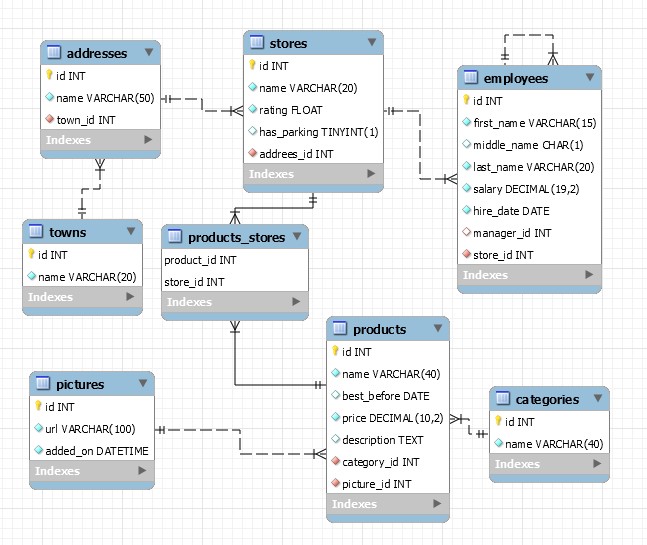
# MySQL Exam Triple S – SoftUni Stores System

Because of the fact that the students in the Java Track are the best in SoftUni, with а look into the future, they decided to create databases for all eventually future businesses of SoftUni. Of course, they have many ideas, but they need to start from somewhere. You have more than a year of experience, that's why you were chosen as a senior developer for one of the teams. Your task is to create a store system – SoftUni Stores System. You and the other senior developers create an E/R Diagram, that looks like this. Good Luck.

## Section 0: Database Overview

You have been given an Entity / Relationship Diagram of the SoftUni Stores System:



The **SoftUniStoresSystem** needs to hold information about **stores**, **products**, **employees**, **addresses, towns, pictures** and **categories**.

Your task is to create a database called **softuni\_stores\_system**. Then you will have to create several **tables**.

* stores – contains information about the **stores**.
  + Each store has a name, rating, has parking and relation with addresses.
* products – contains information about the **products**.
  + Each product has a name, best before, price, description and has   
    relations with **categories** and **pictures.**
* products\_stores – a **many** to **many** **mapping** table between the **products** and the **stores**.
  + Has a **composite primary key** from product\_id and store\_id
* employees – contains information about the **employees**.
  + Each employee has first name, middle name, last name, salary and have relations with stores and with self.
* addresses – contains information about the **addresses** of stores.
  + Each address has name and relation with towns.
* towns - contains information about the **towns**.
  + Each town has a name.
* categories – contains information about the categories.
  + Each category has a name.
* pictures – contains information about the pictures.
  + Each picture has a name and date and time when is added on.

## Section 1: Data Definition Language (DDL) – 40 pts

Make sure you implement the whole database correctly on your local machine so that you can work with it.

The instructions you’ll be given will be the minimum required for you to implement the database.

### Table Design

You have been tasked to create the tables in the database by the following models:

#### pictures

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Data Type** | **Constraints** |
| id | **Integer,** from **1** to 2,147,483,647. | **Primary Key AUTO\_INCREMENT** |
| url | A **string** containing a maximum of **100 characters**. Unicode is **NOT** needed. | **NULL** is **NOT** permitted**.** |
| added\_on | A **date** and **time** of adding picture. | **NULL** is **NOT** permitted**.** |

#### categories

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Data Type** | **Constraints** |
| id | **Integer,** from **1** to 2,147,483,647. | **Primary Key AUTO\_INCREMENT** |
| name | A **string** containing a maximum of **40 characters**. Unicode is **NOT** needed. | **NULL** is **NOT** permitted**.**  The name is **unique**. |

#### products

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Data Type** | **Constraints** |
| id | **Integer,** from **1** to 2,147,483,647. | **Primary Key AUTO\_INCREMENT** |
| name | A **string** containing a maximum of **40 characters**. Unicode is **NOT** needed. | **NULL** is **NOT** permitted**.**  The name is **unique**. |
| best\_before | A **date** that product is best before |  |
| price | **Decimal number**, up to **10 digits**, **2** of which after the **decimal point**. | **NULL** is **NOT** permitted**.** |
| description | A **very long** String field |  |
| category\_id | **Integer**, from **1** to 2,147,483,647. | Relationship with table categories.  **NULL** is **NOT** permitted**.** |
| picture\_id | **Integer**, from **1** to 2,147,483,647. | Relationship with table pictures.  **NULL** is **NOT** permitted**.** |

#### towns

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Data Type** | **Constraints** |
| id | **Integer**, from **1** to 2,147,483,647. | **Primary Key AUTO\_INCREMENT** |
| name | A **string** containing a maximum of **20 characters**. Unicode is **NOT** needed. | **NULL** is **NOT** permitted**.**  The name is **unique**. |

