**SQL project**

Anna Fesiuk for CV

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# **Walmart**

## Data Wrangling

*Build a database*

[CREATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-database.html) [DATABASE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-database.html" \t "mysql_doc) [IF](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/control-flow-functions.html%23function_if" \t "mysql_doc) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) EXISTS walmartSales;

*Create database, table, insert data from CSV file*

[CREATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html) [TABLE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html" \t "mysql_doc) [IF](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/control-flow-functions.html%23function_if" \t "mysql_doc) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) EXISTS sales( invoice\_id VARCHAR(30) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL PRIMARY KEY, branch VARCHAR(5) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, city VARCHAR(30) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, customer\_type VARCHAR(30) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, genderVARCHAR(30) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, product\_line VARCHAR(100) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, unit\_price DECIMAL(10,2) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, quantity INT [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, tax\_pct FLOAT(6,4) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, total DECIMAL(12, 4) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL,date DATETIME [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, time TIME [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, payment VARCHAR(15) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, cogs DECIMAL(10,2) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, gross\_margin\_pct FLOAT(11,9), gross\_income DECIMAL(12, 4), ratingFLOAT(2, 1) );

A screenshot of a computer

Description automatically generated

INSERT INTO sales (`invoice\_id`, `branch`, `city`, `customer\_type`, `gender`, `product\_line`, `unit\_price`, `quantity`, `tax\_pct`, `total`, `date`, `time`, `payment`, `cogs`, `gross\_margin\_pct`, `gross\_income`, `rating`) VALUES ('750-67-8428', 'A', 'Yangon', 'Member', 'Female', 'Health and beauty', 75, 7, 26, 549, '05.01.2019', '13:08:00', 'Ewallet', 523, 5, 26, 9), ('226-31-3081', 'C', 'Naypyitaw', 'Normal', 'Female', 'Electronic accessories', 15, 5, 4, 80, '08.03.2019', '10:29:00', 'Cash', 76, 5, 4, 10)

A screenshot of a computer

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## Feature Engineering

*Add a new column named time\_of\_day to give insight of sales in the Morning, Afternoon and Evening.*

ALTER TABLE sales ADD COLUMN time\_of\_day VARCHAR(20);

[UPDATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/update.html" \t "mysql_doc) sales [SET](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/set.html" \t "mysql_doc) time\_of\_day = ( [CASE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/control-flow-functions.html%23operator_case" \t "mysql_doc) WHEN `time` BETWEEN "00:00:00" [AND](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_and" \t "mysql_doc) "12:00:00" THEN "Morning" WHEN `time` BETWEEN "12:01:00" [AND](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_and" \t "mysql_doc) "16:00:00" THEN "Afternoon" ELSE "Evening"END );

A screenshot of a calendar

Description automatically generated

*Add a new column named day\_name that contains the extracted days of the week on which the given transaction took place (Mon, Tue, Wed, Thur, Fri).*

[ALTER](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/alter-table.html" \t "mysql_doc) [TABLE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/alter-table.html" \t "mysql_doc) sales ADD COLUMN day\_name VARCHAR(10);

[UPDATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/update.html) sales [SET](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/set.html" \t "mysql_doc) day\_name = DAYNAME(date);

*Add a new column named month\_name that contains the extracted months of the year on which the given transaction took place (Jan, Feb, Mar).*

[ALTER](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/alter-table.html) [TABLE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/alter-table.html" \t "mysql_doc) sales ADD COLUMN month\_name VARCHAR(10);

[UPDATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/update.html" \t "mysql_doc) sales [SET](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/set.html" \t "mysql_doc) month\_name = MONTHNAME(date);

## Questions

*How many unique cities does the data have?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) DISTINCT city FROM sales;

A screenshot of a computer

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*In which city is each branch?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) DISTINCT city, branch FROM sales;

A screenshot of a computer

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* 1. Product

*How many unique product lines does the data have?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) DISTINCT product\_line FROM sales;

A screenshot of a computer

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*What is the most selling product line?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) [SUM](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_sum" \t "mysql_doc)(quantity) as qty, product\_line FROM sales GROUP BY product\_line ORDER BY qty DESC;

