**SQL bits**

1. Using table ‘bank’. From the card table (which we will now call ‘c’), select the distinct values from coloumn type. (in other words: list all the unique values contained int this column)

use bank;

select distinct c.type

from card c

1. Using table ‘bank’. From the district table (which we shall now call ‘d’), select ‘district name’ and A3 (now renamed as region). Order the results in ascending order with a max of 30 rows

use bank;

select d.A2 as district\_name, d.A3 as region

from district d

order by district\_name ASC

limit 30

1. Using table ‘bank’. From the trans table (which we shall now call ‘t’), count amount where operation is VYPER and type is VYDAJ

use bank;

select sum(t.amount) as total from trans t

where t.operation = 'VYBER' and t.type = 'VYDAJ'

1. Using table ‘bank’. From the loan table (which we shall now call ‘l’), list amount by status and then amount in descending order, Where status is not B or D.

use bank;

select \* from loan l

where l.status not in ('B','D')

order by l.status, l.amount Desc

1. Filter by an amount.

use bank;

select \* from order o

where o.amount > 1000 AND o.k\_symbol=’SIPO’

order by o.amount DESC

1. What is the balance of all our loans?

#what is the balance of all our loans?

use bank;

select \*, l.amount-l.payments as balance

from loan l

1. What is the percentage of the loan that has been paid back?

##what is the percentage of the balance that has been paid back

use bank;

select \*, round((l.payments/l.amount) \* 100,2) as balancep

from loan l

1. Searching for bad debts

##what are the top ten biggest unpaid debts (B = debt period finished and not fully paid)

use bank;

select loan\_id, amount, payments

from loan l

where l.status='B' and l.amount > 10000

order by l.amount DESC

limit 10

1. Working out urban population

use bank;

select round(A4\*(A10/100) ,2) as urbanpop, A2

from district

1. Floor and ceiling. – rounds up or down to integers

use bank;

select floor(A4\*(A10/100)) as urbanpop, A2

from district

**Best practise**

Good idea to reference the table you are looking at every time. (because a lot of tables have same solumn names meaning the different things).   
This is why we give the table a 1 letter name e.g. ‘l’. Then reference it as l.orders, l.type etc

Danger words = drop and delete (these could permanently alter the database)

1. Strings. Take left 3 digits from k\_symbol and Concat with id string and make it all lower case

#strings

use bank;

select \*, concat(lower(left(k\_symbol,3)),' ',account\_id) as symbolid

from order1

1. Random allocation and playing with strings

use bank;

select concat(lower(A2),upper(A3),left(A2,5))

from district

**DATES**

Today () – returns today’s date

1. Converting date to readable

use bank;

select account\_id, date, convert(date,datetime)

from trans

1. This gives you a nice date format

use bank;

select account\_id, date, date\_format(convert(date,datetime), '%D-%M') as day\_n\_month

from trans

1. Substring\_index (value, ‘index around this thing’, what part?). So here it is using the space as the split in the value then taking the 1st part.

use bank;

select \*,card\_id, date\_format(convert(substring\_index(issued, ' ',1),datetime), 'Date is %D-%M\_%Y') as date23

from card

where type = 'gold'

1. Another way using left() – just takes first 6 characters from the left

use bank;

select \*,card\_id, date\_format(convert(left(issued, 6),datetime), 'Date is d of %M of %Y') as date23

from card

where type = 'gold'

1. Finding first year that gold cards were issued

use bank;

select date\_format(convert(left(c.issued,6),date),'%Y') as year

from card c

where type = 'gold'

order by year ASC

limit 1;

1. Finding Nulls

select isnull(k\_symbol) from bank.trans;

**When and Else Satements**

1. Printing statements depending on status

select loan\_id, account\_id,

case

when status = 'A' then 'Good - Contract Finished'

when status = 'B' then 'Defaulter - Contract Finished'

when status = 'C' then 'Good - Contract Running'

else 'In Debt - Contract Running'

end as 'Status\_Description'

from bank.loan;

**If Statements**

1. An if statement to do the same thing. If(this, then this, if not this) and call it decr:

select \*,

If(type='PRIJEM','credit','withdrwal') as descr

from bank.trans;

**Wildcards**

https://www.w3schools.com/sql/sql\_wildcards.asp

WHERE City LIKE ‘L\_n\_on’; = find cities with names structured like this.

Also find: BETWEEN, IS, OR, AND, REGEXP

**Creating tables as rows**

1. Create database

create database if not exists bank\_demo

1. Table

create table bank\_demo.account(

account\_id int(11) UNIQUE NOT NULL,

district\_id int(11) DEFAULT NULL

)

1. Insert a row

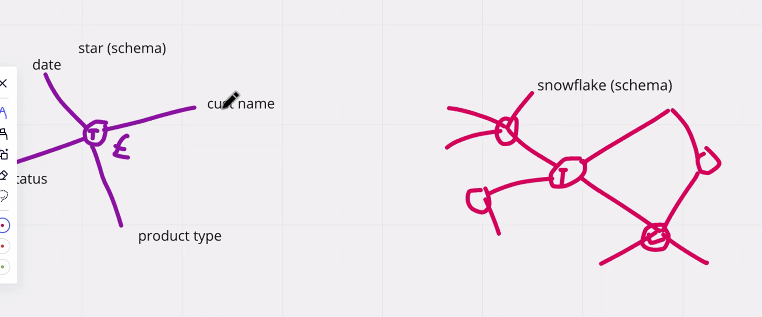
insert into bank\_demo.account values

(1,4),(2,4),(3,4);

