DATA ANALYTICS

"Supermarket Sales Analysis"

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BRANCH : Computer Science Engineering

Semester: 4

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Introduction

This data analytics project focuses on understanding retail performance using the Kaggle Supermarket Sales Dataset. The analysis leverages tools like Google Collab, Pandas, Seaborn, and Matplotlib to uncover key trends and patterns in supermarket sales and customer behavior.

By exploring the dataset, the project aims to provide insights into important aspects of retail performance, such as monthly sales trends and customer spending patterns. These insights can inform strategic decision-making and help optimize operations for the supermarket chain.

Why Sales Analysis Matters

Sales analysis is critical for informed business decisions. It unveils consumer spending patterns, allowing businesses to understand what products are most popular and when they are purchased. This helps optimize both inventory and marketing approaches by ensuring the right products are in stock at the right time and that marketing campaigns are targeted effectively. