

Project 1: Maven Toy Data Analysis

By: Ankita Mall
Batch No.: MIP-DA-14



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Introduction: Toy Sales Data Analysis Using SQL

Objective: The primary aim of this SQL project is to conduct a comprehensive analysis of toy sales data to extract valuable insights that can drive effective decision-making in inventory management, product performance, sales trends, and store operations.

Scope: The analysis draws on four key datasets:

- Inventory Table: Tracking stock levels across various stores.
- Products Table: Detailing product information like pricing, category, and cost.
- Sales Table: Capturing transaction data, including units sold, store location, and sales date.
- Stores Table: Providing store-specific details, such as location and opening date.

By leveraging SQL to query and analyze these datasets, this project seeks to uncover actionable insights that will optimize inventory management, enhance sales performance, and guide strategic business decisions across the company's operations.

Dataset Overview

inventory

- Store_ID
- Product_ID
- Stock_On_Hand

products

- Product_ID
- Product_Name
- Product_Category
- Product_Cost
- Product_Price

sales

- Sale_ID
- Date
- Store_ID
- Product_ID
- Units

stores

- Store_ID
- Store_Name
- Store_City
- Store_Location
- Store_Open_Date

Data Cleaning

Checking for Missing and Null Values: Identified and handled any missing or null entries in key columns like Product_ID, Store_ID, and Sales.

Ensuring Consistent Data Types: Checked the data types of fields across all tables (e.g., ensuring numerical values for Product_Price, Product_Cost). Converted inconsistent data types, such as text-formatted numbers, to appropriate numeric formats (e.g., DECIMAL(10, 2) for pricing).

Standardizing Date Format: Detected inconsistencies in date formats, with some dates stored as text. Used SQL functions like STR_TO_DATE() (MySQL) to convert text-based dates into proper DATE format, ensuring accurate analysis over time.

Analysis (Queries)

1. What is the total sales revenue generated by each store?

```
SELECT st.Store_ID, st.Store_Name, round(sum(s.Units * p.Product_Price),2) AS Total_Sales_Revenue  
FROM sales s  
JOIN products_products p ON s.Product_ID = p.Product_ID  
JOIN stores_stores st ON s.Store_ID = st.Store_ID  
GROUP BY st.Store_ID, st.Store_Name  
ORDER BY Total_Sales_Revenue DESC;
```

Store_ID	Store_Name	Total_Sales_Revenue
1	Maven Toys Guadalajara 1	1827.87
16	Maven Toys San Luis Potosi 1	1741.88
21	Maven Toys Santiago 1	1705.87
15	Maven Toys Tuxtla Gutierrez 1	1705.87
27	Maven Toys Oaxaca 1	1641.91
14	Maven Toys Guanajuato 1	1619.59
26	Maven Toys Campeche 2	1594.86
12	Maven Toys Chetumal 1	1579.88
13	Maven Toys Mexicali 2	1540.01
32	Maven Toys Hermosillo 1	1503.61
2	Maven Toys Monterrey 1	1486.27
28	Maven Toys Puebla 2	1465.88
6	Maven Toys Mexicali 1	1450.88
43	Maven Toys Durango 1	1447.76
41	Maven Toys Hermosillo 2	1382.69
22	Maven Toys Guanajuato 2	1367.06
35	Maven Toys Chilpancingo 1	1363.91
40	Maven Toys Toluca 2	1202.89
5	Maven Toys La Paz 1	939.27
45	Maven Toys Ciudad de Mexico 4	927.39
29	Maven Toys Xalapa 1	522.63
20	Maven Toys Zacatecas 1	509.74

Store_ID	Store_Name	Total_Sales_Revenue
38	Maven Toys Chihuahua 2	1936.47
18	Maven Toys Merida 1	1920.97
47	Maven Toys Monterrey 4	1866.63
24	Maven Toys Aguascalientes 1	1855.25
49	Maven Toys Culiacan 1	1845.52
1	Maven Toys Guadalajara 1	1827.87
16	Maven Toys San Luis Potosi 1	1741.88
21	Maven Toys Santiago 1	1705.87
15	Maven Toys Tuxtla Gutierrez 1	1705.87
27	Maven Toys Oaxaca 1	1641.91
14	Maven Toys Guanajuato 1	1619.59
26	Maven Toys Campeche 2	1594.86
12	Maven Toys Chetumal 1	1579.88
13	Maven Toys Mexicali 2	1540.01
32	Maven Toys Hermosillo 1	1503.61
2	Maven Toys Monterrey 1	1486.27
28	Maven Toys Puebla 2	1465.88
6	Maven Toys Mexicali 1	1450.88
43	Maven Toys Durango 1	1447.76
41	Maven Toys Hermosillo 2	1382.69
22	Maven Toys Guanajuato 2	1367.06
35	Maven Toys Chilpancingo 1	1363.91
40	Maven Toys Toluca 2	1202.89

