Inventory management system:

Use case scenario:

The primary user of the Inventory management system is the inventory manager, store clerks and sales clerks. To use the system, the users have to log in. The user's goal is to add, check, generate reports and sell/distribute items from the inventory.

Actors:

Actor Role/Name	**Role description and Objective**
Manager	Adding user(store clerk, sales clerk) to the system and giving them the login credentials to log into the system
Store Clerk	Adding new products to the inventory
Sales Clerk	Selling products from the inventory
Inventory Database	Alerting manager and store clerk when a products runs out
Database manager	Maintain the database

Log in:

The user has to register to the system to use the system. The user has to put into the full name, email id and a password to register in the system. After registration, users can log into the system providing the email address and the password. If the user types in a wrong password or gives incorrect email address, the system will provide an error message saying "wrong username or password". Otherwise, the system will let the user log into the system.

Add:

Add User:

The Manager can add a store clerk/sales clerk who will enjoy the same privilege as the primary user. To add an user to the system, the manager clicks the add user button and enters the name and type of user to add. After entering the credentials, the system generates an username and password for the store clerk/sales clerk and grants the privilege to log into the system.

Add item:

The user can add items to the items category. To add an item, the user has to enter the identification for the item such as product id, units, description of the item, expiry date, vendor's information corresponding to the item. If the user enters every required field correctly, the system will add the product to the existing inventory and provide a message to the user "the item is added to the inventory".

Add unit:

Store clerks can also add additional units to an existing product or item. To add units, the user has to type the product id or the name of the product. If the product already exists, the system will allow the user to add extra units of that product. The user then has to type in the amount of units. If the user enters a valid number, the system will add the units to the existing units of the product and display a message saying "units added to the product ?x".

update info:

User can add any missing information such as product description, expiry date and vendor's information. If the user enters the product description, a valid expiration date and vendor's name into the respective fields, the system will update the information of that particular product and provide a message saying that the "product information updated".

Add vendor:

user can add vendor's information corresponding to an existing product. To add a vendor, the user has to enter the product id and the vendor's name and email address into the respective fields. If there is an existing vendor of the same product, the system will nonetheless add the vendor. But if the product is missing from the current product list, the user has to first create a product and then add the vendor to that product.

Check:

check stock:

user can check the stock of product/s. This will show the number of products currently available for distribution. This will also show if there are products which have already expired or not and the remaining time for the product or batch of products and how much time they have left until expiration. To check a product, the user first puts in the product id to the search box. If the item exists in the inventory, the system will show the item, the quantity of the item and the expiry date of the item.

Check purchase:

Manager can check the purchased items between two dates. To check the purchased item between an interval, the user has to enter two valid dates(the first date cannot be later than the second date). After pressing the enter button, the system will list the products purchased between the dates. If there are no products available, the system will show a message saying that "there are no items to show".

Check sales:

Manager can check the sold/distributed items between two dates. To check the sales of items, the user has to enter two valid dates(the first date cannot be later than the second date). After pressing the enter button, the system will list the products sold between the dates. If there are no sold items available, the system will show a message saying that "there are no items to show".

Generate reports:

Generate sales reports:

the user can generate a sales or distribution report for a week or a month from the system. This report will include the check sell method. The system will periodically produce a weekly report based on the number of products sold within the 2 week period and within one month. If the user wants to generate a sales report of a selected month, the user has to enter a particular month(the month has to be a previous one). Then the system will generate a sales report of that particular month providing the item list, units sold and the timestamp of the shipment.

Generate stock report:

user can generate a stock report which provides a list of all the products currently available. This report details the products currently available in the inventory and displays the information in a graphical format.

Generate expiry report:

user can generate an expiry report for a week or a month showing the product list which is going to expire within that week or month. To do this, the user first selects whether the expiry report is for the next week or the next month. Then the system shows a list of product names, quantity and expiration dates.

Generate purchase report:

user can generate purchase reports for a month or a week. Users can select a previous week or month from the calendar. The system then prepares a list of purchases that were brought into the inventory. This shows the product names, quantity and expiration dates.

