DATA BASES

CAL1

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1.DATA DICTIONARY

ENTITIES:

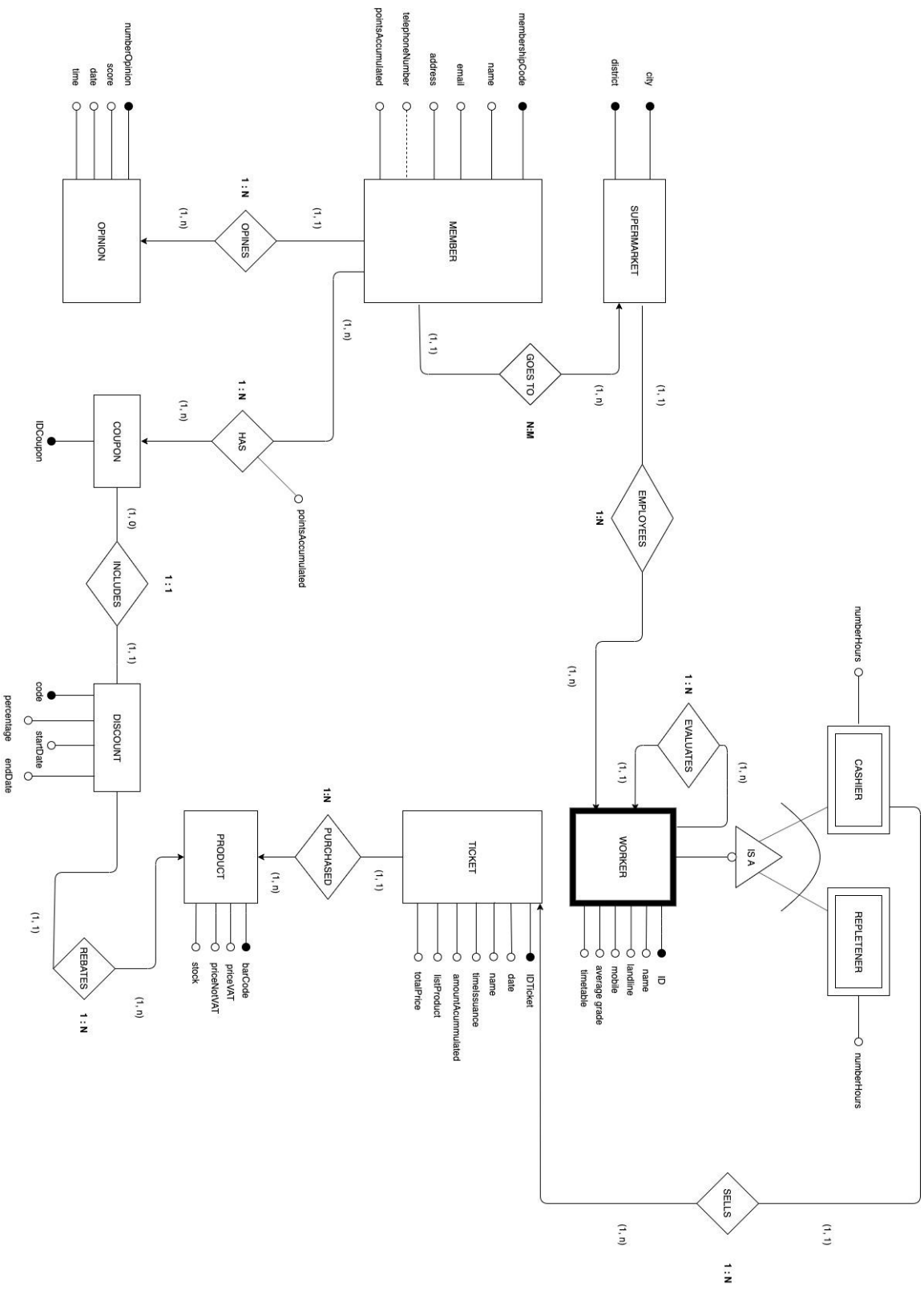
ENTITIES			
ENTITY	ATTRIBUTES	DOMAIN	RESTRICTIONS
Supermarket	city	char40	PK
	district	char40	PK
Worker (super entity)	ID	integer	PK
	name	char 40	-
	landline	integer	multivalued
	mobile	integer	multivalued
	average grade	integer	>=0 and <=10
	timeTable	char 1	M/A
Cashier (sub entity)	numberHours	integer	0 < x < 24
Repletener (sub entity)	numberHours	integer	0 < x < 24
Member	membershipCode	integer	PK
	name	char 40	-
	email	char 40	-
	address	char 40	composite
	telephoneNumber (optional)	integer	multivalued
	pointsAccumulated	integer	>0
Coupon	ID coupon	integer	PK
Opinion	numberOpinion	integer	PK
	score	integer	0-10
	date	date / char 10	DD/MM/YYYY
	time	date / char 8	HH:MM:SS
Discount	percentage	integer	0 < x < 100