2. Which products are the top-selling in terms of units sold?

```
select p.Product_ID, p.Product_Name , sum(sales.Units ) as total_unit_sold  
from products_products as p  
join sales on sales.Product_ID = p.Product_ID  
group by p.Product_ID, p.Product_Name  
order by total_unit_sold desc;
```

Top-selling products are Colorbuds, Deck of Cards, Action Figure, dart Gun, Dino Egg

Product_ID	Product_Name	total_unit_sold
6	Colorbuds	1409
8	Deck Of Cards	816
1	Action Figure	630
7	Dart Gun	387
9	Dino Egg	387
18	Lego Bricks	321
27	PlayDoh Toolkit	305
30	Rubik's Cube	295
17	Kids Makeup Kit	266
31	Splash Balls	264
2	Animal Figures	248
14	Glass Marbles	215
10	Dinosaur Figures	211
21	Mini Ping Pong ...	193
24	Nerf Gun	179
34	Toy Robot	178
25	PlayDoh Can	155
20	Mini Basketball...	87
4	Chutes & Ladd...	74
33	Teddy Bear	64
5	Classic Dominoes	62
22	Monopoly	49
35	Uno Card Game	43
3	Barral O' Clima	41

3. What is the sales performance by product category?

```
select p.Product_Category, sum(sales.Units) as total_units_sold, round(sum(sales.Units * p.Product_Price),2) AS Total_Sales_Revenue  
from products_products as p  
join sales on sales.Product_ID = p.Product_ID  
group by p.Product_Category  
order by Total_Sales_Revenue desc;
```

Toys has highest sales performance of product category and Art & Crafts has least.

	Product_Category	total_units_sold	Total_Sales_Revenue
▶	Toys	1861	34379.39
	Electronics	1587	25747.13
	Games	1554	16867.46
	Sports & Outdoors	1110	16241.9
	Art & Crafts	767	7466.33

4. What are the current inventory levels for each product at each store?

```

select s.Store_ID, s.Store_Name, p.Product_ID, p.Product_Name, t.Stock_On_Hand as current_inventory
from products_products as p
join inventory_inventory as t on t.Product_ID = p.Product_ID
join stores_stores as s on s.Store_ID = t.Product_ID
order by current_inventory desc;
    
```

	Store_ID	Store_Name	Product_ID	Product_Name	current_inventory
	6	Maven Toys Mexicali 1	6	Colorbuds	79
	8	Maven Toys Pachuca 1	8	Deck Of Cards	77
	8	Maven Toys Pachuca 1	8	Deck Of Cards	77
	8	Maven Toys Pachuca 1	8	Deck Of Cards	76
	19	Maven Toys Puebla 1	19	Magic Sand	75
	3	Maven Toys Guadalajara 2	3	Barrel O' Slime	74
	3	Maven Toys Guadalajara 2	3	Barrel O' Slime	74
	8	Maven Toys Pachuca 1	8	Deck Of Cards	74
	25	Maven Toys Ciudad Victoria 1	25	PlayDoh Can	74
	30	Maven Toys Guadalajara 3	30	Rubik's Cube	74
	31	Maven Toys Ciudad de Mexi...	31	Splash Balls	74
	8	Maven Toys Pachuca 1	8	Deck Of Cards	73
	8	Maven Toys Pachuca 1	8	Deck Of Cards	71
	8	Maven Toys Pachuca 1	8	Deck Of Cards	71
	10	Maven Toys Campeche 1	10	Dinosaur Figures	71
	25	Maven Toys Ciudad Victoria 1	25	PlayDoh Can	71
	25	Maven Toys Ciudad Victoria 1	25	PlayDoh Can	71
	8	Maven Toys Pachuca 1	8	Deck Of Cards	70
	25	Maven Toys Ciudad Victoria 1	25	PlayDoh Can	70
	10	Maven Toys Campeche 1	10	Dinosaur Figures	69
	19	Maven Toys Puebla 1	19	Magic Sand	69
	21	Maven Toys Santiago 1	21	Mini Ping Pong Set	69
	24	Maven Toys Aguascalientes 1	24	Nerf Gun	69

