Sri Lanka Institute of Information Technology

Faculty of Computing

Year 2 – Semester 1 (2025)

SE2030 - Software Engineering

Lab Sheet 04 - Activity Diagrams and Use Case Scenarios

Project Title: Web-based Inventory Control System

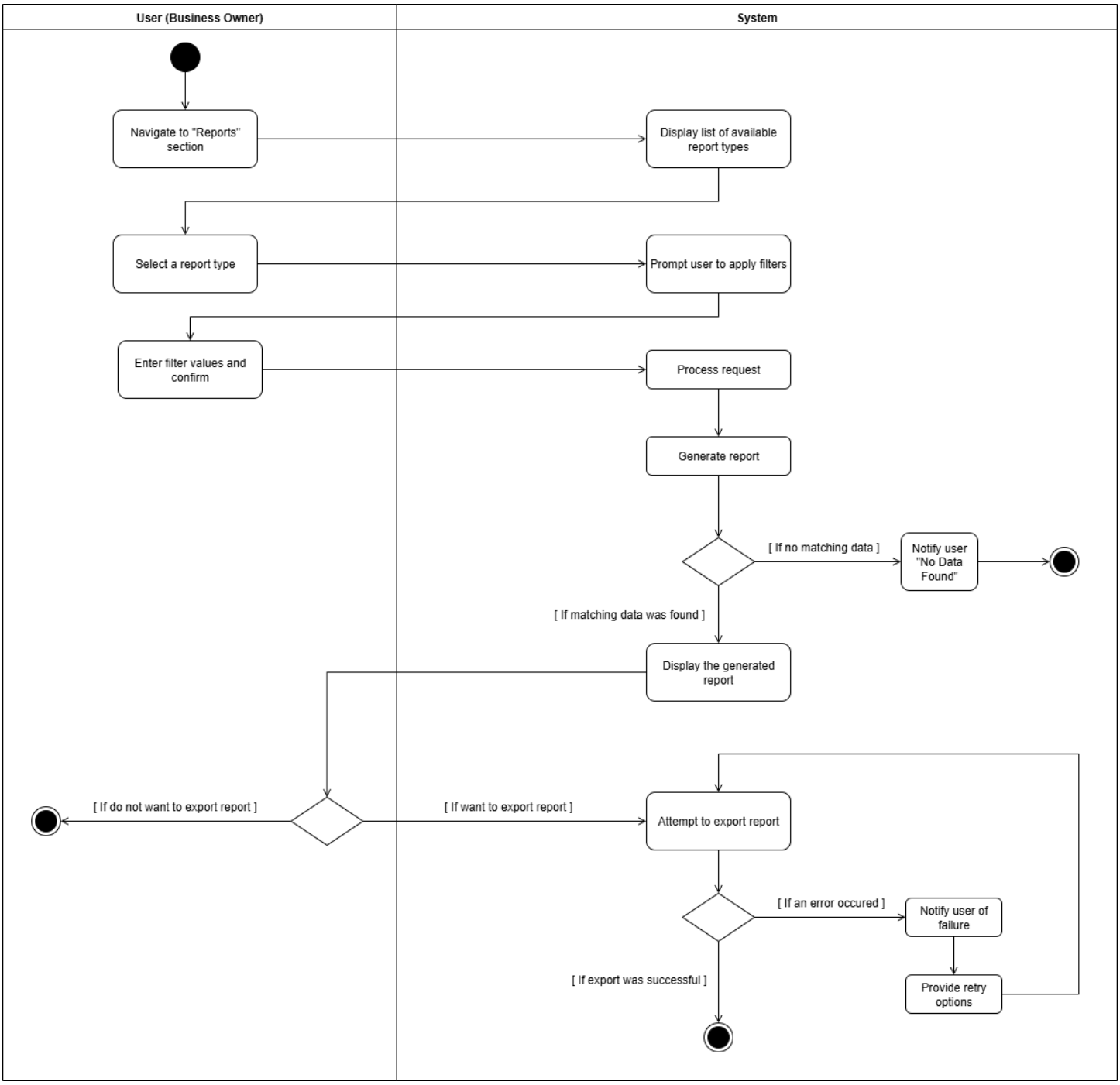
Group ID: 2025-Y2-S1-MLB-B10G2-06

Registration Number	**Name**
IT24102699	Mummullage B.U.T
IT24102758	Priyamalka W D N
IT24102784	Panagodage N.M.H
IT24102773	Siriwardane K.D.D.D
IT24102795	Alahakoon A. M. J. P
IT24102798	Sooriyabandara U.R.G.W.K

