GROUP BY, ORDER BY AND LIMIT

FLASHBACK: WE SPOKE ABOUT A TABLE CONTAINING SALES DATA

LAST TIME AROUND, WE FOCUSED ON THE CREATION OF SUCH A TABLE

LET'S SAY WE HAVE A TABLE WITH SALES DATA

COLUMNS ARE NAMED 'STORELOCATION', 'PRODUCT', 'DATE','REVENUE'

StoreLocation	Product	Date	Revenue
Bellandur	Bananas	January 18,2016	8,236.33
Bellandur	Nutella	January 18,2016	7,455.67
Bellandur	Peanut Butter	January 18,2016	5,316.89
Bellandur	Milk	January 18,2016	2,433.76
Koramangala	Bananas	January 18,2016	9,456.01
Koramangala	Nutella	January 18,2016	3,644.33
Koramangala	Peanut Butter	January 18,2016	8,988.64
Koramangala	Milk	January 18,2016	1,621.58

THIS IS A TABLE NAMED 'SALES_DATA'

THIS IS A TABLE NAMED 'SALES_DATA'

StoreLocation	Product	Date	Revenue
Bellandur	Bananas	January 18,2016	8,236.33

```
CREATE TABLE Sales_Data
(
StoreLocation VARCHAR(30) NOT NULL,
Product VARCHAR(30) NOT NULL,
Date DATE NOT NULL,
Revenue DEC(10,2) NOT NULL DEFAULT 0.0,
PRIMARY KEY (StoreLocation,Product, Date)
)
```

FLASHBACK: SEPARATELY, WE SPOKE ABOUT INSERTING DATA INTO A TABLE

LET'S PUT THAT TO USE AND POPULATE THE TABLE WE JUST DISCUSSED CREATING!

HOW DO WE PUT STUFF INTO TABLES?

INSERT: LET'S POPULATE THE SALES_DATA TABLE WE JUST CREATED

HOW DO WE PUT STUFF INTO TABLES?

THAT GETS US TO THE SQL INSERT STATEMENT FOR A TABLE LIKE THIS..

StoreLocation	Product	Date	Revenue

```
INSERT INTO TABLE Sales_Data
(StoreLocation,Product,Date,Revenue)
VALUES
('Bellandur','Bananas','18-January-2016',
8236.33)
```

HOW DO WE PUT STUFF INTO TABLES?

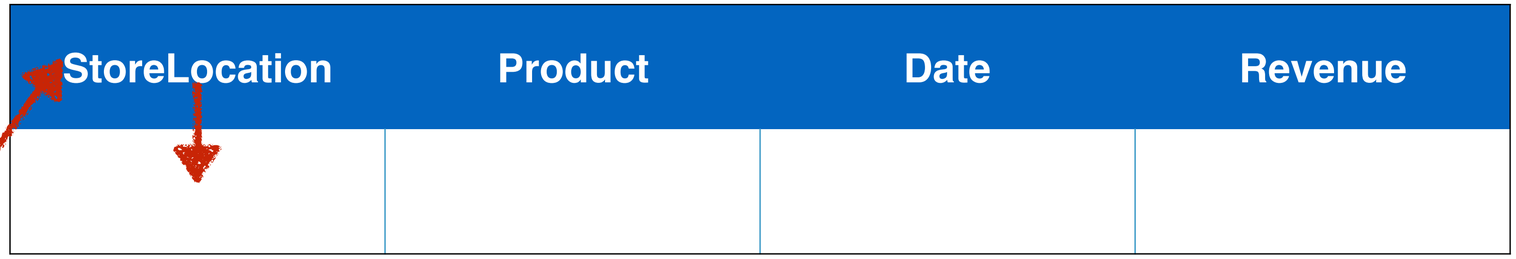
THAT GETS US TO THE SQL INSERT STATEMENT FOR A TABLE LIKE THIS..

