Lab: Built-in Functions

This document defines the **lab exercise assignments** for the "Databases Basics - MySQL" course @ Software University.

Download from the course instance and get familiar with the **`book_library`** database. You will use it in the following exercises.

1. Find Book Titles

Write a SQL query to find **books which titles start with "The". Order the result by `id`.** Submit your query statements as **Prepare DB & run queries.**

Example

title
The Mysterious Affair at Styles
The Big Four
The Murder at the Vicarage
The Mystery of the Blue Train
The Ring
…

2. Replace Titles

Write a SQL query to find **books which titles start with "The" and replace the substring with 3 asterisks.** Retrieve data about the updated titles. **Order the result by `id`.** Submit your query statements as **Prepare DB & run queries.**

Example

title
*** Mysterious Affair at Styles
*** Big Four
*** Murder at the Vicarage
*** Mystery of the Blue Train
*** Ring
*** Alchemist
*** Fifth Mountain
*** Zahir
*** Dead Zone

*** Hobbit
*** Adventures of Tom Bombadil

3. Sum Cost of All Books

Write a SQL query to sum prices of all books. Format the output to **2 digits after decimal point**. Submit your query statements as **Prepare DB & run queries.**

4. Days Lived

Write a SQL query to calculate the days that the authors have lived. **NULL** values mean that the author is still alive. Submit your query statements as **Prepare DB & run queries.**

Example

Full Name	Days Lived
Agatha Christie	31164
William Shakespeare	18990
Danielle Schuelein-Steel	(NULL)
Joanne Rowling	(NULL)
Lev Tolstoy	30021
Paulo Souza	(NULL)
Stephen King	(NULL)
John Tolkien	29827
Erika Mitchell	(NULL)
Agatha Christie	31164
William Shakespeare	18990

5. Harry Potter Books

Write a SQL query to retrieve titles of all the Harry Potter books. **Order the information by `id`.** Submit your query statements as **Prepare DB & run queries.**

Example

title
Harry Potter and the Philosopher's Stone
Harry Potter and the Chamber of Secrets
Harry Potter and the Prisoner of Azkaban

...

Exercises: Built-in Functions

This document defines the **exercise assignments** for the "Databases Basics - MySQL" course @ Software University.

Part I – Queries for SoftUni Database

1. Find Names of All Employees by First Name

Write a SQL query to find **first** and **last names** of all employees whose **first name starts with "Sa" (case insensitively). Order the information by id.** Submit your query statements as **Prepare DB & run queries.**

Example

first_name	last_name
Sariya	Harnpadoungsataya
Sandra	Reategui Alayo
…	…

2. Find Names of All employees by Last Name

Write a SQL query to find **first** and **last names** of all employees whose **last name contains "ei" (case insensitively). Order the information by id**. Submit your query statements as **Prepare DB & run queries.**

Example

first_name	last_name
Kendall	Keil
Christian	Kleinerman
…	…

3. Find First Names of All Employees

Write a SQL query to find the **first names** of all employees in the **departments** with **ID 3 or 10** and whose **hire year** is **between 1995 and 2005 inclusively**. **Order the information by id**. Submit your query statements as **Prepare DB & run queries.**

Example

first_name
Deborah
Wendey
Candy
…

4. Find All Employees Except Engineers

Write a SQL query to find the **first** and **last names** of all employees whose **job titles does not contain** "**engineer**". **Order the information by id**. Submit your query statements as **Prepare DB & run queries.**

Example

first_name	last_name
Guy	Gilbert
Kevin	Brown

Rob	Walters
…	…

5. Find Towns with Name Length

Write a SQL query to find **town names** that are **5** or **6 symbols long** and **order** them **alphabetically by town name**. Submit your query statements as **Prepare DB & run queries.**

Example

name
Berlin
Duluth
Duvall
…

6. Find Towns Starting With

Write a SQL query to find all towns that **start with** letters **M**, **K**, **B** or **E (case insensitively).** Order them **alphabetically** by **town name**. Submit your query statements as **Prepare DB & run queries.**

Example

town_id	name
5	Bellevue
31	Berlin
30	Bordeaux
…	…

7. Find Towns Not Starting With

Write a SQL query to find all towns that **do not start with** letters **R**, **B** or **D (case insensitively).** Order them **alphabetically** by name. Submit your query statements as **Prepare DB & run queries.**

Example

town_id	name
2	Calgary
23	Cambridge
15	Carnation
…	…

8. Create View Employees Hired After 2000 Year

Write a SQL query to create view **v_employees_hired_after_2000** with **the first and the last name** of all employees **hired after 2000 year.** Submit your query statements as **Run skeleton, run queries & check DB.**