Generate vendor report:

user can generate a list of registered vendors in the system. User can put into a name of product/s and then the system

Use case index:

Use case ID	Use case name	Primary actor	Scope	Complexity	Priority
1	User log in	Generic User	In	low	1
2	Adds a product	Store clerk	In	High	1
3	Sells a product	Sales clerk	In	High	1
4	Generates report	Manager	In	High	2
5	Creates category	Store clerk	In	Mid	2
6	Add user	Manager	In	Mid	3
7	Add Vendor	Manager	In	mid	4
8	Check stock	Store clerk, manager	In	mid	2
9					

Use cases:

1.

Name	Store clerk adds a product
Description	Allows a store clerk to add a product to the inventory
Participating actors	Store clerk(Primary), Inventory database(secondary) Inventory management application(secondary)
Priority	Must have

Goals	To add product to the inventory
Trigger	New shipment comes to the inventory
Pre-Condition	Product is labeled
Post-Condition	Products added to the inventory and the database is updated
Basic flow	1.Store clerk clicks the add button 2.store clerk enters the name and unit and category info in appropriate boxes 3.enters product unit price 3.store clerk clicks the add button 4.The application validates the input from the Store clerk, if not correct, the store clerk is asked to enter Correct inputs 5.The application adds the product and units in the Stock 6.the application shows a message to the screen Saying the product is added to the inventory
Alternate flows	1.stock clerk cancels the action after pressing add button 2.stock clerk cancels after entering the name, unit and Category 3.stock clerk does not enter 1 or more inputs 4.stock keeping unit not found on product
Exception	Application cannot communicate with the database
Qualities	Inventory updated as soon as product added

2.

Name	Sell Product
Description	
Participating actors	Sales clerk
Goals	To sell products from the inventory

Trigger	Customer has ordered a product
Pre-condition	Product available in the inventory
Post-condition	Product sold to the customer and invoice generated
Basic flow	1.sell button pressed 2.product name, unit and category info and SKU entered 3. invoice generated for the sale 4.inventory updated 5.sale complete message shown
Alternate flows	Enough unit is not available
Exception	Product does not exist in the inventory
Qualities	Database updated as soon as product sold

3.

Name	Generate report
Description	
Participating actors	Manager
Goals	To generate a monthly report of sales
Trigger	Manager wants to know get an overview of sales records And stok
Pre-condition	Transaction needs to happen and product sold from the inventory
Post-condition	A graph detailing how many items were sold in previous month/week

Basic flow	1.manager clicks generate report button 2.manager selects weekly and monthly report 3.a graph of week/month vs product sold is generated and shown on the screen
Alternate flows	Manager wants to change the view to month or week.
Exception	No product sold from the inventory
Qualities	Good visual representation, accurate data visualization, understandable