A screenshot of a computer

Description automatically generated

*What is the total revenue by month?*

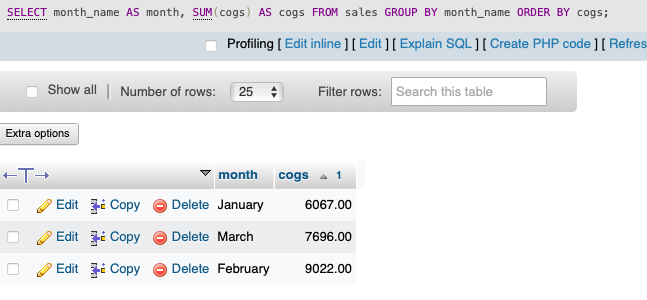
[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) month\_name AS month, [SUM](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_sum" \t "mysql_doc)(total) AS total\_revenue FROM sales GROUP BY month\_name ORDER BY total\_revenue;

A screenshot of a computer screen

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*What month had the largest COGS?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) month\_name AS month, [SUM](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_sum" \t "mysql_doc)(cogs) AS cogs FROM sales GROUP BY month\_name  ORDER BY cogs;



*What product line had the largest revenue?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) product\_line, [SUM](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_sum" \t "mysql_doc)(total) as total\_revenue FROM sales GROUP BY product\_line ORDER BY total\_revenue DESC;

A screenshot of a computer

Description automatically generated

*What is the city with the largest revenue?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) branch, city, [SUM](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_sum" \t "mysql_doc)(total) AS total\_revenue FROM sales GROUP BY city, branch ORDER BY total\_revenue;

A screenshot of a computer

Description automatically generated

*What product line had the largest VAT?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) product\_line, [AVG](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_avg" \t "mysql_doc)(tax\_pct) as avg\_tax FROM sales GROUP BY product\_line ORDER BY avg\_tax DESC;

A screenshot of a computer

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*Fetch each product line and add a column to those product line showing "Good", "Bad". Good if its greater than average sales.*

A screenshot of a computer

Description automatically generated

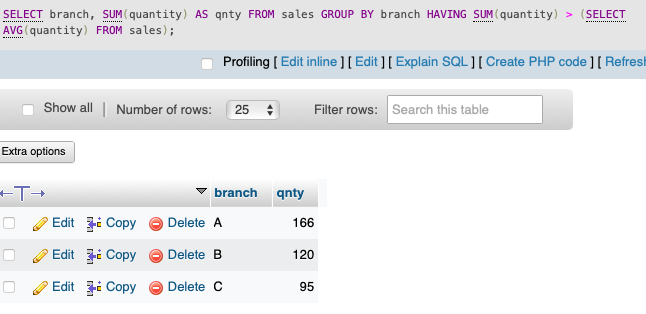
[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) product\_line, [CASE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/control-flow-functions.html%23operator_case" \t "mysql_doc) WHEN [AVG](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_avg" \t "mysql_doc)(quantity) > 5.6 THEN "Good" ELSE "Bad" END AS remark FROM sales GROUP BY product\_line;

A screenshot of a computer

Description automatically generated

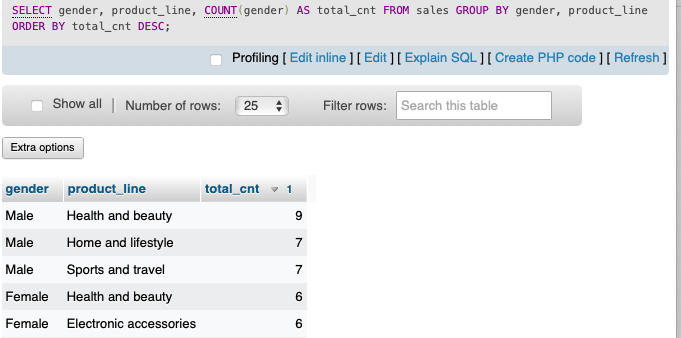
*Which branch sold more products than average product sold?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) branch,  [SUM](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_sum)(quantity) AS qnty FROM sales GROUP BY branch HAVING [SUM](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_sum" \t "mysql_doc)(quantity) > ([SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html" \t "mysql_doc) [AVG](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_avg" \t "mysql_doc)(quantity) FROM sales);



What is the most common product line by gender?