1. Individual Use Case Specifications and Activity Diagrams

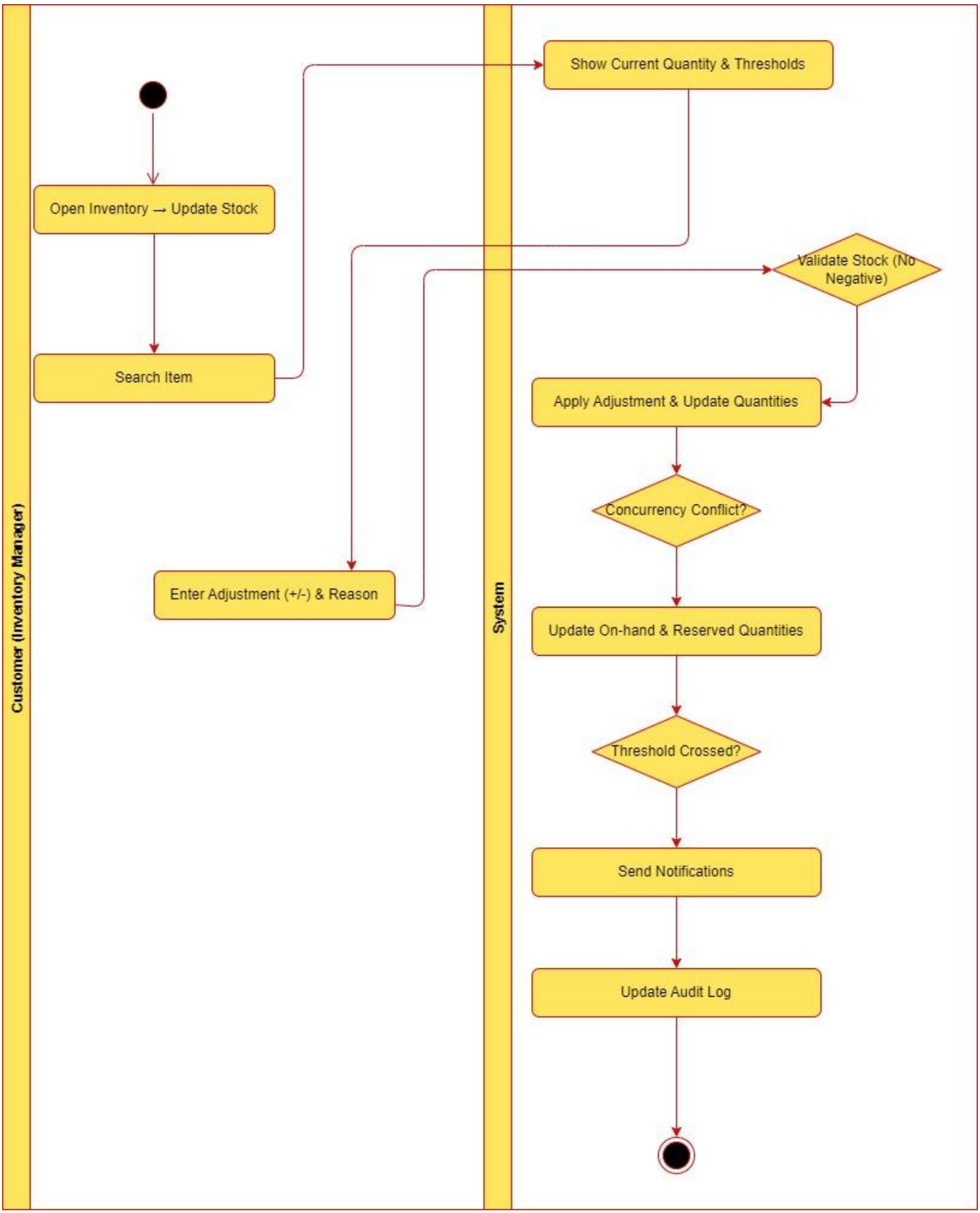
i. UC - 01 – Business Report Generation (Mummullage B.U.T - IT24102699)

