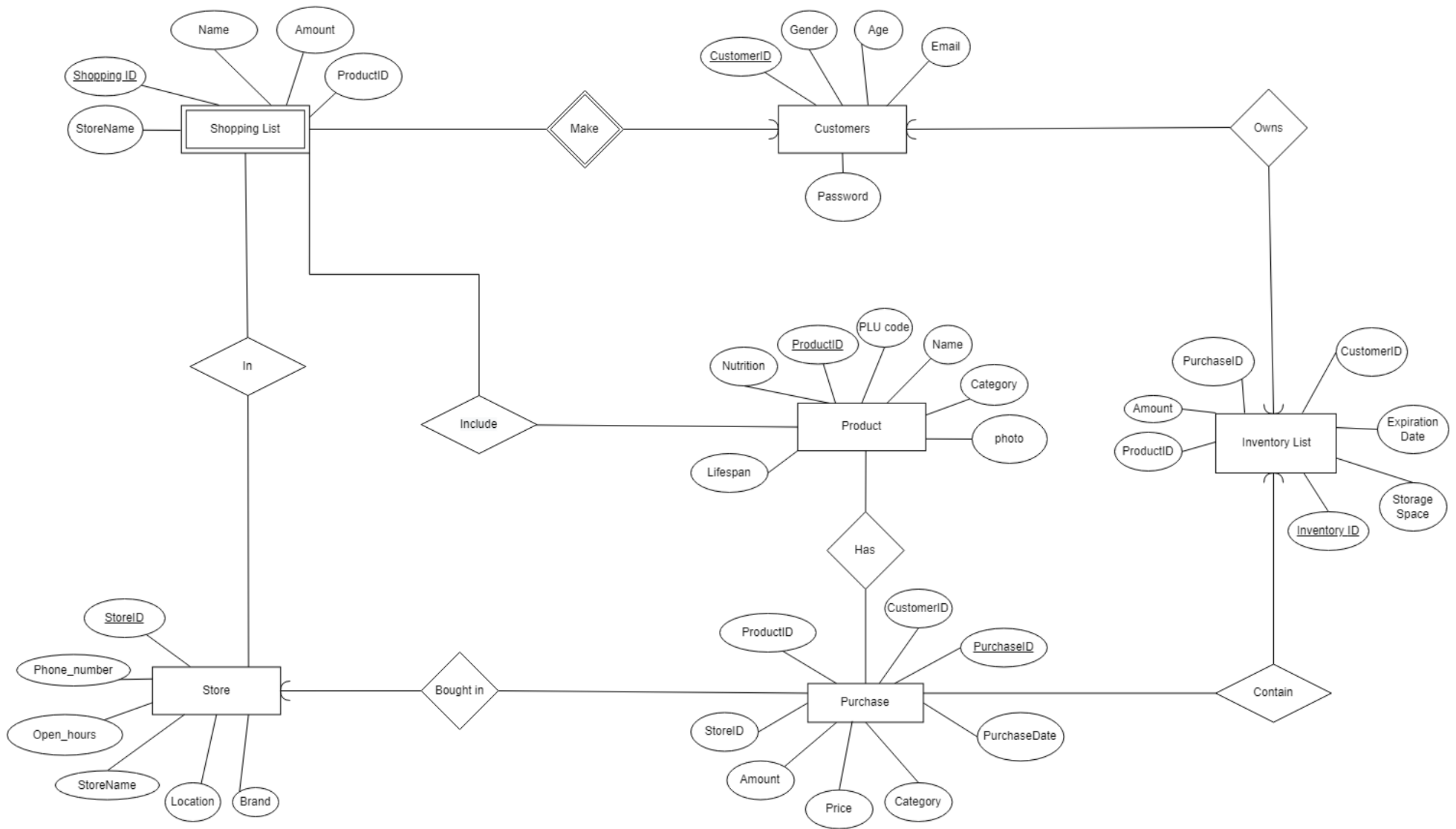


## CS411 - Team48 - Project Track 1

### Stage 2: Conceptual and Logical Database Design



## Entity and Relationship

1. Shopping List→ Customer: Every customer can have no shopping list when creating an account or deleting all lists. They can also have more than one list. For example, they have one list for Costco, one list for Walmart, and one list for Trader Joe.
  - a. Many to one
2. Customer→ Inventory List: Every customer has only one inventory list, and it can be empty. Every inventory list can only be owned by one customer.
  - a. One to one
3. Product→Purchase: Customers could buy multiple products in one purchase, and each product could belong to multiple purchases. For example, two customers could buy the same product in two different purchases.
  - a. Many to many
4. Purchase→ Store: The purchase could only be made in one store at a time. While in each store, there could be 0 or multiple purchases.
  - a. Many to one
5. Shopping List → Product: Each shopping list can include nothing when it just is created, and it can include many products in one list.
  - a. Many to Many
6. Shopping List →Store: every shopping list must have at least one store to note where to buy these things. But not all stores will be in the shopping list because customers may not want to buy something in some stores.
  - a. Many to many
7. Inventory List → Purchase: The inventory list can contain zero purchases when creating an account. Every purchase must be in only one inventory list, and the purchase would be automatically added to the list by the application.
  - a. Many to one

## Relational Schema

**Customers**(CustomerID:VARCHAR(255)[PK], Gender: CHAR(1), Age: INT, Email: VARCHAR(255), Password: VARCHAR(255));

**Purchase**(PurchaseID: VARCHAR(255)[PK], CustomerID: VARCHAR(255) [FK to Customers.CustomerID], ProductID: INT [FK to Product.ProductID], StoreID: INT [FK to Store.StoreID], InventoryID: varchar(255) [PK to InventoryList.InventoryID], PurchaseDate: DATE, Category: VARCHAR(255), Price: REAL, Amount: VARCHAR(255))

**Product**(ProductID: INT[PK], PLUcode: INT, Name: VARCHAR(255), Lifespan: VARCHAR(255), Nutrition: VARCHAR(255), photo: VARCHAR(255))

**InventoryList**(CustomerID: VARCHAR(255) [FK to Customers.CustomerID], InventoryID: VARCHAR(255)[PK], PurchaseID: VARCHAR(255) [FK to Purchase.PurchaseID], ProductID: VARCHAR(255)[FK to Product.ProductID], ExpirationDate: date, StorageSpace: varchar(255), Amount:varchar(255)[FK to Purchase.Amount])

**ShoppingList**(ShoppingID: VARCHAR(255) [PK], CustomerID: VARCHAR(255) [FK to Customers.CustomerID], ProductID: VARCHAR(255) [FK to Purchase], StoreID: INT [FK to Store.StoreID], Amount: VARCHAR(255))

**Store**(StoreID: INT[PK], Name: VARCHAR(255), PhoneNumber: VARCHAR(255), Location: VARCHAR(255), OpenHours: VARCHAR(255), Brand: VARCHAR(255), )

**Has**(PurchaseID: VARCHAR(255) [FK to Purchase.PurchaseID], ProductID: VARCHAR(255) [FK to Product.ProductID])

**Include**(ShoppingID: VARCHAR(255) [PK] [FK to ShoppingList.ShoppingID], ProductID: VARCHAR(255)[FK to Product.ProductID])

**In**(StoreID: INT[PK][FK to Store.StoreID], ShoppingID: VARCHAR(255) [PK][FK to ShoppingList], CustomerID:VARCHAR(255)[PK])