Appendix A

ASTANA IT
UNIVERSITY

INFORMATION COMMUNICATION TECHNOLOGIES

Individual Project

Project Title:
Multimedia Company
«Меломан»

Student Name:

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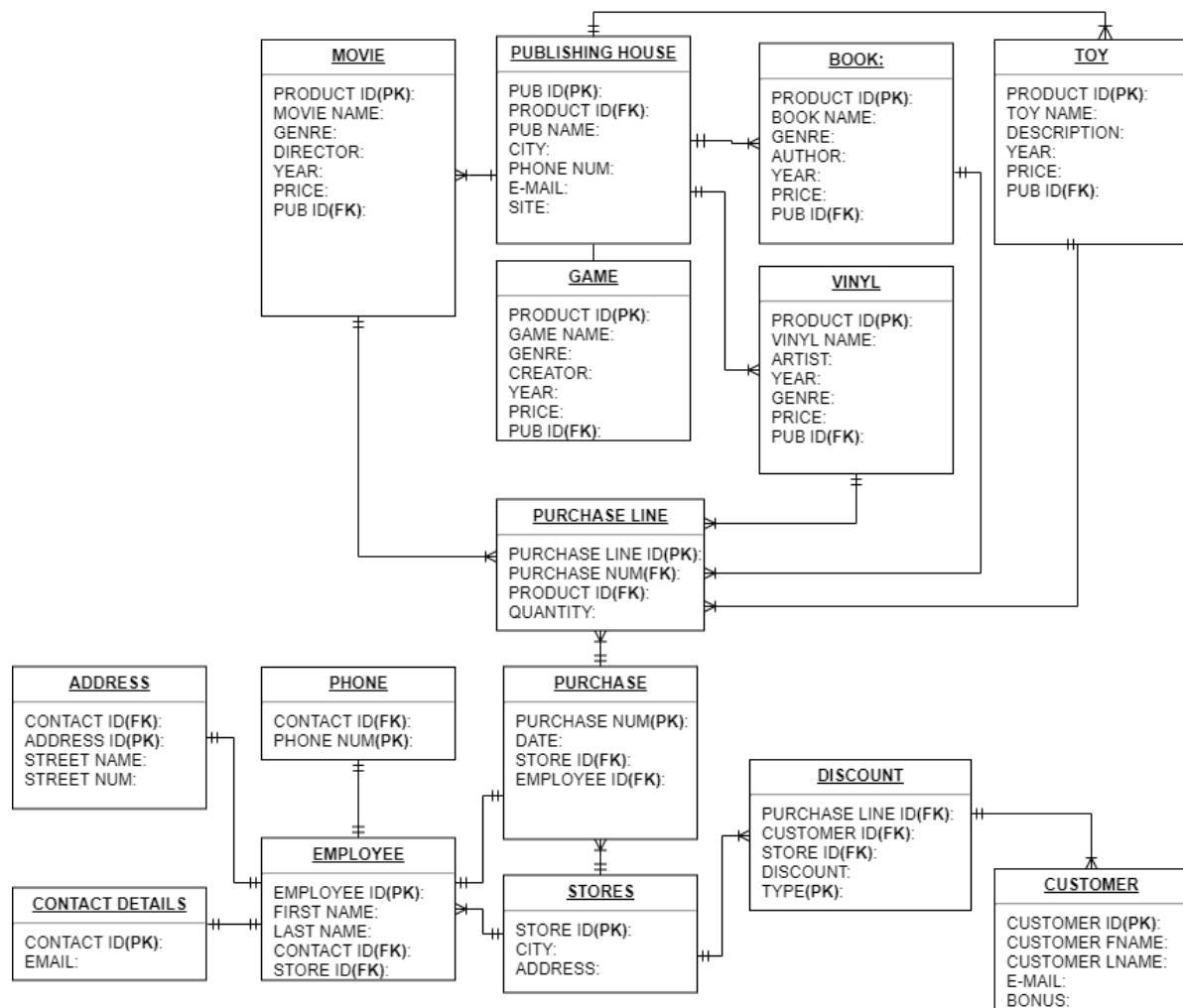
Date:

Nur-Sultan 2019

Short information about company:

Online store meloman.kz - books, films, music, stationery, video games and consoles, products for artists and creativity, goods for home and family. There are always more than 250,000 products in stock, including an assortment of two more Meloman company lines - a supermarket for repairs, home and cottage komfort.kz and a children's goods store marwin.kz. More than 300,000 customers already use the bonus program. Save and spend bonuses when shopping at meloman.kz, marwin.kz and komfort.kz online stores, and at all Meloman, MARWIN and Comfort retail stores. Everything is very simple - 1 bonus = 1 tenge
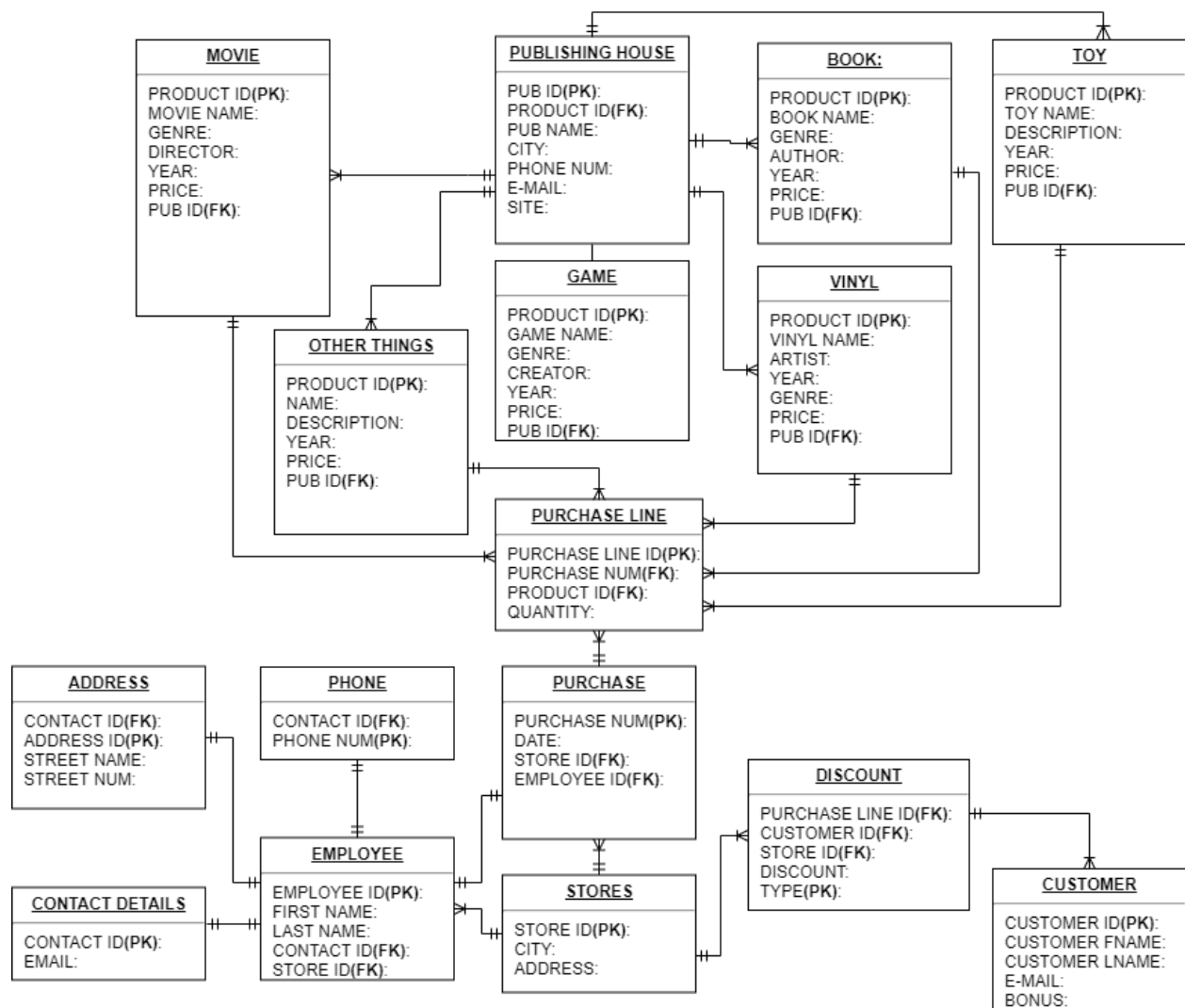
Goal:

Our goal is to provide the company with a normalized database with the help of which it will be easier to find all information about goods, purchases, employees, etc.

