SQL: Capstone Project

NOTE:

- Perform the below exercises in your SQL editor installed on your laptop.
- You can use the links provided at the end of the exercises for extra practice.

Session 2: Creating a Database

1.

a. Create a database with the name: AbleJobs
b. Create the following Table with the name: Sales1

salesman_id	name	city	commission
5001	James Hoog	New York	0.15
5002	Nail Knite	Paris	0.13
5005	Pit Alex	London	0.11
5006	Mc Lyon	Paris	0.14
5007	Paul Adam	Rome	0.13
5003	Lauson Hen	San Jose	0.12

c. Display all the data in the above table

2.

a. Create a database with the name: AbleJobs
b. Create the following Table with the name: Sales2

customer_id	cust_name	city	grade	salesman_id
3002	Nick Rimando	New York	100	5001
3007	Brad Davis	New York	200	5001
3005	Graham Zusi	California	200	5002
3008	Julian Green	London	300	5002
3004	Fabian Johnson	Paris	300	5006
3009	Geoff Cameron	Berlin	100	5003
3003	Jozy Altidor	Moscow	200	5007

c. Display all the data in the above table

Session 3: Other Basic Queries

1.

a. Create a database with the name: AbleJobs
b. Create the following Table with the name: Sales1

salesman_id	name	city	commission
5001	James Hoog	New York	0.15
5002	Nail Knite	Paris	0.13
5005	Pit Alex	London	0.11
5006	Mc Lyon	Paris	0.14
5007	Paul Adam	Rome	0.13
5003	Lauson Hen	San Jose	0.12

c. In the above table, write a SQL query to change the following data:
    i. Change commission of salesman with name of ‘Pit Alex’ to 0.22
    ii. Change city of salesman with salesman_id of ‘5003’ to Paris
d. Display all the data in the above table

2.

a. Create a database with the name: AbleJobs
b. Create the following Table with the name: Sales2

customer_id	cust_name	city	grade	salesman_id
3002	Nick Rimando	New York	100	5001
3007	Brad Davis	New York	200	5001
3005	Graham Zusi	California	200	5002
3008	Julian Green	London	300	5002
3004	Fabian Johnson	Paris	300	5006
3009	Geoff Cameron	Berlin	100	5003
3003	Jozy Altidor	Moscow	200	5007

c. In the above table, write a SQL query to alter the following data:
   i. Change grade of customer with name of ‘Graham Zusi’ to 300
   ii. Change city of customer with cust_id of ‘3009’ to London
e. Display all the data in the above table

Session 4: Functions and Wildcards

1.
a. Create a database with the name: AbleJobs
b. Create the following Table with the name: Sales1

salesman_id	name	city	commission
5001	James Hoog	New York	0.15
5002	Nail Knite	Paris	0.13
5005	Pit Alex	London	0.11
5006	Mc Lyon	Paris	0.14
5007	Paul Adam	Rome	0.13
5003	Lauson Hen	San Jose	0.12

c. From the above table, write a SQL query to find the details of those salespeople who come from the 'Paris' City or 'Rome' City. Return salesman_id, name, city, commission.
d. From the following table, write a SQL query to find the details of those salespeople who live in cities apart from 'Paris' and 'Rome'. Return salesman_id, name, city, commission.
e. From the following table, write a SQL query to find the details of salespeople who get the commission in the range from 0.12 to 0.14 (begin and end values are included). Return salesman_id, name, city, and commission.

f. From the following table, write a SQL query to find the details of those salespeople whose name starts with any letter within 'A' and 'L' (not inclusive). Return salesman_id, name, city, commission.
g. From the following table, write a SQL query to find the details of the customers whose name begins with the letter 'B'. Return customer_id, cust_name, city, grade, salesman_id.
h. From the following table, write a SQL query to find the details of the customers whose names end with the letter 'n'. Return customer_id, cust_name, city, grade, salesman_id.
i. From the following table, write a SQL query to find the details of those salespeople whose name starts with ‘N’ and the fourth character is 'l'. Rests may be any character. Return salesman_id, name, city, commission.

