RIMS
Developer Manual

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Overview

Summary

Our software development endeavor centers on the creation of an Inventory Management Software tailored to the precise requirements of our client, a dedicated restaurant manager. This software is pivotal for optimizing the daily tracking of ingredients and thereby enhancing the restaurant's operational efficiency.

Problem Statement

Our client is a small business owner in the restaurant industry facing significant challenges in managing their restaurant inventory effectively. The main problem we're addressing is how to better manage their restaurant inventory. The client currently uses a manual entry system to manage their inventory items, but this system is not sufficient and does not scale to meet their needs. The restaurant initially opened with just 10 tables, but due to the increasing demand from delivery services like DoorDash and Uber Eats, the complexity of their inventory management has grown exponentially.

They want a solution that eliminates the need for repetitive manual checks to know what items are available or running low, as the current manual system is time-consuming and error-prone. Our goal is to provide them with a more efficient way to keep track of their inventory, considering the dynamic nature of their business with both dine-in and delivery services. We want to do the following:

- Keep track of what they have and how much of it on a daily basis, so we don't run out or have too much of anything.
- Provide real-time updates on inventory levels to prevent instances of both overstocking and understocking.
- Create an easy-to-use system for the Owner and staff that quickly shows which items are running low so that reordering can be done easily and promptly.
- Create a central location for all important details about items, suppliers, and their prices to support owner weekly purchase deliveries.
- Create on demand reports that show us trends in what we use and how much we spend on it may it be by price trend or grocery categories.

Target Audience

In the context of this project, our primary audience consists of the restaurant owner and manager. These key stakeholders include:

- The Restaurant Owner, who will serve as the primary user responsible for managing inventory, accessing critical analytical reports, and making informed decisions concerning stock levels and procurement strategies.
- The Restaurant Manager, playing an integral role in overseeing the daily operations of the restaurant, with a significant focus on inventory management. The manager's adept use of the tool is essential for maintaining a seamless and efficient operational workflow.

This precise identification of our primary stakeholders allows for a tailored approach to designing the inventory management tool, ensuring that it aligns precisely with their unique requirements and operational intricacies.

This refined articulation of project requirements represents a meticulously crafted and professionally presented submission, tailored to meet the exacting standards of your teacher's evaluation.

Goal Of This Document

The goal of this document is to help eliminate duplicative work by providing a clear understanding of what has already been done. By documenting every step of our process, it will become easier to identify inefficiencies, reduce waste, and maintain consistency. It is also possible that this document may help others identify areas that need improvement, making it easier to implement changes that will result in better quality and a more streamlined process.

Development Team

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Software Structure

User Stories

- As a user I want the application to have two distincts Roles: Admin and Manager, So that specific functionalities and permissions can be granted for each role ensuring proper operation and management of the application.
    - Acceptance Criteria
        - The application allows for two user roles: admin and manager.
        - Both admin and manager can create new roles in the application.
        - Only the admin has the permission to delete users.
        - Both admin and manager can access and use all features of the application.
        - A default set of permissions is defined for each role.
    - Rejection Criteria
        - More than two user roles are allowed in the application.
        - Admin does not have the ability to create new roles.
        - Manager has the permission to delete users.
        - Certain features are restricted for the manager role.
        - No default set of permissions is defined for each role.
- As a user, I want to be the only one with the capability to add or remove users, so that I can maintain control and security over who has access to the application.
    - Acceptance Criteria
        - Only the admin role has the permission to add or remove users from the application.
        - The admin can easily add new users to the application.
        - The admin can easily remove users from the application.
        - The application provides a secure and reliable method for adding and removing users.
        - The admin has full control over the user management functionality.
    - Rejection Criteria
        - Users other than the admin can add or remove users from the application.
        - The admin cannot add new users to the application.
        - The admin cannot remove users from the application.
        - The application lacks proper security measures for user management.
        - The admin does not have full control over the user management functionality.