Below is more about how we normalized tables:

MOVIE

PRODUCT ID(PK):
MOVIE NAME:
GENRE:
DIRECTOR:
YEAR:
PRICE:
PUB ID(FK):

PUBLISHING HOUSE

PUB ID(PK):
PRODUCT ID(FK):
PUB NAME:
CITY:
PHONE NUM:
E-MAIL:
SITE:

BOOK:

PRODUCT ID(PK):
BOOK NAME:
GENRE:
AUTHOR:
YEAR:
PRICE:
PUB ID(FK):

TOY

PRODUCT ID(PK):
TOY NAME:
DESCRIPTION:
YEAR:
PRICE:
PUB ID(FK):

GAME

PRODUCT ID(PK):
GAME NAME:
GENRE:
CREATOR:
YEAR:
PRICE:
PUB ID(FK):

VINYL

PRODUCT ID(PK):
VINYL NAME:
ARTIST:
YEAR:
GENRE:
PRICE:
PUB ID(FK):

PURCHASE LINE

PURCHASE LINE ID(PK):
PURCHASE NUM(FK):
PRODUCT ID(FK):
QUANTITY:

ADDRESS

CONTACT ID(FK):
ADDRESS ID(PK):
STREET NAME:
STREET NUM:

PHONE

CONTACT ID(FK):
PHONE NUM(PK):

PURCHASE

PURCHASE NUM(PK):
DATE:
STORE ID(FK):
EMPLOYEE ID(FK):

DISCOUNT

PURCHASE LINE ID(FK):
CUSTOMER ID(FK):
STORE ID(FK):
DISCOUNT:
TYPE(PK):

EMPLOYEE

EMPLOYEE ID(PK):
FIRST NAME:
LAST NAME:
CONTACT ID(FK):
STORE ID(FK):

CONTACT DETAILS

CONTACT ID(PK):
EMAIL:

STORES

STORE ID(PK):
CITY:
ADDRESS:

CUSTOMER

CUSTOMER ID(PK):
CUSTOMER FNAME:
CUSTOMER LNAME:
E-MAIL:
BONUS:

Our first attempt to make tables and ERD. We it was all right, until we realized that there were other things. Then we added another table. And you can understand our logic why we did just that according to the Business Rules.

MOVIE

PRODUCT ID(PK):
MOVIE NAME:
GENRE:
DIRECTOR:
YEAR:
PRICE:
PUB ID(FK):

PUBLISHING HOUSE

PUB ID(PK):
PRODUCT ID(FK):
PUB NAME:
CITY:
PHONE NUM:
E-MAIL:
SITE:

BOOK:

PRODUCT ID(PK):
BOOK NAME:
GENRE:
AUTHOR:
YEAR:
PRICE:
PUB ID(FK):

TOY

PRODUCT ID(PK):
TOY NAME:
DESCRIPTION:
YEAR:
PRICE:
PUB ID(FK):

GAME

PRODUCT ID(PK):
GAME NAME:
GENRE:
CREATOR:
YEAR:
PRICE:
PUB ID(FK):

VINYL

PRODUCT ID(PK):
VINYL NAME:
ARTIST:
YEAR:
GENRE:
PRICE:
PUB ID(FK):

OTHER THINGS

PRODUCT ID(PK):
NAME:
DESCRIPTION:
YEAR:
PRICE:
PUB ID(FK):

PURCHASE LINE

PURCHASE LINE ID(PK):
PURCHASE NUM(FK):
PRODUCT ID(FK):
QUANTITY:

ADDRESS

CONTACT ID(FK):
ADDRESS ID(PK):
STREET NAME:
STREET NUM:

PHONE

CONTACT ID(FK):
PHONE NUM(PK):

PURCHASE

PURCHASE NUM(PK):
DATE:
STORE ID(FK):
EMPLOYEE ID(FK):

DISCOUNT

PURCHASE LINE ID(FK):
CUSTOMER ID(FK):
STORE ID(FK):
DISCOUNT:
TYPE(PK):

CONTACT DETAILS

CONTACT ID(PK):
EMAIL:

EMPLOYEE

EMPLOYEE ID(PK):
FIRST NAME:
LAST NAME:
CONTACT ID(FK):
STORE ID(FK):

STORES

STORE ID(PK):
CITY:
ADDRESS:

CUSTOMER

CUSTOMER ID(PK):
CUSTOMER FNAME:
CUSTOMER LNAME:
E-MAIL:
BONUS:

BUSINESS RULES:

1)EACH PUBLISHING HOUSE HAVE MANY PRODUCTS

2)MANY PRODUCTS CAN BE OWNED TO ONE PUBLISHING HOUSE

3)EACH PRODUCT CAN HAVE MANY ORDERS(PURCHASE LINE)

4)EACH ORDER CAN HAVE ONLY ONE TYPE OF PRODUCT

5)DIFFERENT PRODUCTS MAY BE SOLD IN DIFFERENT QUANTITIES

6)MANY PURCHASE LINE CAN HAVE ONLY ONE PURCHASE

7)MANY PURCHASES MAY BE PERFORMED IN ONE STORE

8)MANY DIFFERENT DISCOUNTS CAN STAND OUT ONE STORE

9)MANY OF CUSTOMERS WHO HAVE A BONUS CARD OR INSTALLED THE APPLICATION MAY HAVE ONE TYPE OF DISCOUNT

10)ONE TYPE OF DISCOUNTS MAY APPLY FOR MANY CUSTOMERS

11)ONE EMPLOYEE RESPONSES ONE PURCHASE

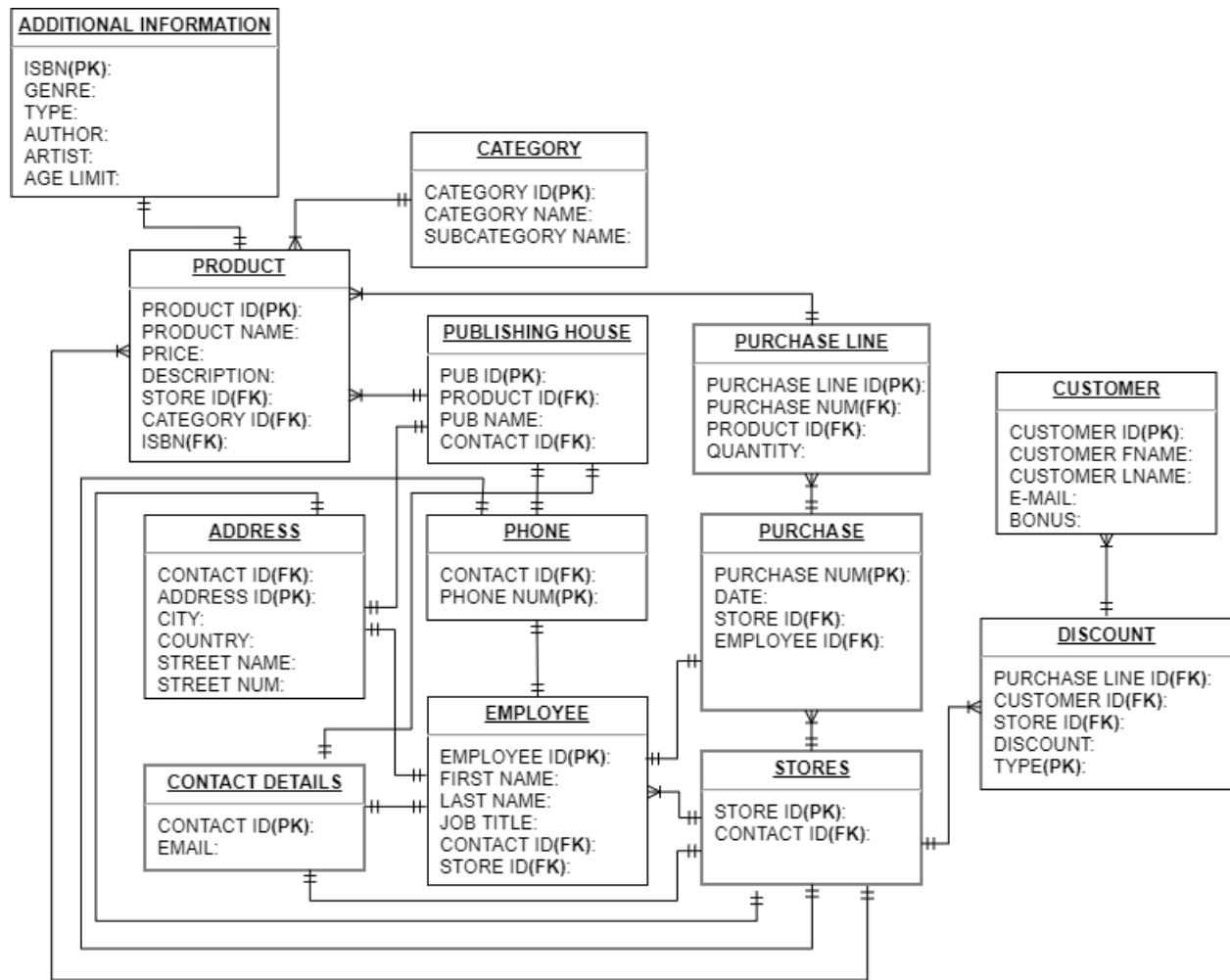12)MANY EMPLOYEES CAN WORK IN ONE STORE

13)EACH EMPLOYEE HAS ONE PHONE

14)EACH EMPLOYEE HAS ONE ADDRESS

15)EACH EMPLOYEE HAS ONE ADDRESS DETAILS

