

For the first version of the store management system, we want to start with the following user stories:

- As a user, I want to add a new product into the system.
- As a user, I want to add a new customer into the system.
- As a user, I want to record a purchase from a customer into the system.

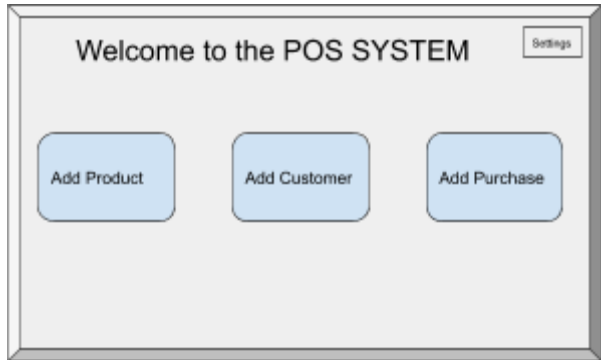
Tasks:

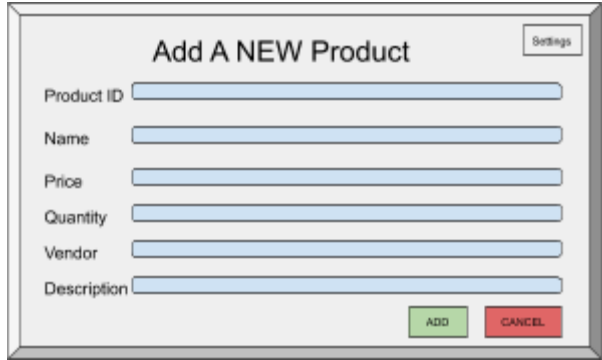


1. Write a common use case for each user story. Sketch the screens the system should display in each use case.

- As a user, I want to add a new product into the system.

* Adding a product can either add successfully if there is no other product with the given productID, or may error if there is already a matching product id, or if the user fails to input all the required fields. For this project we will look at the cases where adding a product goes smoothly and then where they input a duplicate id.

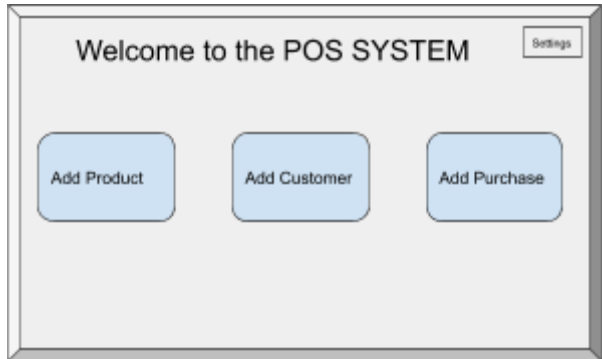
- A. Name: Adding a new product into the system
- B. Actors: Manager (or employee with appropriate permissions)
- C. Goals: add product
- D. Preconditions: must be the correct user, product should not already be in the system
- E. Summary: the user will log into the product management section and add a new product with the appropriate attributes such as name, type, cost, etc.
- F. Related use cases- update products
- G. Steps:

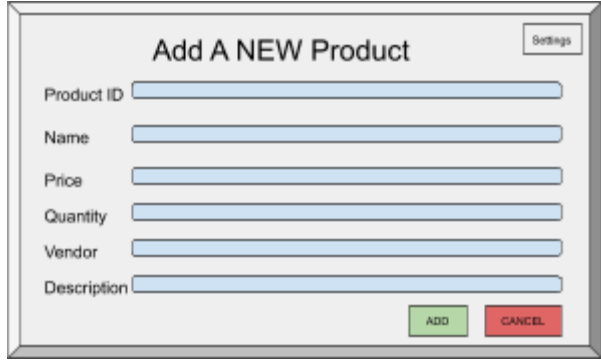
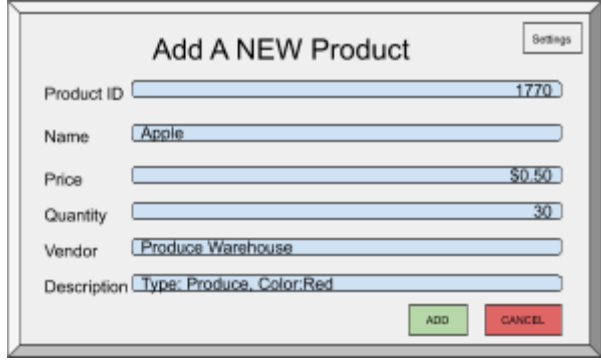