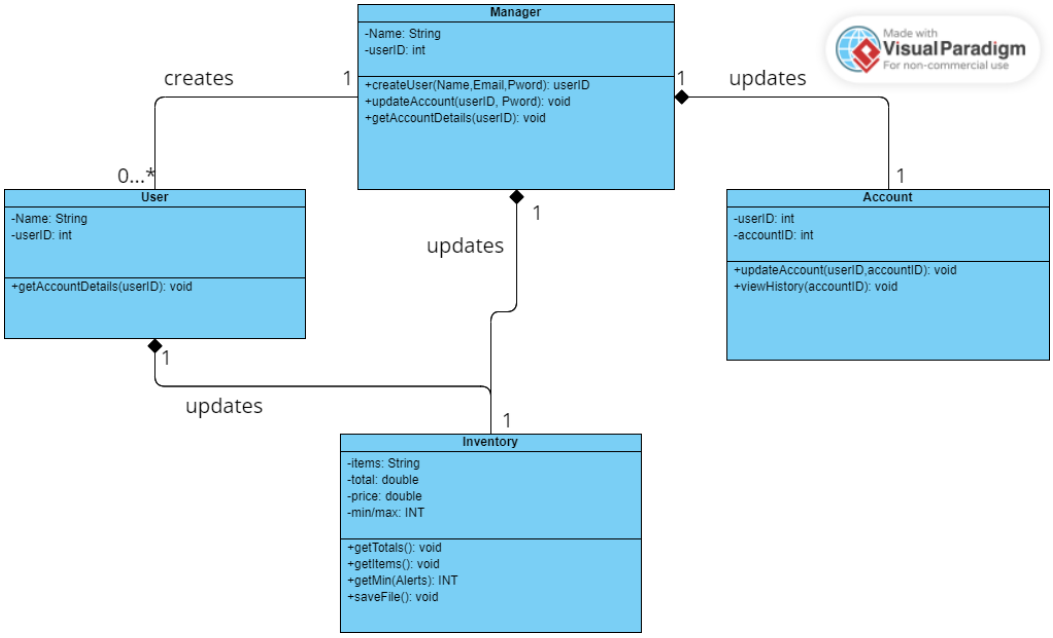
- As a user I want to receive alerts when inventory reaches low stock levels, so that I can take timely actions to replenish the stock and prevent any operational disruptions.
    - Acceptance Criteria
        - Page must show the maximum and minimum levels.
        - Page must show all ingredients
        - Clients must view max and minimum levels.
    - Rejection Criteria
        - Function is rejected if the client isn't able to set the maximum and minimum levels.
- As a registered user, I want to be able to log in to my account so that I can access my private information.
    - Acceptance Criteria
        - The login page should have fields for entering a username/email and a password.
        - When I enter my credentials, the system should verify my identity and grant me access to my account.
        - If I enter incorrect credentials, I should receive an error message indicating that the login was unsuccessful.
        - After a successful login, I should be redirected to the main application page.
    - Rejection Criteria
        - Login Failure: If the software allows a user with incorrect credentials to access the account or doesn't display an error message.
        - Incomplete Redirection: If the user is not redirected to the expected destination after a successful login.
- As a user, I want to view all items in my inventory along with their purchase details, So that I can keep track of the cost, price, and the source of purchase for each item.
    - Acceptance Criteria
        - All items require input and location purchased
        - Inventory page displays prices of items, also the total price for all items
        - Inventory page displays where each item was purchased.
    - Rejection Criteria
        - Receipt is lost and prices are unknown.
        - Page does not display locations
- As a user to save and print out the results of my inquiries, so that I can have a physical record for future comparisons and references.

