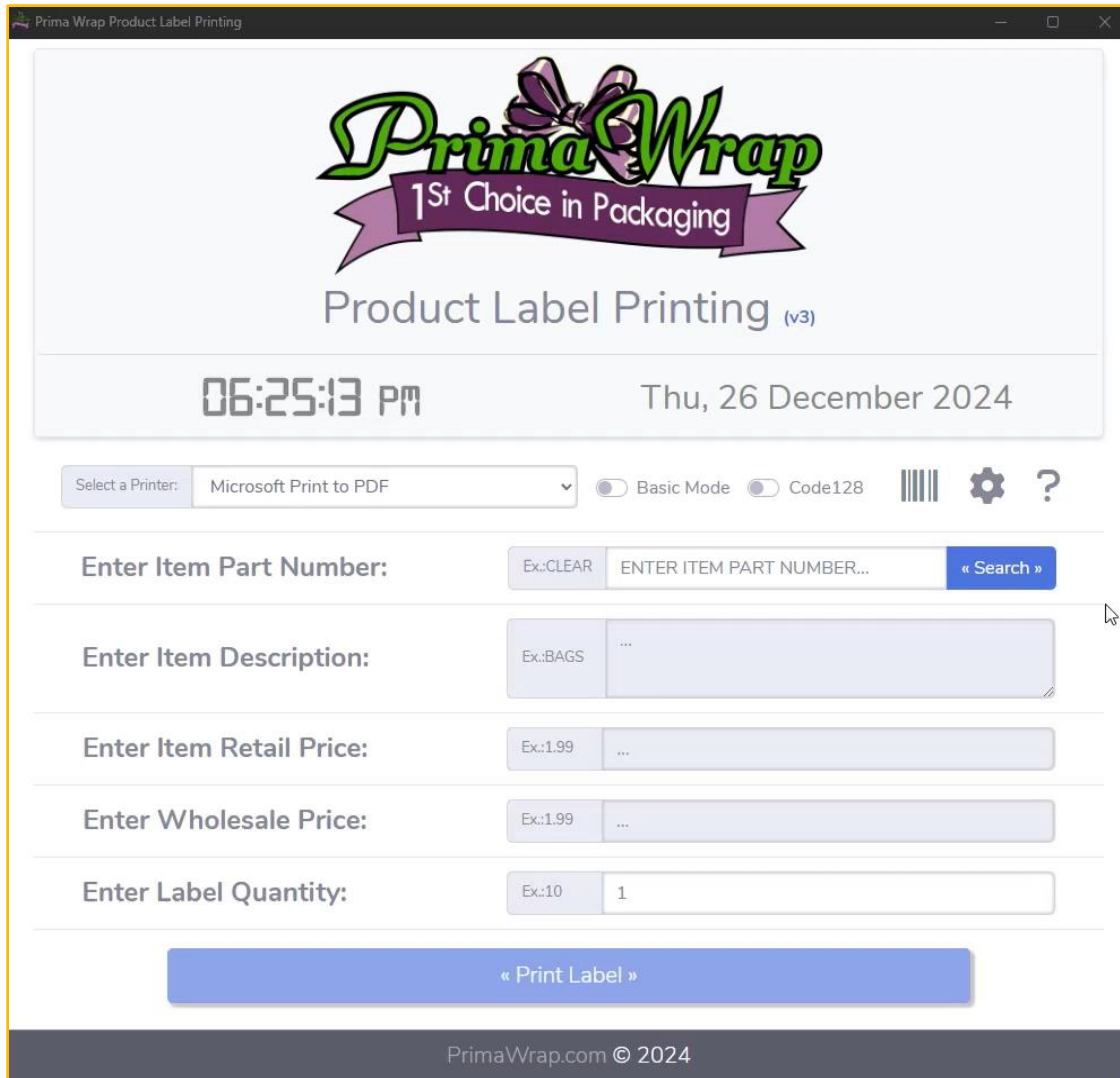


The screenshot shows the Prima Wrap Product Label Printing application window. At the top, there is a logo for 'Prima Wrap' with the tagline '1st Choice in Packaging' and the text 'Product Label Printing (v3)'. Below the logo, a status bar displays the time '06:00:59 PM' and the date 'Thu, 26 December 2024'. A toolbar contains a printer selection dropdown, a 'Basic Mode' toggle, a 'Code128' toggle, a barcode icon, a settings gear, and a help question mark. The main form area has five input fields: 'Enter Item Part Number:' with a 'CLEAR' button and a search button; 'Enter Item Description:' with a 'BAGS' suggestion; 'Enter Item Retail Price:' with a '1.99' suggestion; 'Enter Wholesale Price:' with a '1.99' suggestion; and 'Enter Label Quantity:' with a '1' suggestion. A large blue button at the bottom is labeled '« Print Label »'. The footer shows 'PrimaWrap.com © 2024'.



# Features (8)

- Feedback driven error checking with clear user guidance to avoid any guessing or confusion



The screenshot displays the 'Prima Wrap Product Label Printing' web application. At the top, the logo features the text 'Prima Wrap' in a stylized green font with a purple ribbon bow, and a banner below it reads '1st Choice in Packaging'. Below the logo, the text 'Product Label Printing (v3)' is visible. A status bar shows the time '06:25:13 PM' and the date 'Thu, 26 December 2024'. The interface includes a 'Select a Printer:' dropdown menu set to 'Microsoft Print to PDF', with toggle switches for 'Basic Mode' and 'Code128', and icons for a barcode, settings, and help. The main form contains five input fields: 'Enter Item Part Number:' with a search button, 'Enter Item Description:', 'Enter Item Retail Price:', 'Enter Wholesale Price:', and 'Enter Label Quantity:'. Each field has a placeholder example (e.g., 'Ex.:1.99', 'Ex.:10'). A large blue button at the bottom is labeled '« Print Label »'. The footer shows 'PrimaWrap.com © 2024'.

# Results

- A simple output can sometimes solve a big problem.  
Sample labels in the 2 barcode modes created using ZPLII.

Code128



Data Matrix



- Using a Zebra ZD-620-43 and 2.25inx1.75in Direct Thermal labels, the labels above managed to simplify inventory significantly reducing costs







Thank  
You