Actor	System
Log into system	Display main page 

Select Add Product	Display Add Product Screen 
Fill out product attributes	
Confirm entry	Hide the “Add NEW Product” screen and display a “Product Added Successfully” screen 
Select “OK”	Display “Main” screen again

	
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- H. Name: Adding a new product into the system (edge case: duplicate ID)
- I. Actors: Manager (or employee with appropriate permissions)
- J. Goals: add product
- K. Preconditions: must be the correct user, product should not already be in the system
- L. Summary: the user will log into the product management section and add a new product with the appropriate attributes such as name, type, cost, etc.
- M. Related use cases- update products
- N. Steps:

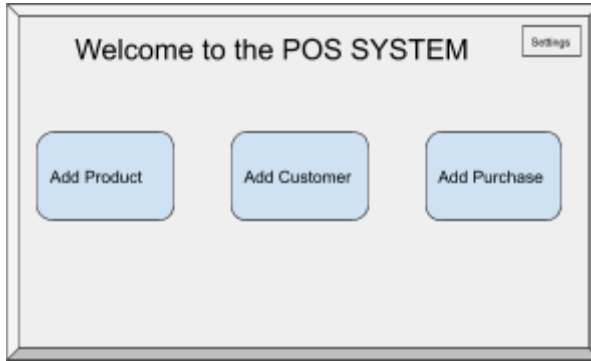
Actor	System
Log into system	Display main page 
Select Add Product	Display Add Product Screen

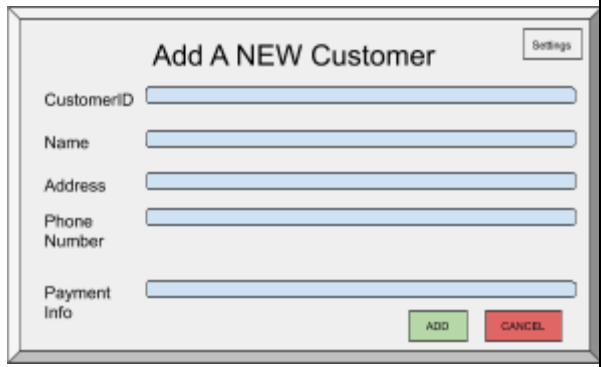
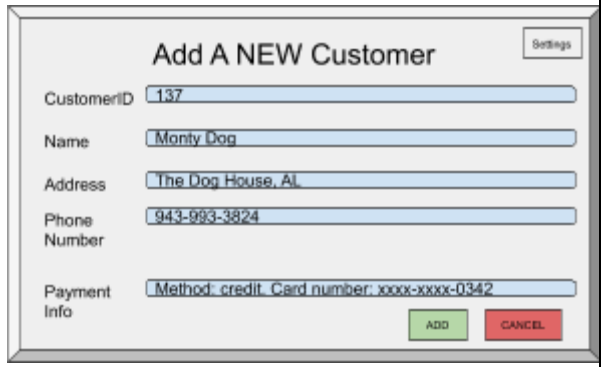
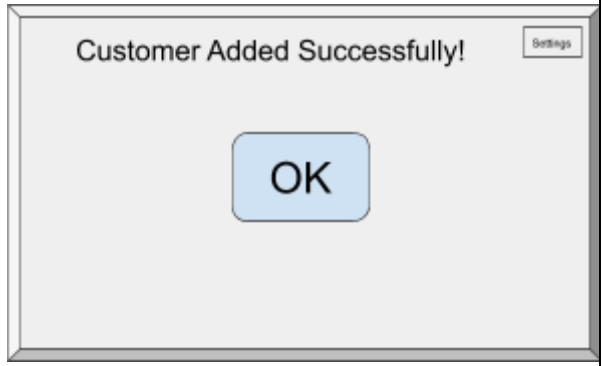
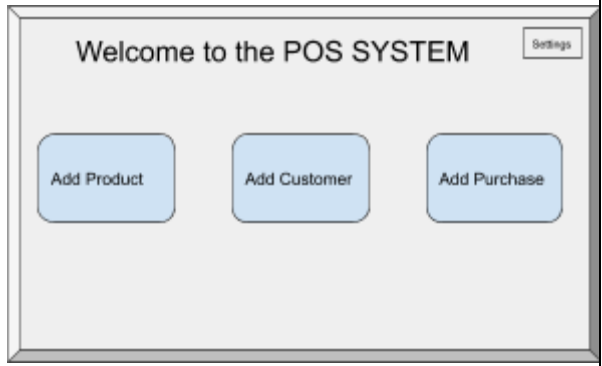
	