	code	integer	PK
	startDate	date / char 10	DD/MM/YYYY
	endDate	date / char 10	DD/MM/YYYY
Ticket	ticketIdentifier	integer	PK
	date	date / char 10	DD/MM/YYYY
	timeIssuance	date / char 8	HH:MM:SS
	amountAccumulated	real/numeric (8,2)	>0
	name	char 40	-
	listProduct	integer	>0
	amountProduct	integer	>0
	totalPrice	real/numeric (8,2)	>0
Product	barCode	integer	PK
	priceVAT	real/numeric (8,2)	>0
	priceNotVAT	real/numeric (8,2)	>0
	stock	integer	>0

RELATIONSHIPS:

RELATIONSHIPS			
RELATIONSHIPS	ENTITIES	CARDINALITY	ATTRIBUTES
IS A	Worker - Cashier / Worker - Repletener	1:1	
Evaluates	Worker - Worker	1:N	
Includes	Coupon - Discount	1:1	
Has	Member - Coupon	1:N	pointsAcummulated
Sells	Cashier - Ticket	1:N	
Opines	Member - Opinion	1:N	
Purchased	Product - Ticket	1:N	
Goes to	Member - Supermarket	N:M	
Employees	Supermarket -Worker	1:N	
Rebates	Discount-Product	1:N	

2. EXTENDED ENTITY-RELATIONSHIP DIAGRAM



3. ALL THE OTHER INFORMATION THAT CANNOT BE CAPTURED IN THE DIAGRAM ENTITIES:

The entity Supermarket may always have as attribute *district* because even though it is a small city it will at least have one district. It has its two attributes as primary key.

The entity Worker is the father class of Cashier and Repletener, since there are two types of workers. The main difference that determines the kind of worker is the time they work: if their work take full-time, they would be cashiers; on the other hand, if they work part-time, they would be repleteners.
Cashier and Repletener inherit from the superclass Worker.
On the diagram, it is disjoint and total. Disjoint because a worker is a Cashier or a Repletener, it can't be both. And it is total because every worker is a Cashier or a Repletener.

There is not a class Client because you can't find any attributes related to it.

The entity Member distinguishes all the customers that are members from the supermarket that have given their *email*, *name*, *address* and optionally their *telephone number*. This optional attribute is represented in the diagram with discontinue lines. Members also have *points accumulated* from each purchase. We have added an attribute called *membership code* to identify each member.

The entity Coupon has as primary key *ID coupon* to identify which coupon is it and the members that have access to that coupon.

The entity Opinion as well as coupon is only for members of the supermarket. Its primary key is *numberOpinion*, that we have added to identify each of the opinions that give the members. It also has as attribute the *score* that they give for the services, and the *time* and *date* that must be recorded.

The entity Discount represents the discounts that are generated each week. Its primary key is the *code* that identifies each discount. It also has as attributes the *percentage* applied, the *starting date* of the discount and also its *end date*.

The entity Ticket has tickerIdentifier as primary key. It needs to store the *date* and *time* of expedition, the *cashier's name*, the *amount accumulated* on the purchase. It also needs to record the *list of the products* and in case of any of them of appearing several times, it needs the *amount of product* attribute. The last one is the *total price* of the purchase.

The entity Product stores the information of each product, such as its *barcode*, *amount* of the product, its *price with and without VAT*.

RELATIONSHIPS:

IS A: Relationship between worker (1) and cashier/replenter (1), this is an inherit relationship that represents that there is a superclass from where the two classes inherit.

Evaluates: Relationship between a worker (1) and all their partners (N). Every worker evaluates the work of all his partners.

Includes: Relationship between a coupon (1) and a discount (1). Every coupon has assigned one discount.

Has: Relationship between a member (1) and his coupons (N). Every member has a certain amount of coupons, that depend on how much points has the client accumulated, this is shown by the attribute pointsAcummulated.

Sells: Relationship between a cashier (1) and the tickets (N) that he expends to the clients.

Opines: Relationship between a member (1) and the opinions (N) he has given. After every purchase the members have the option of giving an opinion about the service, that are stored by the supermarket.

Purchased: Relationship between a product (1) and the tickets (N) in which it appears.

Goes to: Relationship between the members (N) and supermarkets (M) where they purchase. Every member can purchase in different supermarkets and in every supermarket there are members who purchase there.

Employees: Relationship between the supermarket (1) and the workers (N) who work there. Every supermarket employees a certain amount of workers.

Rebates: Relationship between a coupon (1) and the products (N) affected by it.