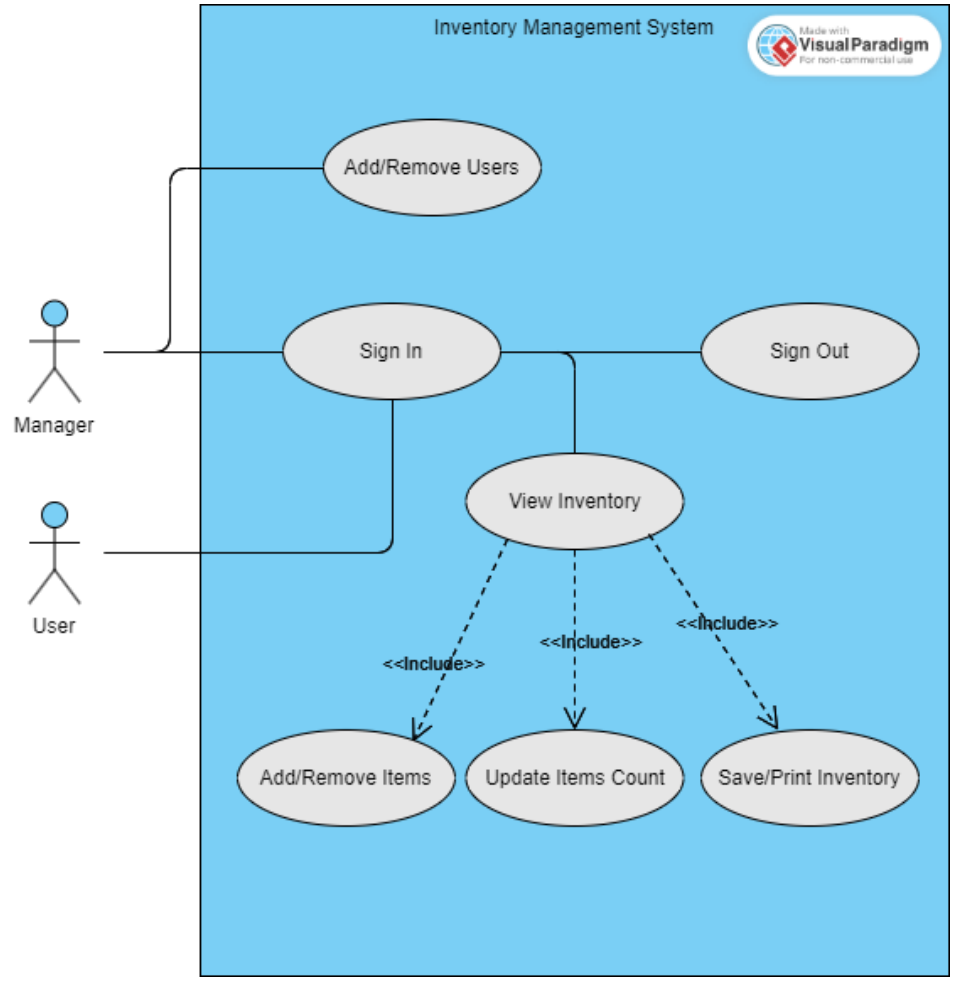
    - Acceptance Criteria
        - All pages can be saved as pdf
        - All pages can be printed
    - Rejection Criteria
        - Info is incomplete
        - Pages do not print
- As a user of the application, I want a comprehensive English Help Page, So that I can understand the five primary functionalities of the application and use it with ease.
    - Acceptance Criteria
        - The Help Page should be filled with clear and comprehensive descriptions for each of the five functionalities.
        - Given I am on the Help Page, When I look for guidance on how to use the application, Then I should see clear instructions on the five primary functionalities.
        - Given I have learned the functionalities from the Help Page, When someone else needs assistance, Then I should be confident enough to guide them through the application.
        - Given I am a first-time user, When I visit the Help Page, Then I should find the information presented in a manner that ensures a seamless experience.
        - For each feature, a step-by-step navigation guide must be available, allowing users to understand and implement the function effortlessly.
    - Rejection Criteria
        - The page will be considered insufficient if the provided descriptions are vague, lack clarity, or fail to guide the user through the navigation of the application effectively.
        - Instructions that aren’t straightforward or self-explanatory will lead to the page's rejection.
- As a user, I want clear visibility on the prices of items for informed purchasing decisions.
    - Acceptance Criteria
        - Each item has its price displayed clearly.
        - Prices are in local currency and inclusive of all charges.
        - Discounts or promotions display both the original and discounted price.
    - Rejection Criteria
        - Items without displayed prices.
        - Hidden costs not displayed with the item's price.