Store_ID	Store_Name	Product_ID	Product_Name	current_inventory
10	Maven Toys Campeche 1	10	Dinosaur Figures	139
10	Maven Toys Campeche 1	10	Dinosaur Figures	138
25	Maven Toys Ciudad Victoria 1	25	PlayDoh Can	131
8	Maven Toys Pachuca 1	8	Deck Of Cards	129
25	Maven Toys Ciudad Victoria 1	25	PlayDoh Can	125
18	Maven Toys Merida 1	18	Lego Bricks	117
8	Maven Toys Pachuca 1	8	Deck Of Cards	110
14	Maven Toys Guanajuato 1	14	Glass Marbles	110
8	Maven Toys Pachuca 1	8	Deck Of Cards	100
19	Maven Toys Puebla 1	19	Magic Sand	100
19	Maven Toys Puebla 1	19	Magic Sand	95
8	Maven Toys Pachuca 1	8	Deck Of Cards	94
10	Maven Toys Campeche 1	10	Dinosaur Figures	94
25	Maven Toys Ciudad Victoria 1	25	PlayDoh Can	94
25	Maven Toys Ciudad Victoria 1	25	PlayDoh Can	92
8	Maven Toys Pachuca 1	8	Deck Of Cards	90
19	Maven Toys Puebla 1	19	Magic Sand	90
10	Maven Toys Campeche 1	10	Dinosaur Figures	86
7	Maven Toys Monterrey 2	7	Dart Gun	84
8	Maven Toys Pachuca 1	8	Deck Of Cards	84
8	Maven Toys Pachuca 1	8	Deck Of Cards	84
10	Maven Toys Campeche 1	10	Dinosaur Figures	84
25	Maven Toys Ciudad Victoria 1	25	PlayDoh Can	80
6	Maven Toys Mavirali 1	6	Colorbuds	70

5. How do monthly sales trends vary across different stores?

```

SELECT st.Store_ID, st.Store_Name,
       DATE_FORMAT(s.Date, '%Y-%m') AS Month_Year,
       round(SUM(s.Units * p.Product_Price),2) AS Total_Sales_Revenue
FROM sales s
JOIN stores_stores st ON st.Store_ID = s.Store_ID
JOIN products_products p ON s.Product_ID = p.Product_ID
GROUP BY st.Store_ID, st.Store_Name, Month_Year
ORDER BY st.Store_ID, Month_Year;
    
```

Store_ID	Store_Name	Month_Year	Total_Sales_Revenue
1	Maven Toys Guadalajara 1	2017-01	1827.87
2	Maven Toys Monterrey 1	2017-01	1486.27
3	Maven Toys Guadalajara 2	2017-01	3004.98
4	Maven Toys Saltillo 1	2017-01	2121.87
5	Maven Toys La Paz 1	2017-01	939.27
6	Maven Toys Mexicali 1	2017-01	1450.88
7	Maven Toys Monterrey 2	2017-01	2160.34
8	Maven Toys Pachuca 1	2017-01	2362.49
9	Maven Toys Ciudad de Mexico 1	2017-01	3697.72
10	Maven Toys Campeche 1	2017-01	2443.85
11	Maven Toys Cuernavaca 1	2017-01	2088.65
12	Maven Toys Chetumal 1	2017-01	1579.88
13	Maven Toys Mexicali 2	2017-01	1540.01
14	Maven Toys Guanajuato 1	2017-01	1619.59
15	Maven Toys Tuxtla Gutierrez 1	2017-01	1705.87
16	Maven Toys San Luis Potosi 1	2017-01	1741.88
17	Maven Toys Toluca 1	2017-01	2256.42
18	Maven Toys Merida 1	2017-01	1920.97

Store_ID	Store_Name	Month_Year	Total_Sales_Revenue
19	Maven Toys Puebla 1	2017-01	2845.96
20	Maven Toys Zacatecas 1	2017-01	509.74
21	Maven Toys Santiago 1	2017-01	1705.87
22	Maven Toys Guanajuato 2	2017-01	1367.06
23	Maven Toys Chihuahua 1	2017-01	2272.35
24	Maven Toys Aguascalientes 1	2017-01	1855.25
25	Maven Toys Ciudad Victoria 1	2017-01	2172.89
26	Maven Toys Campeche 2	2017-01	1594.86
27	Maven Toys Oaxaca 1	2017-01	1641.91
28	Maven Toys Puebla 2	2017-01	1465.88
29	Maven Toys Xalapa 1	2017-01	522.63
30	Maven Toys Guadalajara 3	2017-01	4089.34
31	Maven Toys Ciudad de Mexico 2	2017-01	2305.35
32	Maven Toys Hermosillo 1	2017-01	1503.61
33	Maven Toys Monterrey 3	2017-01	2211.39
34	Maven Toys Villahermosa 1	2017-01	3416.38
35	Maven Toys Chilpancingo 1	2017-01	1363.91
36	Maven Toys Morelia 1	2017-01	1965.53

6.Which stores have the highest and lowest sales performance?

```
SELECT s.Store_ID, s.Store_Name,  
       round(SUM(sa.Units * p.Product_Price),2) AS Total_Sales_Revenue  
FROM sales sa  
JOIN stores_stores s ON sa.Store_ID = s.Store_ID  
JOIN products_products p ON sa.Product_ID = p.Product_ID  
GROUP BY s.Store_ID, s.Store_Name  
ORDER BY Total_Sales_Revenue DESC;
```

Guadalajara 3 store
has the highest and
Zacatecas 1 store has
lowest sales
performance.