StoreLocation	Product	Date	Revenue

```
INSERT INTO TABLE Sales_Data
(StoreLocation,Product,Date,Revenue)
VALUES
('Bellandur','Bananas','18-January-2016',8236.33)
```

HOW DO WE PUT STUFF INTO TABLES?

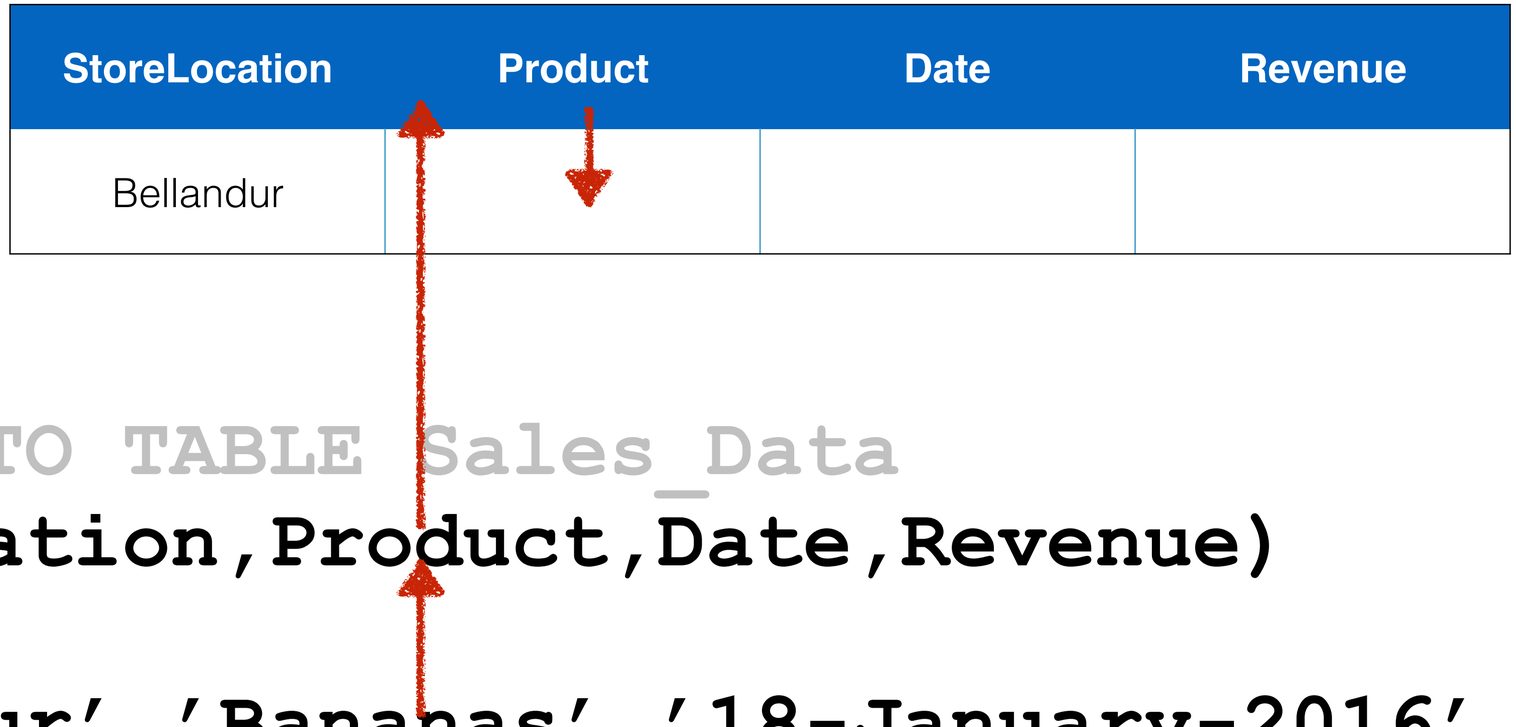
THAT GETS US TO THE SQL INSERT STATEMENT FOR A TABLE LIKE THIS..




```
INSERT INTO TABLE Sales_Data
(StoreLocation,Product,Date,Revenue)
VALUES
('Bellandur','Bananas','18-January-2016',8236.33)
```

HOW DO WE PUT STUFF INTO TABLES?