**Terminology about data Architecture**

1. Data Lake = non-structured data (pool of stuff). Collect loads of data from different places. Some sort of blending? But don’t necessarily need to join data together.   
   **A managed lake** – is more catalogued and refined + delivers useable formats for other tools.
2. Data Warehouse = Copy of transactional data structured for querying and reporting. Supports normalized and denormalized data (de-normalized data = joined up data. Makes it easier to report against). Mostly used for data mining and dashboards. Is resource and cost heavy.
3. Online Transactions Processing (OLTP) is a store of transactional information. It stores current transactional data – there are no redundancies.  
   Online Analytical Processing (OLAP). System designed for relatively small no of transactions. Stores historic data. Queries are more complex. Support different schemas – snowflake   
   Real Time Analysis Processing (RTAP). Uses cloud. Real time data. More flexibility. Real time data and historic data. Most businesses demand real time data today. EG Google Cloud. Data Bricks.

Different Schemas



# Sakila Exercise 06.04.2021

# Lab | SQL Queries - Lesson 2.5

1. Select all the actors with the first name ‘Scarlett’.

use sakila;

SELECT \*

FROM actor

WHERE first\_name = 'Scarlett'

1. How many films (movies) are available for rent and how many films have been rented?
2. What are the shortest and longest movie duration? Return the results as columns with the names max\_duration and min\_duration. Answer 15861

use sakila;

select \*, MAX(length) as longest, MIN(length) as shortest from film;

1. What's the average movie duration expressed in format (hours, minutes) Return the result as columns with the names hours and minutes? Answer 46 – 185 mins

use sakila;

select \*, floor(avg(length)/60), avg(length)-floor(avg(length/60)) as minutes

from film;

1. How many distinct (different) actors' last names are there? Answer 121.

SELECT count(distinct last\_name) as uniquestar from sakila.actor;

1. Since how many days has the company been operating (check the DATEDIFF() function)? Hint: rental table. Answer: 275

use sakila;

SELECT DATEDIFF(min(rental\_date),max(last\_update)) as 'days trading when last updated'

from rental;

1. Show all rental information with additional columns month and weekday. (hint: DATE\_FORMAT() ). Get 20 results.

USE sakila;

SELECT \*, DATE\_FORMAT(rental\_date, '%M') AS Rental\_Month, DAYNAME(rental\_date) AS Rental\_Day

from rental

limit 20;

1. Add an additional column day\_type with values 'weekend' and 'workday' depending on the rental day of the week.

USE sakila;

SELECT

\*,

CASE

WHEN DATE\_FORMAT(rental\_date, '%w') IN (1 , 7) THEN 'Weekend'

ELSE 'workday'

END AS daytype

FROM

rental;

1. How many rentals were made in the last month of renting activity?

use sakila;

SELECT \*, DATE\_FORMAT(rental\_date, '%M') AS Rental\_Month, DATE\_FORMAT(MAX(last\_update), '%M'), COUNT(rental\_date) AS NoRENTSlastMONTH

FROM rental

WHERE rental\_date LIKE '2006-02-\_\_\_\_\_:\_\_:\_\_';

# Lab | SQL Queries - Lesson 2.6

#Lab | SQL Queries - Lesson 2.6. **THIS IS THE ACTUAL SCRIPT**

#Using sakila

#1. Get the unique release years.

SELECT distinct(f.release\_year) as uniqueRyear

FROM sakila.film f;

#2. Get all films with ARMAGEDDON in the title.

SELECT \*

FROM sakila.film

WHERE title LIKE 'ARMAGEDDON'; # Conclusion = none do.

#3. Get all films which title ends with APOLLO.

SELECT \*

FROM sakila.film

WHERE title LIKE '%APOLLO';

#4. Get 10 the longest films.

select \*, length

from sakila.film

order by length DESC

limit 10;

#5. How many films include Behind the Scenes content?

SELECT \*

FROM sakila.film

WHERE special\_features = 'Behind the Scenes';

#6. Drop column picture from staff.

ALTER TABLE sakila.staff

DROP COLUMN picture;

7. .A new person is hired to help Jon. Her name is TAMMY SANDERS, and she is a customer. Update the database accordingly.

#Add a rental for movie "Academy Dinosaur" by the customer "Charlotte Hunter" from employee Mike Hillyer at Store 1. You can use current date for the rental\_date column in the rental table. Hint: Check the columns in the table rental and see what information you would need to add there. You can query those pieces of information in other tables. For eg., you would notice that you need customer\_id information as well. To get that you can use the following query:

**<skipped this question>**

#8. select customer\_id from sakila.customer where first\_name = 'CHARLOTTE' and last\_name = 'HUNTER'

SELECT \*, customer\_id

FROM sakila.customer

WHERE first\_name = 'CHARLOTTE' AND last\_name = 'HUNTER';