        - Discounted prices without the original price for reference.
- As a client, I want to quickly navigate between items from Restaurant Depot and other miscellaneous vendors to ensure I capture all my purchasing needs.
    - Acceptance Criteria
        - The platform has a dedicated tab for "Restaurant Depot".
        - There is a separate "Miscellaneous" tab for items from other places.
        - Switching between tabs is seamless, and items are categorized accurately under each tab.
        - Each tab clearly lists items with their units and prices.
    - Rejection Criteria
        - Absence of a distinct tab for "Restaurant Depot" or "Miscellaneous".
        - Mis-categorization of items under the wrong tabs.
        - Lag or delay when switching between tabs.
- As a client, I need to view units for each item to understand the exact quantity or volume I'm buying.
    - Acceptance Criteria
        - Each item on the platform displays its respective unit (e.g., kilograms, liters, pieces).
        - Units are clearly labeled next to the numerical quantity.
        - Users can choose between different units for applicable items.
    - Rejection Criteria
        - Items without units displayed.
        - Ambiguous or non-standard units.
        - Inability to select between different units for items that have multiple unit options.
- As a user I would like the ability to add new items into a “New Items” form, so that all inventory items are updated automatically.
    - Acceptance
        - A separate/initial form is available to the user and allows the user to input additional ingredient information
        - The initial form is submitted and update the main inventory automatically
    - Rejection
        - The initial form fails to communicate with the main inventory
        - The initial form incorrectly updates the main inventory sheet
- As a user I would like the ability to “Gather” previous inventory reports, so that I can see all statistics and analysis reports over a given time period.
    - Acceptance

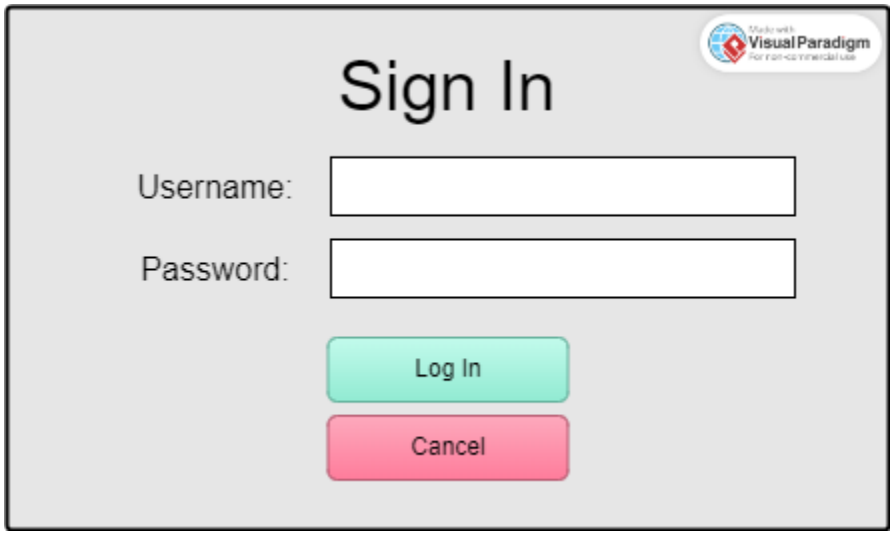
        - The report display receives data from previously saved reports and calculates all data for a specified time period.
    - Rejection
        - Previously saved reports are not saved in a proper format, the excel program is not able to properly gather info from the previous reports
        - The previously saved reports are not saved in the proper destination folder.