Fill out product attributes	
Confirm entry	<p>Hide the “Add NEW Product” screen and display a “Duplicate Product ID warning” screen</p> 
Select “BACK” to navigate back to adding the product	<p>Display previous “Add Product” screen. Either the user inputs a new ID and the first use case occurs, or they still enter a duplicate ID and the warning appears again.</p>

- As a user, I want to add a new customer into the system.

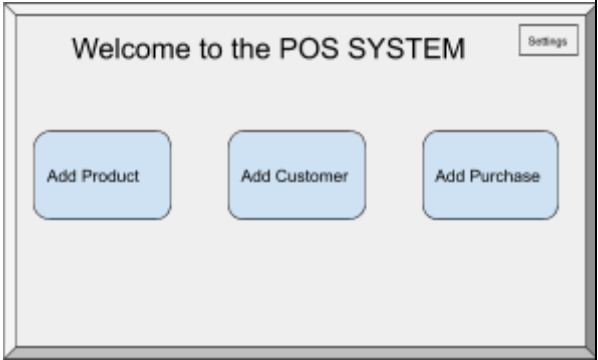

* Adding a Customer can either add successfully if there is no other customer with the given customerID, or may error if there is already a matching customer id, or if the user fails to input all the required fields. For this project we will look at the cases where adding a customer goes smoothly and then where they input a duplicate id.

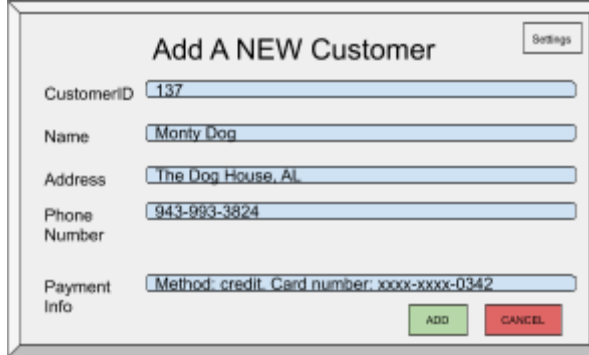

- A. Name: Adding a new customer into the system
- B. Actors: Manager (or employee with appropriate permissions)
- C. Goals: add add customer
- D. Preconditions: must be the correct user, customer should not already be in the system
- E. Summary: the user will log into the product management section and add a new customer with the appropriate attributes such as Name, Address, customerID, phone number, payment info, ...
- F. Related use cases- update customer info
- G. Steps:

Actor	System
Log into system	Display "Main" landing page 
Select "Add Customer"	Display "Add NEW Customer" screen

	
Fill out customer attributes	
Confirm changes	Display “Customer Added” page 
Select “OK”	Display “Main” page again 

- H. Name: Adding a new customer into the system (edge case: Duplicate customerID)
- I. Actors: Manager (or employee with appropriate permissions)
- J. Goals: add add customer
- K. Preconditions: must be the correct user, customer should not already be in the system
- L. Summary: the user will log into the product management section and add a new customer with the appropriate attributes such as Name, Address, customerID, phone number, payment info, ...
- M. Related use cases- update customer info
- N. Steps:

Actor	System
Log into system	Display “Main” landing page 
Select “Add Customer”	Display “Add NEW Customer” screen 

