Data Manipulation in SQL

Relevel
by Unacademy

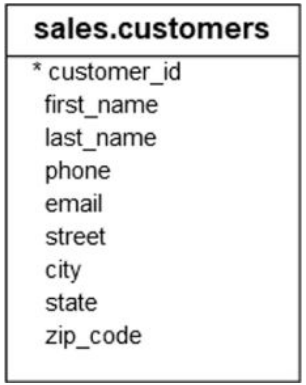
Finding Unique Values

Distinct Command in used to find the unique values in column(s)

Not using Distinct

```
SELECT city
FROM sales.customers
ORDER BY city
```

city
Albany
Albany
Albany
Amarillo
Amarillo
Amarillo



Using Distinct

```
SELECT DISTINCT city
FROM sales.customers
ORDER BY city
```

city
Albany
Amarillo
Amityville
Amsterdam
Anaheim
Apple Valley

Instructions for practice questions in this class

- Log into https://mode.com/
- Create a new report
- Access database tutorial.crunchbase_companies

Practice Question

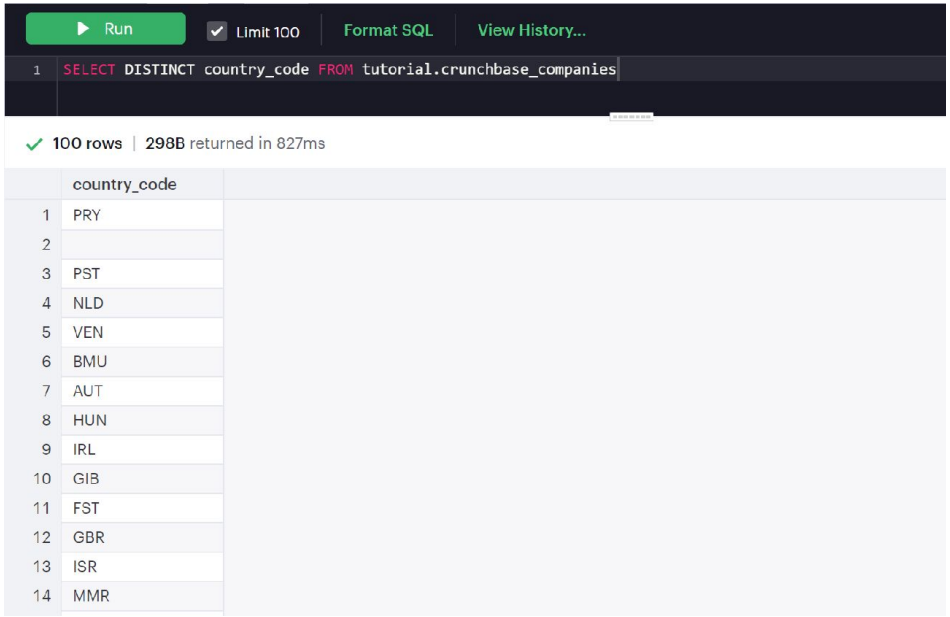
Find the list of unique country codes in the data

Instructions: Go to the coding console and write code for using DISTINCT on country_code column

Practice Question

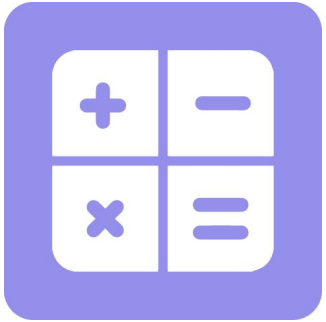
Solution:

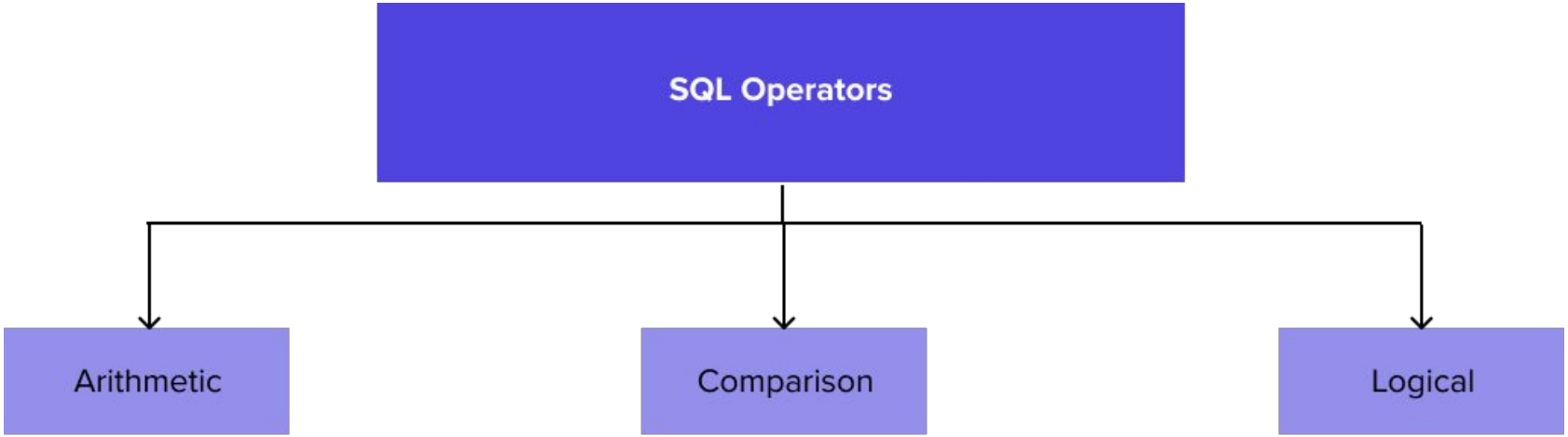
Find the list of unique country codes in the data



	country_code
1	PRY
2	
3	PST
4	NLD
5	VEN
6	BMU
7	AUT
8	HUN
9	IRL
10	GIB
11	FST
12	GBR
13	ISR
14	MMR

Operators in SQL




SQL Operators
Arithmetic
Comparison
Logical

SQL Arithmetic Operators

Operator	Description
+	Add
-	Subtract
*	Multiply
/	Divide
%	Modulo

Addition in SQL

SQL Query:

```
SELECT (15 + 6) AS ADDITION
```

Output Table

ADDITION
21

Subtraction in SQL

SQL Query:

```
SELECT (15 - 6) AS SUBTRACTION
```

Output Table

SUBTRACTION
9

Multiplication in SQL

SQL Query:

```
SELECT (15 * 6) AS MULTIPLICATION
```

Output Table

MULTIPLICATION
90

Division in SQL

SQL Query:

```
SELECT (15 / 3) AS DIVISION
```

Output Table

DIVISION
5

Modulo in SQL

SQL Query:

```
SELECT (15 % 4) AS MODULO
```

Output Table

MODULO
3

SQL Comparison Operators

Operator	Description
==	Equal
!=	Not Equal
>	Greater than
<	Less than
>=	Greater than or equal
<=	Less than or equal