Store_ID	Store_Name	Total_Sales_Revenue
14	Maven Toys Guanajuato 1	1619.59
26	Maven Toys Campeche 2	1594.86
12	Maven Toys Chetumal 1	1579.88
13	Maven Toys Mexicali 2	1540.01
32	Maven Toys Hermosillo 1	1503.61
2	Maven Toys Monterrey 1	1486.27
28	Maven Toys Puebla 2	1465.88
6	Maven Toys Mexicali 1	1450.88
43	Maven Toys Durango 1	1447.76
41	Maven Toys Hermosillo 2	1382.69
22	Maven Toys Guanajuato 2	1367.06
35	Maven Toys Chilpancingo 1	1363.91
40	Maven Toys Toluca 2	1202.89
5	Maven Toys La Paz 1	939.27
45	Maven Toys Ciudad de Mexico 4	927.39
29	Maven Toys Xalapa 1	522.63
20	Maven Toys Zacatecas 1	509.74

Store_ID	Store_Name	Total_Sales_Revenue
30	Maven Toys Guadalajara 3	4089.34
39	Maven Toys Xalapa 2	4026.11
9	Maven Toys Ciudad de Mexico 1	3697.72
34	Maven Toys Villahermosa 1	3416.38
3	Maven Toys Guadalajara 2	3004.98
50	Maven Toys Guanajuato 3	2974.73
19	Maven Toys Puebla 1	2845.96
37	Maven Toys Ciudad de Mexico 3	2747.28
46	Maven Toys Guadalajara 4	2631.05
44	Maven Toys Puebla 3	2536.57
10	Maven Toys Campeche 1	2443.85
8	Maven Toys Pachuca 1	2362.49
31	Maven Toys Ciudad de Mexico 2	2305.35
23	Maven Toys Chihuahua 1	2272.35
17	Maven Toys Toluca 1	2256.42
48	Maven Toys Saltillo 2	2236.64
33	Maven Toys Monterrey 3	2211.39
42	Maven Toys Hermosillo 3	2181.76

7. What is the profit margin for each product?

```
SELECT Product_ID, Product_Name, Product_Price AS Selling_Price, Product_Cost AS Cost_Price,  
       round(((Product_Price - Product_Cost) / Product_Price) * 100 ,2) AS Profit_Margin  
FROM products_products;
```

20	Mini Basketball ...	24.99	8.99	64.03
21	Mini Ping Pong Set	9.99	6.99	30.03
22	Monopoly	19.99	13.99	30.02
23	Mr. Potatohead	9.99	4.99	50.05
24	Nerf Gun	19.99	14.99	25.01
25	PlayDoh Can	2.99	1.99	33.44
26	PlayDoh Playset	24.99	20.99	16.01
27	PlayDoh Toolkit	4.99	3.99	20.04
28	Playfoam	10.99	3.99	63.69
29	Plush Pony	19.99	8.99	55.03
30	Rubik's Cube	19.99	17.99	10.01
31	Splash Balls	8.99	7.99	11.12
32	Supersoaker W...	14.99	11.99	20.01
33	Teddy Bear	12.99	10.99	15.4
34	Toy Robot	25.99	20.99	19.24
35	Uno Card Game	7.99	3.99	50.06

Product_ID	Product_Name	Selling_Price	Cost_Price	Profit_Margin
1	Action Figure	15.99	9.99	37.52
2	Animal Figures	12.99	9.99	23.09
3	Barrel O' Slime	3.99	1.99	50.13
4	Chutes & Ladders	12.99	9.99	23.09
5	Classic Dominoes	9.99	7.99	20.02
6	Colorbuds	14.99	6.99	53.37
7	Dart Gun	15.99	11.99	25.02
8	Deck Of Cards	6.99	3.99	42.92
9	Dino Egg	10.99	9.99	9.1
10	Dinosaur Figures	14.99	10.99	26.68
11	Etch A Sketch	20.99	10.99	47.64
12	Foam Disk Laun...	11.99	8.99	25.02
13	Gamer Headpho...	20.99	14.99	28.59
14	Glass Marbles	10.99	5.99	45.5
15	Hot Wheels 5-Pack	5.99	3.99	33.39
16	Jenga	9.99	2.99	70.07
17	Kids Makeup Kit	19.99	13.99	30.02
18	Lego Bricks	39.99	34.99	12.5
19	Magic Sand	15.99	13.99	12.51

8. How are sales distributed across different cities?

```
SELECT st.Store_City, round(SUM(sa.Units * p.Product_Price),2) AS Total_Sales_Revenue  
FROM sales sa  
JOIN stores_stores st ON sa.Store_ID = st.Store_ID  
JOIN products_products p ON sa.Product_ID = p.Product_ID  
GROUP BY st.Store_City  
ORDER BY Total_Sales_Revenue DESC;
```

Guadalajara, Cuidad de Mexico, Monterrey, Puebla, Guanajuato, Hermosillo has the highest sales revenue.

