SUPERMARKET STOCK TRACKER
(Çağla ŞEN – 150116001 Kevser İLDEŞ – 150116048)

In our project we will construct a database system for shopping stores. It is a general program which can be used for a wide variety of store types but we will especially focus on supermarket – grocery - delicatessen type shopping stores to add more specification to our system. But as we said our database system is a main framework for all shopping stores and it can be adapted to any other shopping store system with modifying or adding little changes to the database system.

Note: As we said above we will concentrate on supermarket – grocery - delicatessen type shopping stores. To increase readability, we will reduce this long word group to just "supermarket" and we will mention like that throughout the text.

Our database system will help firstly to the manager of the supermarket with giving ease of administration to him/her, increasing profits. It will secondly help to the staff with many services which are:

- Defining stores (like grocery, butcher, cosmetic etc.)
- Identifying types of the products (specifying kind of it, for example vegetable or fruit and also which specific type of it (like tropical, berries, melons etc.))
- Keeping data of personals (for both office and market)
- Labeling products
- Stock tracking
- Keeping customer information and giving a bunch of services to them
- Keeping product info which can be vitally important sometimes (for example throwing away the products which are expired)

and the list of beneficial features goes on like that…

Requirement Analysis

- Categorize the products as delicatessen, dairy, desert, bread, grocery etc.
- Keep data of the company' s debts, credits and balances
- Keep the old prices of products in archive.
- Put products in rayon according to type to know where it is placed.
- Keep expenses on the system.
- Keep quantities of stocks in system.
- Give a unique identifier for each entity.
- Keep all locations, addresses, phone numbers of companies working with.
- Have different units of each product (each with different amount like 1 piece, 1 dozen, 1 package, 1 parcel etc.) and keep different prices according to their units.
- Categorize rayon as different kinds (grocery, butcher etc.)
- Keep employees on the system.
- Categorize employees as office workers or market personals.

Business Rules

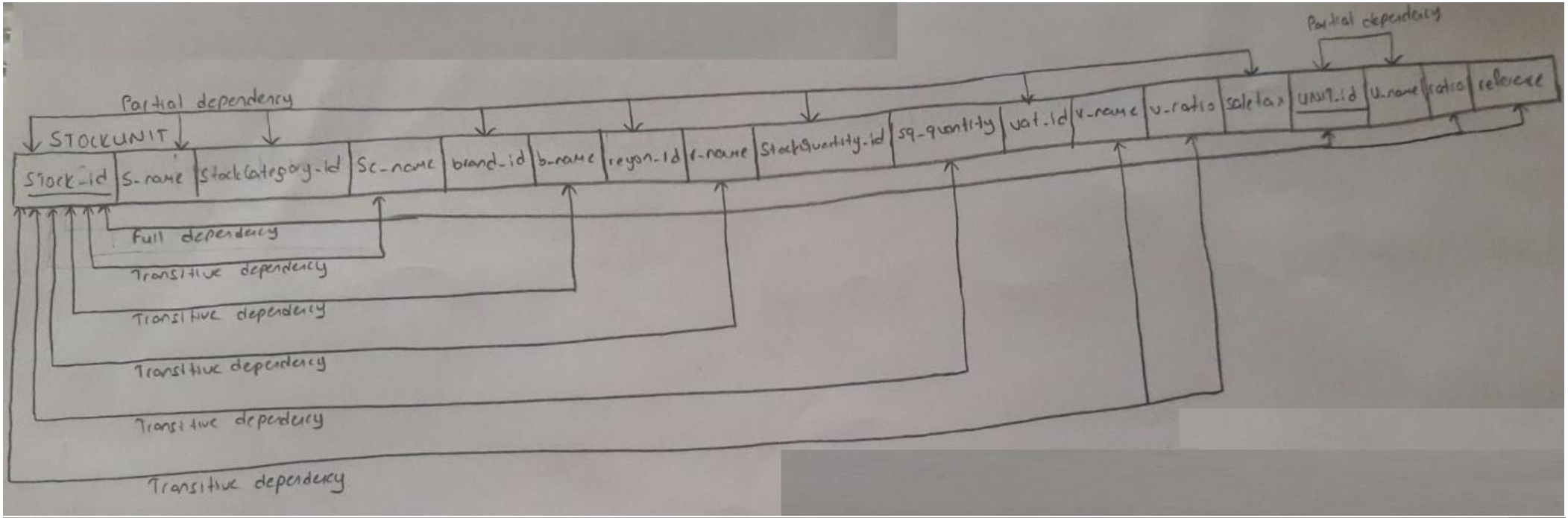
- A stock may have many archived prices. If there is an archived price, there should be one and only one stock.
- A rayon should consist of at least one stock and each stock should be in only one rayon.
- Each stock should have a brand and there may be many stocks belong to same brand.
- A stock may have many stock images and if there is a stock image, then there should be exactly one stock.
- Each stock has a category assigned.
- There are different units for each stock. Each unit has unit id and description about which unit it belongs to.
- A stock unit has unit price assigned to it and a barcode. Prices may differ for different locations and so each price has location specifies where to sell.
- For each stock there has to be at least one label that shows id and prices.
- Each stock has vat (KDV in Turkish) that describes name and ratio.
- Companies have at least one category and exactly one balance. A company also has at least one location and of course there can be several different locations assigned to it.