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) gender, product\_line, [COUNT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(gender) AS total\_cnt FROM sales GROUP BY gender, product\_line ORDER BY total\_cnt DESC;



*What is the average rating of each product line?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) ROUND([AVG](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_avg" \t "mysql_doc)(rating), 2) as avg\_rating, product\_line FROM sales GROUP BY product\_line ORDER BY avg\_rating DESC;

A screenshot of a computer

Description automatically generated

* 1. Sales

*Number of sales made in each time of the day per weekday.*

[Select](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) time\_of\_day, [COUNT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) AS total\_sales from sales GROUP BY time\_of\_day;

A screenshot of a computer

Description automatically generated

*Which of the customer types brings the most revenue?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) customer\_type, [SUM](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_sum" \t "mysql_doc)(total) AS revenue FROM sales GROUP BY customer\_type ORDER BY revenue;

A screenshot of a computer

Description automatically generated

*Which city has the largest tax percent/ VAT (Value Added Tax)?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) city, tax\_pct FROM sales GROUP BY city, tax\_pct ORDER BY tax\_pct DESC;

A screenshot of a computer

Description automatically generated

*Which customer type pays the most in VAT?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) customer\_type, tax\_pct FROM sales GROUP BY customer\_type, tax\_pct ORDER BY tax\_pct DESC;

A screenshot of a computer

Description automatically generated

* 1. Customer

*How many unique customer types does the data have?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) DISTINCT customer\_type FROM sales;

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*How many unique payment methods does the data have?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) DISTINCT payment FROM sales;

A screenshot of a computer

Description automatically generated

*What is the most common customer type?*

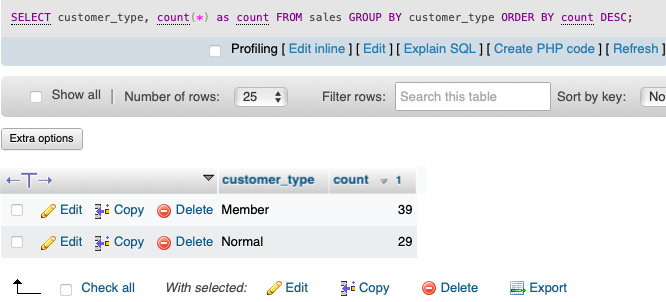
[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) customer\_type, [count](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) as [count](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc) FROM sales GROUP BY customer\_type ORDER BY [count](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc) DESC;

Select comments with “id” inside

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) comment\_text FROM `comments` WHERE comment\_text [like](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/string-comparison-functions.html%23operator_like" \t "mysql_doc) "id%";

A screenshot of a computer

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*Which customer type buys the most?*

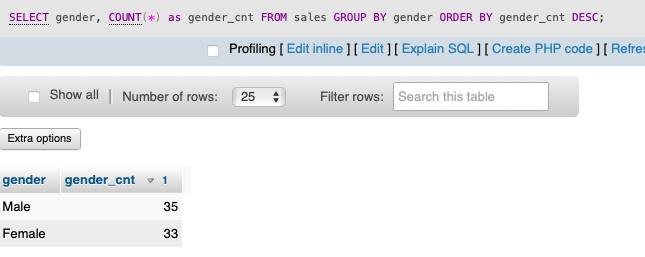
[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) customer\_type,[COUNT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) FROM sales GROUP BY customer\_type;

A screenshot of a computer

Description automatically generated

*What is the gender of most of the customers?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) gender, [COUNT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) as gender\_cnt FROM sales GROUP BY gender ORDER BY gender\_cnt DESC;



*What is the gender distribution per branch?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) gender, [COUNT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) as gender\_cnt FROM sales WHERE branch = "C" GROUP BY gender ORDER BY gender\_cnt DESC;

A screenshot of a computer

Description automatically generated

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) gender, [COUNT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) as gender\_cnt FROM sales WHERE branch = "A" GROUP BY gender ORDER BY gender\_cnt DESC;

A screenshot of a computer

Description automatically generated [SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) gender, [COUNT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) as gender\_cnt FROM sales WHERE branch = "B" GROUP BY gender ORDER BY gender\_cnt DESC;

A screenshot of a computer

Description automatically generated

*Which time of the day do customers give most ratings?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) time\_of\_day, [AVG](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_avg" \t "mysql_doc)(rating) AS avg\_rating FROM sales GROUP BY time\_of\_day ORDER BY avg\_rating DESC;

A screenshot of a computer

Description automatically generated

*Which time of the day do customers give most ratings per branch A?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) time\_of\_day, [AVG](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_avg" \t "mysql_doc)(rating) AS avg\_rating FROM sales WHERE branch = "A" GROUP BY time\_of\_day ORDER BY avg\_rating DESC;