Store_City	Total_Sales_Revenue
Campeche	4038.71
Toluca	3459.31
Villahermosa	3416.38
Mexicali	2990.89
Pachuca	2362.49
Ciudad Victoria	2172.89
Cuernavaca	2088.65
Morelia	1965.53
Merida	1920.97
Aguascalientes	1855.25
Culiacan	1845.52
San Luis Potosi	1741.88
Santiago	1705.87
Tuxtla Gutierrez	1705.87
Oaxaca	1641.91
Chetumal	1579.88
Durango	1447.76
Chilpancingo	1363.91
La Paz	939.27
Zacatecas	509.74

Store_City	Total_Sales_Revenue
Guadalajara	11553.24
Cuidad de Mexico	9677.74
Monterrey	7724.63
Puebla	6848.41
Guanajuato	5961.38
Hermosillo	5068.06
Xalapa	4548.74
Saltillo	4358.51
Chihuahua	4208.82
Campeche	4038.71
Toluca	3459.31
Villahermosa	3416.38
Mexicali	2990.89
Pachuca	2362.49
Ciudad Victoria	2172.89
Cuernavaca	2088.65
Morelia	1965.53
Merida	1920.97
Aguascalientes	1855.25
Culiacan	1845.52

9.Which products are out of stock in each store?

```
SELECT s.Store_Name, p.Product_Name, i.Stock_On_Hand  
FROM inventory_inventory i  
JOIN stores_stores s ON i.Store_ID = s.Store_ID  
JOIN products_products p ON i.Product_ID = p.Product_ID  
WHERE i.Stock_On_Hand <= 0;
```

	Store_Name	Product_Name	Stock_On_Hand
	Maven Toys Puebla 1	Hot Wheels 5-Pack	0
	Maven Toys Puebla 1	Teddy Bear	0
	Maven Toys Zacatecas 1	Mini Ping Pong Set	0
	Maven Toys Guanajuato 2	Barrel O' Slime	0
	Maven Toys Guanajuato 2	Hot Wheels 5-Pack	0
	Maven Toys Guanajuato 2	Playfoam	0
	Maven Toys Aguascalient...	Foam Disk Launcher	0
	Maven Toys Aguascalient...	Hot Wheels 5-Pack	0
	Maven Toys Aguascalient...	Mini Ping Pong Set	0
	Maven Toys Aguascalient...	Playfoam	0
	Maven Toys Ciudad Victor...	Splash Balls	0
	Maven Toys Oaxaca 1	Etch A Sketch	0
	Maven Toys Puebla 2	Animal Figures	0
	Maven Toys Puebla 2	Hot Wheels 5-Pack	0
	Maven Toys Hermosillo 1	Mini Ping Pong Set	0
	Maven Toys Monterrey 3	Gamer Headphones	0
	Maven Toys Monterrey 3	Hot Wheels 5-Pack	0
	Maven Toys Villahermosa 1	Dino Egg	0
	Maven Toys Chilpancingo 1	Hot Wheels 5-Pack	0
	Maven Toys Morelia 1	Chutes & Ladders	0

	Store_Name	Product_Name	Stock_On_Hand
	Maven Toys Guadalajara 1	Animal Figures	0
	Maven Toys Guadalajara 1	Classic Dominoes	0
	Maven Toys Guadalajara 1	Toy Robot	0
	Maven Toys Monterrey 1	Action Figure	0
	Maven Toys Monterrey 1	Dino Egg	0
	Maven Toys Monterrey 1	Etch A Sketch	0
	Maven Toys Guadalajara 2	Hot Wheels 5-Pack	0
	Maven Toys Guadalajara 2	Plush Pony	0
	Maven Toys Saltillo 1	Toy Robot	0
	Maven Toys La Paz 1	Etch A Sketch	0
	Maven Toys La Paz 1	Foam Disk Launcher	0
	Maven Toys La Paz 1	Hot Wheels 5-Pack	0
	Maven Toys La Paz 1	Mini Ping Pong Set	0
	Maven Toys La Paz 1	Playfoam	0
	Maven Toys Mexicali 1	Action Figure	0
	Maven Toys Monterrey 2	Dino Egg	0
	Maven Toys Monterrey 2	Playfoam	0
	Maven Toys Pachuca 1	Dino Egg	0
	Maven Toys Pachuca 1	Gamer Headphones	0
	Maven Toys Pachuca 1	Glass Marbles	0

10. How do sales vary by specific dates?

```
SELECT sa.Date,  
       round( SUM(sa.Units * p.Product_Price),2) AS Total_Sales_Revenue,  
       SUM(sa.Units) AS Total_Units_Sold  
FROM sales sa  
JOIN products_products p ON sa.Product_ID = p.Product_ID  
GROUP BY sa.Date  
ORDER BY sa.Date ASC;
```

Highest sales on date 2017-01-01
and least on 2017-01-06

	Date	Total_Sales_Revenue	Total_Units_Sold
▶	2017-01-01	21076.15	1485
	2017-01-02	19750.94	1406
	2017-01-03	11759.5	750
	2017-01-04	14814.4	960
	2017-01-05	19791.3	1370
	2017-01-06	13509.92	908

11.What is the average cost of products in each category?

```
SELECT Product_Category, round(AVG(Product_Cost),2) AS Average_Cost  
FROM products_products  
GROUP BY Product_Category;
```

Product category, Electronics has the highest average cost and Games has lowest average cost.