Comparison Equal Operator in SQL

SQL Query:

```
SELECT (11 == 6) AS EQUAL_OPERATOR
```

Output Table

EQUAL_OPERATOR
0

Comparison Not Equal Operator in SQL

SQL Query:

```
SELECT (11 != 6) AS NOT_EQUAL_OPERATOR
```

Output Table

NOT_EQUAL_OPERATOR
1

Comparison Greater than Operator in SQL

SQL Query:

```
SELECT (11 > 31) AS GREATER_OPERATOR
```

Output Table

GREATER_OPERATOR
0

Comparison Lesser Than Operator in SQL

SQL Query:

```
SELECT (11 < 5) AS LESSER_OPERATOR
```

Output Table

LESSER_OPERATOR
0

Comparison Greater Than and Equal Operator in SQL

SQL Query:

```
SELECT (11 >= 11) AS GREATER_EQUAL_OPERATOR
```

Output Table

GREATER_EQUAL_OPERATOR
1

Comparison Lesser Than and Equal Operator in SQL

SQL Query:

```
SELECT (11 <= 21) AS LESSER_EQUAL_OPERATOR
```

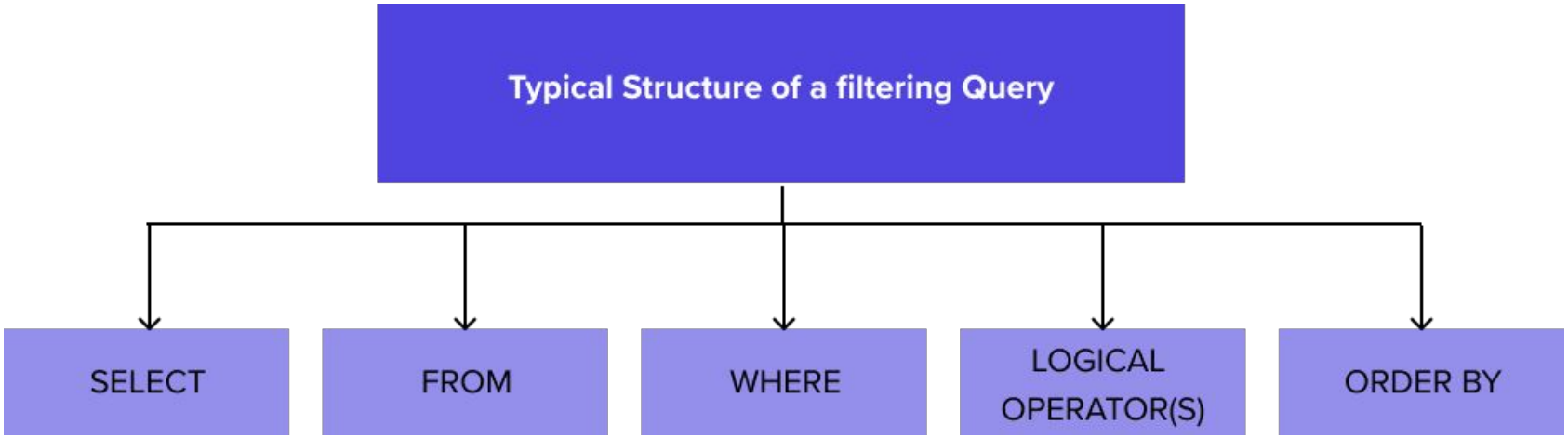
Output Table

LESSER_EQUAL_OPERATOR
1

Filtering Data

Filtering data is a technique to extract the desired data from the database. It is achieved primarily via using ‘Where clause’ along with SQL logical operators.

Note : SELECT and FROM are covered in previous classes



SELECT

SELECT statement is used to return the required stored data from a database table. The output is also in the form of table.

Using Select statement we can retrieve multiple columns.

For eg:-
SELECT column1, column2
FROM table_name

WHERE condition

Where statement is used to retrieve only those results that fulfill the required conditions.Also Where is not just limited to Select statement it can be extend its use to Delete or Insert statements.

Question - Write a query to output name salary from customers table whose salary is greater than 2000.

Table Customers

ID	NAME	AGE	ADDRESS	SALARY
1	Ramesh	32	Ahmedabad	2000.00
2	Khilan	25	Delhi	1500.00
3	kaushik	23	Kota	2000.00
4	Chaitali	25	Mumbai	6500.00
5	Hardik	27	Bhopal	8500.00
6	Komal	22	MP	4500.00
7	Muffy	24	Indore	10000.00

SQL Query

```
SELECT ID, NAME, SALARY
FROM Customers  WHERE SALARY > 2000;
```

Output Table

ID	NAME	SALARY
4	Chaitali	6500.00
5	Hardik	8500.00
6	Komal	4500.00
7	Muffy	10000.00

