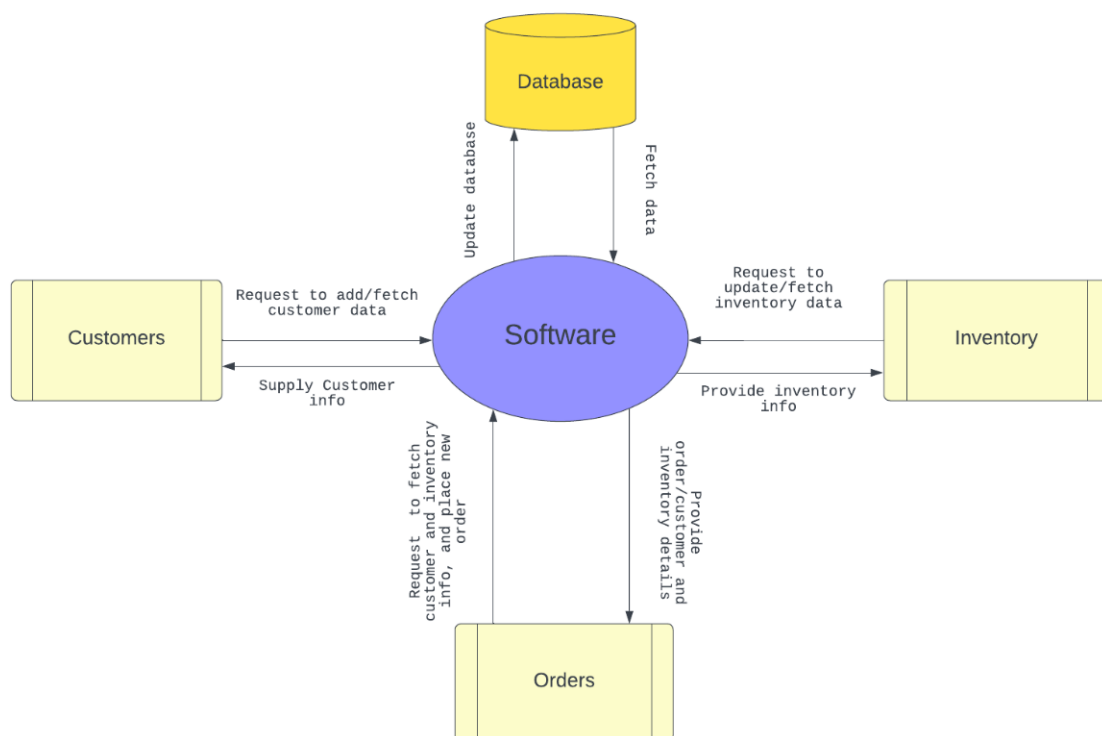# Criterion B- Design
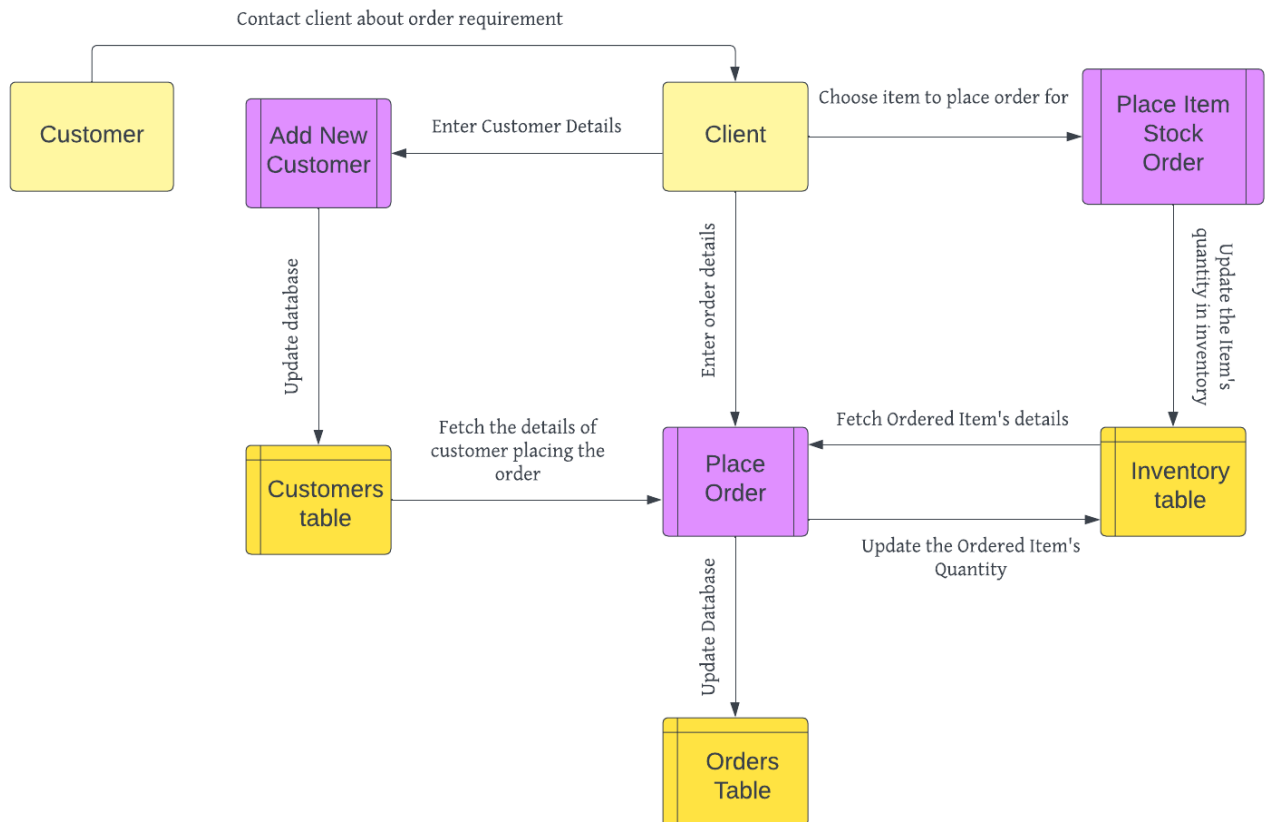