#### addresses

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Data Type** | **Constraints** |
| id | **Integer**, from **1** to 2,147,483,647. | **Primary Key AUTO\_INCREMENT** |
| name | A **string** containing a maximum of **50 characters**. Unicode is **NOT** needed. | **NULL** is **NOT** permitted**.**  The name is **unique**. |
| town\_id | **Integer**, from **1** to 2,147,483,647. | Relationship with table towns.  **NULL** is **NOT** permitted**.** |

#### stores

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Data Type** | **Constraints** |
| id | **Integer**, from **1** to 2,147,483,647. | **Primary Key AUTO\_INCREMENT** |
| name | A **string** containing a maximum of **20 characters**. Unicode is **NOT** needed. | **NULL** is **NOT** permitted**.**  The name is **unique**. |
| rating | A floating point number | **NULL** is **NOT** permitted. |
| has\_parking | Can be true or false | **Default** is **FALSE** |
| address\_id | **Integer**, from **1** to 2,147,483,647. | Relationship with table addresses.  **NULL** is **NOT** permitted**.** |

#### products\_stores

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Data Type** | **Constraints** |
| product\_id | **Integer**, from **1** to 2,147,483,647. | **NULL** is **NOT** permitted. |
| store\_id | **Integer**, from **1** to 2,147,483,647. | **NULL** is **NOT** permitted. |

* products\_stores table has a composite primary key from product\_id and store\_id

#### employees

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Data Type** | **Constraints** |
| id | **Integer**, from **1** to 2,147,483,647. | **Primary Key AUTO\_INCREMENT** |
| first\_name | A **string** containing a maximum of **15 characters**. Unicode is **NOT** needed. | **NULL** is **NOT** permitted**.** |
| middle\_name | A single one character |  |
| last\_name | A **string** containing a maximum of **20 characters**. Unicode is **NOT** needed. | **NULL** is **NOT** permitted**.** |
| salary | **Decimal number**, up to **19 digits**, **2** of which after the **decimal point**. | **DEFAULT 0** |
| hire\_date | A **date** that employee was **hired** | **NULL** is **NOT** permitted**.** |
| manager\_id | **Integer**, from **1** to 2,147,483,647. |  |
| store\_id | **Integer**, from **1** to 2,147,483,647. | **NULL** is **NOT** permitted**.** |

Submit your solutions in Judge on the first task. Submit **all** SQL table creation statements.

You will also be given a data.sql file. It will contain a **dataset** with random data which you will need to **store** in your **local database**. This data will be given to you so you don’t have to imagine it and lose precious time in the process. The data is in the form of **INSERT** statement queries.

## Section 2: Data Manipulation Language (DML) – 30 pts

Here we need to do several manipulations in the database, like changing data, adding data etc.

### Insert

You will have to **insert** records of data into the **products\_stores** table, based on the **products** table.

Find all **products** that are **not offered** in any stores (don’t have a relation with stores) and insert data in the   
products\_stores. For every product saved -> **product\_id** and **1(one)** as a **store\_id**. And now this product will be offered in store with name **Wrapsafe** and **id 1**.

* product\_id –id of product
* store\_id – set it to be 1 for all products.

### Update

Update all **employees** that hire **after 2003(exclusive)** year and **not work** in store **Cardguard** and **Veribet**.   
Set their **manager** to be **Carolyn Q Dyett** (with **id 3**) and **decrease** **salary** with 500.

### Delete

It is time for the stores to start working. All good employees already are in their stores. But some of the employers are too expensive and we need to cut them, because of finances restrictions.  
Be careful not to delete **managers they are also employees**.  
**Delete** only those employees that **have managers** and a salary is more than **6000**(inclusive)

## Section 3: Querying – 50 pts

And now we need to do some data extraction. **Note** that the **example results** from **this section** use a **fresh database**. It is **highly recommended** that you **clear** the **database** that has been **manipulated** by the **previous problems** from the **DML** **section** and **insert again** the **dataset** you’ve been given, to ensure **maximum consistency** with the **examples** given in this section.

### Employees

Extract from the SoftUni Stores System database, info about all of the **employees**.

**Order** the results by employees **hire date** in **descending** order.

#### Required Columns

* first\_name
* middle\_name
* last\_name
* salary
* hire\_date

#### Example

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **first\_name** | **middle\_name** | **last\_name** | **salary** | **hire\_date** |
| Roz | U | Dewdney | 9316.56 | 2018-10-20 |
| Florian | E | Bamlet | 6266.27 | 2018-02-19 |
| Shae | O | Fasey | 7463.52 | 2018-02-03 |
| Elwin | G | Rennock | 9538.20 | 2017-05-12 |
| … | … | … | … | … |
| Carolyn | Q | Dyett | 1223.45 | 2000-02-23 |

### Products with old pictures

A photographer wants to take pictures of **products that have old pictures**. You must select all of the products that have a description **more than 100 characters long description**, and a **picture that is made before 2019 (exclusive)** and the product **price** being **more** than **20**. Select a **short description** column that consists of **first 10 characters** of the picture's description **plus '…'**. Order the results by product **price** in **descending** order.