Product_Category	Average_Cost
Toys	11.66
Art & Crafts	8.99
Games	8.36
Electronics	14.32
Sports & Outdoors	10.28

12.What is the sales growth over time for the entire company?

```
SELECT
    DATE_FORMAT(sa.Date, '%Y-%m') AS Month,
    SUM(sa.Units * p.Product_Price) AS Total_Sales_Revenue,
    LAG(SUM(sa.Units * p.Product_Price)) OVER (ORDER BY DATE_FORMAT(sa.Date, '%Y-%m')) AS Previous_Month_Sales,
CASE
    WHEN LAG(SUM(sa.Units * p.Product_Price)) OVER (ORDER BY DATE_FORMAT(sa.Date, '%Y-%m')) IS NOT NULL
        THEN ((SUM(sa.Units * p.Product_Price) - LAG(SUM(sa.Units * p.Product_Price)) OVER (ORDER BY DATE_FORMAT(sa.Date, '%Y-%m'))))
            / LAG(SUM(sa.Units * p.Product_Price)) OVER (ORDER BY DATE_FORMAT(sa.Date, '%Y-%m')) * 100
    ELSE NULL
END AS Sales_Growth_Percentage
FROM sales sa
JOIN products_products p ON sa.Product_ID = p.Product_ID
GROUP BY DATE_FORMAT(sa.Date, '%Y-%m')
ORDER BY Month ASC;
```

Here, only one month data has given.

	Month	Total_Sales_Revenue	Previous_Month_Sales	Sales_Growth_Percentage
▶	2017-01	100702.21000000628	NULL	NULL

13. How does the store open date affect sales performance?

```

SELECT s.Store_ID, s.Store_Name, s.Store_Open_Date, round(SUM(sa.Units * p.Product_Price),2) AS Total_Sales_Revenue
FROM sales sa
JOIN products_products p ON sa.Product_ID = p.Product_ID
JOIN stores_stores s ON sa.Store_ID = s.Store_ID
GROUP BY s.Store_ID, s.Store_Name, s.Store_Open_Date
ORDER BY s.Store_Open_Date;
    
```

Store_ID	Store_Name	Store_Open_Date	Total_Sales_Revenue
14	Maven Toys Guanajuato 1	2007-01-31	1619.59
15	Maven Toys Tuxtla Gutierrez 1	2007-03-05	1705.87
16	Maven Toys San Luis Potosi 1	2007-05-19	1741.88
17	Maven Toys Toluca 1	2007-12-09	2256.42
18	Maven Toys Merida 1	2008-08-22	1920.97
19	Maven Toys Puebla 1	2008-12-16	2845.96
20	Maven Toys Zacatecas 1	2009-05-29	509.74
21	Maven Toys Santiago 1	2009-11-23	1705.87
22	Maven Toys Guanajuato 2	2010-03-29	1367.06
23	Maven Toys Chihuahua 1	2010-06-12	2272.35
24	Maven Toys Aguascalientes 1	2010-07-31	1855.25
25	Maven Toys Ciudad Victoria 1	2010-09-08	2172.89
26	Maven Toys Campeche 2	2010-09-15	1594.86
27	Maven Toys Oaxaca 1	2010-10-02	1641.91
28	Maven Toys Puebla 2	2011-04-01	1465.88
29	Maven Toys Xalapa 1	2011-06-21	522.63
30	Maven Toys Guadalajara 3	2011-10-20	4089.34
31	Maven Toys Ciudad de Mexico 2	2012-05-04	2305.35
32	Maven Toys Hermosillo 1	2012-08-31	1503.61
33	Maven Toys Monterrey 3	2013-03-17	2211.39
34	Maven Toys Villahermosa 1	2013-06-07	3416.38
35	Maven Toys Chilpancingo 1	2013-06-11	1363.91
36	Maven Toys Morelia 1	2013-07-01	1065.52

