TAIPEI 101 COMPUTERS

Mission Statement:
Taipei 101 Computers sells different types of laptops based on processor and panel size and intends to develop a website for selling laptops online and tracking sales.

Mission Objectives:
-How many laptops were sold in the 2nd quarter of 2022?
-Which gender contributed significantly to the sales of laptops?
-Which shipment mode do customers largely prefer?
-Find the details and quantity of the top 5 selling laptops

The business description includes:
-Each customer is identified by a unique customerID, name of the customer, gender of the customer, and phone number of the customer.
- Each product is described by a unique productID, name of the product, type of CPU, size of the panel, and, price of the product.
- Each order is identified by a unique orderID, and date of the order. Each customer places one or more orders.
- Each order can contain at least 1 product. Since there can be multiple products in each order, this relationship is described by an attribute quantity. Each product can be included in 0 or more orders.
- Each shipment arranged for delivery is identified by a shipmentID. This is further described by the mode of shipment, and the expected and actual date of delivery to the customer.
- However, each shipment can fulfill one or more orders in a single delivery

ER Schema:
Entities, Attributes and Primary Keys

Customer (**customerID**, customerName, cuatomerGender, customerPhoneNumber)
Order (**orderID**, orderDate)
Product (**productID**, productName, productCPUType, productPanel, productPrice)
Shipment (**shipmentID**, shipmentMode, estimatedDeliveryDate, actualDeliveryDate)

Relationships, Attributes, Degrees, Participating Entities and Constraints
Place: binary relationship

1 customer to 0 or more orders
1 order to 1 customer

Include: binary relationship

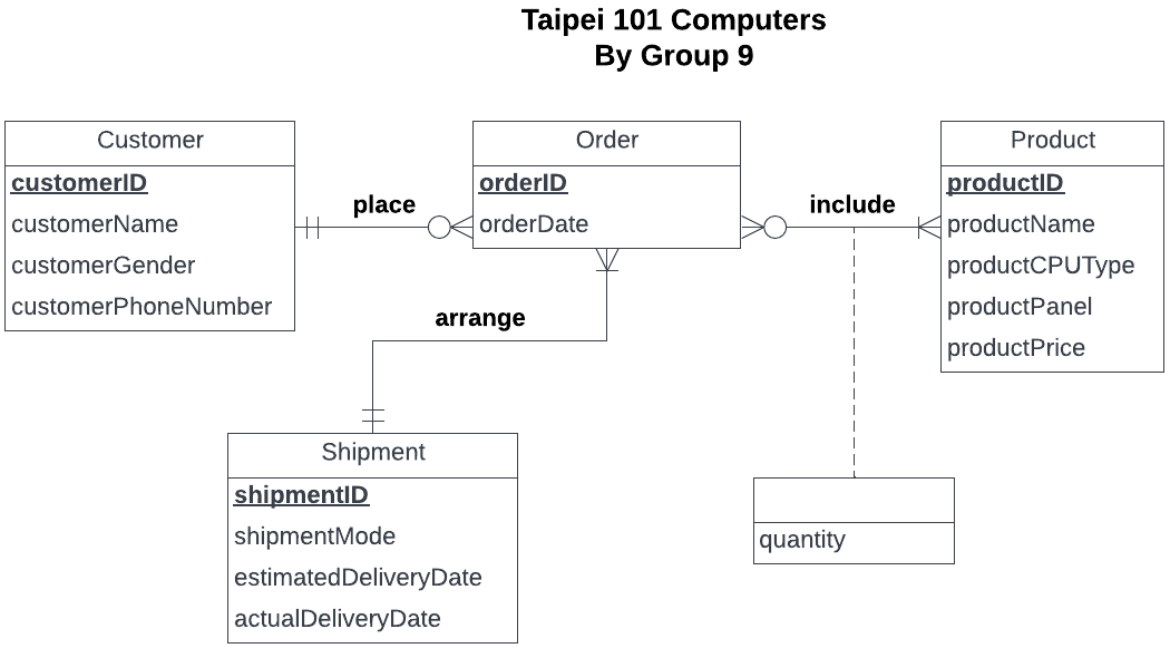
1 order to 1 or many products
1 product to 0 or many orders

Arrange: binary relationship

1 order to 1 shipment

1 shipment to 1 or many orders.

ER Diagram:



Relational Model:

Customer (**customerID**, customerName, cuatomerGender, customerPhoneNumber)

Order (**orderID**, orderDate**,** *customerID, shipmentID*)

Product (**productID**, productName, productCPUType, productPanel, productPrice)

Shipment (**shipmentID**, shipmentMode, estimatedDeliveryDate, actualDeliveryDate)

Include(***orderID*, *productID,*** quantity)

Business rules:

[R1] When a customer cancels the order or is removed from the platform, then order information should be removed from the database.

[R2] If a customer modifies the order, then order information should be changed accordingly.

[R3] If an order is canceled, then shipment information should be deleted accordingly.

[R4] When the order is modified/ changed, the shipment information must be changed.

[R5] When an order is deleted from the database, then all the products included in the order will be deleted accordingly.

[R6] When the information on an order is changed in the database, then the corresponding product included in the order information should be changed accordingly.

[R7] When a product is no longer in the database, the order information will be deleted.

[R8] When the information on a product is changed in the database, then the corresponding order information should be changed accordingly.

Referential integrity:

Relation	Foreign Key	Base Relation	Primary Key	Business Rule	Constraint: ON DELETE	Business Rule	Constraint: ON UPDATE
Order	customerID	Customer	customerID	R1	CASCADE	R2	CASCADE
Order	shipmentID	Shipment	shipmentID	R3	CASCADE	R4	CASCADE
Include	orderID	Order	orderID	R5	CASCADE	R6	CASCADE
Include	productID	Product	productID	R7	CASCADE	R8	CASCADE

Sample Data:

Customer:

customerID (VARCHAR)	**customerName** (VARCHAR)	**customerGender** (VARCHAR)	**customerPhone** (VARCHAR)
C000001	A-Bomb	Male	240-134-1100

Product:

productID (VARCHAR)	**productName** (VARCHAR)	**productCPU** (VARCHAR)	**productPanel** (INT)	**productPrice** (DECIMAL)
P000001	GT76 TitanDT 10SFS	i7-10700K	17	1899.99

Shipment:

shipmentID (VARCHAR)	**shipmentMode** (VARCHAR)	**estimatedDeliveryDate** (DATE)	**actualDeliveryDate** (DATE)
S000001	Truck	2022/1/1	2022/1/1

Order:

orderID (VARCHAR)	**orderDate** (DATE)	**customerID** (VARCHAR)	**shipmentID** (VARCHAR)
O000001	2021/12/1	C000001	S000001

Include:

orderID (VARCHAR)	**productID** (VARCHAR)	**quantity** (INT)
O000001	P000001	2