Prototype & Diagrams





Login Prototype



Inventory Prototype

Food (cold)									
Status	Item Name	Description	Quantity	Unit	Cost	Min	Max	Purchase Location	Total
	Beef		2		$8.50	1	2		$17.00
	Chicken		4		$7.50	1	4		$30.00
	Chofi		4		$7.00	1	4		$28.00
	Cow Feet		1		$8.25	1	1		$8.25
	Cow Stripe		2		$2.00	1	2		$4.00
	Goat		6		$5.75	1	6		$34.50
	Tilapia (box)		4		$6.25	1	4		$25.00

Vegetables									
Status	Item Name	Description	Quantity	Unit	Cost	Min	Max	Purchase Location	Total
	Cabbage		1		$3.75	1	2		$3.75
	Carrots		2		$2.50	1	1		$5.00
	Ginger		2	Bag(s)	$6.50	1	2		$13.00
	Green Peppers		1	Box(es)	$4.25	1	2		$4.25
	Hot Peppers		1	Box(es)	$3.75	1	2		$3.75
	Okra		2		$2.00	1	2		$4.00
	Red Onions		1	Bag(s)	$4.75	1	2		$4.75
	Red Peppers		2	Box(es)	$4.75	1	2		$9.50
	Spinach		2		$3.75	1	2		$7.50
	Spring Onions		2		$6.00	1	2		$12.00
	Yellow Onions		2	Bag(s)	$7.50	1	5		$15.00
	??? Leaves		2		$3.50	1	2		$7.00

Requirements

Functional Requirements

- Inventory Alerts
    - Alerts generated for every item that falls below the minimum requirement.
- Analytics
    - Each category will display a total.
    - Each category will be totaled together for better analytics.
- Inventory History
    - A file is exported every time the user selects the submit button.
- User Authentication
    - User is authenticated every time they log into the system
- User Role Creation
    - Creation/Removal of users.
    - Each user created by the manager will have limited access and will only be able to update the inventory items count.

Non-Functional Requirements

- Purchase History
    - Purchase history is stored locally
- Comment Creation
    - Each item has an ability to be commented
- Operating Schedule and Updates
- Vender Details
    - Each item will display the vendor details associated with that item.
- Performance
    - The system should load within a few seconds
- User Manuals/Training
    - User manual will be simple and easy to read

Building & Development

Software Toolset

The chosen toolset for this project is a strategic combination of Microsoft Excel and Visual Basic for Applications (VBA). Here's how these tools contribute to the development process:

Microsoft Excel:

- Efficient Data Management: Excel serves as the primary platform for data management and presentation. It enables us to efficiently store, organize, and display inventory-related data, providing a familiar interface for our client.
- User-Friendly Interface: Excel's intuitive interface ensures that the software is user-friendly. It facilitates ease of use and swift adoption by the client and their team, aligning with our commitment to delivering a solution that is readily embraced.
- Real-Time Updates: Excel's capabilities support real-time updates on ingredient quantities, ensuring the client can make informed decisions swiftly and minimize inventory-related issues.

Visual Basic for Applications (VBA):

- Customization and Automation: VBA plays a pivotal role in customizing Excel to meet the unique needs of our client. It allows for the creation of tailored functions and automated processes that enhance efficiency.
- Integration and Interactivity: VBA enables seamless integration with Excel, enhancing interactivity and responsiveness. It ensures that the software efficiently meets the client's daily tracking and management requirements.
- Data Processing and Reporting: VBA enhances data processing capabilities, allowing for the generation of comprehensive inventory reports and analytics that empower the client with valuable insights.