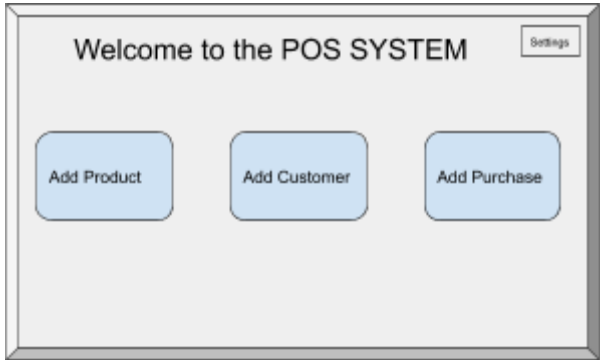
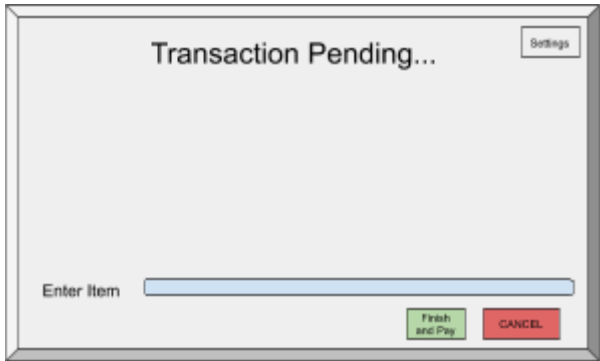
Fill out customer attributes	
Confirm changes	<p>Display “Duplicate ID Warning” page</p> 
Select “BACK” to navigate back to adding the customer	<p>Display previous “Add Customer” screen. Either the user inputs a new ID and the first use case occurs, or they still enter a duplicate ID and the warning appears again.</p>

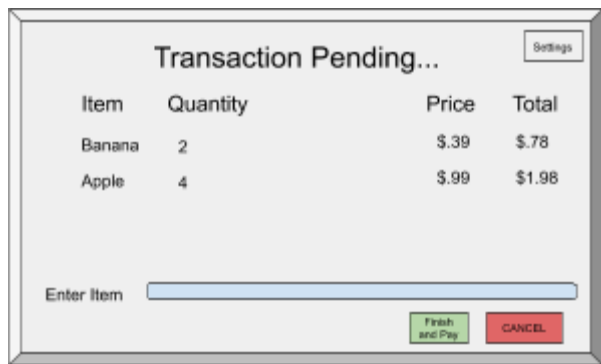
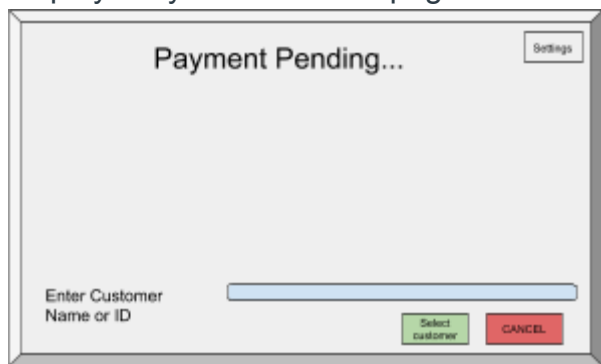
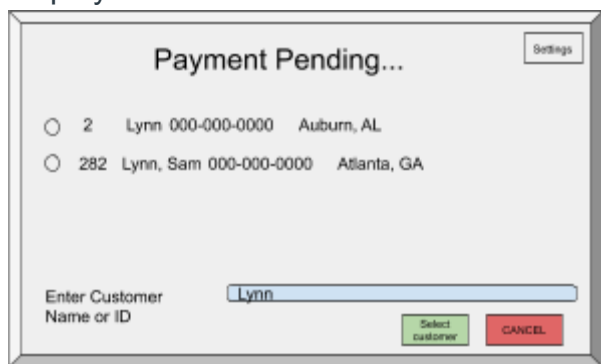
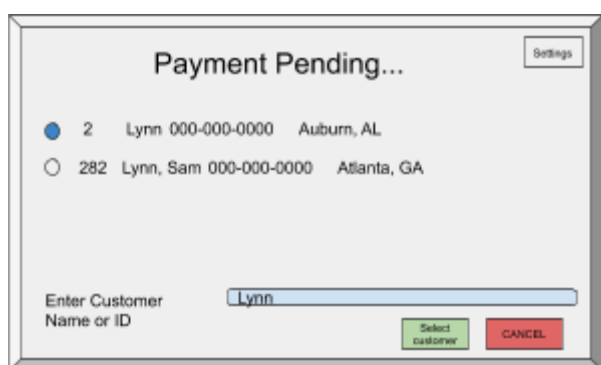
- As a user, I want to record a purchase from a customer into the system.