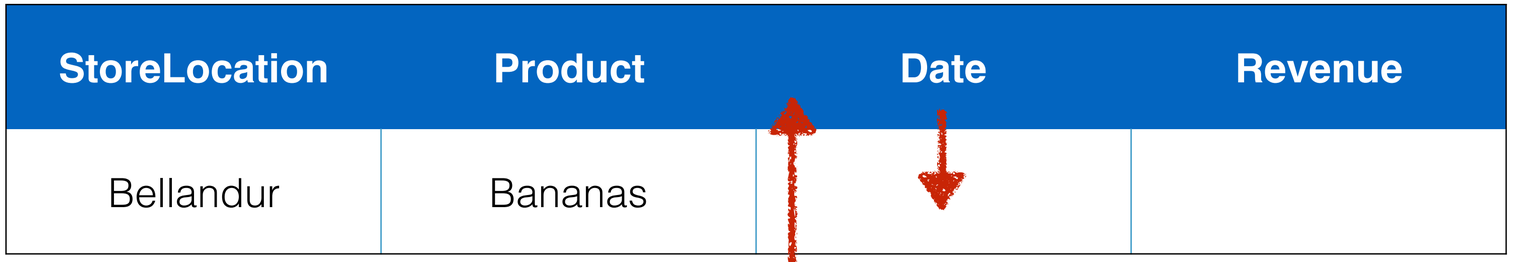
THAT GETS US TO THE SQL INSERT STATEMENT FOR A TABLE LIKE THIS..




```
INSERT INTO TABLE Sales_Data
(StoreLocation,Product,Date,Revenue)
VALUES
('Bellandur','Bananas','18-January-2016',8236.33)
```

HOW DO WE PUT STUFF INTO TABLES?

THAT GETS US TO THE SQL INSERT STATEMENT FOR A TABLE LIKE THIS..




```
INSERT INTO TABLE Sales_Data
(StoreLocation,Product,Date,Revenue)
VALUES
('Bellandur','Bananas','18-January-2016',8236.33)
```

HOW DO WE PUT STUFF INTO TABLES?

THAT GETS US TO THE SQL INSERT STATEMENT FOR A TABLE LIKE THIS..

StoreLocation	Product	Date	Revenue
Bellandur	Bananas	18-Jan-2016	

```
INSERT INTO TABLE Sales_Data
(StoreLocation,Product,Date,Revenue)
VALUES
('Bellandur','Bananas','18-January-2016',8236.33)
```

HOW DO WE PUT STUFF INTO TABLES?

THAT GETS US TO THE SQL INSERT STATEMENT FOR A TABLE LIKE THIS..

StoreLocation	Product	Date	Revenue
Bellandur	Bananas	18-Jan-2016	8236.33

```
INSERT INTO TABLE Sales_Data
(StoreLocation,Product,Date,Revenue)
VALUES
('Bellandur','Bananas','18-January-2016',8236.33)
```

HOW DO WE PUT STUFF INTO TABLES?

StoreLocation	Product	Date	Revenue
Bellandur	Bananas	18-Jan-2016	8236.33

HOW DO WE PUT STUFF INTO TABLES?

