EGE UNIVERSITY

FACULTY OF ENGINEERING

COMPUTER ENGINEERING DEPARTMENT

INTRODUCTION TO DATABASES

2024–2025 FALL SEMESTER

PROJECT REPORT

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PREPARED BY GROUP 30

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# ANALYSIS AND CONCEPTUAL DESIGN

Data requirements

Amazon

1- Each user can be customer, seller or both. Sellers must be only one of the independent or institutional seller. Seller has a unique id, location, name, products, contact and reviews. Sellers work with logistic companies, refund to payment method and send logistics.

2- Each customer has a unique account. The database must store unique customer ID, name, email, phone number, address, password. Each customer display wishlist and order. Wishlist can be public, shared or private. Wishlists has a unique id, number of products and name. Shared wishlists has collaborator info and number of views , public wishlists has number of followers info and views.

3- Customer confirms and returns order, has a cart and makes review. Cart concludes order and includes shop spesific product. Order has a unique order id, status, final price. Each order includes order item. Order item has unit price and quantity info. Cart has total price, number of products and coupon.

4- Product has a unique product id, photos, description, name and review. Products with the same id can be selled by different sellers with different prices and different stocks.

5- Each product is in a category and each category has a unique name. These categories may have several subcategories.

6- Wishlist includes product.

7- Customer may have Prime membership. Prime membership has advantages, price and expiration date.

8- Customer should have payment method that pays order. Payment method has currency and unique payment id. Payment method can be either giftcard or credit card. Giftcards have balance and unique giftcard's code. Credit cards have card holder, unique card number and cvv.

9- Each logistics company has name and the logistics company must be either local or global. Global logistics company has duty and country name info. All of the logistics companies handle with logistics. Logistics has a unique logistics id, seller name, delivery date, phone number, delivery address and receiver name. Logistics handles order.

AMAZON
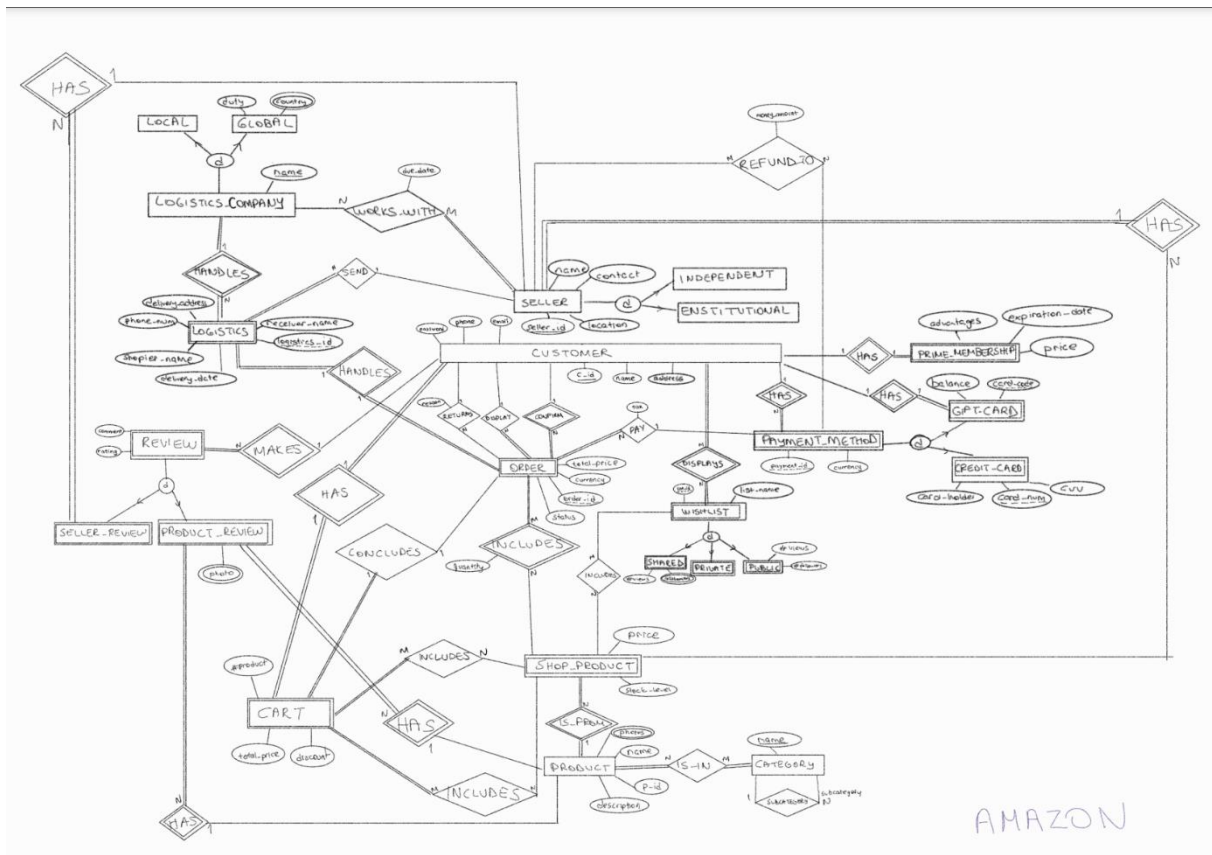
Hepsiburada

1- A user must be either shop or customer. Shop has a unique id, location, name, products, contact and reviews. Shop works with logistics company, refunds to payment method and sends logistics.

2- Each customer has a unique account. The database must store unique customer ID, email and password. Each customer display order and wishlist. Wishlist can be public or private. Wishlist has a name, number of products and unique list id. Public wishlist has number of views and number of followers info.

3- Customer holds customer's info which has address, fullname composed of name and surname, gender, birthday, phone number and contact info.

4- Customer confirms and returns order, has a cart and makes review. Cart concludes order and includes shop spesific product. Order has a unique order id, status, final price. Each order includes order item. Order item has unit price and quantity info. Cart has total price, number of products and coupon.

5- Product has a unique product id, photos, description, name and review. Products with the same id can be sold by different shops with different prices and different stocks.
6- Each product is in a category and each category has a unique name. These categories may have several subcategories.
7- Wishlist includes product.
8- Customer may have Premium membership. Premium membership has advantages, price and expiration date.
9- Customer should have payment method that pays order. Payment method has currency and unique payment id. Payment method can be either Hepsipay or credit card. Hepsipay have balance and campaigns and a unique hepsipay id. Credit cards have card holder, unique card number and cvv.
10- Logistics company has name and handles with logistics. Logistics handles order. Each logistics has unique logistics id, shopier name, delivery date, delivery address, receiver name and phone number.


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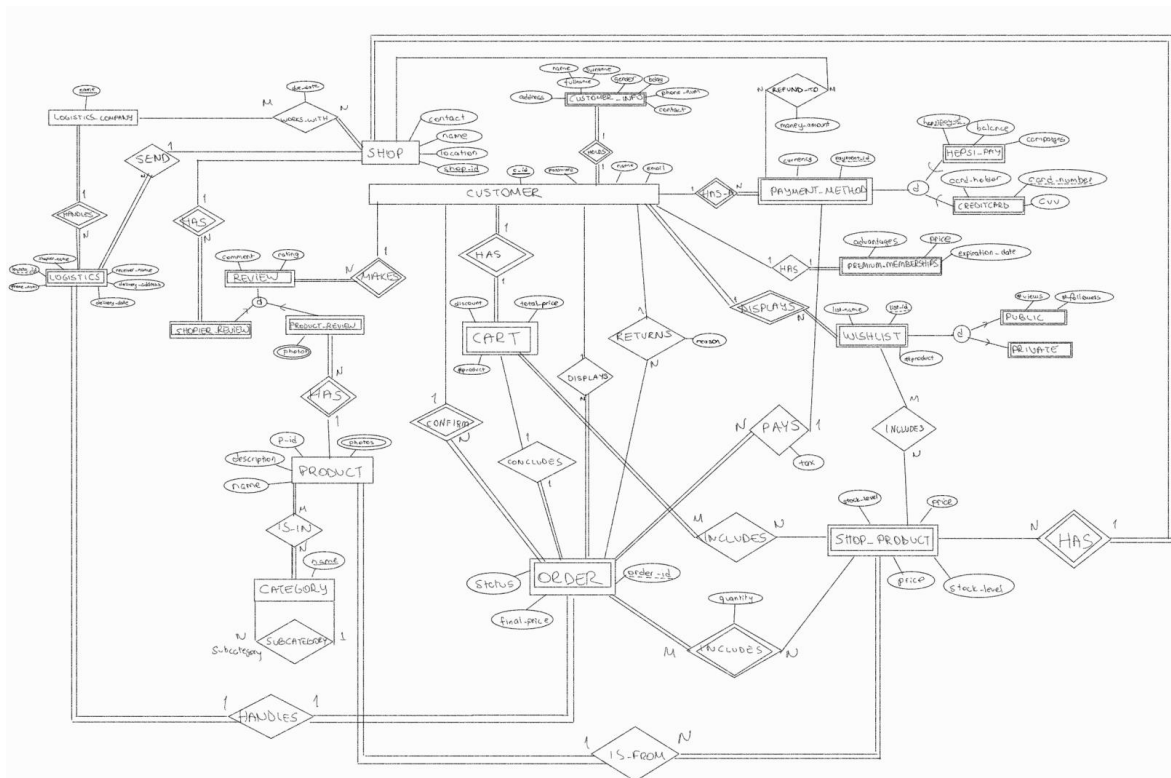
Trendyol

1- Each user must be either customer or shop. Shop has a unique id, location, name, products, contact and reviews. Shop works with logistics company, refunds to payment method and sends logistics. A shop must be either dolap account or institutional shop. Dolap has a unique id, number of followers, follows, product and sells. Customer may have dolap account. Instutional shop must be either Trendyol Go shop or Trendyol Pazaryeri shop. Trendyol Go shop has minimum price, arrival time and working hours. Trendyol Go uses packet service. Packet service has a type. A Trendyol Go shop must be only one of the "Hızlı Market" , "Su ve Damacana" and "Yemek". A Hızlı Market shop has market type and Yemek shop has cuisine.

2- Each customer has a unique account. The database must store unique customer ID, total point, isElite attribute, email and password. Each customer display order and wishlist. Wishlist has a unique id, number of products and name. Wishlist can be either favourites or collection. The database must store collection's number of products, followers and views. Collection can be either created by customer or followed.

3- Customers can stream a live video and give coupons to viewers. Live video has start time.

4- Customer holds customer's info which has address, fullname composed of name and surname, gender, birthday, height, weight info and phone number.

5- Customer confirms and returns order, has a cart, makes review. Cart concludes order and includes shop spesific product. Order has a unique order id, status, final price. Each order includes order item. Order item has unit price and quantity info. Cart has total price, number of products and coupon.

6- Product has a unique product id, photos, description, name and review. Products with the same id can be selled by different shops with different prices and different stocks.

7- Each product is in a category and each category has a unique name. These categories may have several subcategories.

8- Wishlist includes product.

9- Customer earns points when orders an order and makes a review. This points provides Elite membership to customer account.

10- Customer should have payment method that pays order. Payment method has currency and unique payment id. Payment method can be either shopping credit or credit card. Shopping credit has loan term, interest rate and type. Credit card has cart holder info, unique card number and cvv.

11- Logistics company has name and handles with logistics. Logistics handles order. Each logistics has unique logistics id, shopier name, delivery date, delivery address, receiver name and phone number.
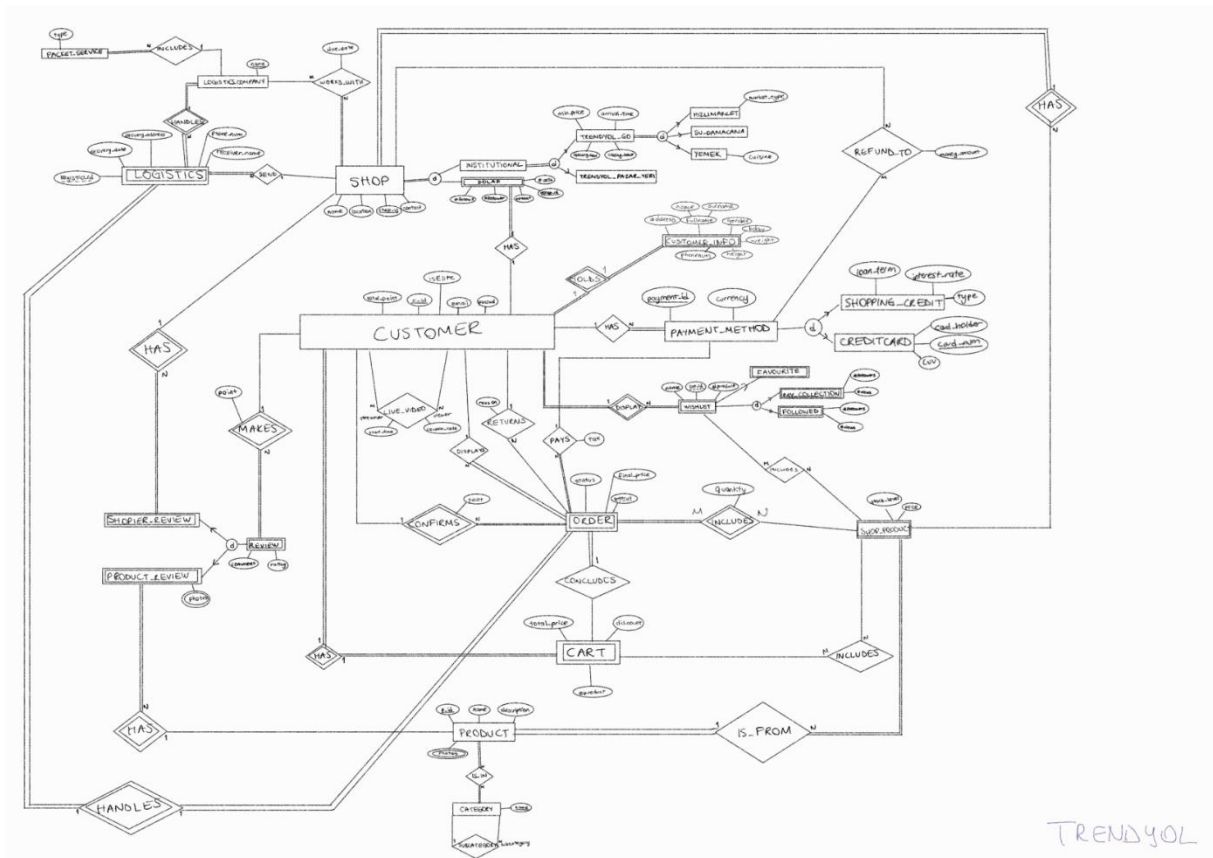
TRENDYOL

Combining them:

We wrote the same thing for the same entities. If the logic is different among the websites (e.g. wishlist) we tried to create largest scope that covers all the differences.
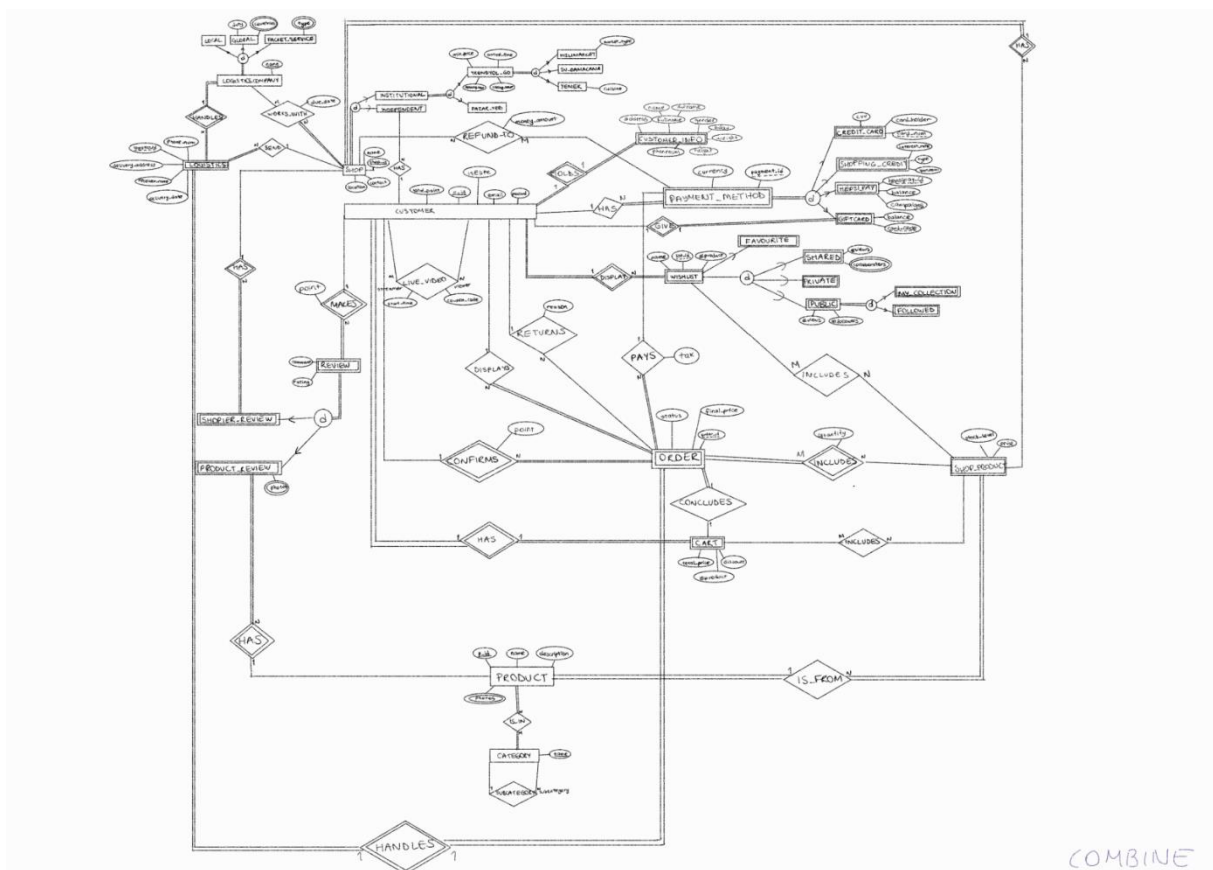
COMBINE

DESIGN-LOGICAL MODEL

Relational Schema Steps

First iteration:

1- SHOP(<u>shopID,</u> name, contact, location)
CUSTOMER(<u>customerID</u>, email, passwd, total_point, isElite)
PRODUCT(<u>productID</u>, name, description)
CATEGORY(<u>category_name</u>)
LOGISTICS_COMPANY(<u>company_name</u>)

2- CUSTOMER_INFO(<u>CUSTOMER.customerID</u>, phonenum, address, gender, name, surname, bday, weight, height)
PAYMENT_METHOD(<u>CUSTOMER.customerID, payment_id,</u> currency)
GIFTCARD(<u>CUSTOMER.customerID, card_code</u>, balance)
WISHLIST(<u>CUSTOMER.customerID, listID</u>, name, #products)
ORDER(<u>CUSTOMER.customerID, orderID</u>, status, final_price)
CART(<u>CUSTOMER.customerID,</u> total_price, discount, #products)
SHOP_PRODUCT(<u>SHOP.shopID</u>, stock_level, price)
REVIEW(<u>CUSTOMER.customerID</u>, comment, rating)
PRODUCT_REVIEW(<u>PRODUCT.productID</u>)
SHOPIER_REVIEW(<u>SHOP.shopID</u>)
LOGISTICS(<u>LOGISTICS_COMPANY.company_name, logisticsID</u>, phonenum, delivery_address, receiver_name, delivery_date)