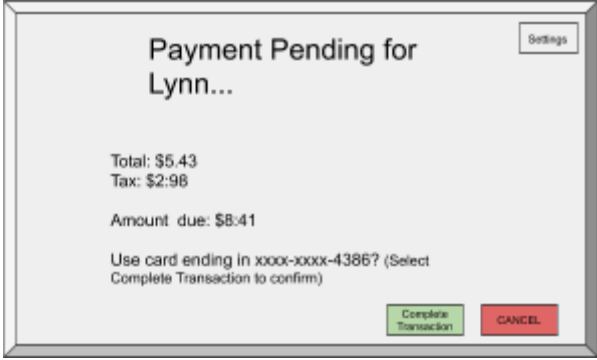
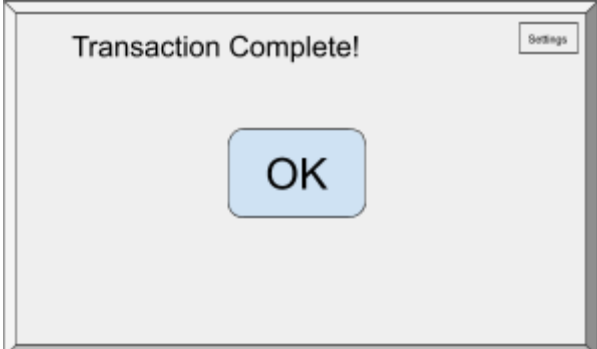
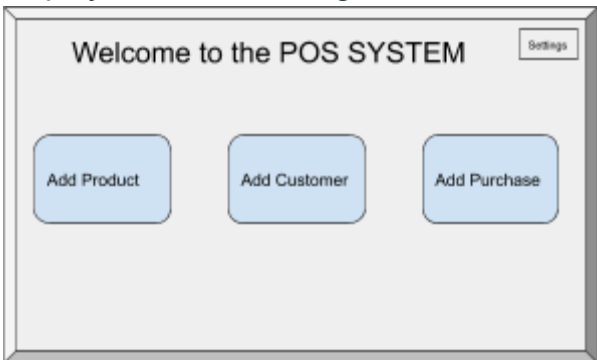
* Adding a purchase can either add successfully if there is no other purchase with the given purchaseID AND there are existing customers and products with the given corresponding ids, or may error if there is already a matching purchase id, no existing customer or product, or if the user fails to input all the required fields. For this project we will look at the cases where adding a purchase goes smoothly and then where they input a product id that does not match any stored product.

- A. Name: Record a new purchase into the system
- B. Actors: Manager (or cashier)
- C. Goals: record a transaction