INSERT: NOW, IMAGINE THIS IS REPEATED A BUNCH OF TIMES, AND THE TABLE SALES_DATA ENDS UP FULL

INSERT: NOW, IMAGINE THIS IS REPEATED A BUNCH OF TIMES, AND THE TABLE SALES_DATA ENDS UP FULL

StoreLocation	Product	Date	Revenue
Bellandur	Bananas	18-Jan-2016	8236.33

INSERT: NOW, IMAGINE THIS IS REPEATED A BUNCH OF TIMES, AND THE TABLE SALES_DATA ENDS UP FULL

StoreLocation	Product	Date	Revenue
Bellandur	Bananas	January 18,2016	8,236.33
Bellandur	Nutella	January 18,2016	7,455.67
Bellandur	Peanut Butter	January 18,2016	5,316.89
Bellandur	Milk	January 18,2016	2,433.76
Koramangala	Bananas	January 18,2016	9,456.01
Koramangala	Nutella	January 18,2016	3,644.33
Koramangala	Peanut Butter	January 18,2016	8,988.64
Koramangala	Milk	January 18,2016	1,621.58
Bellandur	Bananas	January 17,2016	2342.33
Bellandur	Nutella	January 17,2016	6345.10
Bellandur	Peanut Butter	January 17,2016	5673.01
Bellandur	Milk	January 17,2016	4543.98
Koramangala	Bananas	January 17,2016	8902.65
Koramangala	Nutella	January 17,2016	9114.67
Koramangala	Peanut Butter	January 17,2016	5102.05
Koramangala	Milk	January 17,2016	1299.45

FLASHBACK: WE SPOKE FETCHING DATA FROM A TABLE

LET'S BUILD ON OUR KNOWLEDGE OF THE SELECT STATEMENT TO USE THIS TABLE!

WHAT IS SOME OBVIOUS STUFF WE'D DO WITH A TABLE LIKE THIS ONE?

StoreLocation	Product	Date	Revenue
Bellandur	Bananas	January 18,2016	8,236.33
Bellandur	Nutella	January 18,2016	7,455.67
Bellandur	Peanut Butter	January 18,2016	5,316.89
Bellandur	Milk	January 18,2016	2,433.76
Koramangala	Bananas	January 18,2016	9,456.01
Koramangala	Nutella	January 18,2016	3,644.33
Koramangala	Peanut Butter	January 18,2016	8,988.64
Koramangala	Milk	January 18,2016	1,621.58
Bellandur	Bananas	January 17,2016	2342.33
Bellandur	Nutella	January 17,2016	6345.10
Bellandur	Peanut Butter	January 17,2016	5673.01
Bellandur	Milk	January 17,2016	4543.98
Koramangala	Bananas	January 17,2016	8902.65
Koramangala	Nutella	January 17,2016	9114.67
Koramangala	Peanut Butter	January 17,2016	5102.05
Koramangala	Milk	January 17,2016	1299.45

SALES_DATA

WHAT IS SOME OBVIOUS STUFF WE'D DO WITH A TABLE LIKE THIS ONE?

SALES_DATA

StoreLocation	Product	Date	Revenue

WE WOULD FIND TOTAL REVENUE

WHAT IS SOME OBVIOUS STUFF WE'D DO WITH A TABLE LIKE THIS ONE?

SALES_DATA

StoreLocation	Product	Date	Revenue

WE WOULD FIND TOTAL REVENUE

WE WOULD FIND THE BEST PERFORMING STORES

WHAT IS SOME OBVIOUS STUFF WE'D DO WITH A TABLE LIKE THIS ONE?

SALES_DATA

StoreLocation	Product	Date	Revenue

WE WOULD FIND TOTAL REVENUE

WE WOULD FIND THE BEST PERFORMING STORES

WE WOULD FIND THE BEST PERFORMING PRODUCTS

WHAT IS SOME OBVIOUS STUFF WE'D DO WITH A TABLE LIKE THIS ONE?

SALES_DATA

StoreLocation	Product	Date	Revenue

WE WOULD FIND TOTAL REVENUE

WE WOULD FIND THE BEST PERFORMING STORES

WE WOULD FIND THE BEST PERFORMING PRODUCTS

WE WOULD FIND THE PRODUCT-STORE COMBINATIONS THAT SOLD BEST

WHAT IS SOME OBVIOUS STUFF WE'D DO WITH A TABLE LIKE THIS ONE?

SALES_DATA

StoreLocation	Product	Date	Revenue

WE WOULD FIND TOTAL REVENUE

WE WOULD FIND THE BEST PERFORMING STORES

WE WOULD FIND THE BEST PERFORMING PRODUCTS

WE WOULD FIND THE PRODUCT-STORE COMBINATIONS THAT SOLD BEST

LET'S FIGURE OUT HOW TO DO THESE!