Store_ID	Store_Name	Store_Open_Date	Total_Sales_Revenue
1	Maven Toys Guadalajara 1	1992-09-18	1827.87
2	Maven Toys Monterrey 1	1995-04-27	1486.27
3	Maven Toys Guadalajara 2	1999-12-27	3004.98
4	Maven Toys Saltillo 1	2000-01-01	2121.87
5	Maven Toys La Paz 1	2001-05-31	939.27
6	Maven Toys Mexicali 1	2003-12-13	1450.88
7	Maven Toys Monterrey 2	2003-12-25	2160.34
8	Maven Toys Pachuca 1	2004-10-14	2362.49
9	Maven Toys Ciudad de Mexico 1	2004-10-15	3697.72
10	Maven Toys Campeche 1	2005-01-14	2443.85
11	Maven Toys Cuernavaca 1	2005-04-19	2088.65
12	Maven Toys Chetumal 1	2006-05-05	1579.88
13	Maven Toys Mexicali 2	2006-08-30	1540.01
14	Maven Toys Guanajuato 1	2007-01-31	1619.59
15	Maven Toys Tuxtla Gutierrez 1	2007-03-05	1705.87
16	Maven Toys San Luis Potosi 1	2007-05-19	1741.88
17	Maven Toys Toluca 1	2007-12-09	2256.42
18	Maven Toys Merida 1	2008-08-22	1920.97
19	Maven Toys Puebla 1	2008-12-16	2845.96
20	Maven Toys Zacatecas 1	2009-05-29	509.74
21	Maven Toys Santiago 1	2009-11-23	1705.87
22	Maven Toys Guanajuato 2	2010-03-29	1367.06
23	Maven Toys Chihuahua 1	2010-06-12	2272.35

14.What percentage of total sales does each store contribute?

```
WITH Total_Sales AS (
    SELECT SUM(sa.Units * p.Product_Price) AS Total_Sales_Revenue
    FROM sales sa
    JOIN products_products p ON sa.Product_ID = p.Product_ID
),
-- Calculate the sales revenue for each store
Store_Sales AS (
    SELECT s.Store_ID, s.Store_Name, round(SUM(sa.Units * p.Product_Price),2) AS Store_Sales_Revenue
    FROM sales sa
    JOIN products_products p ON sa.Product_ID = p.Product_ID
    JOIN stores_stores s ON sa.Store_ID = s.Store_ID
    GROUP BY s.Store_ID, s.Store_Name
)
-- Compute the percentage contribution of each store's sales revenue to the total sales revenue
SELECT st.Store_ID, st.Store_Name, st.Store_Sales_Revenue,
    round((st.Store_Sales_Revenue / ts.Total_Sales_Revenue) * 100 ,2)AS Percentage_Contribution
FROM Store_Sales st
JOIN Total_Sales ts
ON 1=1 -- Cartesian join to include total sales revenue for calculation
ORDER BY Percentage_Contribution DESC;
```

Store_ID	Store_Name	Store_Sales_Revenue	Percentage_Contribution
30	Maven Toys Guadalajara 3	4089.34	4.06
39	Maven Toys Xalapa 2	4026.11	4
9	Maven Toys Ciudad de Mexico 1	3697.72	3.67
34	Maven Toys Villahermosa 1	3416.38	3.39
3	Maven Toys Guadalajara 2	3004.98	2.98
50	Maven Toys Guanajuato 3	2974.73	2.95
19	Maven Toys Puebla 1	2845.96	2.83
37	Maven Toys Ciudad de Mexico 3	2747.28	2.73
46	Maven Toys Guadalajara 4	2631.05	2.61
44	Maven Toys Puebla 3	2536.57	2.52
10	Maven Toys Campeche 1	2443.85	2.43
8	Maven Toys Pachuca 1	2362.49	2.35
31	Maven Toys Ciudad de Mexico 2	2305.35	2.29
23	Maven Toys Chihuahua 1	2272.35	2.26
17	Maven Toys Toluca 1	2256.42	2.24
48	Maven Toys Saltillo 2	2236.64	2.22
33	Maven Toys Monterrey 3	2211.39	2.2
42	Maven Toys Hermosillo 3	2181.76	2.17
25	Maven Toys Ciudad Victoria 1	2172.89	2.16
7	Maven Toys Monterrey 2	2160.34	2.15
4	Maven Toys Saltillo 1	2121.87	2.11
11	Maven Toys Cuernavaca 1	2088.65	2.07
36	Maven Toys Morelia 1	1965.53	1.95
38	Maven Toys Chihuahua 2	1936.47	1.92
18	Maven Toys Merida 1	1920.97	1.91

Store_ID	Store_Name	Store_Sales_Revenue	Percentage_Contribution
36	Maven Toys Morelia 1	1965.53	1.95
38	Maven Toys Chihuahua 2	1936.47	1.92
18	Maven Toys Merida 1	1920.97	1.91
47	Maven Toys Monterrey 4	1866.63	1.85
24	Maven Toys Aguascalientes 1	1855.25	1.84
49	Maven Toys Culiacan 1	1845.52	1.83
1	Maven Toys Guadalajara 1	1827.87	1.82
16	Maven Toys San Luis Potosi 1	1741.88	1.73
21	Maven Toys Santiago 1	1705.87	1.69
15	Maven Toys Tuxtla Gutierrez 1	1705.87	1.69
27	Maven Toys Oaxaca 1	1641.91	1.63
14	Maven Toys Guanajuato 1	1619.59	1.61
26	Maven Toys Campeche 2	1594.86	1.58
12	Maven Toys Chetumal 1	1579.88	1.57
13	Maven Toys Mexicali 2	1540.01	1.53
32	Maven Toys Hermosillo 1	1503.61	1.49
2	Maven Toys Monterrey 1	1486.27	1.48
28	Maven Toys Puebla 2	1465.88	1.46
6	Maven Toys Mexicali 1	1450.88	1.44
43	Maven Toys Durango 1	1447.76	1.44
41	Maven Toys Hermosillo 2	1382.69	1.37
22	Maven Toys Guanajuato 2	1367.06	1.36
35	Maven Toys Chilpancingo 1	1363.91	1.35
40	Maven Toys Toluca 2	1202.89	1.19
5	Maven Toys La Paz 1	939.27	0.93

Store Guadalajara 3 has the highest percentage contribution in sales.

