

-- Task 3: SQL for Data Analysis

-- a. Use SELECT, WHERE, ORDER BY, GROUP BY

-- 1. List all customers ordered by their last name

SELECT * FROM Customer ORDER BY LastName;

	CustomerID	FirstName	LastName	DOB	Email	Password	Contact
▶	415	Sajid	Abbas	1999-10-27	Myalishop.1471@Gmail.Com	Vf7mHbBLly	03072075201
	526	Zaheer	Abbas	1994-12-02	Zaheer.Abbas@Orient-Power.Com	0Azydd<J	03461112130
	63	Abdul	Abbas	1994-04-03	A.Samad@Live.Com	?Vg4J5tkp	03404457416
	114	Ali	Abbas	1991-02-10	Irtu197@Gmail.Com	7or?nu7Hj+	03154133704
	7	Dua	Abbas	1995-08-18	DuaAbbas@gmail.com	JZR-Fe1PG	03346953222
	50	Kamran	Abbas	1993-06-02	KamranAbbas@gmail.com)L8GnfADyEN[03002329767
	195	Fasugg	Abbas	1999-01-29	Hawk.Arrow@Hotmail.Com	nIL,7VcR1	03245487175
	500	Tayyab	Abbas	1998-09-04	Tayabkhan@Gmail.Com	HRK^z*JL	03201460363
	161	Azhar	Abbas	1992-06-29	munirahmed257@yahoo.com	8q2[[3AU	03008244211
	293	malik	Abbas	1990-03-13	dg.cabletaunsa@gmail.com	**jlw.Its9(03457400221
	364	Nabeel	Abbas	1998-02-17	S2016266047@Umt.Edu.Pk	vy3C;k0No:	03070655610
	33	Haseeb	Abbas	1992-07-29	HaseebAbbas@gmail.com	9`W25j6?L;o)	03537952349

Customer 1 ×

-- 2. Find customers who registered after 1995

SELECT * FROM Customer WHERE DOB > '1995-01-01';

	CustomerID	FirstName	LastName	DOB	Email	Password	Contact
▶	1	Aamir	Abbasi	1998-03-29	Aamir@Whatmobile.Com.Pk	92Eac13Cijz	03008564501
	4	Abdul	Majid	1996-05-03	Kamranwahid2032@Ymail.Com	(2R_N,yzx+g	03212800124
	5	Abdul	Saboor	1998-05-06	ubaidaslam1988@gmail.com	0.6rgsO&c	03366840140
	7	Dua	Abbas	1995-08-18	DuaAbbas@gmail.com	JZR-Fe1PG	03346953222
	9	Ehtsham	Raheem	1998-04-18	EhtshamRaheem@gmail.com	Zw`f<(yo8	03455562622
	11	Faaz	Rehman	1997-11-28	FaazRehman@gmail.com	K<RcGG2pH	03522225252
	12	Fahad	Samad	1996-02-16	FahadSamad@gmail.com	t2Mfrt VM(03355040790
	14	Faheem	Waqar	1995-08-30	FaheemWaqar@gmail.com	:.iLPqKR	03404023447
	15	Faisal	RAZZIQUE	1996-07-27	FaisalRAZZIQUE@gmail.com	cWc@kTnt	03352445993
	19	Farhan	Abbasi	1996-03-04	FarhanAbbasi@gmail.com	jgp@LW4IHbh	03332322470
	23	HAMZA	Daniyal	1998-05-01	HAMZADaniyal@gmail.com	Ce>F W;Qzz	03255029777
	26	Hamza	Ishaque	1997-05-22	HamzaIshaque@gmail.com	wn];JKHQ8-	03227272593

Customer 2 ×

-- 3. Count how many vendors are registered

SELECT COUNT(*) AS TotalVendors FROM Vendor;

	TotalVendors
▶	48

Result 3 ×

-- 4. Group products by category

```
SELECT c.CategoryName, COUNT(p.ProductID) AS ProductCount
```

```
FROM Product p
```

```
JOIN Category c ON p.CategoryID = c.CategoryID
```

```
GROUP BY c.CategoryName;
```

	CategoryName	ProductCount
▶	Android Smart TV Box/Air Mouse	16
	Attendance Machine	8
	Barcode Scanner/Thermal Receipt Printer	13
	Bluetooth Handsfree	22
	Bluetooth Headphone	14
	Bluetooth Speakers	16
	Power Bank	11
	Security Cameras and Gadgets	10
	Smart Watch	19
	USB Hub	10

Result 4 x

-- b. Use JOINS (INNER, LEFT, RIGHT)

-- 5. Get all vendor products along with vendor names

```
SELECT vp.*, v.Name AS VendorName
```

```
FROM VendorProduct vp
```

```
INNER JOIN Vendor v ON vp.VendorID = v.VendorID;
```

	VendorProductID	VendorID	ProductID	Price	Quantity	Description	VendorName
▶	1	1	1	1000.00	132	This is a good Product	BESTEZY
	125	1	125	3700.00	63	Better than other vendors	BESTEZY
	2	2	2	1050.00	142	This is a very good product	BLAZEPULSE
	122	2	122	3550.00	48	Better than other vendors	BLAZEPULSE
	149	2	100	2400.00	61	Cheaper than other vendors. Great Product wo...	BLAZEPULSE
	3	3	3	1100.00	18	This is a very good product	BRANDITUDE(ZUBAIR)
	96	3	96	2250.00	94	Nani	BRANDITUDE(ZUBAIR)
	101	3	101	2500.00	46	Nani	BRANDITUDE(ZUBAIR)
	103	3	103	2600.00	33	Nani	BRANDITUDE(ZUBAIR)
	108	3	108	2850.00	144	Nani	BRANDITUDE(ZUBAIR)
	141	3	92	2000.00	105	Cheaper than other vendors. Great Product wo...	BRANDITUDE(ZUBAIR)
	150	3	101	2450.00	70	Cheaper than other vendors. Great Product wo...	BRANDITUDE(ZUBAIR)

Result 5 x

-- 6. List all products and their categories (including those without products)

```
SELECT c.CategoryName, p.ProductName  
FROM Category c  
LEFT JOIN Product p ON c.CategoryID = p.CategoryID;
```

	CategoryName	ProductName
▶	Android Smart TV Box/Air Mouse	Air Mouse C120 for Android and Smart TV
	Android Smart TV Box/Air Mouse	Air Mouse MX3 for Android and Smart TV
	Android Smart TV Box/Air Mouse	MINI TOUCH PAD RF 500 WIRELESS WITH 3 C...
	Android Smart TV Box/Air Mouse	Viboton Touch pad wireless keyboard mouse S1
	Android Smart TV Box/Air Mouse	Android Hdmi Dongle Quad Core TV Stick 2G+8...
	Android Smart TV Box/Air Mouse	ANDROID SMART TV BOX MXQ 4K QUAD CORE ...
	Android Smart TV Box/Air Mouse	ANDROID TV BOX MXQ PRO 4K QUAD CORE 2....
	Android Smart TV Box/Air Mouse	Android Smart TV Box NexBox A95X R1 Quad-c...
	Android Smart TV Box/Air Mouse	ANDRIOD TV BOX H96 PRO PLUS 3GB+32GB O...
	Android Smart TV Box/Air Mouse	ANDRIOD TV BOX H96 MAX 4GB+32GB 4K OCT...
	Android Smart TV Box/Air Mouse	Android Smart TV Box X96 mini Quad Core 2g+16g
	Android Smart TV Box/Air Mouse	MECOOL KIII PRO ANDRIOD TV OCTA CORE 3...

Result 6 ×

-- 7. List all cities with or without a ZipCode

```
SELECT c.CityName, z.ZipCodeID  
FROM City c  
LEFT JOIN ZipCode z ON c.CityID = z.CityID;
```

	CityName	ZipCodeID
▶	Karachi	1
	Lahore	2
	Faisalabad	3
	Rawalpindi	4
	Gujranwala	5
	Peshawar	6
	Multan	7
	Hyderabad	8
	Islamabad	9
	Quetta	10
	Bahawalpur	11
	Sargodha	12

Result 7 ×

-- c. Write subqueries

-- 8. Find all products that are priced above the average price

```
SELECT ProductID, Price FROM VendorProduct
```

```
WHERE Price > (SELECT AVG(Price) FROM VendorProduct);
```

	ProductID	Price
▶	18	7350.00
	19	16500.00
	20	7850.00
	23	8150.00
	25	7950.00
	26	10000.00
	27	10050.00
	28	10100.00
	29	10150.00
	30	10200.00
	31	10250.00
	32	10300.00

VendorProduct 8 x

-- 9. Get customers who have made orders

```
SELECT * FROM Customer
```

```
WHERE CustomerID IN (SELECT CustomerID FROM Orders);
```