Field	Details
Use Case ID	UC-01
Use Case Name	Business Report Generation
Primary Actor	Business Owner
Secondary Actors	Inventory Manager, Warehouse Staff
Preconditions	The user is logged into the system, and the system has existing data on sales, inventory, orders, and payments.
Postconditions	The requested report is displayed to the user, and the report is available for export in supported formats.
Main Flow	1. The user navigates to the "Reports" section in the system. 2. The system displays a list of available report types. 3. The user selects a report type. 4. The system prompts the user to apply basic filters. 5. The user enters the filter values and confirms. 6. The system processes the request and generates the report. 7. The generated report is displayed to the user. 8. The user may download/export the report (PDF/Excel) if needed.
Extensions	5a. If no matching data is found, the system notifies the user ("No Data Found"). 8a. If the export fails due to system error, the system notifies the user and provides retry options.
Open Issues	1. Will role-based access control limit which reports different users can view? 2. Should graphical representations (charts/graphs) be included, or stick to tabular formats?


User (Business Owner)
System
Navigate to "Reports" section
Display list of available report types
Select a report type
Prompt user to apply filters
Enter filter values and confirm
Process request
Generate report
[If no matching data]
Notify user "No Data Found"
[If matching data was found]
Display the generated report
[If do not want to export report]
[If want to export report]
Attempt to export report
[If an error occured]
Notify user of failure
[If export was successful]
Provide retry options

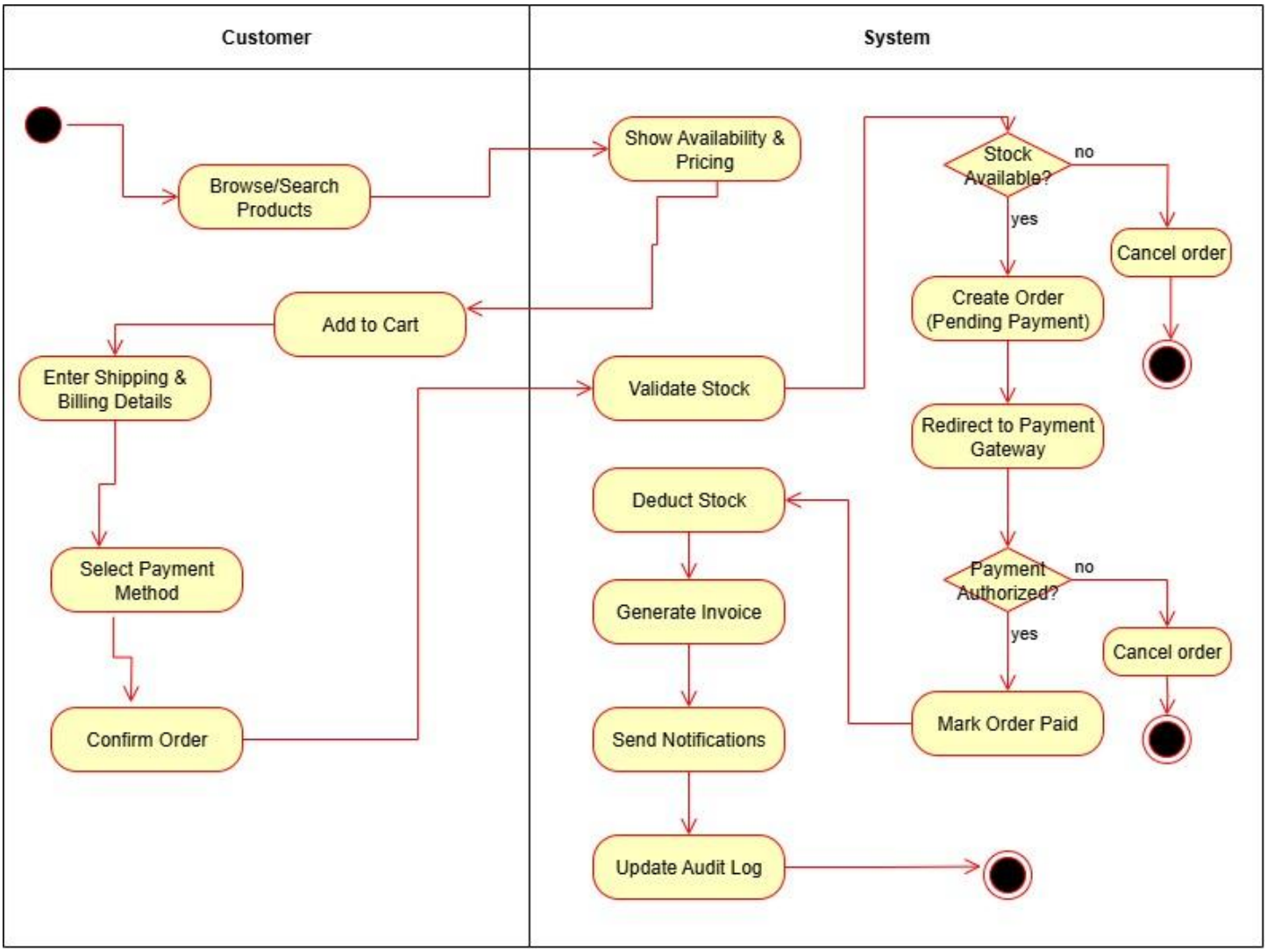
ii. UC-02 – Update Company Stock (Priyamalka W D N - IT24102758)