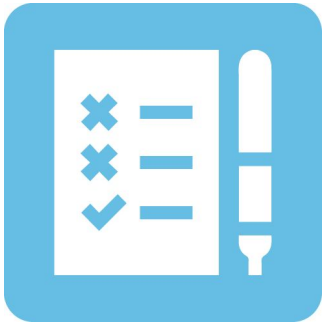
SQL Logical Operators

Operator	Description
AND	TRUE if all the conditions separated by AND is TRUE
BETWEEN	TRUE if the operand is within the range of comparisons
IN	TRUE if the operand is equal to one of a list of expressions
LIKE	TRUE if the operand matches a pattern
NOT	Displays a record if the condition(s) is NOT TRUE
OR	TRUE if any of the conditions separated by OR is TRUE

Practice Question

Find the list of all the companies founded in or after 2009

Instructions: Go to the coding console and write a code for finding the name using WHERE condition



Practice Question

Solution:

Find the list of all the companies founded on or after 2009

```
SELECT name FROM tutorial.crunchbase_companies
WHERE
  founded_year >=2009
```

✓ 100 rows | 985B returned in 541ms

	name
1	2.10E+07
2	.Club Domains
3	@Pay
4	#waywire
5	0xdata
6	1000memories
7	1001 Menus
8	100Plus
9	10BestThings
10	10X Technologies
11	10X10 Room
12	121cast
13	1234ENTER
14	12Society
15	13th Lab

AND Operator

Question- Write a query to output name and salary from customers table whose salary is greater than 2000 and age is less than 25

Table Customers

ID	NAME	AGE	ADDRESS	SALARY
1	Ramesh	32	Ahmedabad	2000.00
2	Khilan	25	Delhi	1500.00
3	kaushik	23	Kota	2000.00
4	Chaitali	25	Mumbai	6500.00
5	Hardik	27	Bhopal	8500.00
6	Komal	22	MP	4500.00
7	Muffy	24	Indore	10000.00

SQL Query

```
SELECT ID, NAME, SALARY
FROM Customers  WHERE SALARY > 2000
AND AGE <25;
```

Output Table

ID	NAME	SALARY
6	Komal	4500.00
7	Muffy	10000.00

Practice Question

Find the list of all the companies founded before 2015 and have received funding of at least 1 Mn USD

Instructions: Go to the coding console and write code for finding the name using the ‘where’ condition along with the ‘AND’ operator.

Practice Question

Solution:

Find the list of all the companies founded before 2015 and have received funding of at least 1 Mn USD or after 2009

```
SELECT name
FROM tutorial.crunchbase_companies
WHERE
  founded_year < 2015
  AND funding_total_usd >=1000000
```

✓ 100 rows | 974B returned in 430ms

	name
1	2.10E+07
2	.Club Domains
3	@Pay
4	#waywire
5	0-6.com
6	0xdata
7	1-800-DOCTORS
8	10-20 Media
9	1000memories
10	1000museums.com
11	1001 Menus
12	100Plus
13	1010data
14	10X Technologies
15	1366 Technologies

BETWEEN Operator

Question- Write a query to find first_name and last_name with salary between 30000 and 45000.

Table Products

Fname	Lname	SSN	Salary	DOB
John	Smith	123456789	30000	1988-05-02
Franklin	Wong	333445555	40000	1986-01-02
Joyce	English	453453453	80000	1977-12-08
Ramesh	Narayan	666884444	38000	1987-03-05
James	Borg	888665555	55000	1982-10-10
Jennifer	Wallace	987654321	43000	1985-08-07
Ahmad	Jabbar	987987987	25000	1990-06-28
Alicia	Zeala	999887777	25000	1980-09-14

SQL Query:

```
SELECT Fname, Lname  FROM
Employee  WHERE Salary
BETWEEN 30000 AND 45000;
```

Output Table

Fname	Lname
John	Smith
Franklin	Wong
Ramesh	Narayan
Jennifer	Wallace

Practice Question

Find the list of all the companies that has funding between 3 to 6 rounds

Instructions: Go to the coding console and write code for finding the name using the ‘where’ condition along with the ‘BETWEEN’ operator.