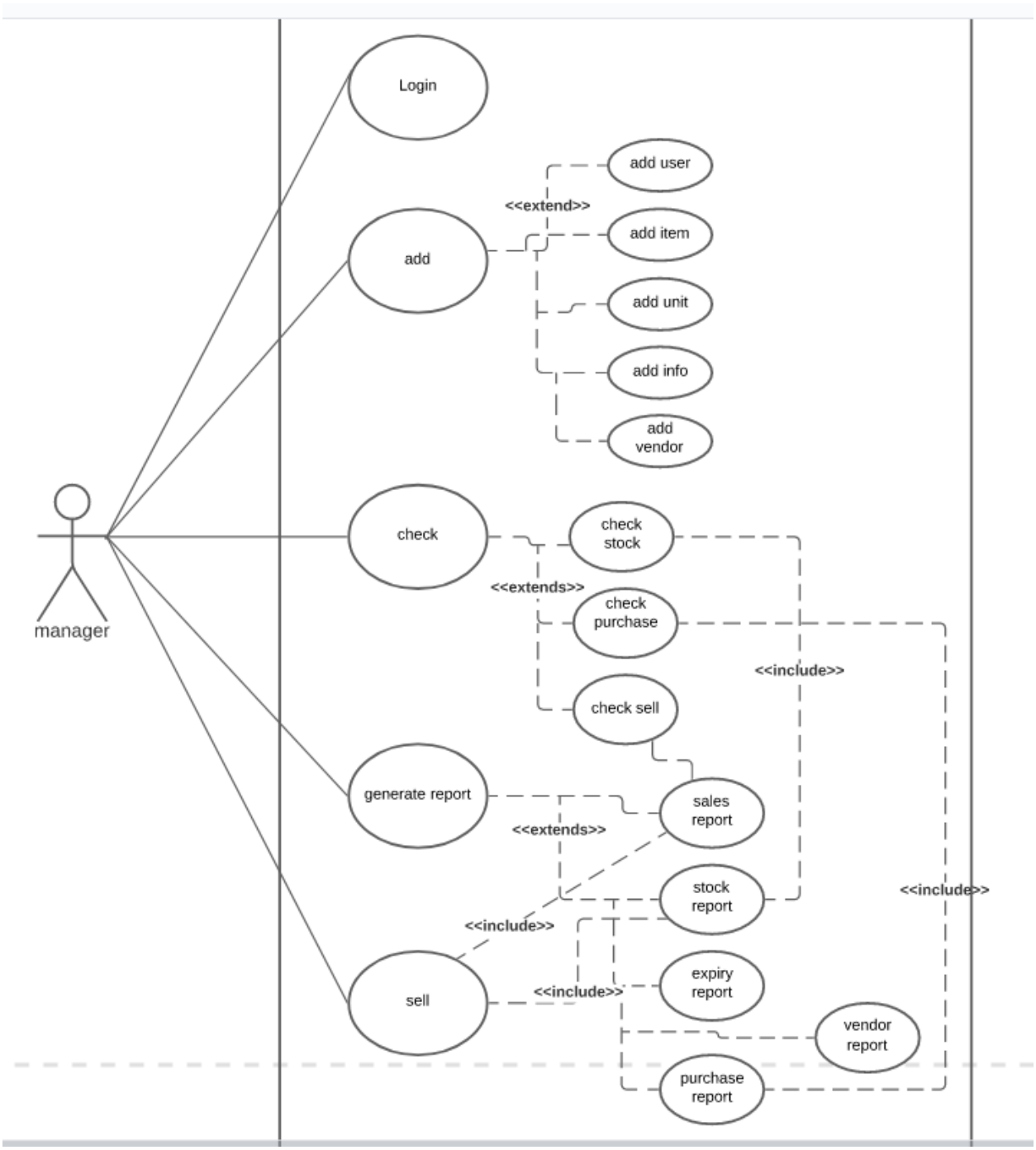
4.

Name	Create categories
Participating Actors	Store clerk
Goals	Add new categories for products
Trigger	A new identifier for a product is needed
Pre-condition	Existing identifiers cannot identify the product
Post condition	New category created
Basic flow	1. user presses the Add Category button 2.user enters category name/s 3.user
Alternate flows	User cancels the process by pressing cancel button
Exception	Category already exists

Qualities	

5.

Name	
Participating Actors	
Goals	
Trigger	
Pre-condition	
Post condition	
Basic flow	
Alternate flows	
Exception	
Qualities	


Login
add user
<<extend>>
add
add item
add unit
add info
add
vendor
manager
check
check
stock
<<extends>>
check
purchase
<<include>>
check sell
generate report
sales
report
<<extends>>
stock
report
<<include>>
<<include>>
sell
<<include>>
expiry
report
vendor
report
purchase
report

id	noun	p/s	attributes
01	Inventory management System	p	
02	Inventory manager	s	8,9, 10
03	User	s	2
04	Goal	p	
05	Item	p	
06	Inventory	p	
07	Full name	s	
8	Email Address	s	
9	Password	s	
10	Wrong Password	s	
11	Incorrect /Email Password	s	
12	Error Message	s	
13	Wrong Username	s	
14	Wrong Password	s	
15	Items /Category	s	16,17,18,19
16	Name of the product	s	
17	Product id	s	
18	Product unit	s	
19	Expiry date	s	
20	Identification for the item	p	
21	Time Stamp	s	
22	Description of the item	s	15
23	Message	p	

24	Additional units	s	15
25	Valid number	p	
26	Missing information	s	15
27	Vendors	s	28,29,15
28	Vendors name	s	
29	Vendors email	s	
30	Remaining time for the product	p	
31	Batch of products	p	
32	Search box	p	
33	Purchased items	p	
34	Interval	p	
35	Entered button	p	
36	shipment	p	
37	Distribution report	p	
38	Report	s	15,16,17,18,19
39	Stocked Report	s	38
40	Sales report	s	38
41	Expiry report	s	38
42	Purchased report	s	38
43	Registered vendors	s	28,29,15