Then we thought that maybe we could add more tables. It seemed to us that it's better for us if we have more tables and we added more tables referring to the site https://www.meloman.kz
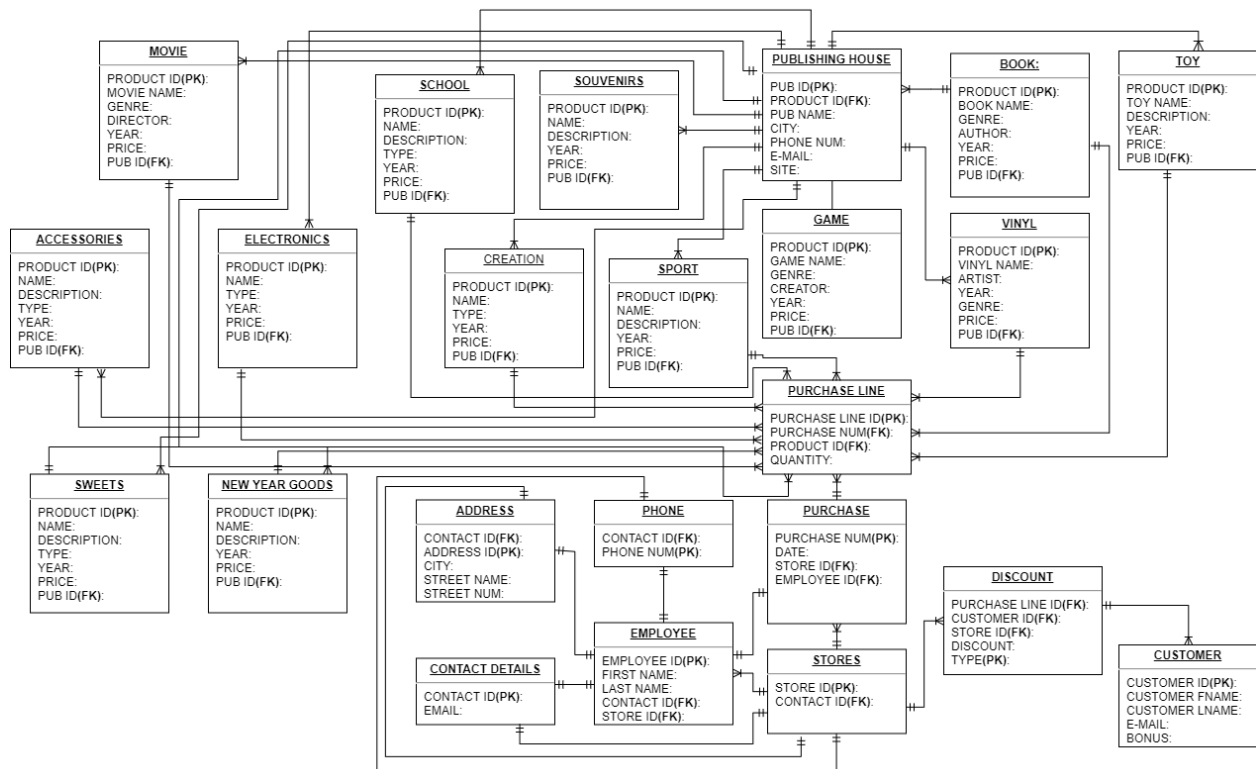
It seemed to us that there are many similar tables and many repeating rows, which could lead to anomalies and memory clogging. We thought and went to the site. On the site, the products were in categories and subcategories. We did the same. But that meant that we no longer needed all these tables. We deleted all the tables and created only one called Product. Also, looking at the products, it becomes clear that in addition to the code there is another code, but this code was in a different branch called "Additional Information". This means that we added the same table in which some cells may remain empty, because some products did not have additional information.