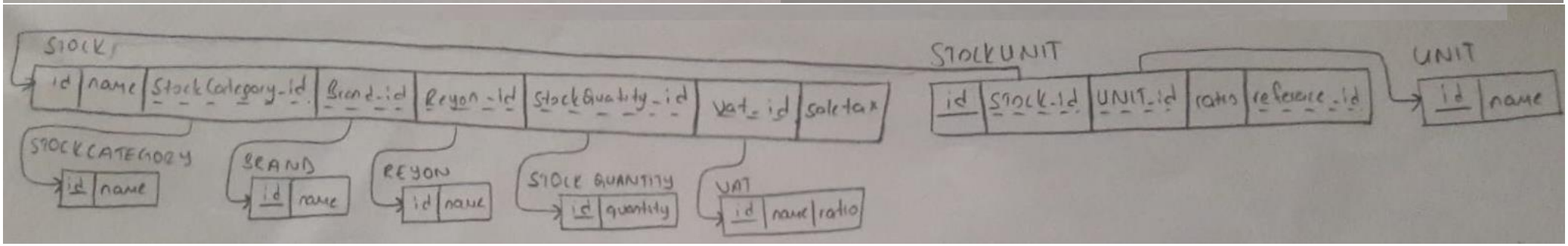
ENTITY	DESCRIPTION
STOCK	It is simply the product object
STOCKQUANTITY	The quantity of the stock object
STOCKUNIT	The object which includes the ratio of the stock according to the unit of the stock object
STOCKUNITPRICE	The price object of the stock which is determined by stock unit and the location of the store
STOCKIMAGE	The image(s) of the stock object
STOCKUNITBARCODE	The object which has the product barcode
STOCKPRICEARCHIVE	The all price history of the stock
STOCKCATEGORY	The category of the stock which can be delicatessen, dairy, desert, bread, grocery etc.
REYON	The place, department, where the stock is
UNIT	The unit of the stock which can be either piece, parcel, kilogram, liter, shrink, pallet etc.
LOCATION	The location(address) of the store
VAT	It is Value Added Tax which is known as ‘Katma Değer Vergisi’ in Turkey. It can have different percentage ratios.
LABEL	It is the label(tag) of the product
EXPENSE	It is the cost(s) of the store