Field	Details
Use Case ID	UC-02
Use Case Name	Update Company Stock
Primary Actor	Inventory Manager
Secondary Actors	Warehouse Staff
Preconditions	User is logged in and product catalog exists.
Postconditions	Inventory stock is accurate, and alerts sent if needed.
Main Flow	1. User opens the Inventory → Update Stock. 2. User Search to find items. 3. System shows current quantity, thresholds, movement history. 4. User enters adjustment (+/−), reason (recount, damage, return). 5. System validates with no negative final stock. 6. System applies adjustment, updates on-hand and (if needed) reserved quantities. 7. If threshold crossed, system sends notifications (low/critical). 8. Audit log updated.
Extensions	5a. Invalid quantity → prompt correction. 6a. Concurrency conflict (item changed by another user) → Reload & Retry.
Open Issues	1. How will the system handle stock discrepancies between physical and system counts? 2. Should inventory include company-only consumables (pens, paper) or focus only on customer-sold items?


Customer (Inventory Manager)
System
Open Inventory → Update Stock
Search Item
Show Current Quantity & Thresholds
Enter Adjustment (+/-) & Reason
Validate Stock (No Negative)
Apply Adjustment & Update Quantities
Concurrency Conflict?
Update On-hand & Reserved Quantities
Threshold Crossed?
Send Notifications
Update Audit Log