ADDITIONAL INFORMATION

ISBN(PK):
GENRE:
TYPE:
AUTHOR:
ARTIST:
AGE LIMIT:

CATEGORY

CATEGORY ID(PK):
CATEGORY NAME:
SUBCATEGORY NAME:

PRODUCT

PRODUCT ID(PK):
PRODUCT NAME:
PRICE:
DESCRIPTION:
STORE ID(FK):
CATEGORY ID(FK):
ISBN(FK):

PUBLISHING HOUSE

PUB ID(PK):
PRODUCT ID(FK):
PUB NAME:
CONTACT ID(FK):

PURCHASE LINE

PURCHASE LINE ID(PK):
PURCHASE NUM(FK):
PRODUCT ID(FK):
QUANTITY:

CUSTOMER

CUSTOMER ID(PK):
CUSTOMER FNAME:
CUSTOMER LNAME:
E-MAIL:
BONUS:

ADDRESS

CONTACT ID(FK):
ADDRESS ID(PK):
CITY:
COUNTRY:
STREET NAME:
STREET NUM:

PHONE

CONTACT ID(FK):
PHONE NUM(PK):

PURCHASE

PURCHASE NUM(PK):
DATE:
STORE ID(FK):
EMPLOYEE ID(FK):

DISCOUNT

PURCHASE LINE ID(FK):
CUSTOMER ID(FK):
STORE ID(FK):
DISCOUNT:
TYPE(PK):

CONTACT DETAILS

CONTACT ID(PK):
EMAIL:

EMPLOYEE

EMPLOYEE ID(PK):
FIRST NAME:
LAST NAME:
JOB TITLE:
CONTACT ID(FK):
STORE ID(FK):

STORES

STORE ID(PK):
CONTACT ID(FK):