15. How do sales compare to current stock levels for each product?

```
-- Calculate total units sold for each product
WITH Total_Sales AS (
    SELECT sa.Product_ID, p.Product_Name, SUM(sa.Units) AS Total_Units_Sold
    FROM sales sa
    JOIN products_products p ON sa.Product_ID = p.Product_ID
    GROUP BY sa.Product_ID, p.Product_Name
),
-- Retrieve current stock levels for each product
Current_Stock AS (
    SELECT i.Product_ID, p.Product_Name,
        SUM(i.Stock_On_Hand) AS Current_Stock_Level
    FROM inventory_inventory i
    JOIN products_products p ON i.Product_ID = p.Product_ID
    GROUP BY i.Product_ID, p.Product_Name
)
-- Compare sales to current stock levels
SELECT cs.Product_ID, cs.Product_Name,
    COALESCE(ts.Total_Units_Sold, 0) AS Total_Units_Sold, cs.Current_Stock_Level,
    CASE
        WHEN cs.Current_Stock_Level > 0 THEN
            (COALESCE(ts.Total_Units_Sold, 0) / cs.Current_Stock_Level) * 100
        ELSE NULL
    END AS Sales_To_Stock_Ratio_Percentage
FROM Current_Stock cs
LEFT JOIN Total_Sales ts ON cs.Product_ID = ts.Product_ID
ORDER BY cs.Product_Name;
```

Product_ID	Product_Name	Total_Units_Sold	Current_Stock_Level	Sales_To_Stock_Ratio_Percentage
1	Action Figure	630	614	102.6059
2	Animal Figures	248	835	29.7006
3	Barrel O' Slime	41	1282	3.1981
4	Chutes & Ladders	74	255	29.0196
5	Classic Dominoes	62	241	25.7261
6	Colorbuds	1409	1159	121.5703
7	Dart Gun	387	776	49.8711
8	Deck Of Cards	816	2738	29.8028
9	Dino Egg	387	649	59.6302
10	Dinosaur Figures	211	2272	9.2870
11	Etch A Sketch	0	402	0.0000
12	Foam Disk Laun...	0	379	0.0000
13	Gamer Headpho...	0	637	0.0000
14	Glass Marbles	215	795	27.0440
15	Hot Wheels 5-Pack	0	376	0.0000
16	Jenga	0	181	0.0000
17	Kids Makeup Kit	266	606	43.8944
18	Lego Bricks	321	1118	28.7120
19	Magic Sand	0	1922	0.0000
20	Mini Basketball ...	87	234	37.1795
21	Mini Ping Pong Set	193	974	19.8152
22	Monopoly	49	207	23.6715
23	Mr. Potatohead	0	709	0.0000
24	Nerf Gun	179	1212	14.7690
25	PlayDoh Can	155	2129	7.2804

Product_ID	Product_Name	Total_Units_Sold	Current_Stock_Level	Sales_To_Stock_Ratio_Percentage
11	Etch A Sketch	0	402	0.0000
12	Foam Disk Laun...	0	379	0.0000
13	Gamer Headpho...	0	637	0.0000
14	Glass Marbles	215	795	27.0440
15	Hot Wheels 5-Pack	0	376	0.0000
16	Jenga	0	181	0.0000
17	Kids Makeup Kit	266	606	43.8944
18	Lego Bricks	321	1118	28.7120
19	Magic Sand	0	1922	0.0000
20	Mini Basketball ...	87	234	37.1795
21	Mini Ping Pong Set	193	974	19.8152
22	Monopoly	49	207	23.6715
23	Mr. Potatohead	0	709	0.0000
24	Nerf Gun	179	1212	14.7690
25	PlayDoh Can	155	2129	7.2804
26	PlayDoh Playset	0	550	0.0000
27	PlayDoh Toolkit	305	1387	21.9899
28	Playfoam	0	357	0.0000
29	Plush Pony	0	497	0.0000
30	Rubik's Cube	295	1497	19.7061
31	Splash Balls	264	893	29.5633
32	Supersoaker W...	0	513	0.0000
33	Teddy Bear	64	483	13.2505
34	Toy Robot	178	622	28.6174
35	Uno Card Game	43	241	17.8423

Thank You