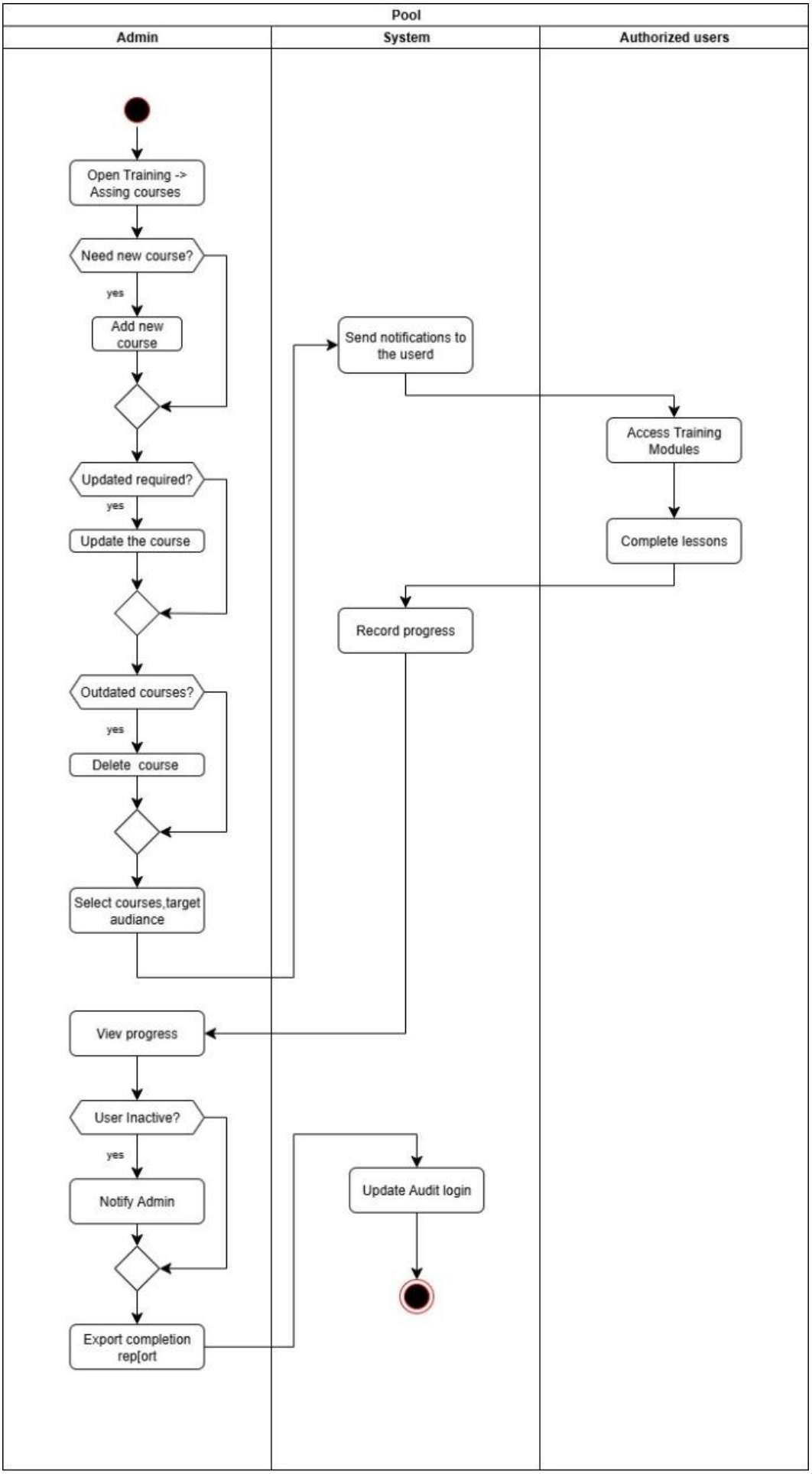
iii. UC-03 – Process Customer Order & Payment (Panagodage N.M.H - IT24102784)

Field	Details
Use Case ID	UC-03
Use Case Name	Process Customer Order & Payment
Primary Actor	Registered Customer
Secondary Actors	Sales Staff
Preconditions	Customer is registered and items exist with available stock.
Postconditions	Paid order recorded, inventory is reduced, invoices are issued, and notifications are sent.
Main Flow	1. User browses/searches products, adds to cart. 2. System shows availability and pricing and user proceeds to check out. 3. User enters shipping/billing details and selects payment method. 4. System re-validates stock. 5. User confirms, and system creates order with status “Pending Payment”. 6. System redirects Payment Gateway, and payment authorized. 7. System marks order Paid, deducts stock, generates invoice. 8. System sends notifications (Order Confirmation and the Invoice). 9. Audit log updated.
Extensions	4a. Insufficient stock → Offer Backorder, Reduce Quantity, or suggest alternatives. 6a. If the User selects a different Payment Method (Bank Slips, Cash On Demand) → Direct into the relevant page to details and upload slips. 6b. Payment Failure or Time-out → Set Status “Pending Payment”, Notify & Allow retry.
Open Issues	1. Will the system integrate with online payment gateways or only record offline transactions? 2. Should supplier payments be tracked through the same system, or through an external accounting system? 3. How will failed or cancelled orders affect stock reservations?