3- CUSTOMER(<u>customerID</u>, email, passwd, total_point, isElite, phonenum, address, gender, name, surname, bday, weight, height)

4- ORDER(<u>CUSTOMER.customerID, paymentID, orderID</u>, status, final_price, return_reason, tax)
SHOP_PRODUCT(<u>SHOP.shopID, PRODUCT.productID,</u> stock_level, price)
REVIEW(<u>CUSTOMER.customerID</u>, comment, rating, point)
LOGISTICS(<u>LOGISTICS_COMPANY.company_name, SHOP.shopID, logisticsID</u>, phonenum, delivery_address, receiver_name, delivery_date)

5- REFUND_TO(<u>SHOP.shopID, CUSTOMER.customerID, paymentID,</u> money_amount)
CUST_PMETHOD(<u>CUSTOMER.customerID, paymentID</u>)
LIST_SPRODUCT(<u>CUSTOMER.customerID, listID, SHOP.shopID, PRODUCT.productID</u>)
CART_SPRODUCT(<u>CUSTOMER.customerID, SHOP.shopID, PRODUCT.productID</u>)

PRODUCT_CATEGORY(PRODUCT.productID, CATEGORY.category_name)
WORKS_WITH(LOGISTICS_COMPANY.company_name, SHOP.shopID, due_date)
LIVE_VIDEO(CUSTOMER.customerID, start_time, coupon_code)

6- PRODUCT_PHOTO(PRODUCT.productID, photourl)
PRODUCT_REVIEW_PHOTO(PRODUCT.productID, photourl)

7-
8- INSTITUTIONAL_SHOP(SHOP.shopID)
INDEPENDENT_SHOP(SHOP.shopID)
CREDIT_CARD(CUSTOMER.customerID, paymentID, card_number, card_holder, cvv)
SHOPPING_CREDIT(CUSTOMER.customerID, paymentID, interes_rate, type, loan_term)
HEPSI_PAY(CUSTOMER.customerID, paymentID, hepsipayID, balance)
GIFTCARD(CUSTOMER.customerID, paymentID, card_code, balance)
SHARED_WISHLIST(CUSTOMER.customerID, listID, name, #products, #views)
PRIVATE_WISHLIST(CUSTOMER.customerID, listID, name, #products)
PUBLIC_WISHLIST(CUSTOMER.customerID, listID, name, #products, #views, #followers, public_type)
FAVOURITE_WISHLIST(CUSTOMER.customerID, listID, name, #products)
LOCAL_LOGISTICS_COMPANY(company_name)
GLOBAL_LOGISTICS_COMPANY(company_name, duty)
PACKET_SERVICE_LOGISTICS_COMPANY(company_name)
SHOPIER_REVIEW(SHOP.shopID, CUSTOMER.customerID, comment, rating, point)
PRODUCT_REVIEW(PRODUCT.productID, CUSTOMER.customerID, comment, rating, point)
9-

Second iteration

1-

2-
LOGISTICS(LOGISTICS_COMPANY.company_name, SHOP.shopID, CUSTOMER.customerID, ORDER.orderID, logisticsID, phonenum, delivery_address, receiver_name, delivery_date)

3-

4- INDEPENDENT_SHOP(SHOP.shopID, CUSTOMER.customerID)

5- ORDER_SPRODUCT(CUSTOMER.customerID, ORDER.orderID, SHOP.shopID, PRODUCT.productID, quantity)

6- SHARED_WISHLIST_COLLABORATOR(CUSTOMER.customerID, WISHLIST.listID, collaborator)
PRODUCT_REVIEW_PHOTO(PRODUCT.productID, CUSTOMER.customerID, photourl)
GLOBAL_LOGISTICS_COMPANY_COUNTRIES(company_name, country)
PACKET_SERVICE_LOGISTICS_COMPANY_TYPE(company_name, type)

7-

8- PAZARYERI(SHOP.shopID)
TRENDYOL_GO(SHOP.shopID, min_price, arrival_time, opening_hour, closing_hour, tgo_type, market_type, cuisine)

IMPLEMENTATION-PHYSICAL MODEL

// all pdf files added to egeders