Build Process & Schedule

- Schedule
    - Sprint 1 (Weeks 1-3):
    - - Requirement gathering sessions with the client.
    - - User story creation and prioritization.
    - - Initial project planning.
    - - Meet with client for feedback and prep for sprint 2 (10/18/2023)

    - Sprint 2 (Weeks 3-8):
    - - Designing initial wireframes.
    - - Feedback sessions on UI/UX with the client.
    - - Iterative designing based on client feedback.
    - - Development of core features (Phase 1).
    - - Daily standup meetings to discuss progress and blockers.
    - - Backlog grooming for the next sprint.

- - Preparation for integration testing.
- - Review and retrospective at the end of the sprint.
- - Meet with client for feedback and to discuss sprint 3

- Sprint 3 (Weeks 9-12):
- - Development of core features (phase 2)
- - Complete integration testing.
- - Bug fixing and debugging.
- - User acceptance testing preparation.
- - Deployment to production.
- - Meet with client for update on project
- - Training sessions for users.
- - Monitoring the system for immediate critical bugs.

Continuous Integration

Microsoft Excel and Github

- Microsoft Excel is a powerful tool that we can utilize effectively to satisfy the clients needs. Here are several reasons why Microsoft Excel is valuable to our team:
  - Excel is equipped with a vast array of built-in functions and formulas that allow users to perform complex calculations easily. Formulas can be customized to suit specific needs, making it an excellent tool for simple and complex data analysis.
  - Users can quickly analyze large datasets, identify patterns, and generate insights.
  - Excel simplifies data entry through features like drop-down lists, data validation, and auto-fill. In future builds, users will be able to import data from external sources such as text files, and csv files for ease of use.
  - Macros are an important tool for saving time and reducing errors in tasks that involve multiple steps.
  - Excel is widely used in finance and business for tasks such as budgeting, financial forecasting, and analyzing business performance. Its ability to handle financial functions and create financial models makes it an indispensable tool for professionals in these fields.
  - Our team is familiar with Excel, and the restaurant staff may already know how to use it.
  - Excel is readily available and inexpensive, making it a budget-friendly choice for this small-scale project.

    - We can create custom inventory tracking spreadsheets tailored to our specific needs.
- GitHub is a web-based platform designed for version control and collaborative software development. It offers several key features that will make it incredibly useful for our team during this development process.
    - GitHub provides robust version control tools based on Git, allowing our team to track changes over time. Our team will have the ability to revert to previous versions, and track changes, ensuring stability of the file.
    - Team members can review each other's code, suggest changes, and discuss improvements, fostering collaboration and knowledge sharing.
    - GitHub is cloud-based, which means developers can access their repositories from anywhere with an internet connection. This is particularly valuable for distributed teams and open-source projects where contributors might be located all over the world.

Deployment Procedures

Testing & Maintenance

Version Control

Using Excel and GitHub together can be a powerful combination, especially when you want to manage and analyze data stored in Excel spreadsheets collaboratively. Currently all file updates between Microsoft Excel and Github are handled manually, but will be handled automatically in the future using Github Desktop.

- Version Control for Excel Files
    - Store your Excel files on GitHub repositories to utilize version control. This way, you can track changes, revert to previous versions, and collaborate with others effectively.
    - You can either upload Excel files directly to your GitHub repository or use GitHub Desktop to manage your version-controlled files.
- Collaborative Data Analysis
    - Multiple users can collaborate on the same Excel file stored on GitHub. Each user can make changes to the Excel file, commit those changes, and create pull requests for review.
    - GitHub provides a clear history of changes, making it easy to understand who made what changes and when.