Inventory Manager	Email Address, Password, Wrong Password
User	Inventory Manager
Category	Description of the product(size, color, brand)
Report:	Items /Category, Name of the product, Product id, Product unit, Expiry date
Registered vendors:	Vendors name, Vendors email

Here:

1. Since Description of the item, Additional units, Missing information have the same attributes we will merge them and name the data object as item.
2. Again since Stocked report, Sales report, Expiry report, Purchased report have the same attributes we will merge them and name the data object as report.

After merging we have the following data objects:

Inventory Manager: Email Address, Password, Wrong Password

User: Inventory Manager

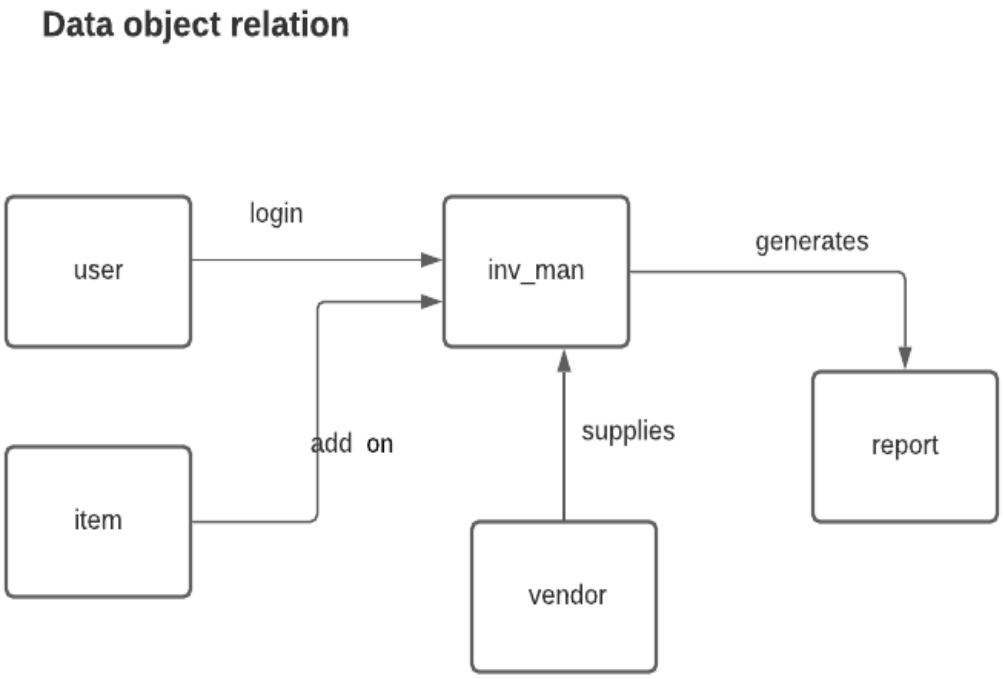
Items /Category: Name of the product, Product id, Product unit, Expiry date, description of the item, additional units, missing Information

Report: Items /Category, Name of the product, Product id, Product unit, Expiry date