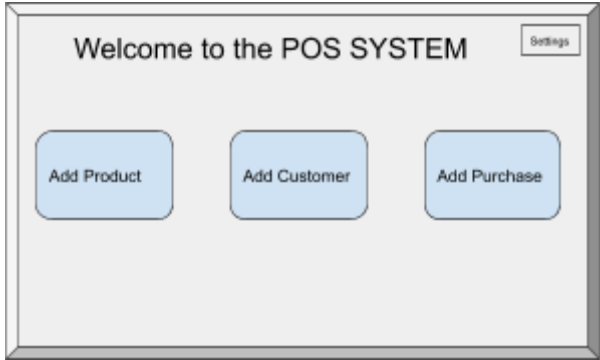
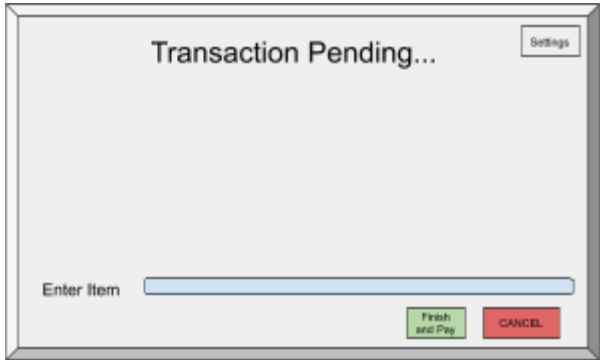
- D. Preconditions: must be the correct user, customer must have selected products to buy and have a means of purchasing them
- E. Summary: the user will log into the product management section and add a new purchase. All appropriate attributes must be recorded including all product information from the product database, and the customer info and purchase method from the customer database.
- F. Related use cases- add/update products and add/update customer (required to access all needed info to complete transaction)
- G. Steps:


Actor	System
Log into system	Display "Main" landing screen 
Select "Add Purchase"	Display Add NEW Purchase page 
Scan products or enter manually	Populate transaction with products

	 <p>The screen is titled "Transaction Pending..." with a "Settings" button in the top right. It contains a table with the following data:</p> <table><tr><th>Item</th><th>Quantity</th><th>Price</th><th>Total</th></tr><tr><td>Banana</td><td>2</td><td>\$.39</td><td>\$.78</td></tr><tr><td>Apple</td><td>4</td><td>\$.99</td><td>\$ 1.98</td></tr></table> <p>Below the table is a text input field labeled "Enter Item". At the bottom right are two buttons: "Finish And Pay" (green) and "CANCEL" (red).</p>	Item	Quantity	Price	Total	Banana	2	\$.39	\$.78	Apple	4	\$.99	\$ 1.98
Item	Quantity	Price	Total										
Banana	2	\$.39	\$.78										
Apple	4	\$.99	\$ 1.98										
Select "Finish And Pay"	 <p>The screen is titled "Payment Pending..." with a "Settings" button in the top right. It contains a text input field labeled "Enter Customer Name or ID". At the bottom right are two buttons: "Select customer" (green) and "CANCEL" (red).</p>												
Enter Customer name or ID	 <p>The screen is titled "Payment Pending..." with a "Settings" button in the top right. It displays a list of two customers:</p> <ul style="list-style-type: none"><input type="radio"/> 2 Lynn 000-000-0000 Auburn, AL<input type="radio"/> 282 Lynn, Sam 000-000-0000 Atlanta, GA <p>Below the list is a text input field labeled "Enter Customer Name or ID" containing the text "Lynn". At the bottom right are two buttons: "Select customer" (green) and "CANCEL" (red).</p>												
Select Customer	 <p>The screen is titled "Payment Pending..." with a "Settings" button in the top right. It displays the same list of two customers as the previous screen, but the first customer is now selected:</p> <ul style="list-style-type: none"><input checked="" type="radio"/> 2 Lynn 000-000-0000 Auburn, AL<input type="radio"/> 282 Lynn, Sam 000-000-0000 Atlanta, GA <p>Below the list is a text input field labeled "Enter Customer Name or ID" containing the text "Lynn". At the bottom right are two buttons: "Select customer" (green) and "CANCEL" (red).</p>												