A screenshot of a computer

Description automatically generated

*Which day fo the week has the best avg ratings?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) day\_name, [AVG](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_avg" \t "mysql_doc)(rating) AS avg\_rating FROM sales GROUP BY day\_name ORDER BY avg\_rating DESC;

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# I**nstagram**

## Creating Data Base

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Description automatically generated

*Comments*

[CREATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html) [TABLE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html" \t "mysql_doc) comments (id INTEGER AUTO\_INCREMENT PRIMARY KEY, comment\_text VARCHAR(255) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, photo\_id INTEGER [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL,user\_id INTEGER [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL,created\_at TIMESTAMP[DEFAULT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/miscellaneous-functions.html%23function_default" \t "mysql_doc) NOW(),FOREIGN KEY(photo\_id) REFERENCES photos(id),FOREIGN KEY(user\_id) REFERENCES users(id));

*Follows*

[CREATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html) [TABLE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html" \t "mysql_doc) follows (follower\_id INTEGER [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, followee\_id INTEGER [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL,created\_at TIMESTAMP [DEFAULT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/miscellaneous-functions.html%23function_default" \t "mysql_doc) NOW(),FOREIGN KEY(follower\_id) REFERENCES users(id), FOREIGNKEY(followee\_id) REFERENCES users(id),PRIMARY KEY(follower\_id, followee\_id));

*Likes*

[CREATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html) [TABLE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html" \t "mysql_doc) likes (user\_id INTEGER [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL,photo\_id INTEGER [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, created\_at TIMESTAMP [DEFAULT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/miscellaneous-functions.html%23function_default" \t "mysql_doc) NOW(), FOREIGN KEY(user\_id) REFERENCES users(id),FOREIGNKEY(photo\_id)REFERENCES photos(id),PRIMARY KEY(user\_id, photo\_id));

*Photos*

[CREATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html) [TABLE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html" \t "mysql_doc) photos (id INTEGER AUTO\_INCREMENT PRIMARY KEY, image\_url VARCHAR(255) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, user\_id INTEGER [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, created\_at TIMESTAMP [DEFAULT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/miscellaneous-functions.html%23function_default" \t "mysql_doc) NOW(),FOREIGN KEY(user\_id)REFERENCES users(id));

*Photo tags*

[CREATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html) [TABLE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html" \t "mysql_doc) photo\_tags ( photo\_id INTEGER [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, tag\_id INTEGER [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL,FOREIGN KEY(photo\_id) REFERENCES photos(id), FOREIGN KEY(tag\_id) REFERENCES tags(id), PRIMARYKEY(photo\_id, tag\_id));

*Tags*

[CREATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html) [TABLE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html" \t "mysql_doc) tags (id INTEGER AUTO\_INCREMENT PRIMARY KEY,tag\_name VARCHAR(255) UNIQUE,created\_at TIMESTAMP [DEFAULT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/miscellaneous-functions.html%23function_default" \t "mysql_doc) NOW());

*Users*

[CREATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html) [TABLE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html" \t "mysql_doc) users (id INTEGER AUTO\_INCREMENT PRIMARY KEY,username VARCHAR(255) UNIQUE [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not" \t "mysql_doc) NULL, created\_at TIMESTAMP [DEFAULT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/miscellaneous-functions.html%23function_default" \t "mysql_doc) NOW() );

## *Insert Data*

INSERT INTO users (username, created\_at) VALUES

INSERT INTO photos(image\_url, user\_id) VALUES

INSERT INTO follows(follower\_id, followee\_id) VALUES

INSERT INTO comments(comment\_text, user\_id, photo\_id) VALUES

INSERT INTO likes(user\_id,photo\_id) VALUES

INSERT INTO tags(tag\_name) VALUES

INSERT INTO photo\_tags(photo\_id, tag\_id) VALUES

## Questions

*Find 5 oldest users.*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) \* FROM users ORDER BY created\_at LIMIT 5;

A screenshot of a computer

Description automatically generated

*What day of the week do most users register on ?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) DAYNAME(created\_at) AS day, [COUNT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) AS total FROM users GROUP BY day ORDER BY total DESC LIMIT 2;

A screen shot of a computer

Description automatically generated

*What is the most likes photo ? Who has posted it ?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) username, photos.id, photos.image\_url, [COUNT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) AS total FROM photos INNER JOIN likes ON likes.photo\_id = photos.id INNER JOIN users ON photos.user\_id = users.id GROUPBY photos.id ORDER BY total DESC LIMIT 1;