EXAMPLE #1

FIND TOTAL SALES REVENUE

FIND TOTAL SALES REVENUE

StoreLocation	Product	Date	Revenue
Bellandur	Bananas	January 18,2016	8,236.33
Bellandur	Nutella	January 18,2016	7,455.67
Bellandur	Peanut Butter	January 18,2016	5,316.89
Bellandur	Milk	January 18,2016	2,433.76
Koramangala	Bananas	January 18,2016	9,456.01
Koramangala	Nutella	January 18,2016	3,644.33
Koramangala	Peanut Butter	January 18,2016	8,988.64
Koramangala	Milk	January 18,2016	1,621.58
Bellandur	Bananas	January 17,2016	2342.33
Bellandur	Nutella	January 17,2016	6345.10
Bellandur	Peanut Butter	January 17,2016	5673.01
Bellandur	Milk	January 17,2016	4543.98
Koramangala	Bananas	January 17,2016	8902.65
Koramangala	Nutella	January 17,2016	9114.67
Koramangala	Peanut Butter	January 17,2016	5102.05
Koramangala	Milk	January 17,2016	1299.45

SALES_DATA

FIND TOTAL SALES REVENUE

SUM = 90,476.45

StoreLocation	Product	Date	Revenue
Bellandur	Bananas	January 18,2016	8,236.33
Bellandur	Nutella	January 18,2016	7,455.67
Bellandur	Peanut Butter	January 18,2016	5,316.89
Bellandur	Milk	January 18,2016	2,433.76
Koramangala	Bananas	January 18,2016	9,456.01
Koramangala	Nutella	January 18,2016	3,644.33
Koramangala	Peanut Butter	January 18,2016	8,988.64
Koramangala	Milk	January 18,2016	1,621.58
Bellandur	Bananas	January 17,2016	2342.33
Bellandur	Nutella	January 17,2016	6345.10
Bellandur	Peanut Butter	January 17,2016	5673.01
Bellandur	Milk	January 17,2016	4543.98
Koramangala	Bananas	January 17,2016	8902.65
Koramangala	Nutella	January 17,2016	9114.67
Koramangala	Peanut Butter	January 17,2016	5102.05
Koramangala	Milk	January 17,2016	1299.45

SALES_DATA

FIND TOTAL SALES REVENUE

WHICH ROWS?

ALL ROWS

WHICH COLUMNS?

SUM OF THE REVENUE COLUMN

WHICH TABLES?

SALES_DATA

FIND TOTAL SALES REVENUE

SELECT	WHICH COLUMNS?	SUM OF THE REVENUE COLUMN
FROM	WHICH TABLES?	SALES_DATA
WHERE	WHICH ROWS?	ALL ROWS

FIND TOTAL SALES REVENUE

SELECT	WHICH COLUMNS?	SUM OF THE REVENUE COLUMN
FROM	WHICH TABLES?	SALES_DATA
~~WHERE~~	~~WHICH ROWS?~~	~~ALL ROWS~~

FIND TOTAL SALES REVENUE

```
SELECT    SUM(REVENUE)
          TOTAL_REVENUE

FROM      SALES_DATA;
```

FIND TOTAL SALES REVENUE

Total_Revenue
90,476.45

FIND TOTAL SALES REVENUE

```
SELECT    SUM(REVENUE)
          TOTAL_REVENUE

FROM      SALES_DATA;
```

THIS LINE IS VERY INTERESTING,
LET'S BREAK IT DOWN!

SUM(REVENUE) TOTAL_REVENUE

THIS LINE IS VERY INTERESTING,
LET'S BREAK IT DOWN!

SUM IS A FUNCTION THAT OPERATES OVER
AN ENTIRE COLUMN NOT JUST A SINGLE CELL

SUM(REVENUE) TOTAL_REVENUE

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LET'S BREAK IT DOWN!