Customer
System
Browse/Search Products
Show Availability & Pricing
Add to Cart
Enter Shipping & Billing Details
Select Payment Method
Confirm Order
Validate Stock
Stock Available?
no
yes
Cancel order
Create Order (Pending Payment)
Redirect to Payment Gateway
Payment Authorized?
no
yes
Cancel order
Mark Order Paid
Deduct Stock
Generate Invoice
Send Notifications
Update Audit Log

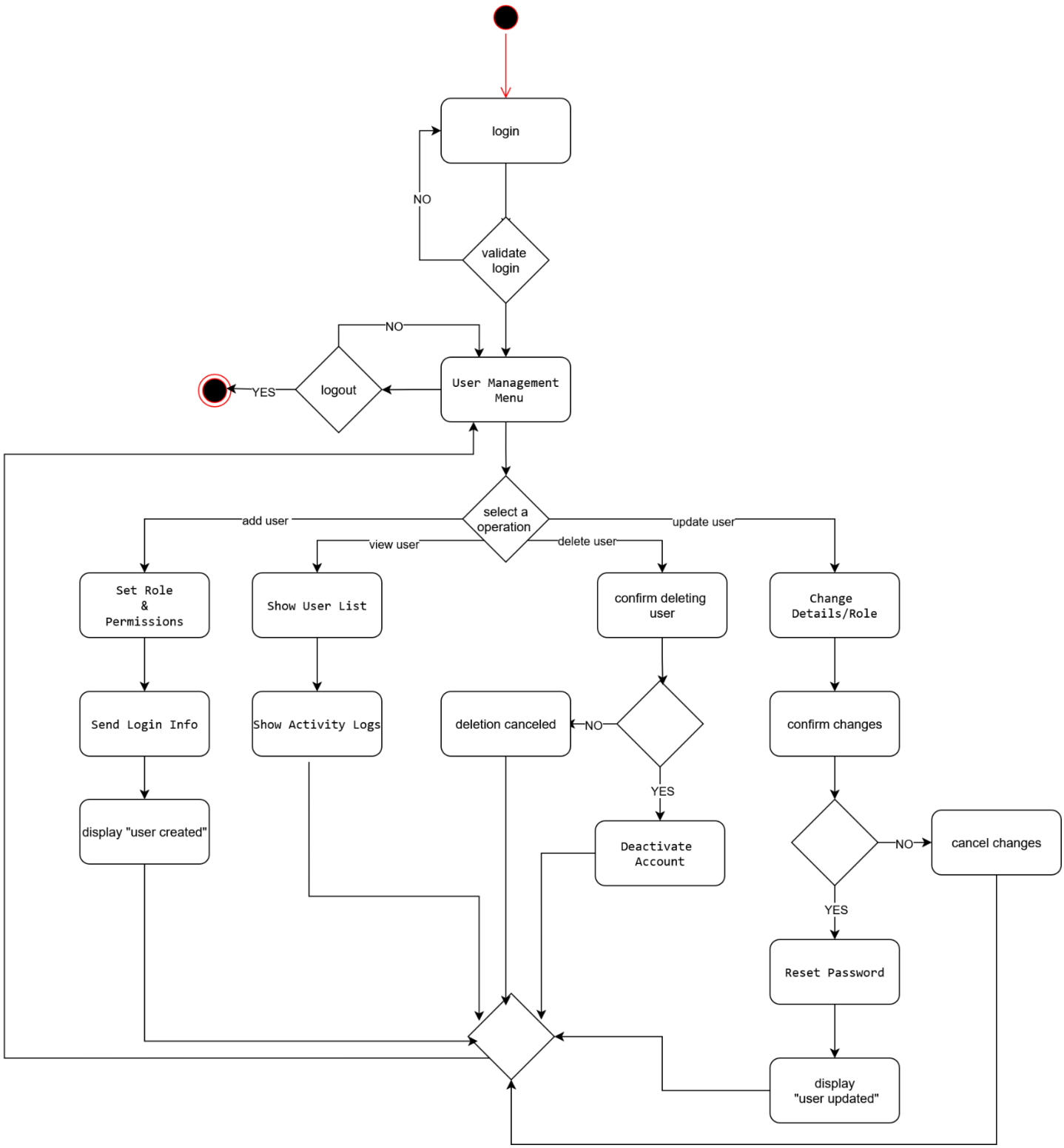
iv. UC-04 – Assign Course & Track Completion (Siriwardane K.D.D.D - IT24102773)