Overall Structure
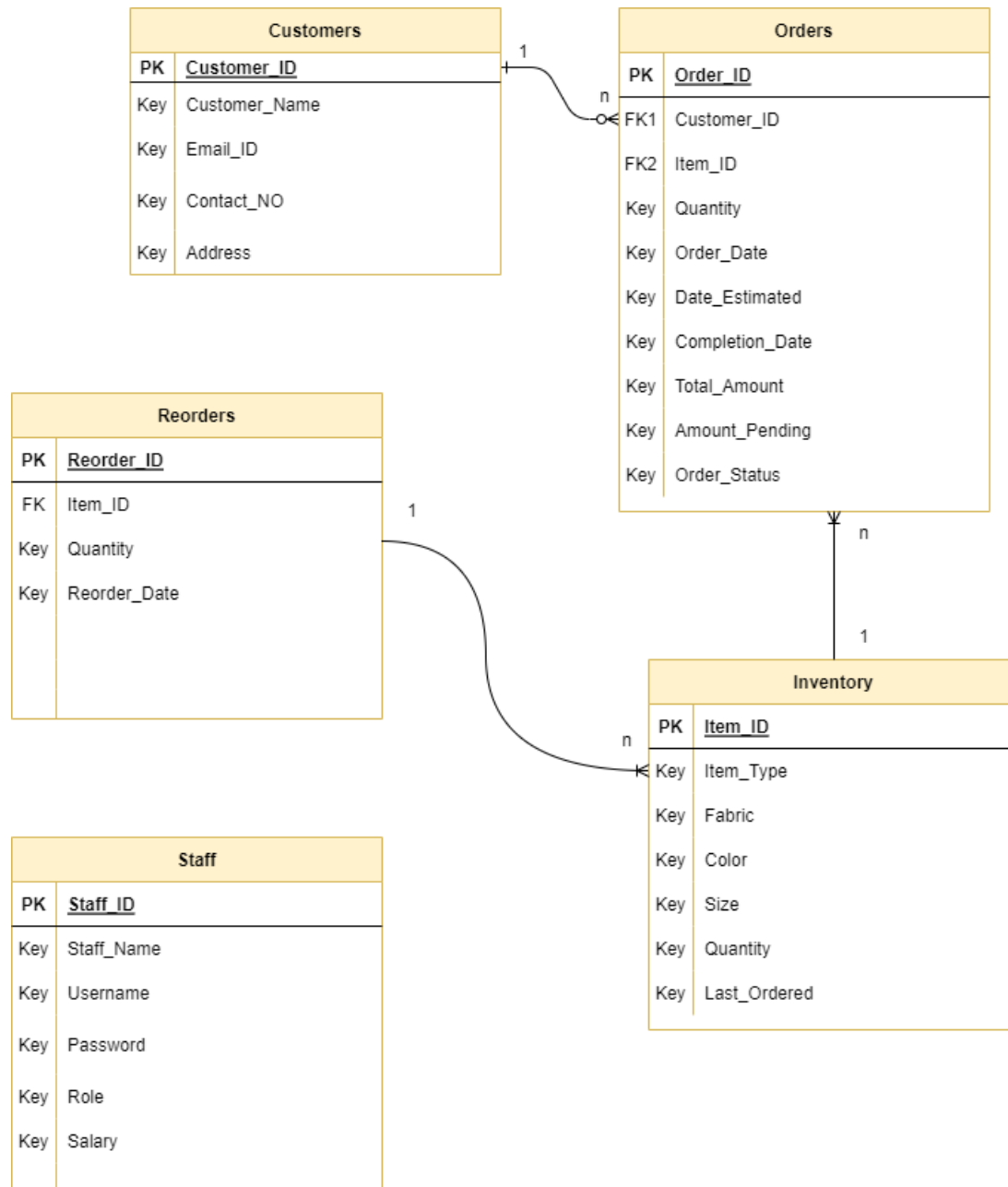
Data Flow Diagram (DFD) Level 0:
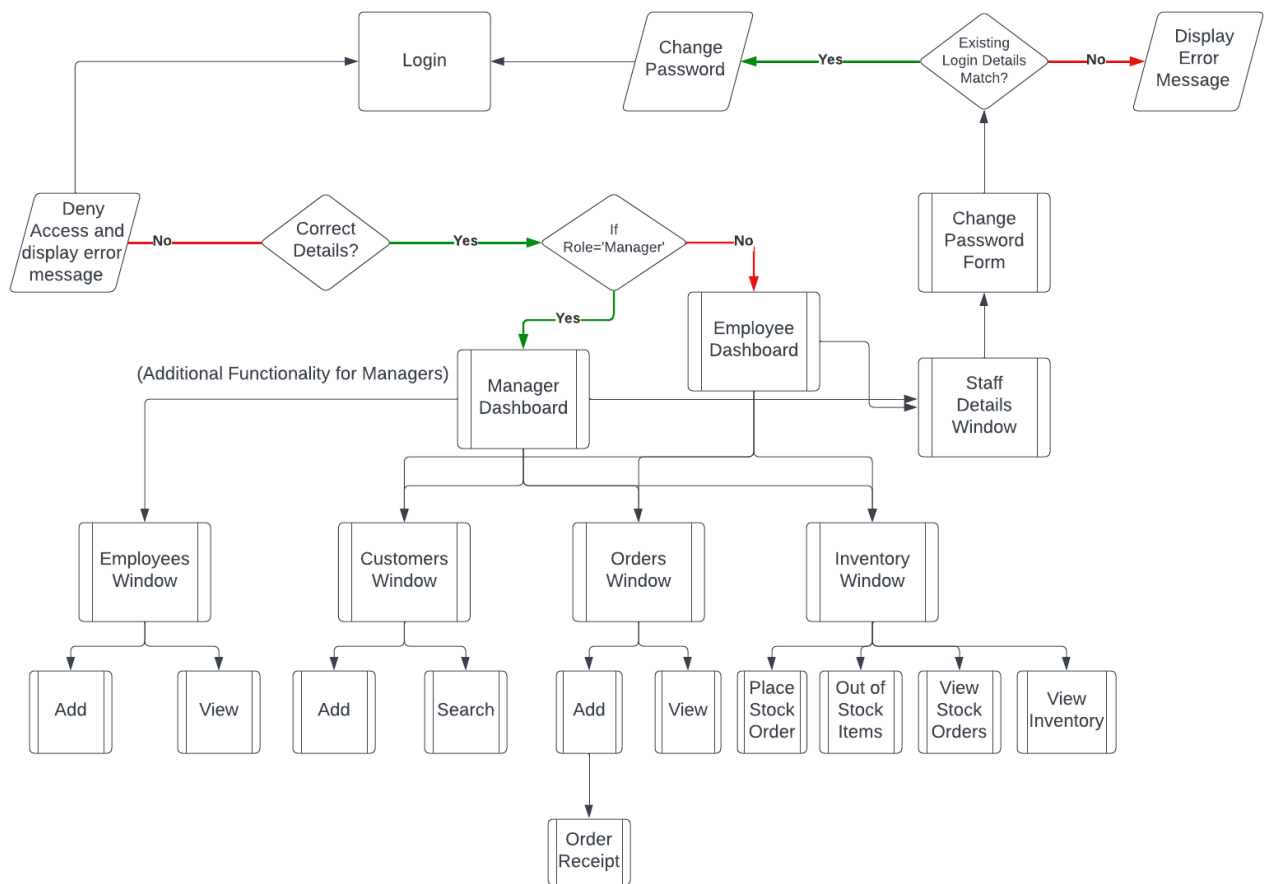
Data Flow Diagram (DFD) Level 1:

Entity Relationship Diagram (ERD):

Customers

PK	Customer_ID
Key	Customer_Name
Key	Email_ID
Key	Contact_NO
Key	Address

Orders

PK	Order_ID
FK1	Customer_ID
FK2	Item_ID
Key	Quantity
Key	Order_Date
Key	Date_Estimated
Key	Completion_Date
Key	Total_Amount
Key	Amount_Pending
Key	Order_Status

Reorders

PK	Reorder_ID
FK	Item_ID
Key	Quantity
Key	Reorder_Date

Inventory

PK	Item_ID
Key	Item_Type
Key	Fabric
Key	Color
Key	Size
Key	Quantity
Key	Last_Ordered

Staff

PK	Staff_ID
Key	Staff_Name
Key	Username
Key	Password
Key	Role
Key	Salary

Site Map (Proposed):

Internal Structure

Proposed Tables:

1. Customers Table

Field Name	Data Type	Purpose
Customer_ID (Primary Key)	int(11)	Uniquely identifies a customer record
Customer_Name	varchar(50)	Stores the customer's name
Email_ID	varchar(50)	Stores the customer's email address
Contact_NO	varchar(50)	Stores the customer's contact number
Address	varchar(50)	Stores the customer's address

2. Orders Table

Field Name	Data Type	Purpose
Order_ID (Primary Key)	int(11)	Uniquely identifies an order record
Customer_ID (Foreign Key)	int(11)	Mentions the customer placing the order
Item_ID (Foreign Key)	int(11)	Mentions the item that is ordered from inventory
Quantity	int(11)	Stores the quantity of item ordered by the customer
Order_Date	date	Stores the date on which order is placed
Date_Estimated	date	Stores the estimated date of order completion which helps determine if the order is 'late'
Completion_Date	date	Stores the actual date on which order is completed
Total_Amount	int(11)	Stores the amount paid for the order

| Amount_Pending | int(11) | Stores any amount dues that are left to be paid |
| Order_Status | varchar(50) | Stores the status of order if its 'pending' or 'complete' |

3. Inventory Table

Field Name	Data Type	Purpose
Item_ID (Primary Key)	int(11)	Uniquely identifies an item record in inventory
Item_Type	varchar(50)	Stores the item's type i.e., if it's a round neck t-shirt, polo t-shirt etc
Fabric	varchar(50)	Stores type of fabric used i.e., cotton, fleece etc
Colour	varchar(50)	Stores the colour of the item i.e., red, blue etc.
Size	varchar(50)	Stores the size of the item i.e., S, M, L, XL etc
Quantity	int(11)	Stores the remaining quantity of the item in inventory
Last_Ordered	date	Stores the date when the last stock reorder was placed for the order

4. Reorders Table

Field Name	Data Type	Purpose
Reorder_ID (Primary Key)	int(11)	Uniquely identifies a stock reorder record
Item_ID (Foreign Key)	int(11)	Mentions the item for which the stock has been reordered
Quantity	int(11)	Stores the quantity of stock that has been reordered (this quantity is then updated in the 'quantity' field of the inventory table)