2.

a. Create a database with the name: AbleJobs
b. Create the following Table with the name: Nobel

YEAR	SUBJECT	WINNER	COUNTRY	CATEGORY
1970	Physics	Hannes Alfven	Sweden	Scientist
1970	Physics	Louis Neel	France	Scientist
1970	Chemistry	Luis Federico Leloir	France	Scientist
1970	Physiology	Ulf von Euler	Sweden	Scientist
1970	Physiology	Bernard Katz	Germany	Scientist
1970	Literature	Aleksandr Solzhenitsyn	Russia	Linguist
1970	Economics	Paul Samuelson	USA	Economist
1970	Physiology	Julius Axelrod	USA	Scientist
1971	Physics	Dennis Gabor	Hungary	Scientist
1971	Chemistry	Gerhard Herzberg	Germany	Scientist
1971	Peace	Willy Brandt	Germany	Chancellor
1971	Literature	Pablo Neruda	Chile	Linguist
1971	Economics	Simon Kuznets	Russia	Economist
1978	Peace	Anwar al-Sadat	Egypt	President
1978	Peace	Menachem Begin	Israel	Prime Minister
1987	Chemistry	Donald J. Cram	USA	Scientist
1987	Chemistry	Jean-Marie Lehn	France	Scientist
1987	Physiology	Susumu Tonegawa	Japan	Scientist
1994	Economics	Reinhard Selten	Germany	Economist
1994	Peace	Yitzhak Rabin	Israel	Prime Minister
1987	Physics	Johannes Georg Bednorz	Germany	Scientist
1987	Literature	Joseph Brodsky	Russia	Linguist
1987	Economics	Robert Solow	USA	Economist
1994	Literature	Kenzaburo Oe	Japan	Linguist

c. From the above table, write a SQL query to find the Nobel Prize winner(s) in the following years (Return year, subject and winner) :

i. 1970
ii. 1987

d. From the above table, write a SQL query to find the Nobel Prize winner in 'Literature' in the year 1971. Return winner.
e. From the following table, write a SQL query to find the Nobel Prize winner 'Dennis Gabor'. Return year, subject.
f. From the following table, write a SQL query to find the Nobel Prize winners in 'Physics' since the year 1950. Return winner.
g. From the following table, write a SQL query to find the Nobel Prize winners in 'Chemistry' between the years 1965 to 1975. Begin and end values are included. Return year, subject, winner, and country
h. Write a SQL query to show all details of the Prime Ministerial winners after 1972 of Menachem Begin and Yitzhak Rabin.
i. From the following table, write a SQL query to find the details of the winners whose first name matches with the string 'Louis'. Return year, subject, winner, country, and category.
j. From the following table, write a SQL query to find the details of the Nobel Prize winner 'Johannes Georg Bednorz'. Return year, subject, winner, country, and category.

3.

a. Create a database with the name: AbleJobs
b. Create the following Table with the name: Orders

	A	B	C	D	E	F
1	ord_no	purch_amt	ord_date	customer_id	salesman_id	
2	----------	----------	----------	----------	----------	
3	70001	150.5	2012-10-05	3005	5002	
4	70009	270.65	2012-09-10	3001	5005	
5	70002	65.26	2012-10-05	3002	5001	
6	70004	110.5	2012-08-17	3009	5003	
7	70007	948.5	2012-09-10	3005	5002	
8	70005	2400.6	2012-07-27	3007	5001	
9	70008	5760	2012-09-10	3002	5001	
10	70010	1983.43	2012-10-10	3004	5006	
11	70003	2480.4	2012-10-10	3009	5003	
12	70012	250.45	2012-06-27	3008	5002	
13	70011	75.29	2012-08-17	3003	5007	
14	70013	3045.6	2012-04-25	3002	5001	

c. From the following table, write a SQL query to calculate total purchase amount of all orders. Return total purchase amount.

d. From the following table, write a SQL query to calculate average purchase amount of all orders. Return average purchase amount.
e. From the following table, write a SQL query to count the number of unique salespeople. Return number of salespeople.
f. From the following table, write a SQL query to count the number of customers. Return number of customers.