Field	Details
Use Case ID	UC-04
Use Case Name	Assigning Course & Track Completion
Primary Actor	System Administrator
Secondary Actors	Authorized Users (Referred to all Staff Members)
Preconditions	Courses exist and staff accounts active
Postconditions	Assignments recorded, staff progress measurable, reports available.
Main Flow	1. Admin opens Training → Assign Course. 2. Chooses courses, target audience (by role/department), and completion deadline. 3. System sends notifications to Users with course links. 4. Staff (Authorized Users) access Training Modules, complete lessons/quizzes. 5. System records progress & scores. 6. Admin views progress dashboard (filters by role, completion by percentage, overdue). 7. Admin exports completion report. 8. Audit log updated.
Extensions	3a. User inactive → Notify for admin attention. 4a. User fails quiz → Allow retry per policy.
Open Issues	1. Should the system be cloud-based or remain on-premises? 2. How will training materials be delivered (Embedded Help, Documentation, or Live Sessions)? 3. Should training be role-specific (Custom training for Warehouse Staff vs. Sales Staff)?


Pool
Admin
System
Authorized users
Open Training -> Assing courses
Need new course?
yes
Add new course
Updated required?
yes
Update the course
Outdated courses?
yes
Delete course
Select courses,target audiance
Send notifications to the userd
Access Training Modules
Complete lessons
Record progress
Viev progress
User Inactive?
yes
Notify Admin
Export completion rep[ort
Update Audit login

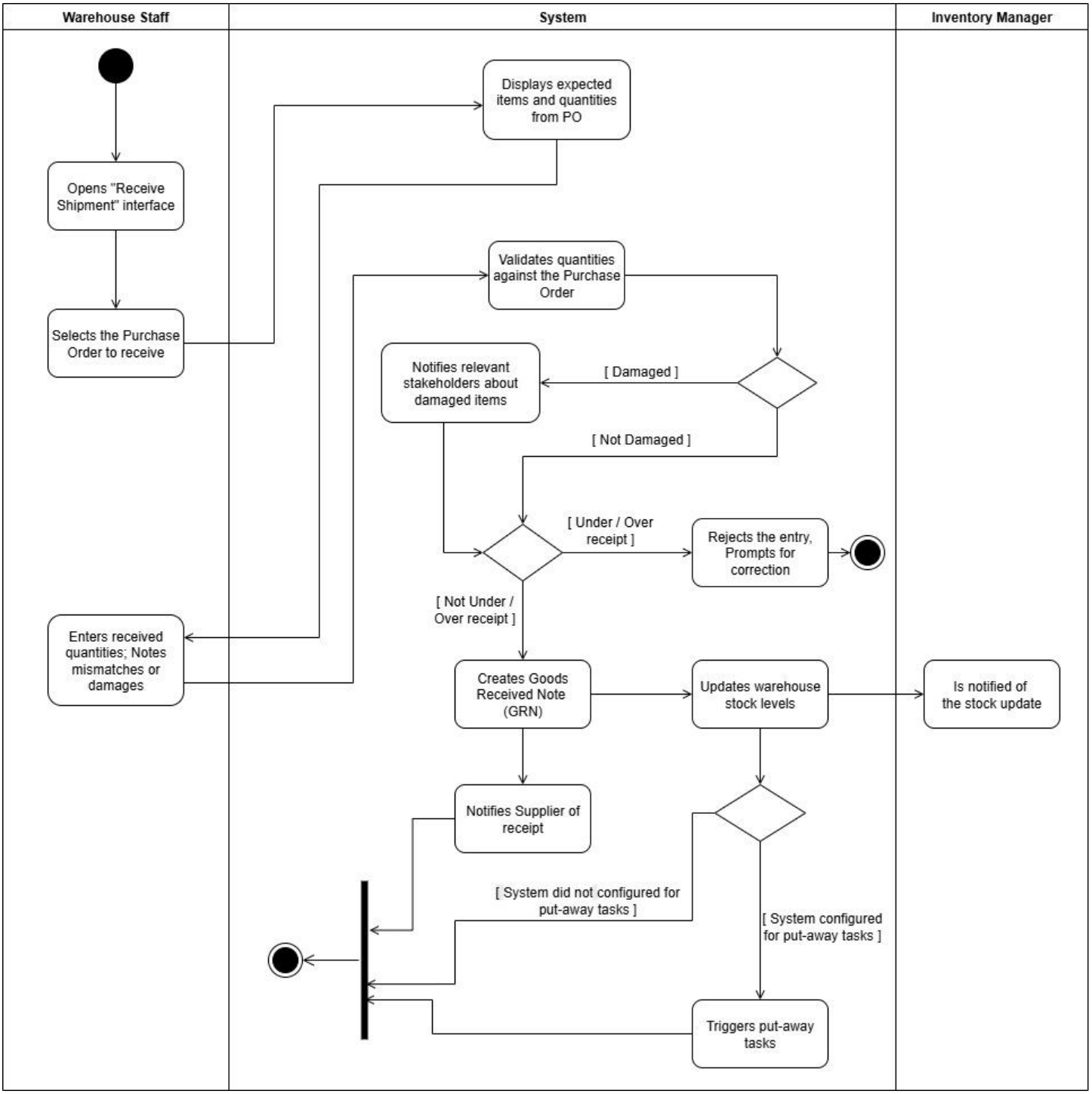
v. UC-05 – Manage Users (Alahakoon A. M. J. P - IT24102795)