SUM IS A FUNCTION THAT OPERATES OVER
AN ENTIRE COLUMN NOT JUST A SINGLE CELL

THE COLUMN IT
OPERATES ON IS REVENUE

SUM(REVENUE) TOTAL_REVENUE

THIS LINE IS VERY INTERESTING,
LET'S BREAK IT DOWN!

SUM IS A FUNCTION THAT OPERATES OVER
AN ENTIRE COLUMN NOT JUST A SINGLE CELL

THE COLUMN IT
OPERATES ON IS REVENUE

THIS FUNCTION RETURNS A
SINGLE VALUE, CALLED
TOTAL_REVENUE

FIND TOTAL SALES REVENUE

THIS FUNCTION RETURNS A SINGLE VALUE, CALLED TOTAL_REVENUE

Total_Revenue
90,476.45

SUM(REVENUE) TOTAL_REVENUE

THIS LINE IS VERY INTERESTING,
LET'S BREAK IT DOWN!

SUM IS A FUNCTION THAT OPERATES OVER
AN ENTIRE COLUMN NOT JUST A SINGLE CELL

THE COLUMN IT
OPERATES ON IS REVENUE

SUM IS A FUNCTION THAT OPERATES OVER AN ENTIRE COLUMN NOT JUST A SINGLE CELL

ACTUALLY SUM CAN OPERATE OVER AN ENTIRE COLUMN, OR ANY SUBSET OF A COLUMN IT NEED NOT BE AN ENTIRE COLUMN - MORE IN A BIT

ALSO, SUM IS THE FIRST 'AGGREGATE FUNCTION' WE'VE SEEN - ACTS ON AGGREGATIONS OF CELLS

EXAMPLE #2

FIND AVERAGE SALES REVENUE (AVERAGE OF 1 PRODUCT AT 1 STORE IN 1 DAY)

FIND AVERAGE SALES REVENUE (AVERAGE OF 1 PRODUCT AT 1 STORE IN 1 DAY)

StoreLocation	Product	Date	Revenue
Bellandur	Bananas	January 18,2016	8,236.33
Bellandur	Nutella	January 18,2016	7,455.67
Bellandur	Peanut Butter	January 18,2016	5,316.89
Bellandur	Milk	January 18,2016	2,433.76
Koramangala	Bananas	January 18,2016	9,456.01
Koramangala	Nutella	January 18,2016	3,644.33
Koramangala	Peanut Butter	January 18,2016	8,988.64
Koramangala	Milk	January 18,2016	1,621.58
Bellandur	Bananas	January 17,2016	2342.33
Bellandur	Nutella	January 17,2016	6345.10
Bellandur	Peanut Butter	January 17,2016	5673.01
Bellandur	Milk	January 17,2016	4543.98
Koramangala	Bananas	January 17,2016	8902.65
Koramangala	Nutella	January 17,2016	9114.67
Koramangala	Peanut Butter	January 17,2016	5102.05
Koramangala	Milk	January 17,2016	1299.45

SALES_DATA

FIND AVERAGE SALES REVENUE (AVERAGE OF 1 PRODUCT AT 1 STORE IN 1 DAY)

AVG = 5,654.78

StoreLocation	Product	Date	Revenue
Bellandur	Bananas	January 18,2016	8,236.33
Bellandur	Nutella	January 18,2016	7,455.67
Bellandur	Peanut Butter	January 18,2016	5,316.89
Bellandur	Milk	January 18,2016	2,433.76
Koramangala	Bananas	January 18,2016	9,456.01
Koramangala	Nutella	January 18,2016	3,644.33
Koramangala	Peanut Butter	January 18,2016	8,988.64
Koramangala	Milk	January 18,2016	1,621.58
Bellandur	Bananas	January 17,2016	2342.33
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Bellandur	Peanut Butter	January 17,2016	5673.01
Bellandur	Milk	January 17,2016	4543.98
Koramangala	Bananas	January 17,2016	8902.65
Koramangala	Nutella	January 17,2016	9114.67
Koramangala	Peanut Butter	January 17,2016	5102.05
Koramangala	Milk	January 17,2016	1299.45