Example

first_name	last_name
Steven	Selikoff
Peter	Krebs
Stuart	Munson
…	…

9. Length of Last Name

Write a SQL query to find the names of all employees whose last name is **exactly 5 characters long.**

Example

first_name	last_name
Kevin	Brown
Terri	Duffy
Jo	Brown
Diane	Glimp
…	…

Part II – Queries for Geography Database

10. Countries Holding 'A' 3 or More Times

Find all countries that hold the **letter 'A'** in their name **at least 3 times (case insensitively), sorted by ISO code**. **Display** the **country name** and the **ISO code**. Submit your query statements as **Prepare DB & run queries.**

Example

country_name	iso_code
Afghanistan	AFG
Albania	ALB
…	…

11. Mix of Peak and River Names

Combine all peak names with all river names, so that the last letter of each peak name is the same as the first letter of its corresponding river name**. Display** the **peak name**, the **river name**, and the **obtained mix**. **Sort the results by the obtained mix alphabetically**. Submit your query statements as **Prepare DB & run queries.**

Example

peak_name	river_name	mix
Aconcagua	Amazon	aconcaguamazon
Aconcagua	Amur	aconcaguamur
Banski Suhodol	Lena	banski suhodolena
…	…	…

Part III – Queries for Diablo Database

12. Games from 2011 and 2012 year

Find the **top 50 games ordered by start date**, then **by name**. Display only the **games from the years 2011 and 2012**. Display the start date in the format "**YYYY-MM-DD**". Submit your query statements as **Prepare DB & run queries.**

Example

name	start
Rose Royalty	2011-01-05
London	2011-01-13
Broadway	2011-01-16
…	…

13. User Email Providers

Find information about the email providers of all users. Display the **user_name** and the **email provider**. Sort the results by **email provider alphabetically**, then by **username**. Submit your query statements **as Prepare DB & run queries.**

Example

user_name	Email Provider
Pesho	abv.bg
monoxidecos	astonrasuna.com
bashsassafras	balibless
…	…

14. Get Users with IP Address Like Pattern

Find the **user_name** and the **ip_address** for each user, sorted by **user_name alphabetically**. Display only the rows, where the **ip_address** matches the pattern: "**___.1%.%.___**". Submit your query statements as **Prepare DB & run queries.**

Example

user_name	ip_address
bindbawdy	192.157.20.222
evolvingimportant	223.175.227.173
inguinalself	255.111.250.207
…	…

15. Show All Games with Duration and Part of the Day

Find all **games** with their corresponding **part of the day** and **duration**. **Parts of the day** should be **Morning** (**start** time is >= 0 and < 12), **Afternoon** (**start** time is >= 12 and < 18), **Evening** (**start** time is >= 18 and < 24). **Duration** should be **Extra Short** (smaller or equal to 3), **Short** (between 3 and 6 including), **Long** (between 6 and 10 including) and **Extra Long** in any other cases or without **duration**. Submit your query statements as **Prepare DB & run queries.**

Example

game	Part of the Day	Duration
Aithusa	Evening	Short
Acid green	Morning	Long
Apple	Morning	Short
Broadway	Morning	Short
Ancalagon	Morning	Short
Allium drumstick	Morning	Extra Long
…	…	…

Part IV – Date Functions Queries

16. Orders Table

You are given a table **orders(id, product_name, order_date)** filled with data. Consider that the **payment** for an order must be accomplished **within 3 days after the order date**. Also the **delivery date is up to 1 month**. Write a query to show each product's **name**, **order date**, **pay and deliver due dates**. Submit your query statements as **Prepare DB & run queries.**

Original Table

id	product_name	order_date
1	Butter	2016-09-19 00:00:00
2	Milk	2016-09-30 00:00:00
3	Cheese	2016-09-04 00:00:00
4	Bread	2015-12-20 00:00:00
5	Tomatoes	2015-12-30 00:00:00
…	…	…

Output

product_name	order_date	pay_due	deliver_due
Butter	2016-09-19 00:00:00	2016-09-22 00:00:00	2016-10-19 00:00:00
Milk	2016-09-30 00:00:00	2016-10-03 00:00:00	2016-10-30 00:00:00
Cheese	2016-09-04 00:00:00	2016-09-07 00:00:00	2016-10-04 00:00:00
Bread	2015-12-20 00:00:00	2015-12-23 00:00:00	2016-01-20 00:00:00
Tomatoes	2015-12-30 00:00:00	2016-01-02 00:00:00	2016-01-30 00:00:00
…	…	…	…