Reorder_Date	date	Stores the date at which the stock reorder was placed (this date is then updated in the 'Last_Ordered' field of the Inventory table

5. Staff Table

Field Name	Data Type	Purpose
Staff_ID (Primary Key)	int(11)	Uniquely identifies a staff record
Staff_Name	varchar(50)	Stores the name of the company's staff
Username	varchar(50)	Stores the staff's username to be used during login
Password	varchar(50)	Stores the staff's password to be used during login
Role	varchar(50)	Stores the role of the staff i.e., if he/she is an employee/manager
Salary	int(11)	Stores the staff's salary

Proposed Queries:

1. Customers Table

Query Name	Purpose
qry_AddCustomer	To insert a new customer into the database via the add customer form
qry_ViewCustomer	To view the details of existing customers in the database
qry_UpdateCustomer	To update the customer records in database, such as changing their contact number or address

2. Orders Table

Query Name	Purpose
qry_AddOrder	To add a new order into the database via the add order form
qry_ViewOrders	To view the details of existing orders in the database
qry_UpdateOrder	To update the details of an order, such as adding the order completion date, or changing the status of order from 'pending' to 'complete'

3. Inventory Table

Query Name	Purpose
qry_AddItem	To insert a new item into the inventory if not already present via the add order form
qry_ViewOutOfStockItems	To view the items with no stock i.e., where Quantity=0
qry_UpdateInventory	To update the quantity of an item in inventory via the stock reorder form and add order form
qry_ViewInventory	To view the details of existing items in inventory

4. Reorders Table

Query Name	Purpose
qry_ReorderStock	To insert a new stock reorder record into the database via the stock reorder form
qry_ViewStockReorders	To view the details of existing stock reorder records

5. Staff Table

Query Name	Purpose
qry_AddEmployee	To add a new employee record into the database via the add employee form
qry_ViewEmployees	To view the details of existing employees in database

qry_UpdateEmployeeDetails	To update the details of existing employees i.e., changing their salary or changing their role from 'employee' to 'manager'

Proposed Reports:

report_Customers	Displays the details of existing customers in database
report_OrderReceipt	Displays the details of a newly placed order including the customer's name, item's name, quantity ordered etc
report_Orders	Displays the details of existing orders in the database
report_Inventory	Displays the details of existing items in the inventory
report_StockReorders	Displays the details of all stock reorders placed of items in inventory
report_Employees	Displays the details of all existing employees in the system

Proposed Pseudocodes:

1. Login

   String Username, Password

   Input (Username)

   Input (Password)

   if StaffRole(Username, Password) = 'Manager' then

   //StaffRole is a function that checks if the entered details match the database and

   returns the 'Role' of the corresponding staff if found

   Output("Logged in successfully")

   DisplayManagerDashboard()

   else if StaffRole(Username, Password) = 'Employee' then

   Output("Logged in successfully")

   DisplayEmployeeDashboard()

   else

   Output("Incorrect Details!!")

   end if

2. Add Order

String ItemType, Fabric, Colour, Size, Quantity

Input(ItemType)

Input(Fabric)

Input(Colour)

Input(Size)

Input(Quantity)

int ItemQuantity= FetchQuantity(ItemType, Fabric, Colour, Size)

//FetchQuantity is a function that returns the available quantity of the corresponding item from inventory table

if ItemQuantity >= Quantity then

ItemQuantity= ItemQuantity-Quantity

UpdateInventory( ) //function to update the inventory with the new quantity

else

Output("Insufficient Quantity! Reorder some?)

end if

3. Stock Reorder

String ItemType, Fabric, Colour, Size, Quantity

Input(ItemType)

Input(Fabric)

Input(Colour)

Input(Size)

Input(Quantity)

int ItemQuantity= FetchQuantity(ItemType, Fabric, Colour, Size)

//FetchQuantity is a function that returns the available quantity of the

corresponding item from inventory table

ItemQuantity= ItemQuantity + Quantity

UpdateInventory( ) //function to update the inventory with the new quantity

Proposed Forms:

1. Login Form

2. Customer Form

CUSTOMER FORM

ENTER NAME:

ENTER EMAIL:

ENTER CONTACT NO:

ENTER ADDRESS:

SUBMIT

3. Change Password Form

CHANGE PASSWORD

ENTER USERNAME

ENTER CURRENT
PASSWORD

ENTER NEW PASSWORD

CONFIRM NEW
PASSWORD

CONFIRM

4. Order Form

ORDER FORM

ENTER CUSTOMER ID:

SELECT ITEM TYPE: (Combo Box with all available item types)

SELECT FABRIC: (Combo Box with all available fabrics)

SELECT COLOUR: (Combo Box with all available colours)

ENTER QUANTITY:

ENTER AMOUNT:

SELECT ORDER DATE: (Datechooser)

SELECT ESTIMATED DELIVERY DATE: (Datechooser)

ADD ORDER

5. Reorder Stock Form

REORDER STOCK

SELECT ITEM TYPE: (Combo Box with all available item types)

SELECT FABRIC: (Combo Box with all available fabrics)

SELECT COLOUR: (Combo Box with all available colours)

SELECT SIZE: (Combo Box with all available sizes)

ENTER QUANTITY: [   ]

ENTER AMOUNT: [   ]

SELECT REORDER DATE: (Datechooser)

(REORDER)

6. Add Employee Form (for Managers only)

ADD EMPLOYEE FORM

ENTER EMPLOYEE NAME:

ENTER USERNAME:

SET DEMO PASSWORD:

ENTER SALARY:

ADD EMPLOYEE

7. Manager Dashboard

8. Employee Dashboard

DASHBOARD

Labket

My Account

Logout

CUSTOMERS

ORDERS

INVENTORY

Test Plan:

Part of System Tested	Method	Purpose	Expected Outcome	Actual Outcome	Success Criteria
Login Form	Leaving either of the fields blank (no data entry)	Validation to ensure that the user fills in all details	User to be prompted to enter all details	An error message was displayed prompting user to fill in all details	1
	Entering incorrect Login credentials	To ensure that only the correct users are granted access to the system	User to be denied access to the system	An error message was displayed denying entry to system and prompting user to enter correct login details	1
	Entering Manager's login details	To ensure that the Manager is directed to the Manager's dashboard	User to be directed to Manager's dashboard	The user was directed to the Manager's dashboard	1.2
	Entering Employee's login details	To ensure that the Employee is directed to the Manager's dashboard	User to be directed to Employee's dashboard	The user was directed to the Employee's dashboard	1.2
Add Customer Form	Leaving either of the fields blank (no data entry)	Validation to ensure that the user fills in all details	User to be prompted to enter all details	An error message was displayed prompting user to fill in all details	2
	Entering Invalid Email and Contact Number	To ensure that valid email and 10-digit contact	An invalid email/contact message to be displayed	The error message was displayed	2

			number is added		
	Entering Valid Customer Details	To ensure that the new customer is successfully added to the database with a unique Customer ID	A new record to be created in the Customers table with a unique Customer ID	The new unique customer record was created in the database	2
Search Customer Widow	Clicking the 'Search Customers' option	To ensure that user can see existing customer details from database	User to be directed to the View Customers window displaying customer records from the database	The user was directed to the desired page and was able to view the customer details	3
	Searching customer records via Customer ID/Name	To ensure that the user can search up a particular customer record	The corresponding customer details to be displayed	The searched-up customer's details were displayed to the user	3
	Clicking 'Generate PDF' option	To ensure that the user is able to generate pdf report of customer records from database	A pdf report with existing customer details from database to be generated	The customers pdf report was generated	3.1
Add Order Form	Leaving either of the fields blank (no data entry)	Validation to ensure that the user fills in all details	User to be prompted to enter all details	An error message was displayed prompting user to fill in all details	4
	Order is placed for item with stock available less than the ordered quantity	To ensure that orders are placed for items within the available stock range	Order to not be placed and user to be notified for the insufficient quantity	The order was not placed and the user was notified about the insufficient quantity	4
	Order placed for item with sufficient	To ensure that a new order record is created with a	New unique order record to be created in orders table.	The new order record was created	4, 4.1