Testing

- User Authentication
    - This area of the program is very important, and will require various testing strategies
        - https://owasp.org/www-project-web-security-testing-guide/latest/4-Web_Application_Security_Testing/04-Authentication_Testing/README
        - https://authenticationtest.com/
        - Using the information gained from these websites, we can perform multiple forms of authentication bypass to ensure that our procedures are secure.
- Real-time Inventory Tracking
    - Alerts for Low Stock
        - Visual alerts for inventory management
        - Visual alerts can be manually tested. If an item falls below a certain threshold, the manager can visually see it with color coded alerts
    - Order Management
- Inventory Analytics
    - Totals
        - Each category must submit a total and each category total is calculated into the final total.
        - This will require some manual testing to ensure that each item is accounted for.
    - Reporting and Forecasting
- Admin Panel for Manager Role
    - Add/Remove Users
        - After the manager has been authenticated, they gain the ability to add/remove users as they please.
        - It is important that normal users do not have the same permissions that the manager has otherwise a user could damage the program.

Maintenance (Common Errors)

User login
Issue:

- User enter wrong password or Forget Passwords: Users forget their passwords within the Excel file for login purposes.

Possible Solutions:

- Implement data validation within Excel to notify users regarding their inputs for usernames, and passwords, they must meet specified criteria - password length, upper and lower case letters.
- Create a Password Reset button: Design a separate sheet or interface within the Excel file where users can reset their passwords by answering security questions or providing alternative verification methods.
- Maintain a Password Record: Store passwords securely and maintain a record in a separate file or securely within the same workbook (if possible) that can be accessed only by authorized individuals.

File Corruption or Locking
Issue:

- Excel File Becomes Corrupted or Locked: The Excel file used for login purposes becomes corrupted or locked, preventing access to user data.

Possible Solutions:

- Backup Data Regularly: Keep backups of the Excel file to prevent data loss in case of corruption.
- Protect File Integrity: Regularly scan for viruses or malware that might corrupt the Excel file.

Limited Security Features
Issue:

- Weak Security Measures: Excel lacks security features found in authentication systems, making it susceptible to breaches.

Possible Solutions:

- Restrict File Access: Limit access to the Excel file by setting strong passwords and restricting user permissions.
- Avoid Storing Sensitive Data: Minimize the storage of highly sensitive information within the Excel file due to security limitations.

Compatibility and Version Issues
Issue:

- Compatibility Problems with Different Excel Versions: Users might face issues when accessing the Excel login system using different versions of Excel or other spreadsheet software.

Possible Solutions:

- Standardize Excel Versions: Encourage users to use specific Excel versions or provide instructions for compatibility across different versions.

User Experience and Usability
Issue:

- Poor User Experience: Users might face difficulties or confusion when navigating the Excel-based login system.

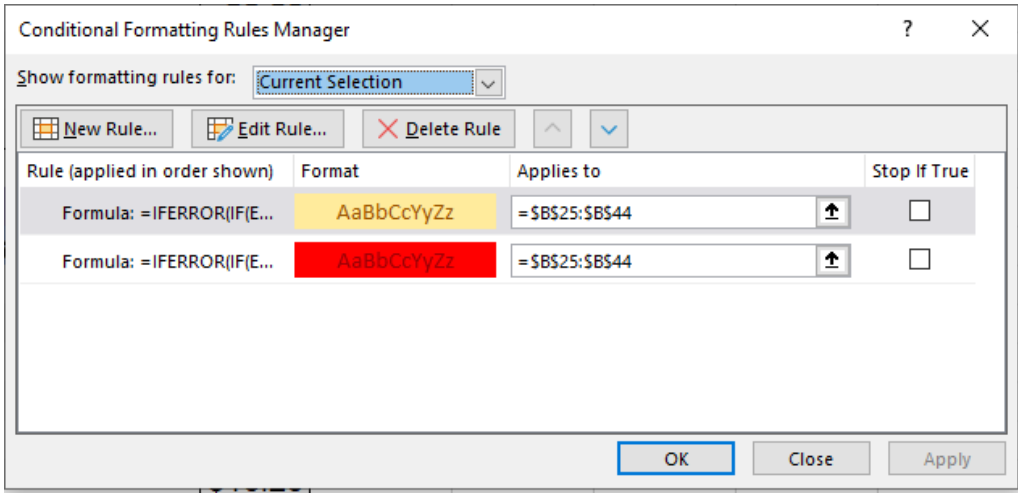
Possible Solutions:

- Clear Instructions: Provide clear instructions and guidelines within the Excel file to guide users through the login process.
- Simplify User Interface: Keep the login process simple and intuitive to enhance user experience.