Practice Question

Solution:

Find the list of all the companies that has funding between 3 to 6 rounds

```
SELECT
  name
FROM
  tutorial.crunchbase_companies
WHERE
  funding_rounds BETWEEN 3 and 6
```

✓ 100 rows | 1KB returned in 473ms

	name
1	10-20 Media
2	1000museums.com
3	1stdibs
4	2080 Media
5	21viaNet
6	22nd Century Group
7	24/7 Card
8	2U
9	33Across
10	3D Sports Technology
11	3D Systems
12	3Leaf
13	3Pillar Global
14	3TIER

IN Operator

Question-Write a query to fetch all details of customer whose daily typing pages are 250,220,170.

Table
Customers

id	name	work_date	daily_typing_pages
1	John	2007-01-24	250
2	Ram	2007-05-27	220
3	Jack	2007-05-06	170
3	Jack	2007-04-06	100
4	Jill	2007-04-06	220
5	Zara	2007-06-06	300
5	Zara	2007-02-06	350

SQL Query
SELECT * FROM Customers
WHERE
Daily_typing_pages IN (250,220,170)

Output Table

id	name	work_date	daily_typing_pages
1	John	2007-01-24	250
2	Ram	2007-05-27	220
3	Jack	2007-05-06	170
4	Jill	2007-04-06	220

Practice Question

Find the list of all the companies founded in India(IN), the USA(USA), and the Great Britain(GBR)

Instructions: Go to the coding console and write code for finding the name using the ‘where’ condition along with the ‘IN’ operator.

Practice Question

Solution:

Find the list of all the companies founded in India(IN), the USA(USA), and the Great Britain(GBR)

```sql
SELECT
  name,
  country_code
FROM
  tutorial.crunchbase_companies
WHERE
  country_code  IN ('USA', 'GBR', 'IND')

```

✓ 100 rows | 1KB returned in 720ms

	name	country_code
83	4Tech	USA
84	4th aspect	GBR
85	5 examples	USA
86	50 Cubes	USA
87	500 Luchadores	USA
88	500Friends	USA
89	5BARz International	USA
90	5minutes	GBR
91	5o9	USA
92	60mo	GBR
93	64 Pixels	USA
94	6connect	USA

Practice Question

Find the list of all the companies which are either acquired or operating

Instructions: Go to the coding console and write code for finding the name using the ‘where’ condition along with the ‘IN’ operator.

Practice Question

Solution:

Find the list of all the companies which are either acquired or operating

```
SELECT
  name,
  status
FROM
  tutorial.crunchbase_companies
WHERE
  status IN ('acquired', 'operating')
```

✓ 100 rows | 2KB returned in 359ms

	name	status
4	[a]list games	operating
5	@Pay	operating
6	&TV Communications	operating
7	#waywire	acquired
8	0-6.com	operating
9	0xdata	operating
10	1-800-DOCTORS	operating
11	10-20 Media	operating
12	1000jobboersen.de	operating
13	1000memories	acquired
14	1000museums.com	operating
15	1001 Menus	operating
16	100du.tv	operating

Wildcards

Question- Write a query to find customers whose salary starts with '200'.