	available stock	unique Order_ID. Also, the corresponding item's quantity to be updated in the inventory To ensure that an order receipt is generated with the necessary details, which can be printed to PDF To ensure that the customer is notified about the placed order via an email	Inventory to be updated with remaining quantity after order Corresponding order receipt to be generated with all essential details, which can be downloaded as PDF Customer to be notified about the placed order via an email notification	and inventory was updated The correct order receipt was generated which could be downloaded as PDF Functionality to send email notification to customer was failed to achieve	
View Orders Window	Clicking the 'View Orders' option	To ensure that user can see existing order details from database	User to be directed to the View Orders window displaying order records from the database	The user was directed to the desired page and was able to view the order details	5
	Sorting order records based on Order_ID, Customer_ID, Date and Status	To ensure that the user can view particular order records from database	The corresponding order records to be displayed	The corresponding order records were displayed to the user	5
	Updating the amount dues, status and completion dates of orders	To ensure that order records can be updated in database as per order progress	Corresponding order details to be updated in database	The corresponding order details were updated in database	5.1
	Clicking 'Generate PDF' option	To ensure that the user is able to generate pdf report of order records from database	A pdf report with existing order details from database to be generated	The orders pdf report was generated	5.2

View Inventory Window	Clicking the 'View Inventory' option	To ensure that user can see the inventory records from database	User to be directed to the View Inventory window displaying inventory records from the database	The user was directed to the desired page and was able to view the inventory records	6
	Sorting inventory records based on categories such as Item_ID, Item_Type, colour, fabric, Quantity etc	To ensure that the user can view particular inventory records from database	The corresponding inventory records to be displayed	The corresponding inventory records were displayed to the user	6
	Clicking 'Generate PDF' option	To ensure that the user is able to generate pdf report of inventory records from database	A pdf report with existing inventory records from database to be generated	The inventory pdf report was generated	6.3
Stock Reorder Form	Leaving either of the fields blank (no data entry)	Validation to ensure that the user fills in all details	User to be prompted to enter all details	An error message was displayed prompting user to fill in all details	7
	Placing a stock reorder of an item	To ensure that a new Reorder record is created with a unique Reorder_ID. To ensure that the corresponding Item's quantity is update in the inventory	New Reorder record to be created with a unique Reorder_ID The corresponding Item's quantity to be updated in the inventory	The new unique record was created and the corresponding Item's quantity was updated in the inventory	7
	Clicking the 'View Stock Orders' option	To ensure that user can see the stock reorder records from database	User to be directed to the View Stock Orders window	The user was directed to the desired page and was able to view the	7.1

			displaying stock reorders records from the database	stock reorder records	
View Stock Orders Window	Sorting Stock order records based on categories such as Reorder_ID Item_ID, quantity and date	To ensure that the user can view particular reorder records from database	The corresponding reorder records to be displayed	The corresponding reorder records were displayed to the user	7.1
	Clicking 'Generate PDF' option	To ensure that the user is able to generate pdf report of stock reorder records from database	A pdf report with existing stock reorder records from database to be generated	The stock reorders pdf report was generated	7.1
Add Employee Form	Leaving either of the fields blank (no data entry)	Validation to ensure that the user fills in all details	User to be prompted to enter all details	An error message was displayed prompting user to fill in all details	8
	Adding an employee into the system	To ensure that a new Employee record is created with a unique Staff_ID	New Employee record to be created with a unique Staff_ID	The new unique Employee record was created and added to the database	8
View Employees Window	Clicking the 'View Employees' option	To ensure that user can see the Employee records from database	Manager to be directed to the View Employees window displaying employee records from the database	The Manager was directed to the desired page and was able to view employee records	9
	Clicking 'Generate PDF' option	To ensure that the manager is able to generate pdf report of employee records from database	A pdf report with existing employee records from database to be generated	The employee records pdf report was generated	9

Change Password Form	Entering incorrect existing login credentials	To ensure that the password is changed only for entering correct current credentials for login	Password to remain unchanged and suitable error message to be displayed	The password was unchanged and an error message was displayed	1.3
	Correct existing login details are entered	To ensure that users are able to securely change their login passwords	Password to be updated in the database, to be used for login hereafter by the user	The new password was updated in the database	1.3

References

"Draw.io - Free Flowchart Maker and Diagrams Online." *Flowchart Maker & Online Diagram Software*, app.diagrams.net/.

Lucid Visual Collaboration Suite: Log In, lucid.app/documents#/dashboard.