COMPANY	Company is the person or company which you (the shop owner) sell products to him/her or buy products from him/her which corresponds to ‘cari’ in Turkish.
COMPANYCATEGORY	It is the category of company
COMPANYBALANCE	The balance of the company
BRAND	The brand of the stock
GROCERY	The sub entities of rayon, the grocery store inside the market
VEGETABLE	The sub entity of grocery store, separated according to type.
FRUIT	The sub entity of grocery store, separated according to type.
BUTCHER	The sub entities of rayon, the butcher store inside the market
COSMETIC	The sub entities of rayon, the cosmetic store inside the market
EMPLOYEE	Employees that work for company either in office or market.
OFFICEWORKER	The sub entity of employee, workers in office part.
MARKETPERSONNEL	The sub entity of employee, workers in market part.

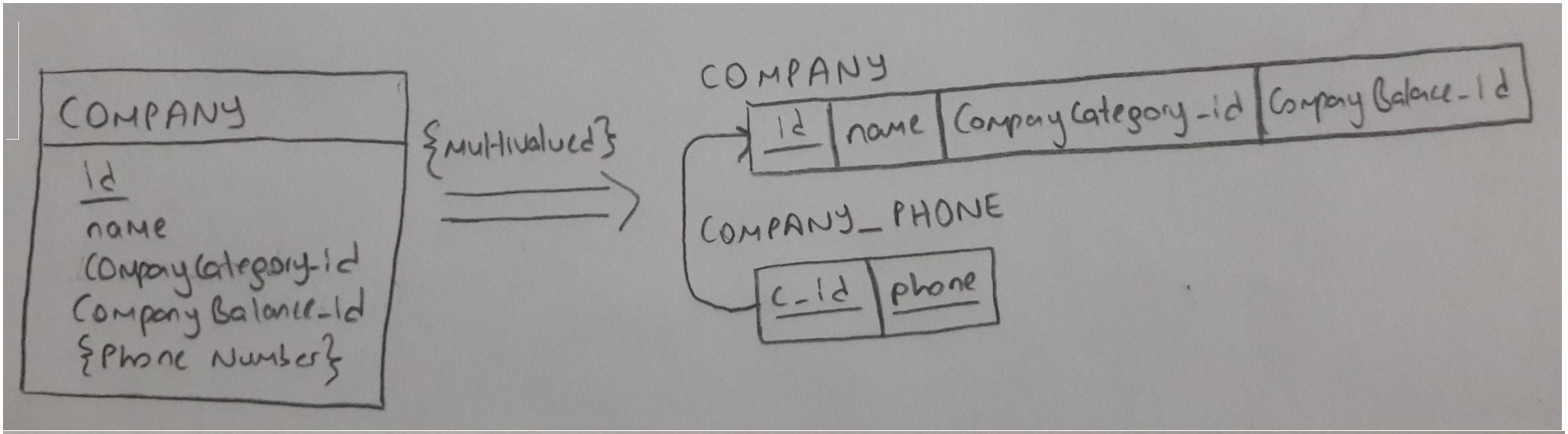
NORMALIZATION:

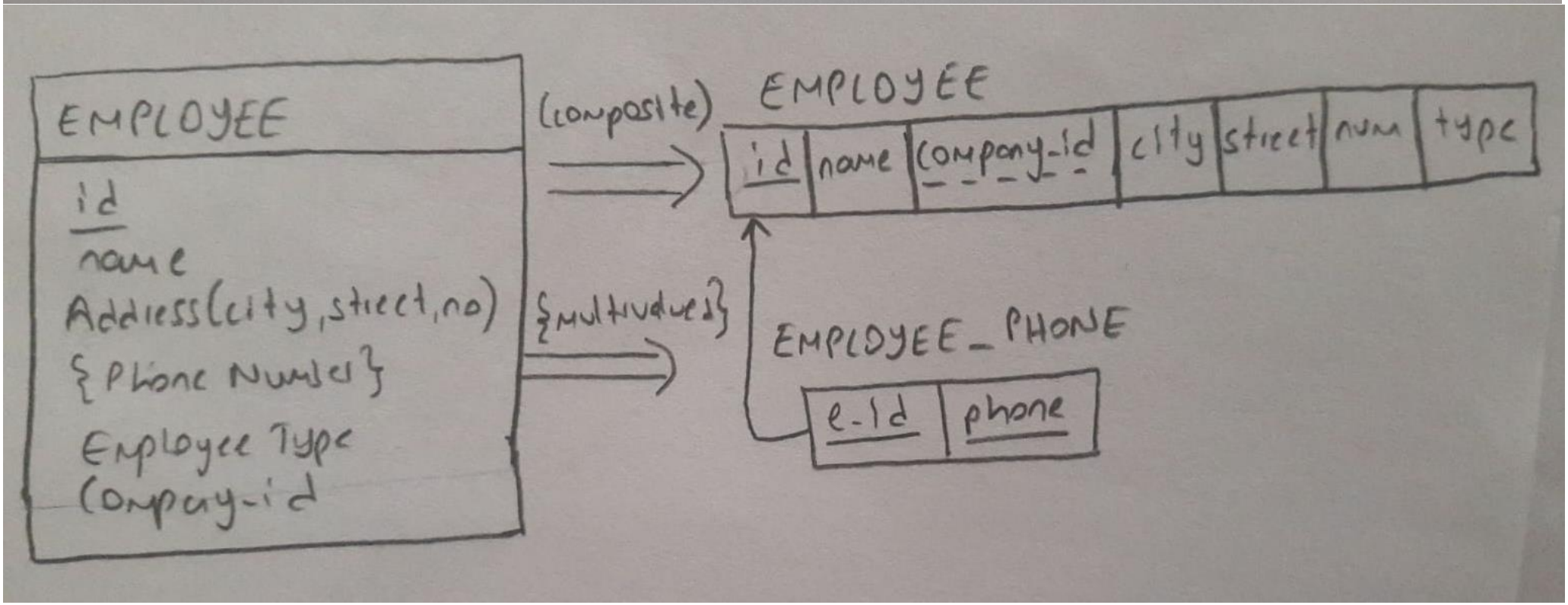
- Dependencies and Transformations:



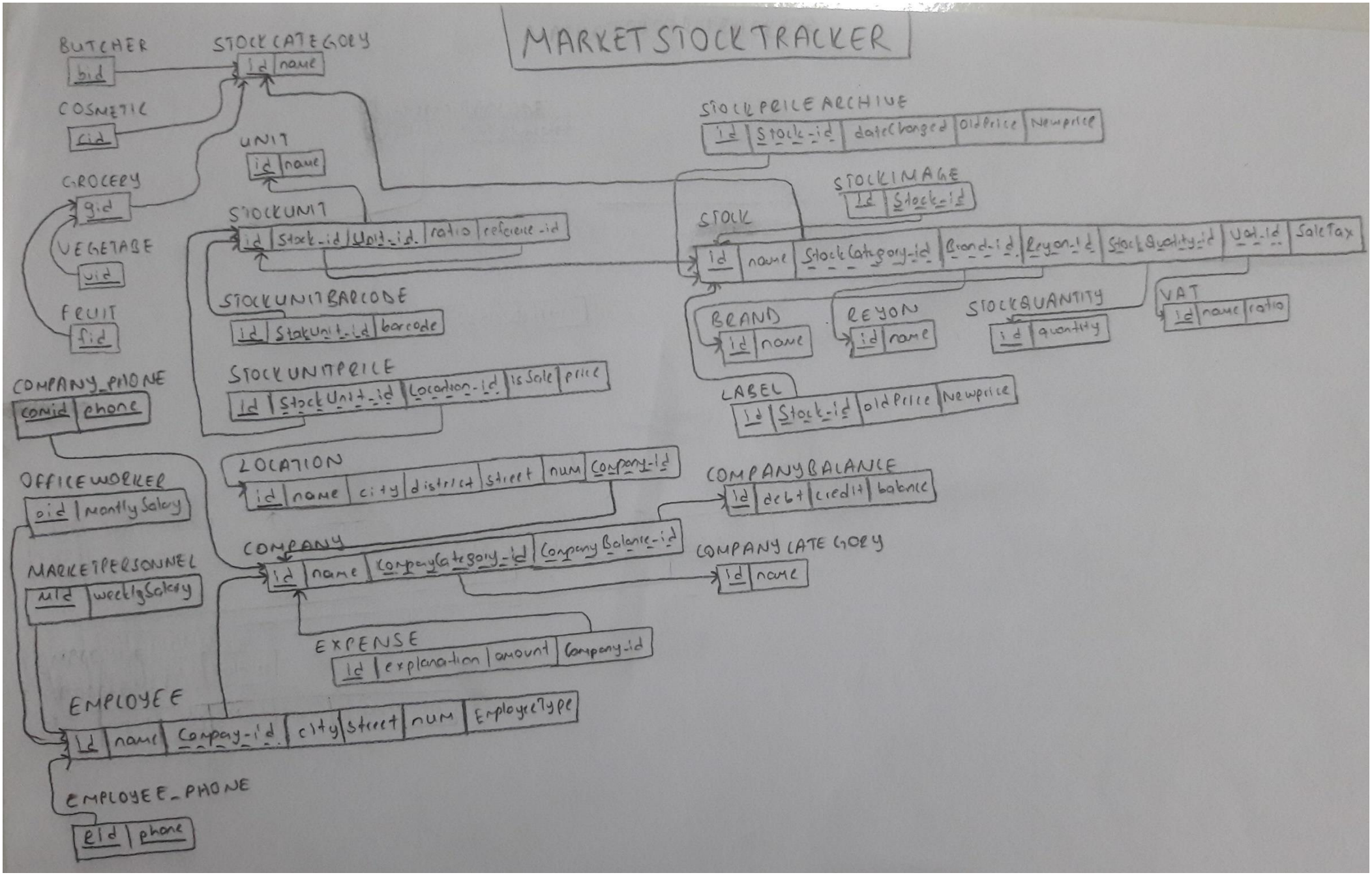


- Composite and Multivalued attributes:

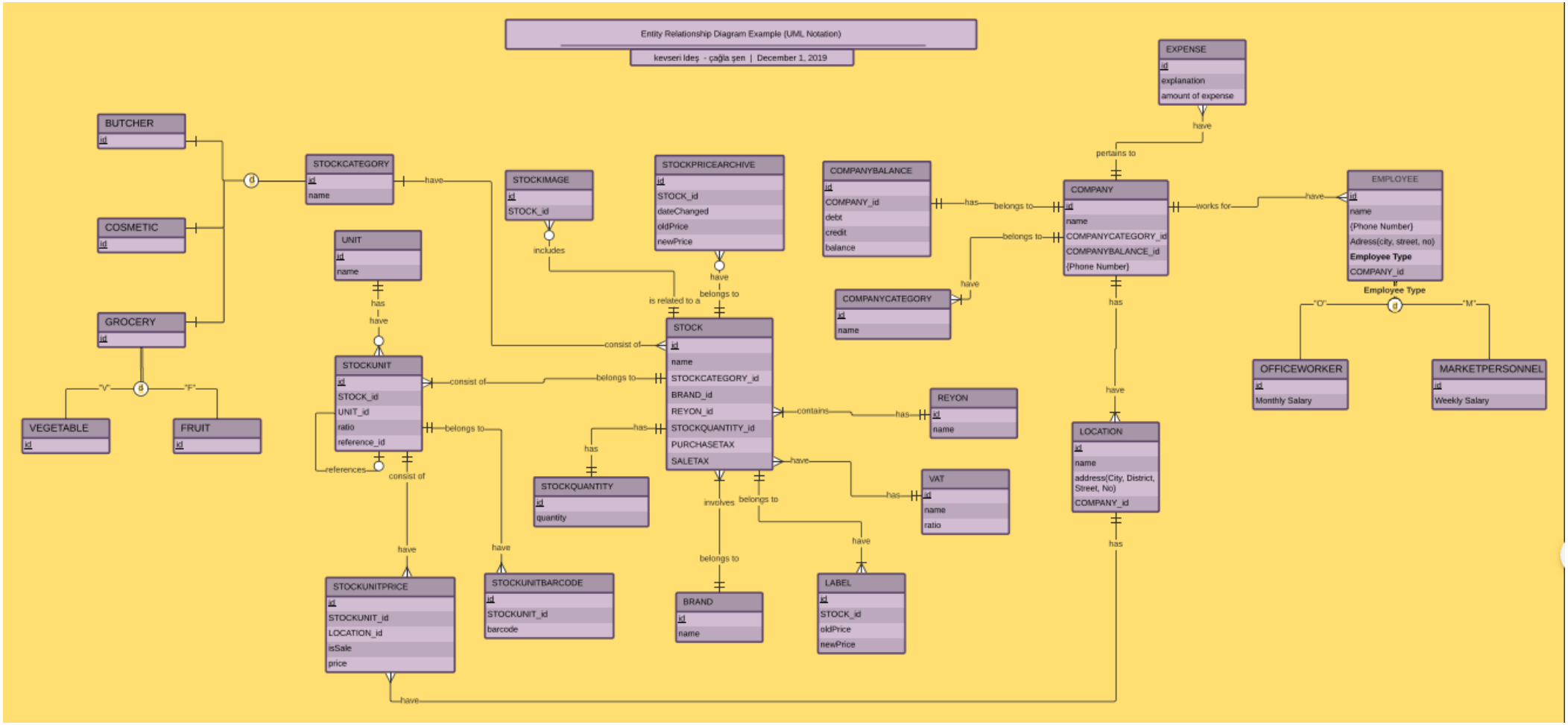




- All Relations in 3rd Normal Form:



ER DIAGRAM:



Entity Relationship Diagram Example (UML Notation)
kevseri ldeş - çağla şen | December 1, 2019
BUTCHER
id
COSMETIC
id
GROCERY
id
VEGETABLE
id
FRUIT
id
"V"
"F"
STOCKCATEGORY
id
name
have
STOCKIMAGE
id
STOCK_id
includes
STOCKPRICEARCHIVE
id
STOCK_id
dateChanged
oldPrice
newPrice
have
belongs to
is related to a
UNIT
id
name
has
have
STOCKUNIT
id
STOCK_id
UNIT_id
ratio
reference_id
consist of
belongs to
references
consist of
STOCK
id
name
STOCKCATEGORY_id
BRAND_id
REYON_id
STOCKQUANTITY_id
PURCHASETAX
SALETAX
contains
has
REYON
id
name
STOCKQUANTITY
id
quantity
involves
belongs to
VAT
id
name
ratio
STOCKUNITPRICE
id
STOCKUNIT_id
LOCATION_id
isSale
price
STOCKUNITBARCODE
id
STOCKUNIT_id
barcode
BRAND
id
name
LABEL
id
STOCK_id
oldPrice
newPrice
COMPANYBALANCE
id
COMPANY_id
debt
credit
balance
COMPANYCATEGORY
id
name
EXPENSE
id
explanation
amount of expense
pertains to
COMPANY
id
name
COMPANYCATEGORY_id
COMPANYBALANCE_id
{Phone Number}
works for
EMPLOYEE
id
name
{Phone Number}
Adress(city, street, no)
Employee Type
COMPANY_id
Employee Type
"O"
"M"
OFFICEWORKER
id
Monthly Salary
MARKETPERSONNEL
id
Weekly Salary
LOCATION
id
name
address(City, District, Street, No)
COMPANY_id