Table Customers

ID	NAME	AGE	ADDRESS	SALARY
1	Ramesh	32	Ahmedabad	2000.00
2	Khilan	25	Delhi	1500.00
3	kaushik	23	Kota	2000.00
4	Chaitali	25	Mumbai	6500.00
5	Hardik	27	Bhopal	8500.00
6	Komal	22	MP	4500.00
7	Muffy	24	Indore	10000.00

SQL Query

```
SELECT  * FROM Customers
WHERE SALARY LIKE '200%'
```

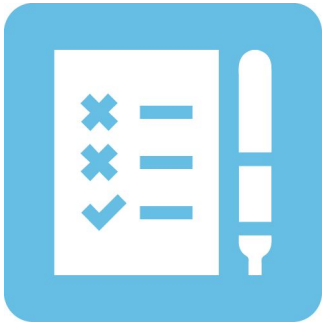
Output Table

ID	NAME	AGE	ADDRESS	SALARY
1	Ramesh	32	Ahmedabad	2000.00
3	kaushik	23	Kota	2000.00

Practice Question

Find the list of all the companies starting with the letter S

Instructions: Go to the coding console and write code for finding the name using the ‘where’ condition along with the ‘LIKE’ operator.



Practice Question

Solution:

Find the list of all the companies starting with the letter S

```
SELECT
  name
FROM
  tutorial.crunchbase_companies
WHERE
  name  LIKE 'S%'
```

✓ 100 rows | 1KB returned in 5s

	name
1	S B E
2	S-E-A
3	S.A.C. Re
4	S&N Airoflo
5	S3Bubble
6	S4 Worldwide
7	S5 Wireless
8	SA Ignite
9	S_ Development
10	SaaSMAX
11	Saatchi Art
12	Saavn
13	Sabakat
14	Saber Seven

Practice Question

Find the list of all the companies founded in the city containing word ‘Park’

Instructions: Go to the coding console and write code for finding the name using the ‘where’ condition along with the ‘LIKE’ operator.

Practice Question

Solution:

Find the list of all the companies founded in the city containing word ‘Park’

Query

```
SELECT
  city,
  name
FROM
  tutorial.crunchbase_companies
WHERE
  city Like '%Park' OR
  city Like 'Park%' OR
  city Like '%Park%'
```

Output

✓ 100 rows | 2KB returned in 877ms

Q1

	city	name
1	Oakland Park	.Club Domains
2	Overland Park	ABPathfinder
3	Overland Park	Accelerated Vision Group
4	Orchard Park	Accipiter Radar
5	Menlo Park	Adallom
6	Research Triangle Park	AgBiome
7	Menlo Park	AirPlug
8	Menlo Park	Algolia
9	Menlo Park	Allux Medical
10	Menlo Park	Applied StemCell
11	Clifton Park	Apprenda
12	Winter Park	Ascendx Spine
13	3601 Sagamore Parkway North,Lafayette	Ash Access Technology
14	Park Afek, Rosh Haayin	ASOCS
15	Research Triangle Park	Athenix
16	Menlo Park	AtheroMed
17	Menlo Park	Auxogyn
18	Menlo Park	Babberly
19	Menlo Park	Beepi

NOT Operator

Question- Write a query to retrieve first name, last name and customer id whose customer id doesn't contain 01 and 03

Table

Customers

Cust_id	first_name	last_name
01	Jhon	Cramer
02	Mathew	George
03	Phillip	McCain
04	Andrew	Thomas

Table transactions

Transaction_ID	Cust_id	Product_ID	Amount	subject
01	01	02	10	5.99
02	03	01	12	6.59
03	01	05	09	8.99
04	01	04	18	6.59
05	03	02	15	5.99

SQL Query

```
Select
first_name, last_name, cust_id
from customer
where
cust_id NOT  IN ( 01,03)
```

Output Table

first_name	last_name	Cust_id
Mathew	George	02
Andrew	Thomas	04

Practice Question

Find the list of all the companies which are operated outside the USA(USA), Australia(AUS), and Argentina(ARG).

Instructions: Go to the coding console and write code for finding the name using the ‘where’ condition along with the ‘NOT’ and ‘IN’ operator.