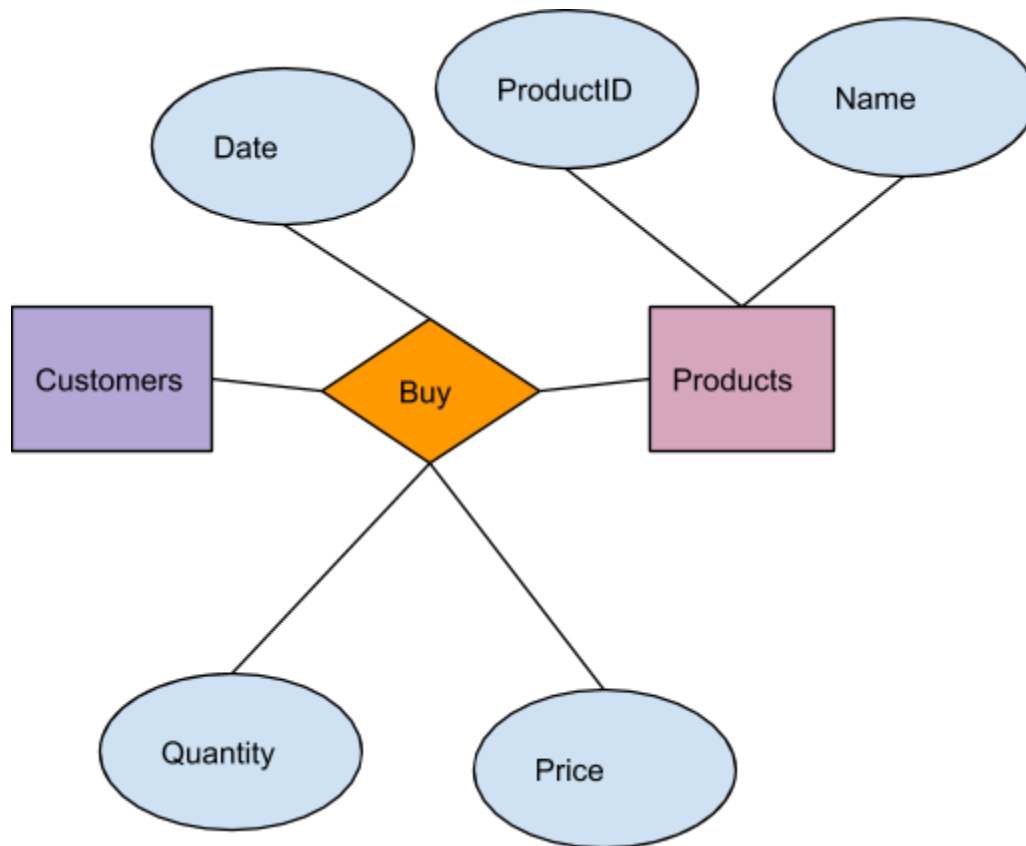
<p>Select “Select Customer” button</p>	<p>Populate with customer info/ prompt payment method</p>  <p>The screenshot shows a dialog box titled "Payment Pending for Lynn...". It contains the following text: "Total: \$5.43", "Tax: \$2.98", "Amount due: \$8.41", and "Use card ending in xxxx-xxxx-4386? (Select Complete Transaction to confirm)". At the bottom, there are three buttons: "Settings" (top right), "Complete Transaction" (bottom left, green), and "CANCEL" (bottom right, red).</p>
<p>Select Confirm transaction</p>	<p>Display “Transaction Complete!” screen</p>  <p>The screenshot shows a dialog box titled "Transaction Complete!". It contains a single large blue button labeled "OK". A "Settings" button is located in the top right corner.</p>
<p>Select “OK”</p>	<p>Display “Main” screen again</p>  <p>The screenshot shows the main screen of the POS system, titled "Welcome to the POS SYSTEM". It features three blue buttons arranged horizontally: "Add Product", "Add Customer", and "Add Purchase". A "Settings" button is located in the top right corner.</p>

- H. Name: Record a new purchase into the system (Edge case: item not found)
- I. Actors: Manager (or cashier)
- J. Goals: record a transaction
- K. Preconditions: must be the correct user, customer must have selected products to buy and have a means of purchasing them
- L. Summary: the user will log into the product management section and add a new purchase. All appropriate attributes must be recorded including all product information from the product database, and the customer info and purchase method from the customer database.
- M. Related use cases- add/update products and add/update customer (required to access all needed info to complete transaction)
- N. Steps:

Actor	System
Log into system	Display "Main" landing screen 
Select "Add Purchase"	Display Add NEW Purchase page 

<p>Enter a productID/ scan the item to retrieve the productID</p>	
<p>Return to “New Purchase” page</p>	<p>Display previous “Add Customer” screen. Either the user inputs a new ID and the first use case occurs, or they still enter a duplicate ID and the warning appears again.</p>

2. Draw the entity-relationship diagram for this system. We assume the minimal requirement with two entities: products and customers, and one relationship "a customer purchases a product".