#### Required Columns

* name (product)
* price
* best\_before
* short\_description
  + only first 10 characters of product description + '...'
* url

#### Example

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **product\_name** | **price** | **best\_before** | **short\_description** | **url** |
| Pasta - Bauletti, Chicken White | 48.85 | 2020-02-08 | Fusce cong... | http://dummyimage.com/241x194.jpg/5fa2dd/ffffff |
| Oil - Sunflower | 48.00 | 2019-10-25 | Lorem ipsu... | http://dummyimage.com/243x233.jpg/cc0000/ffffff |
| Sugar - White Packet | 40.89 | 2019-11-14 | Pellentesq... | http://dummyimage.com/197x104.jpg/cc0000/ffffff |
| … |  |  |  |  |
| Lemonade - Mandarin, 591 Ml | 25.53 | 2020-04-03 | Duis biben... | http://dummyimage.com/208x226.jpg/cc0000/ffffff |

### Counts of products in stores and their average

The managers needs to know in which stores sell different products and their average price.

Extract from the database all of the **stores (with** or **without** products**)** and the **count** of the **products** that they have. Also you can show the average price of all products (rounded to the second digit after decimal point) that sells in store.

**Order** the results **descending** **by count of products in store**, then by **average** price in **descending order** and finally by **store id**.

#### Required Columns

* Name (store)
* product\_count
* avg

#### Example

|  |  |  |
| --- | --- | --- |
| **name** | product\_count | avg |
| DuoStore | 4 | 32.15 |
| Home Ing | 3 | 13.72 |
| Alphazap | 2 | 48.43 |
| Duobam | 2 | 44.45 |
| … | … | … |
| Lotstring | 0 | NULL |

### Specific employee

There are many employees in our shop system, but we need to find only the one that passes some specific criteria.

Extract from the database, the **full name** of an employee, the **name** of **the store** where he works, the **address** of the store, and **salary**. The employee's **salary** must be **lower** than **4000**, the **address** of the store must **contain** '5' somewhere, the **length** of the **store name** needs to be **more than** 8 characters and the employee’s **last name** must **end** with an 'n'.

#### Required Columns

* Full name (employee)
* Store name
* Address
* Salary

#### Example

|  |  |  |  |
| --- | --- | --- | --- |
| **Full\_name** | **Store\_name** | **address** | **salary** |
| Leigh Vedenyakin | Stronghold | 32759 Dwight Plaza | 2159.55 |

### Find all information of stores

The managers always want to know how the business goes. Now, they want from us to show all store names, but for security, the name must be in the reversed order.

Select the name of stores (in **reverse** order).

After that, the full\_address in format: {**town name** in **upper case**}**-**{**address** name}.

The next info is the **count** of **employees**, that work in the store.

**Filter** only the stores that have a **one or more** employees.

**Order the results** by the **full\_address in ascending order.**

#### Required Columns

* reversed\_name (store name)
* full\_address (full\_address)
* employees\_count

#### Example

|  |  |  |
| --- | --- | --- |
| **reversed\_name** | full\_address | employees\_count |
| dlohgnortS | BLAGOEVGRAD-32759 Dwight Plaza | 3 |
| mabouD | BLAGOEVGRAD-35952 Stoughton Circle | 1 |
| focsnarT | BURGAS-07 Armistice Parkway | 2 |
| … | … | … |
| draugdraC | VIDIN-61346 Melody Lane | 3 |

## Section 4: Programmability – 30 pts

The time has come for you to prove that you can be a little more dynamic with the database. So, you will have to write several procedures.

### Find full name of top paid employee by store name

Create a **user defined function** with the name **udf\_top\_paid\_employee\_by\_store(store\_name VARCHAR(50))** that receives a **store name** and returns the **full name** of **top paid employee**.   
Full info must be in format:  
 {**first\_name**} {**middle\_name**}**.** {**last\_name**} works in store for{**years of experience**} years

**The years of experience** is the difference when **they were hired and 2020-10-18**

#### Example 1

|  |
| --- |
| **Query** |
| SELECT udf\_top\_paid\_employee\_by\_store('Stronghold') as 'full\_info'; |
| full\_info |
| **Breena S. Hymans** works in store for **3** years |

#### Example 2

|  |
| --- |
| **Query** |
| SELECT udf\_top\_paid\_employee\_by\_store('Keylex') as 'full\_info'; |
| full\_info |
| **Xylina W. Apfelmann** works in store for **7** years |

### Update product price by address

CREATE user define **procedure udp\_update\_product\_price (address\_name VARCHAR (50)),** that receives as parameter an **address name**.

Increase the product's price with **100** if the address **starts with 0 (zero)** otherwise **increase** the price with **200**.

#### Example 1

|  |
| --- |
| **Query** |
| CALL udp\_update\_product\_price('07 Armistice Parkway');  SELECT name, price FROM products WHERE id = 15; |

#### Result

|  |  |
| --- | --- |
| **name** | **price** |
| Spic And Span All Purpose | **136.53** |

#### Example 2

|  |
| --- |
| **Query** |
| CALL udp\_update\_product\_price('1 Cody Pass');  SELECT name, price FROM products WHERE id = 17; |

#### Result

|  |  |
| --- | --- |
| **name** | **price** |
| Wine – Ruffino Chianti Classico | **221.63** |