Practice Question

Solution:

Find the list of all the companies which are operated outside the USA(USA), Australia(AUS), and Argentina(ARG).

```
SELECT
  name,
  country_code
FROM
  tutorial.crunchbase_companies
WHERE
  country_code NOT IN ('USA', 'ARG', 'AUS')
```

✓ 100 rows | 1KB returned in 623ms

	name	country_code
47	5 CUPS and some sugar	DEU
48	5 Minutes	CHN
49	500px	CAN
50	51 Give	CHN
51	51intern.com ������_�_�	CHN
52	51Talk	CHN
53	55social	BRA
54	55tuan.com	CHN
55	58.com	CHN
56	591wed	CHN
57	5minutes	GBR
58	5Rocks	PRK
59	60mo	GBR
60	6Scan	ISR

OR operator

Question- Write a query to fetch id , name and salary of customers whose either salary > 2000 or whose age<25.

Table Customers

ID	NAME	AGE	ADDRESS	SALARY
1	Ramesh	32	Ahmedabad	2000.00
2	Khilan	25	Delhi	1500.00
3	kaushik	23	Kota	2000.00
4	Chaitali	25	Mumbai	6500.00
5	Hardik	27	Bhopal	8500.00
6	Komal	22	MP	4500.00
7	Muffy	24	Indore	10000.00

SQL Query

```
SELECT ID, NAME, SALARY
FROM Customers  WHERE SALARY > 2000
OR AGE <25;
```

Output Table

ID	NAME	SALARY
3	kaushik	2000.00
4	Chaitali	6500.00
5	Hardik	8500.00
6	Komal	4500.00
7	Muffy	10000.00

Practice Question

Find the list of all the companies founded after 2015 or have received funding of at least 1 Mn USD

Instructions: Go to the coding console and write code for finding the name using the ‘where’ condition along with the ‘or’ operator.

Practice Question

Solution:

Find the list of all the companies founded after 2015 or have received funding of at least 1 Mn USD

```sql
SELECT
  name,
  founded_year,
  funding_total_usd
FROM
  tutorial.crunchbase_companies
WHERE
  founded_year > 2015
  OR funding_total_usd > 3000000
```

✓ 100 rows | 3KB returned in 867ms

	name	founded_year	funding_total_usd
1	2.10E+07	2013	5050000
2	.Club Domains	2011	7000000
3	.Fox Networks		4912394
4	[a]list games		9300000
5	@Pay	2011	3500000
6	&TV Communications		4000000
7	1000museums.com	2008	4196711
8	1010data	2000	35000000
9	1366 Technologies	2007	66450000
10	140 Proof	2010	5500000
11	170 Systems	1990	14000000

Removing Null Values

Question- Write a query to output details of only those customers whose salary is not null

Table Customers

ID	NAME	AGE	ADDRESS	SALARY
1	Ramesh	32	Ahmedabad	2000.00
2	Khilan	25	Delhi	1500.00
3	kaushik	23	Kota	2000.00
4	Chaitali	25	Mumbai	6500.00
5	Hardik	27	Bhopal	8500.00
6	Komal	22	MP	
7	Muffy	24	Indore	

SQL Query

```
SELECT * FROM Customers
WHERE SALARY IS NOT NULL
```

Output Table

ID	NAME	AGE	ADDRESS	SALARY
1	Ramesh	32	Ahmedabad	2000.00
2	Khilan	25	Delhi	1500.00
3	kaushik	23	Kota	2000.00
4	Chaitali	25	Mumbai	6500.00
5	Hardik	27	Bhopal	8500.00

Practice Question

Find the list of unique country codes in the data excludin ues

Instructions: Go to the coding console and write code for using DISTINCT on the country_code column and exclude null using WHERE condition

Practice Question

Solution:

Find the list of unique country codes in the data excluding the null values

```
1  SELECT DISTINCT country_code FROM tutorial.crunchbase_companies
2  WHERE
3    country_code IS NOT NULL
```

✓ 100 rows | 300B returned in 517ms

	country_code
1	PRY
2	PST
3	NLD
4	VEN
5	BMU
6	AUT
7	HUN
8	IRL
9	GIB
10	FST
11	GBR
12	ISR
13	MMR
14	EST
15	SOM

THANK YOU

In the next class we will study:

- Aggregate and Sorting Functions