A screenshot of a computer

Description automatically generated

*How many times does the average user post?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) ([SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html" \t "mysql_doc) [Count](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) FROM  photos) / ([SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html" \t "mysql_doc) [Count](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) FROM  users) AS [avg](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_avg" \t "mysql_doc);

A screenshot of a computer

Description automatically generated

*What are the top 5 most commonly used hashtags ?*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) tags.tag\_name, [Count](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) AS total FROM  photo\_tags JOIN tags ON photo\_tags.tag\_id = tags.id GROUP  BY tags.id ORDER  BY total DESC LIMIT  5;

A screenshot of a computer

Description automatically generated

*Find a user who has likes all photos.*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) username, [Count](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) AS num\_likes FROM  users INNER JOIN likes ON users.id = likes.user\_id GROUP  BY likes.user\_id HAVING num\_likes = ([SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html" \t "mysql_doc) [Count](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) FROM  photos);

# **Books Shop**

## Create table

[CREATE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html) [TABLE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/create-table.html" \t "mysql_doc) books ( book\_id INT AUTO\_INCREMENT, title VARCHAR(100), author\_fname VARCHAR(100), author\_lname VARCHAR(100), released\_year INT, stock\_quantity INT, pages INT,PRIMARY KEY(book\_id) );

## Insert information

[INSERT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/insert.html) INTO books (title, author\_fname, author\_lname, released\_year, stock\_quantity, pages) [VALUES](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/miscellaneous-functions.html%23function_values" \t "mysql_doc) ('The Namesake', 'Jhumpa', 'Lahiri', 2003, 32, 291)…

## Questions

*Connect firs name and last name of the author in one column.*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) CONCAT(author\_fname,' ', author\_lname) AS author\_name FROM books;

A screenshot of a browser window

Description automatically generated

*Create a short title for books*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) SUBSTRING(title, 1, 10) AS 'short title' FROM books;

A screenshot of a computer

Description automatically generated

*Find the length of authors last names*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) author\_lname, CHAR\_LENGTH(author\_lname) AS 'length' FROM books;

A screenshot of a computer

Description automatically generated

*Make title of books with upper letters*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) UPPER(title) FROM books;

A screenshot of a search engine

Description automatically generated

*Find book with the biggest amount of pages .*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) title, pages FROM books WHERE pages = ([SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html" \t "mysql_doc) [MAX](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_max" \t "mysql_doc)(pages) FROM books);

A screenshot of a browser window

Description automatically generated

*Find number of books which was written in each year and average amount of pages in these books.*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) released\_year AS year, [COUNT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count" \t "mysql_doc)(\*) AS '# books', [AVG](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_avg" \t "mysql_doc)(pages) AS 'avg pages' FROM books GROUP BY released\_year ORDER BY released\_year;

A screenshot of a computer

Description automatically generated

*Find all books which was written by Carver/Lahiri/Smith.*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) title, author\_lname FROM books WHERE author\_lname = 'Carver' [OR](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_or" \t "mysql_doc) author\_lname = 'Lahiri' [OR](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_or" \t "mysql_doc) author\_lname = 'Smith';

A screenshot of a computer

Description automatically generated

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) title, author\_lname FROM books WHERE author\_lname [IN](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/comparison-operators.html%23function_in" \t "mysql_doc) ('Carver', 'Lahiri', 'Smith');

A screenshot of a computer

Description automatically generated

*Find book which was released by 1980.*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) \* FROM books WHERE released\_year < 1980;

A screenshot of a computer

Description automatically generated

*Find book which was written by Lahiri and after 2000.*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) \* FROM books WHERE author\_lname = 'Lahiri' [AND](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_and) released\_year > 2000;

A screenshot of a computer

Description automatically generated

*Find amount of books written by every author and create column “”number” books”.*

[SELECT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/select.html) author\_fname, author\_lname, [CASE](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/control-flow-functions.html%23operator_case) WHEN [COUNT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count)(\*) = 1 THEN '1 book' ELSE CONCAT([COUNT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count)(\*), ' books') END AS [count](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/aggregate-functions.html%23function_count) FROM books WHERE author\_lname [IS](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/comparison-operators.html%23operator_is) [NOT](http://localhost:8888/phpMyAdmin5/url.php?url=https://dev.mysql.com/doc/refman/5.7/en/logical-operators.html%23operator_not) NULL GROUP BYauthor\_fname, author\_lname;

A screenshot of a computer

Description automatically generated