3. Design the database logically, i.e., write the relations, attributes, and define keys.

Products:

- barcode, name, productid, expiration date, price, tax rate, quantity, supplier, manufactured date,...

Products(productid, barcode, name, expiration date, price, tax rate, quantity, supplier, manufactured date)

Customers:

- Name, Address, customerID, phone number, payment info, ...
- Customers(CustomerID, name, address, phone number, payment info)

Relationship:

- Buy: date, time, quantity, price, tax, total cost
- purchase(transactionID, customerID, productID, date, time, quantity, price, tax, total cost)

cost)

Using table specific IDs as key.

4. Design the database physically using SQL, i.e., write SQL code to create the tables for those relations.

```
CREATE TABLE "Customers" (  
    "CustomerID"    INTEGER NOT NULL,  
    "Name"          TEXT DEFAULT 'Guest',  
    "Phone"         TEXT DEFAULT '(000)000-000',  
    "Address"       TEXT,  
    PRIMARY KEY("CustomerID")  
);
```

```
CREATE TABLE "Products" (  
    "ProductID"    INTEGER NOT NULL,  
    "Name"         TEXT,  
    "Price"        REAL,  
    "Quantity"     REAL,  
    "Tax Rate"     REAL,  
    PRIMARY KEY("ProductID")  
);
```

```
CREATE TABLE "Purchases" (  
    "TransactionID" INTEGER NOT NULL,  
    "CustomerID"    INTEGER,  
    "ProductID"     INTEGER,  
    "Date"          REAL,
```

```

        "Time"REAL,
        "Quantity"    INTEGER,
        "Price"REAL,
        "Tax"  REAL,
        "Total"REAL,
        PRIMARY KEY("TransactionID"),
        FOREIGN KEY("CustomerID") REFERENCES
"Customers"("CustomerID"),
        FOREIGN KEY("ProductID") REFERENCES "Products"("ProductID"),
        FOREIGN KEY("Price") REFERENCES "Products"("Price")
    );

```

5. Insert data into the tables, with at least 5 products, 5 customers, and 10 purchases.

Products

1	Apple	0.99	100.0	0.09
2	Orange	1.99	200.0	0.09
3	Banana	0.39	150.0	0.09
7	Water	2.0	150.0	0.09
12	Chips	3.99	150.0	0.09
34	Coke	0.69	100.0	0.09

12,12,34,7,3,1,12

Customers

1	Ellie	999-999-9999	USA
2	Lynn	000-000-0000	Auburn, AL

3	Emma	000-000-0000	Japan
7	Monty	000-000-0000	America
8	Meg	314-245-3775	New York
81	Matt	202-978-1423	India
282	Sam	000-000-0000	Atlanta, GA
953	Hannah	000-000-0000	France

1	1	1	9/10/19	2:34	2	0.99	0.09	2.36
2	1	7	9/10/19	5:00	1	2.0	0.09	2.09
3	7	3	2/17/12	3:00	1	0.39	0.09	0.48
4	953	12	3/19/15	4:00	2	3.99	0.09	8.16
5	81	12	4/19/13	3:00	1	3.99	0.09	4.08
6	953	34	8/20/15	2:00	3	0.69	0.09	2.34
7	282	7	5/12/19	7:00	2	2.0	0.09	4.18
8	7	3	4/2/19 8:00		1	0.39	0.09	0.48
9	2	1	6/5/17 11:00		3	0.99	0.09	3.24
10	8	12	6/9/17 2:00		2	3.99	0.09	8.16

See .db

Below is an alternative view for adding a purchase if the purchase is only done one product at a time manually rather than the method in the case studies above that scans multiple products in one purchase and then calculates the totals and charges the customer accordingly.

Add A NEW Purchase

Settings

PurchaseID

Purchase Date[Actual Date]

CustomerID

Customer Name [Actual Name]

ProductID

ProductName [Actual Name]

Quantity

Price [Actual Price]

Tax Total:

Tax Cost:

ADD

CANCEL