2. BUSINESS RULES:

1) MANY PRODUCTS BELONG ONE CATEGORY

2) MANY PRODUCTS CAN ORDER IN ONE PURCHASE LINE

3) MANY PURCHASE LINES MAY BE CONTAINED IN ONE PURCHASE

4) MANY PURCHASES ARE HAPPENING IN ONE STORE

5) ONE STORE MAY HAVE MANY DIFFERENT DISCOUNTS

6) CUSTOMER NUMBER IN THE DISCOUNT TABLE MAY BE EMPTY IF THE CUSTOMER DOES NOT HAVE A CARD

7) IF THE CUSTOMER HAS A BONUS CARD OR APP, THE CUSTOMER'S BASE IS ACTIVATED

8) ONE TYPE OF DISCOUNTS MAY APPLY TO MANY DIFFERENT CUSTOMERS

9) ONE PURCHASE TAKES ONE PURCHASE

10) MANY EMPLOYEES CAN WORK IN ONE STORE

11) MANY PRODUCTS MAY BE PRODUCED BY ONE PUBLISHING HOUSE

12) ONE PUBLISHING HOUSE ONLY ONE CONTACT PHONE, ADDRESS AND DETAILS

**13) ONE STORE ONLY ONE CONTACT PHONE, ADDRESS AND DETAILS**

14) ONE EMPLOYEE ONLY ONE CONTACT PHONE, ADDRESS AND DETAILS

15) MANY PRODUCTS ONLY ONE STORE

16) EACH PRODUCT HAS SEPARATE ADDITIONAL INFORMATION

17) SOME ROWS IN ADDITIONAL INFORMATION CAN BE NULL

Then on the site we saw that there we have subcategories. But if we just added this table we would have an anomaly. Therefore, we had to swap some rows and relations between tables. Then we noticed an error in the diagram between the relations of the tables with the contacts and eliminated it.
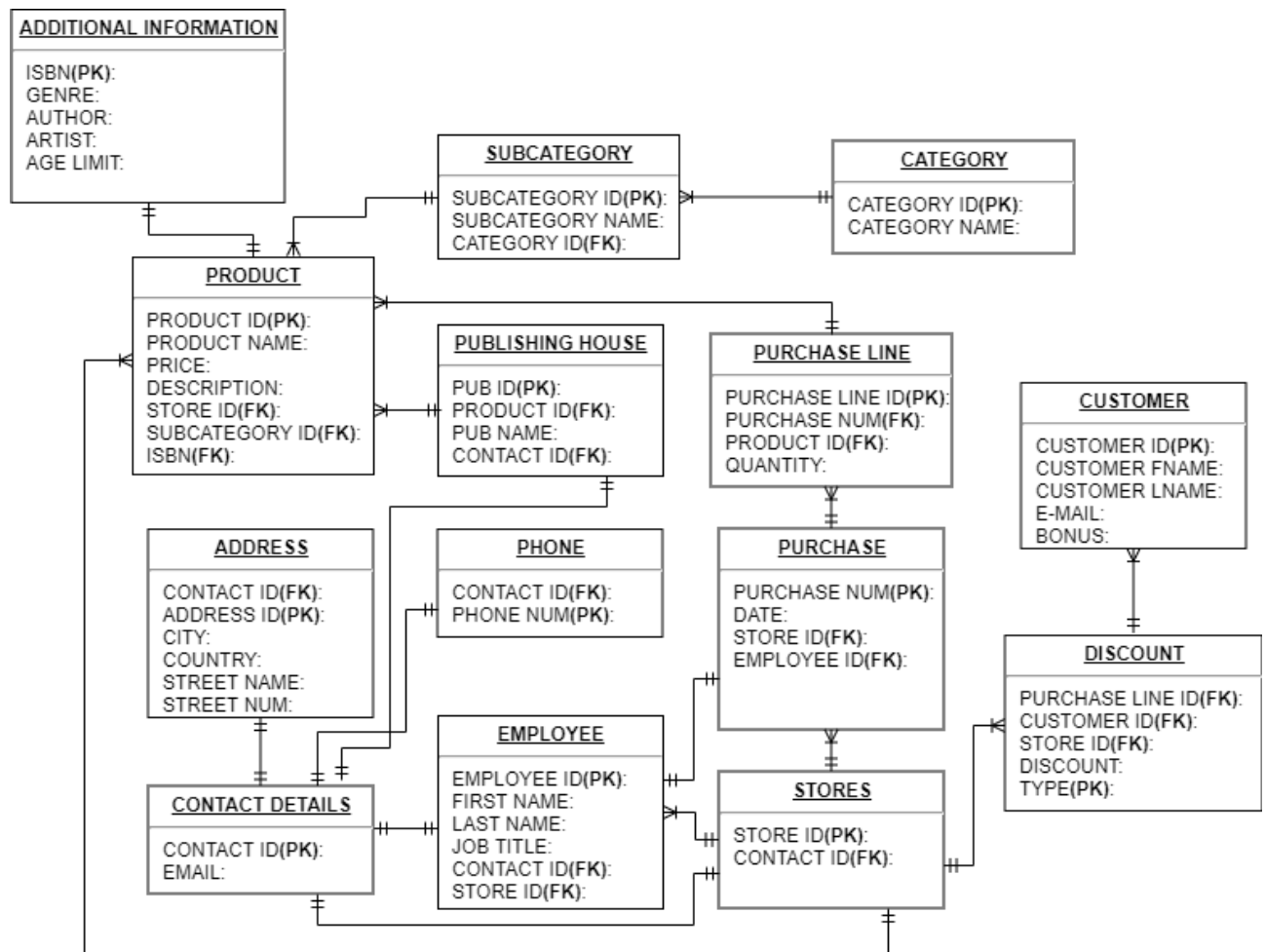
2. BUSINESS RULES:

1) MANY PRODUCTS BELONG ONE SUBCATEGORY

2) MANY PRODUCTS CAN ORDER IN ONE PURCHASE LINE

3) MANY PURCHASE LINES MAY BE CONTAINED IN ONE PURCHASE

4) MANY PURCHASES ARE HAPPENING IN ONE STORE

5) ONE STORE MAY HAVE MANY DIFFERENT DISCOUNTS

6) CUSTOMER NUMBER IN THE DISCOUNT TABLE MAY BE EMPTY IF THE CUSTOMER DOES NOT HAVE A CARD

7) IF THE CUSTOMER HAS A BONUS CARD OR APP, THE CUSTOMER'S BASE IS ACTIVATED

8) ONE TYPE OF DISCOUNTS MAY APPLY TO MANY DIFFERENT CUSTOMERS

9) ONE PURCHASE TAKES ONE PURCHASE

10) MANY EMPLOYEES CAN WORK IN ONE STORE

11) MANY PRODUCTS MAY BE PRODUCED BY ONE PUBLISHING HOUSE

12) ONE PUBLISHING HOUSE ONLY ONE CONTACT PHONE, ADDRESS AND DETAILS

13) ONE STORE ONLY ONE CONTACT PHONE, ADDRESS AND DETAILS

14) ONE EMPLOYEE ONLY ONE CONTACT PHONE, ADDRESS AND DETAILS

15) MANY PRODUCTS ONLY ONE STORE

16) EACH PRODUCT HAS SEPARATE ADDITIONAL INFORMATION

17) SOME ROWS IN ADDITIONAL INFORMATION CAN BE NULL

18) IN ONE CATEGORY WE HAVE PLENTY OF SUBCTEFORIES

How do we understand how to start making a diagram this way? We did normalization referring to the 6th part of our curriculum. In part 6 in the first task, we did the normalization of the purchase and took it as the basis of our project. Also, in almost every document that the teacher sent to us, there were examples of tables with relationships. We also found them useful for the project.

DESCRIPTION

The company has several many stores. Each store has its own number and information about the store. Each store has many employees. For each store, different types of discounts are allocated. Also, discount bonuses are offered to registered customers. The database stores information about the purchase. Before the purchase, information about the basket (purchase line) also remains. The database stores all product information. Multiple products may belong to one publisher. All products are stored in subcategories. And all subcategories in categories. Each product has additional information about itself.

INFORMATION ABOUT EACH TABLE

1) **The most important table in which all important product information is stored**

```
PRODUCT

PRODUCT ID(PK):
PRODUCT NAME:
PRICE:
DESCRIPTION:
STORE ID(FK):
SUBCATEGORY ID(FK):
ISBN(FK):
```

2) **This table stores additional product information, if available**

```
ADDITIONAL INFORMATION

ISBN(PK):
GENRE:
AUTHOR:
ARTIST:
AGE LIMIT:
```

3) **In this table we can find out in which subcategory the product is located**

```
SUBCATEGORY

SUBCATEGORY ID(PK):
SUBCATEGORY NAME:
CATEGORY ID(FK):
```

4) **What category is the subcategory**

```
CATEGORY

CATEGORY ID(PK):
CATEGORY NAME:
```

5) **Product Publisher**

```
PUBLISHING HOUSE

PUB ID(PK):
PRODUCT ID(FK):
PUB NAME:
CONTACT ID(FK):
```

6) **The cart in this diagram is called Purchase Line**

```
PURCHASE LINE

PURCHASE LINE ID(PK):
PURCHASE NUM(FK):
PRODUCT ID(FK):
QUANTITY:
```

7) **Only buyers who have a bonus card or have installed the application are in the database**

CUSTOMER

CUSTOMER ID(PK):
CUSTOMER FNAME:
CUSTOMER LNAME:
E-MAIL:
BONUS:

8) **The client row in this table may remain empty if the client is not registered. Also, just in case, each discount has its own unique number**

DISCOUNT

PURCHASE LINE ID(FK):
CUSTOMER ID(FK):
STORE ID(FK):
DISCOUNT:
DISCOUNT ID(PK):

9) **This table contains all the information about employees**

EMPLOYEE

EMPLOYEE ID(PK):
FIRST NAME:
LAST NAME:
JOB TITLE:
CONTACT ID(FK):
STORE ID(FK):

10) **This table can be regarded as a receipt.**

PURCHASE

PURCHASE NUM(PK):
DATE:
STORE ID(FK):
EMPLOYEE ID(FK):

11)**The company also has many different stores.**

STORES

STORE ID(PK):
CONTACT ID(FK):

12) **These tables store all contacts about publishers, shops and employees.**

ADDRESS

CONTACT ID(FK):
ADDRESS ID(PK):
CITY:
COUNTRY:
STREET NAME:
STREET NUM:

PHONE

CONTACT ID(FK):
PHONE NUM(PK):

CONTACT DETAILS

CONTACT ID(PK):
EMAIL:

LINKS

1) **WE HERE FIND SOME SMALL DETAILS TO FILL IN THE TABLES**

https://ru.wikipedia.org/wiki/%D0%97%D0%B0%D0%B3%D0%BB%D0%B0%D0%B2%D0%BD%D0%B0%D1%8F_%D1%81%D1%82%D1%80%D0%B0%D0%BD%D0%B8%D1%86%D0%B0

2) **HERE INFORMATION ABOUT OUR COMPANY**

https://www.meloman.kz/about-us

3) **TO FILL IN THE IMPORTANT TABLES SUCH AS PRODUCTS, CATEGORIES, ADDITIONAL INFORMATION AND SUBCATEGORIES WE FIND THE INFORMATION ON THE SITE**

https://www.meloman.kz/