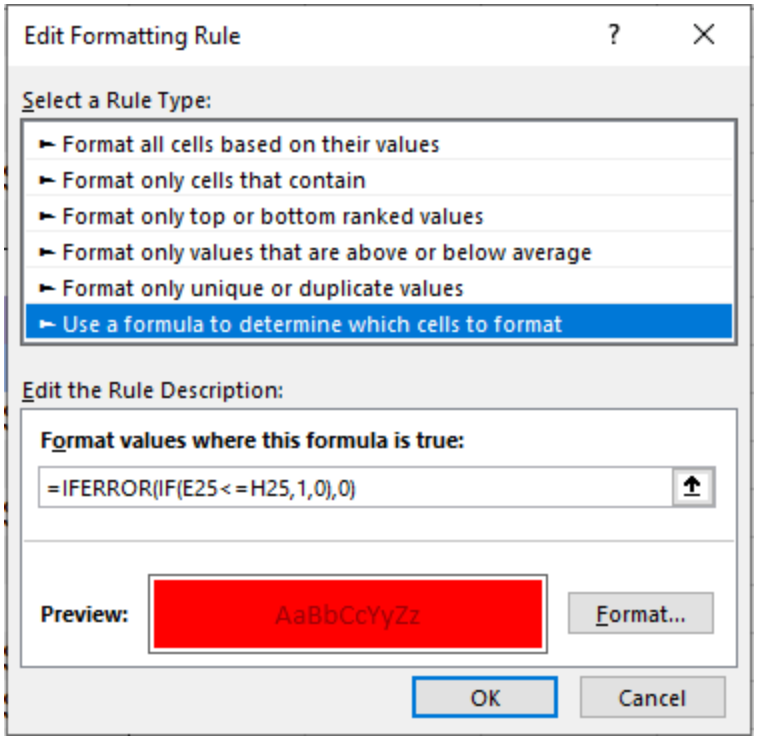
Conditional Formatting Error
Issue:

- “Status” column does not display alert, even though the quantity is below the minimum

Possible Solution:

- Open the Conditional Formatting Rules Manager for the cell.
- 

- Make sure that the formula applies to the correct cells
- If there is no rule to display select the “New Rule” button at the top left

- 

- This will take you to the rule creation box.
- Duplicate the formula shown above, but make sure you point to the correct cells. Otherwise you may create another error.

Formula Error
Issue:

- “Total” column shows incorrect information

Possible Solutions

- 

- All totals should follow similar formulas.
- By multiplying the “Quantity” cell by the “Cost” cell you are able to find your total

Code Contribution

Github Repository

https://github.com/rangueir/Restaurant-Inventory-Management-System-RIMS-.git

Structure for updating code

- Check In/Check Out System
    - All team members will be required to log all interactions with the repository. Fortunately, Github has many automatic logging features, so any users that view or alter the code in any way will be known.
- Updates are applied to “Test Version Build”
    - No updates or alterations will be made to the “Current Stable Build”. Keeping this file unaltered will ensure that a usable build is always available and any alterations that may damage the build will only damage the “Test Version Build”
- Testing of “Test Version Build”
    - All testing will be executed on the “Test Version Build” after any and all alterations to the code or files has been completed.
- Team Agreement
    - The team will review all tests to make sure they were carried out properly and review any concerns from the client. If the testing is successful, the team must agree to move forward with build.
- “Test Version Build” becomes “Current Stable Build”
    - After all tests have been completed successfully, and the Team has agreed to all updates, the “Test Version Build” will become the new “Current Stable Build”. The previous stable build will be moved into the ‘previous versions’ folder.