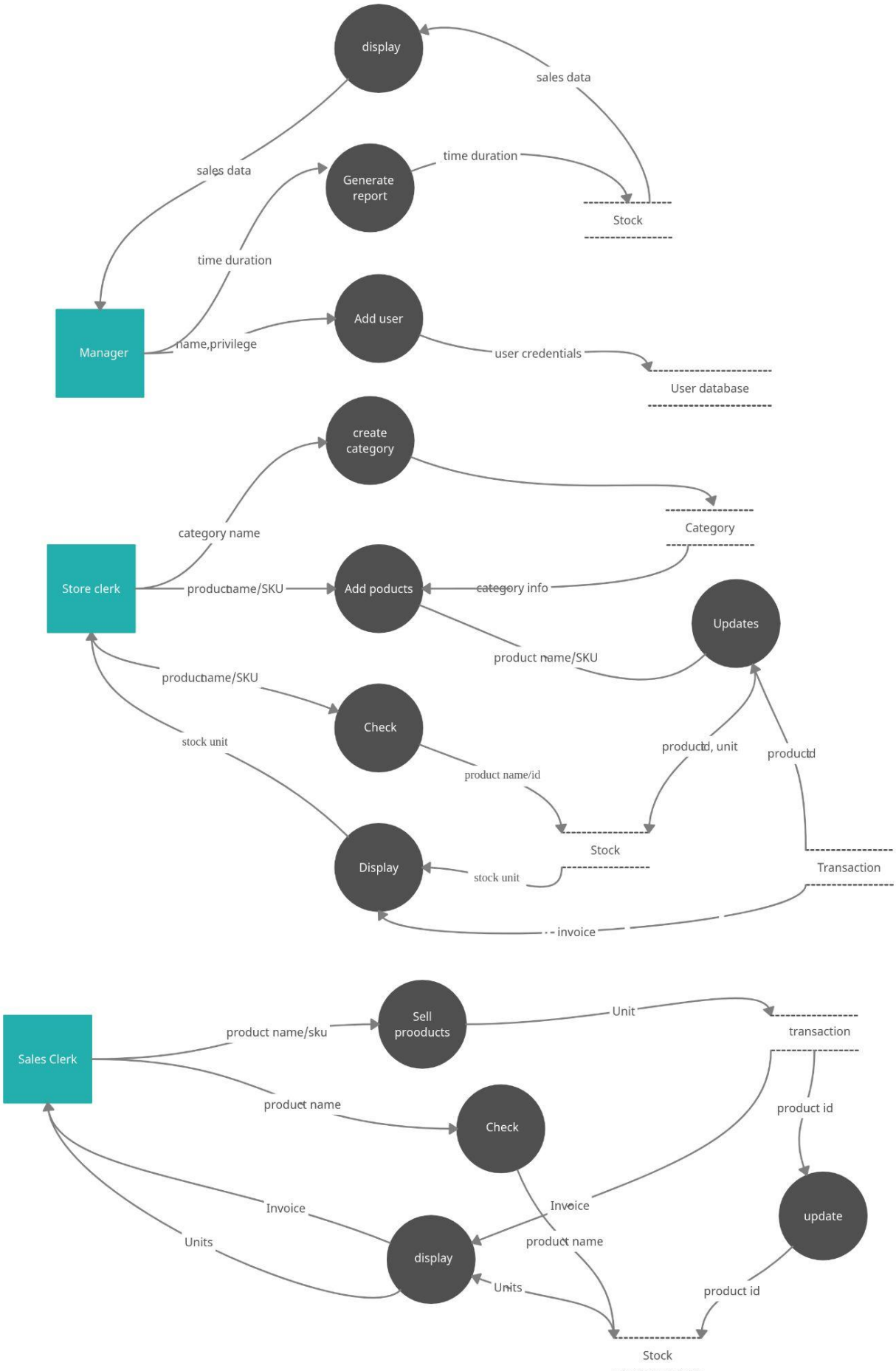
Report Category: Stoked Report, Sales Report, Expiry Report, Purchased Report

Registered vendors: Vendors name, Vendors email

Data Object relation:



Data flow diagram:
1st level:


display
sales data
sales data
Generate report
time duration
Stock
time duration
Manager
Add user
name,privilege
user credentials
User database
create category
Category
category name
Store clerk
productname/SKU
Add poducts
category info
Updates
product name/SKU
productname/SKU
Check
stock unit
productd, unit
productd
product name/id
Stock
Display
stock unit
Transaction
invoice
Sales Clerk
product name/sku
Sell prooducts
Unit
transaction
product name
Check
product id
Invoice
Invoice
update
Units
display
product name
Units
product id
Stock

User		
Column	**Type**	**Size**
User_ID	varchar	20
User_Name	varchar	20
Password	varchar	20

Vendors		
Column	**Type**	**Size**
V_Name	varchar	20
V_Email	varchar	20
Items	varchar	20

Items		
Column	**Type**	**Size**
Product Id	varchar	20
Product name	varchar	20
Unit	int	25
Category	varchar	
vendor_id	type	20