SALES_DATA

FIND AVERAGE SALES REVENUE (AVERAGE OF 1 PRODUCT AT 1 STORE IN 1 DAY)

WHICH ROWS?	WHICH COLUMNS?	WHICH TABLES?
ALL ROWS	AVERAGE REVENUE OF 1 PRODUCT AT 1 STORE IN 1 DAY	SALES_DATA

FIND AVERAGE SALES REVENUE (AVERAGE OF 1 PRODUCT AT 1 STORE IN 1 DAY)

SELECT	WHICH COLUMNS?	AVERAGE REVENUE OF 1 PRODUCT AT 1 STORE IN 1 DAY
FROM	WHICH TABLES?	SALES_DATA
WHERE	WHICH ROWS?	ALL ROWS

FIND AVERAGE SALES REVENUE (AVERAGE OF 1 PRODUCT AT 1 STORE IN 1 DAY)

SELECT	WHICH COLUMNS?	AVERAGE REVENUE OF 1 PRODUCT AT 1 STORE IN 1 DAY
FROM	WHICH TABLES?	SALES_DATA
~~WHERE~~	~~WHICH ROWS?~~	~~ALL ROWS~~

FIND AVERAGE SALES REVENUE (AVERAGE OF 1 PRODUCT AT 1 STORE IN 1 DAY)

```
SELECT   AVG(REVENUE)
         AVG_REVENUE

FROM     SALES_DATA;
```

FIND AVERAGE SALES REVENUE (AVERAGE OF 1 PRODUCT AT 1 STORE IN 1 DAY)

Avg_Revenue
5,654.78

FIND AVERAGE SALES REVENUE (AVERAGE OF 1 PRODUCT AT 1 STORE IN 1 DAY)

```
SELECT   AVG(REVENUE)
         AVG_REVENUE
FROM     SALES_DATA;
```

THIS LINE IS VERY INTERESTING, LET'S BREAK IT DOWN!

AVG(REVENUE) AVG_REVENUE

THIS LINE IS VERY INTERESTING,
LET'S BREAK IT DOWN!

AVG IS A FUNCTION THAT OPERATES OVER AN ENTIRE COLUMN NOT JUST A SINGLE CELL

AVG(REVENUE) AVG_REVENUE

THIS LINE IS VERY INTERESTING,
LET'S BREAK IT DOWN!

AVG IS A FUNCTION THAT OPERATES OVER AN ENTIRE COLUMN NOT JUST A SINGLE CELL

THE COLUMN IT OPERATES ON IS
REVENUE

AVG(REVENUE) AVG_REVENUE

THIS LINE IS VERY INTERESTING,
LET'S BREAK IT DOWN!

AVG IS A FUNCTION THAT OPERATES OVER AN ENTIRE COLUMN NOT JUST A SINGLE CELL

THE COLUMN IT OPERATES ON IS REVENUE

THIS FUNCTION RETURNS A SINGLE VALUE, CALLED

AVG_REVENUE

FIND TOTAL SALES REVENUE

THIS FUNCTION RETURNS A SINGLE VALUE, CALLED AVG_REVENUE

Avg_Revenue
5,654.78

AVG(REVENUE) AVG_REVENUE

THIS LINE IS VERY INTERESTING,
LET'S BREAK IT DOWN!

AVG IS A FUNCTION THAT OPERATES OVER AN ENTIRE COLUMN NOT JUST A SINGLE CELL

THE COLUMN IT OPERATES ON IS
REVENUE

AVG IS A FUNCTION THAT OPERATES OVER AN ENTIRE COLUMN NOT JUST A SINGLE CELL

ACTUALLY AVG CAN OPERATE OVER AN ENTIRE COLUMN, OR ANY SUBSET OF A COLUMN IT NEED NOT BE AN ENTIRE COLUMN - MORE IN A BIT

LIKE SUM, AVG IS ALSO AN 'AGGREGATE FUNCTION'