Session 5: Union and Join

1.

a. Create a database with the name: AbleJobs
b. Create the following Table with the name: Nobel

YEAR	SUBJECT	WINNER	COUNTRY	CATEGORY
1970	Physics	Hannes Alfven	Sweden	Scientist
1970	Physics	Louis Neel	France	Scientist
1970	Chemistry	Luis Federico Leloir	France	Scientist
1970	Physiology	Ulf von Euler	Sweden	Scientist
1970	Physiology	Bernard Katz	Germany	Scientist
1970	Literature	Aleksandr Solzhenitsyn	Russia	Linguist
1970	Economics	Paul Samuelson	USA	Economist
1970	Physiology	Julius Axelrod	USA	Scientist
1971	Physics	Dennis Gabor	Hungary	Scientist
1971	Chemistry	Gerhard Herzberg	Germany	Scientist
1971	Peace	Willy Brandt	Germany	Chancellor
1971	Literature	Pablo Neruda	Chile	Linguist
1971	Economics	Simon Kuznets	Russia	Economist
1978	Peace	Anwar al-Sadat	Egypt	President
1978	Peace	Menachem Begin	Israel	Prime Minister
1987	Chemistry	Donald J. Cram	USA	Scientist
1987	Chemistry	Jean-Marie Lehn	France	Scientist
1987	Physiology	Susumu Tonegawa	Japan	Scientist
1994	Economics	Reinhard Selten	Germany	Economist
1994	Peace	Yitzhak Rabin	Israel	Prime Minister
1987	Physics	Johannes Georg Bednorz	Germany	Scientist
1987	Literature	Joseph Brodsky	Russia	Linguist
1987	Economics	Robert Solow	USA	Economist
1994	Literature	Kenzaburo Oe	Japan	Linguist

c. From the above table, write a SQL query to combine the winners in Physics, 1970 and in Economics, 1971. Return year, subject, winner, country, and category.

2.

a. Create a database with the name: AbleJobs
b. Create the following Table with the name: Sales2

customer_id	cust_name	city	grade	salesman_id
3002	Nick Rimando	New York	100	5001
3007	Brad Davis	New York	200	5001
3005	Graham Zusi	California	200	5002
3008	Julian Green	London	300	5002
3004	Fabian Johnson	Paris	300	5006
3009	Geoff Cameron	Berlin	100	5003
3003	Jozy Altidor	Moscow	200	5007

c. Create the following table with the name: Sales1

salesman_id	name	city	commission
5001	James Hoog	New York	0.15
5002	Nail Knite	Paris	0.13
5005	Pit Alex	London	0.11
5006	Mc Lyon	Paris	0.14
5007	Paul Adam	Rome	0.13
5003	Lauson Hen	San Jose	0.12

d. From the above tables write a SQL query to find the salesperson and customer who belongs to same city. Return Salesman, cust_name and city.
e. From the above tables write a SQL query to find the salesperson(s) and the customer(s) he handle. Return Customer Name, city, Salesman, commission.
f. From the above tables write a SQL query to find those salespersons who received a commission from the company more than 12%.
g. From the following tables write a SQL query to find those salespersons do not live in the same city where their customers live and received a commission from the company more than 12%. Return Customer Name, customer city, Salesman, salesman city, commission.

Session 6 & 7: Nested Queries & Normalization

Consider a database for an online bookstore. The database consists of two tables: Customers and Orders. Here are the structures of the tables:

Customers Table:

CustomerID	CustomerName	City
1	John Smith	New York
2	Jane Doe	Los Angeles
3	Bob Johnson	Chicago

Orders Table:

OrderID	CustomerID	Product	Quantity	Price
1	1	Laptop	2	340
2	1	Printer	1	240
3	2	Smartphone	3	70
4	3	Tablet	2	80

Question 1:
Retrieve the names of all customers who have placed an order for a product with a price greater than $100.

Question 2:
List the products that have been ordered by customers from the same city as customer 'John Smith'.

Question 3:
Find the order IDs and total order amounts for orders that contain at least one product with a quantity greater than 2.

Extra Practice Exercises/Test:

- https://www.w3schools.com/sql/trysql.asp?filename=trysql_asc
- https://sqlzoo.net/wiki/SQL_Tutorial
- https://app.testdome.com/t?GeneratorId=12

Online SQL editor for Self-Practice:

- https://www.mycompiler.io/new/sql
- https://www.sql-practice.com/
- https://www.jdoodle.com/execute-sql-online/

Submit your Homework in this google form: https://forms.gle/RiSKpYgrxhzGffwq7

To submit your Project follow the steps mentioned in this doc. User's guide - SQL