Transaction		
Column	**Type**	**Size**
Transaction ID	varchar	20
Product id	int	25
Product name	varchar	20
Unit	int	25
time and date	datetime	
Category	varchar	20

Stock		
Column	**Type**	**Size**
Product Id	varchar	20
Product Name	varchar	20
Unit	int	25

Sales		
Column	**Type**	**Size**
Product Id	varchar	20
unit	int	25
date time	datetime	

Category		
Column	**Type**	**Size**
category_code	varchar	20
category_name	varchar	20
data	varchar	20

Potential Class identification steps:

Identifying verbs:

- Add reports
- Check reports
- Generate reports
- Add sell/distributed items
- Register to the system
- Put personal details
- Display error messages
- Log in
- Add another user
- Add items
- Enter product id
- Enter units
- Enter description of the product
- Enter expiry date
- Enter vendor information
- Add additional unit
- Add missing information
- Generate message
- Add vendor information
- Check product stock
- Check purchased items

- Check sold products
- Enter a particular month
- Provide product list and units
- Generate stock report
- Generate expiry report
- Generate purchase report
- Show list of registered vendors

Identifying all possible classes:

ID	Potential Classes	Selection Criteria							Remarks
		1	2	3	4	5	6	7	
1	Inventory	×	×	×	✓	×	×	×	✓
2	User	×	×	×	✓	✓	×	×	✓
3	Full name	×	✓	×	×	×	×	×	✓
4	Email Address	×	✓	×	×	×	×	×	✓
5	Password	×	✓	×	×	×	×	×	✓
6	Wrong Password	×	✓	×	×	×	×	×	✓
7	Incorrect Email/ Password	×	✓	×	×	×	×	×	✓

8	Error message	×	✓	×	×	×	×	×	✓
9	Wrong user name	×	×	×	×	×	×	×	×
10	Wrong password	×	×	×	×	×	×	×	×
11	Item	×	✓	×	×	×	×	✓	✓
12	Name of Product	×	✓	×	×	×	×	×	✓
13	Product id	×	✓	×	×	×	×	×	✓
14	Product unit	×	✓	×	×	×	×	×	✓
15	Expire date	×	✓	×	×	×	×	×	✓
16	Description of the product	×	✓	×	×	×	×	×	✓
17	Additional unit	×	✓	×	×	×	×	×	✓
18	Missing information	×	✓	×	×	×	×	×	✓
19	Vendors	×	×	×	×	✓	×	×	✓
20	Vendors name	×	✓	×	×	×	×	×	✓
21	Vendors email	×	✓	×	×	×	×	×	✓

22	Report	×	✓	×	×	×	×	✓	✓
23	Stock report	×	✓	×	×	×	×	×	✓
24	Sales report	×	✓	×	×	×	×	×	✓
25	Expire report	×	✓	×	×	×	×	×	✓
26	Purchase report	×	✓	×	×	×	×	×	✓
27	Registered vendor	×	×	×	×	×	×	×	×

Possible analysis classes:

1. Inventory manager
2. User
3. Full name
4. Email Address
5. Password
6. Wrong Password
7. Incorrect Email / Password
8. Error message
9. Category
10. Name of the product
11. Product id
12. Product name
13. Expire date
14. Description of the item
15. Additional unit
16. Missing information

17. Vendors
18. Vendors name
19. Vendors email
20. Report
21. Stock report
22. Sales report

Potential analysis classes:

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1. Inventory manager
2. Store clerk
3. Sales clerk
4. User
5. Vendors
6. Report
7. Stock report
8. Sales report
9. Product
10. Category

Coad and Yourdon's Six Selection Criteria

ID	Potential Classes	Selection Criteria							Remarks
		1	2	3	4	5	6	7	
1	User	×	×	×	✓	✓	×	×	✓
2	Vendors	×	×	×	×	✓	×	×	✓

3	Report	×	✓	×	×	×	×	✓	✓
4	Stock report	×	✓	×	×	×	×	×	✓
5	Sales report	×	✓	×	×	×	×	×	✓
6	Product	×	✓	×	×	×	×	✓	✓

Sequence diagrams:

Sequence diagram for the add product activity:
Sequence diagram for the sell product activity
sequence diagram for the create category activity