	CustomerID	FirstName	LastName	DOB	Email	Password	Contact
▶	1	Aamir	Abbasi	1998-03-29	Aamir@Whatmobile.Com.Pk	92Eac13CJz	03008564501
	2	Aamir	Raees	1994-07-23	aamir.rais150@gmail.com	yEN[J(78	03007365250
	3	Abbas	Raza	1991-06-07	Abbas_raza94@Hotmail.Com	hLL77dq1_*	03235536781
	4	Abdul	Majid	1996-05-03	Kamranwahid2032@Ymail.Com	(2R_N,yzx+g	03212800124
	5	Abdul	Saboor	1998-05-06	ubaidaslam1988@gmail.com	0.6rgsO&c	03366840140
	6	Abdul	Moiz	1990-12-03	Abdulmoizmohsin@Gmail.Com	.VsH43r*E)	03005901176
	7	Dua	Abbas	1995-08-18	DuaAbbas@gmail.com	JZR-Fe1PG	03346953222
	8	Duncan	Majeed	1990-05-18	DuncanMajeed@gmail.com	Sd1G2qHmk	03452633929
	9	Ehtsham	Raheem	1998-04-18	EhtshamRaheem@gmail.com	Zw`f<(yo8	03455562622
	10	Ejaz	Haq	1993-09-17	EjazHaq@gmail.com	8+Sl`F),N	03454544444
	11	Faaz	Rehman	1997-11-28	FaazRehman@gmail.com	K<RcGG2pH	03522225252
	12	Fahad	Samad	1996-02-16	FahadSamad@gmail.com	t2Mfrt VM{	03355040790

Customer 9 x

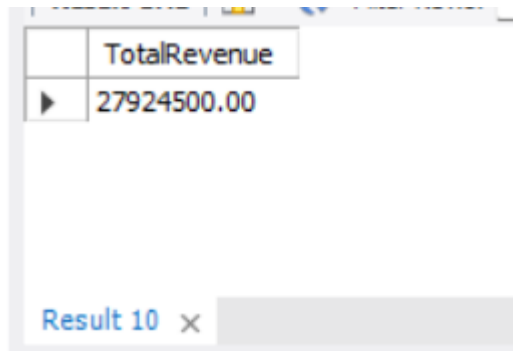
-- d. Use aggregate functions (SUM, AVG)

-- 10. Calculate total revenue from all orders

```
SELECT SUM(vp.Price * op.Quantity) AS TotalRevenue
```

```
FROM OrderedProduct op
```

```
JOIN VendorProduct vp ON op.VendorProductID = vp.VendorProductID;
```



TotalRevenue
27924500.00

Result 10 x

-- 11. Average product price by vendor

```
SELECT v.Name, AVG(vp.Price) AS AvgPrice
```

```
FROM VendorProduct vp
```

```
JOIN Vendor v ON vp.VendorID = v.VendorID
```

```
GROUP BY v.Name;
```



Name	AvgPrice
BESTEZY	2350.000000
BLAZEPULSE	2333.333333
BRANDITUDE(ZUBAIR)	2356.250000
DEJURE WORLD	5600.000000
EXECUTIVE ACCESSORIES(MALIK SHEHRYAR)	7125.000000
GALAXIES HUB	5071.428571
GOAL	4950.000000
GORSI.PK	7750.000000
HAROON & CO	6180.000000
HZ WINKEL (HAMZA ZAHID)	2400.000000
ICON MART	2450.000000
JUST CLICK	2125.000000
KYACHAHIYE.PK	2333.333333

Result 11 x

-- e. Create views for analysis

-- 12. View of vendor performance (sales count and total revenue)

```
CREATE VIEW VendorPerformance AS
```

```
SELECT v.VendorID, v.Name AS VendorName,
```

```
       COUNT(op.OrderedProductID) AS SalesCount,
```

```
       SUM(vp.Price * op.Quantity) AS TotalRevenue
```

```
FROM Vendor v
```

```
JOIN VendorProduct vp ON v.VendorID = vp.VendorID
```

```
JOIN OrderedProduct op ON vp.VendorProductID = op.VendorProductID
```

```
GROUP BY v.VendorID, v.Name;
```

```
SELECT * FROM onlineshopping.vendorperformance;
```

	VendorID	VendorName	SalesCount	TotalRevenue
▶	1	BESTEZY	15	135500.00
	2	BLAZEPULSE	51	289100.00
	3	BRANDITUDE(ZUBAIR)	57	451050.00
	4	DEJURE WORLD	45	1009300.00
	5	EXECUTIVE ACCESSORIES(MALIK SHEHRYAR)	30	310500.00
	6	GALAXIES HUB	56	985000.00
	7	GOAL	24	453450.00
	8	GORSI.PK	29	677550.00
	9	HAROON & CO	36	779500.00
	10	HZ WINKEL(HAMZA ZAHID)	45	342800.00
	11	ICON MART	15	135300.00
	12	JUST CLICK	40	269300.00
	13	KYACHAHIYE.PK	46	370600.00

performance 1 x

-- f. Optimize queries with indexes

-- 13. Add indexes to improve performance

```
CREATE INDEX idx_customer_email ON Customer(Email);
```

```
CREATE INDEX idx_product_category ON Product(CategoryID);
```

```
CREATE INDEX idx_order_customer ON Orders(CustomerID);
```

```
CREATE INDEX idx_order_address ON Orders(AddressID);
```