Field	Details
Use Case ID	UC-05
Use Case Name	Manage Users
Primary Actor	System Administrator
Secondary Actors	Registered Users, Authorized Users
Preconditions	Admin is logged in and has role management permission.
Postconditions	User directory shows the latest roles and status.
Main Flow	1. Admin opens User Management. 2. Views list of users with roles & status. 3. Selects Add User (or Edit / Deactivate). 4. Enters/updates name, email, username, and selects relevant roles (Inventory Manager, Warehouse Staff, etc.). 5. System validates uniqueness and role constraints. 6. System creates/updates user, and assigns roles/permissions. 7. System sends notification to the user with login/reset instructions. 8. Audit log updated.
Extensions	5a. Username/email already exists → Error, Choose Different. 6a. Role conflict → Prompt Correction.
Open Issues	1. Should password policies (strength, expiration date, reset methods) be configurable? 2. Will user deactivation retain logs, or remove data?


login
NO
validate login
NO
logout
YES
User Management Menu
select a operation
add user
view user
delete user
update user
Set Role & Permissions
Show User List
confirm deleting user
Change Details/Role
Send Login Info
Show Activity Logs
deletion canceled
NO
confirm changes
display "user created"
YES
Deactivate Account
NO
cancel changes
YES
Reset Password
display "user updated"

vi. UC-06 – Receive Supplier Shipment (Sooriyabandara U.R.G.W.K - IT24102798)

Field	Details
Use Case ID	UC-06
Use Case Name	Receive Supplier Shipment
Primary Actor	Warehouse Staff
Secondary Actors	Inventory Manager, Sales Staff
Preconditions	Purchase Order exists and is approved and User is logged in.
Postconditions	Warehouse stock updated, GRN (Goods Received Note) recorded and relevant stakeholders are notified.
Main Flow	1. User opens Warehouse → Receive Shipment and selects Purchase Order to receive. 2. System displays expected items and quantities from Purchase Order. 3. User enters received quantities, notes any mismatches of the count or any damages. 4. System validates against Purchase Order. 5. System creates GRN and updates warehouse stock. 6. System notifies Warehouse Staff and Supplier. 7. If configured, system triggers put-away tasks. 8. Audit log updated.
Extensions	3a. Damaged items → mark as non-saleable, notify. 4a. Under/Over-receipt not allowed → Reject Underage/Overage, Prompt Correction.
Open Issues	1. Should warehouse staff be able to directly adjust stock, or must it go through approval? 2. How many Warehouse locations will be supported? 3. Will damaged or returned goods be managed under Warehouse functions or separately?


Warehouse Staff
System
Inventory Manager
Opens "Receive Shipment" interface
Displays expected items and quantities from PO
Selects the Purchase Order to receive
Validates quantities against the Purchase Order
Notifies relevant stakeholders about damaged items
[Damaged]
[Not Damaged]
[Under / Over receipt]
Rejects the entry, Prompts for correction
[Not Under / Over receipt]
Enters received quantities; Notes mismatches or damages
Creates Goods Received Note (GRN)
Updates warehouse stock levels
Is notified of the stock update
Notifies Supplier of receipt
[System did not configured for put-away tasks]
[System configured for put-away tasks]
Triggers put-away tasks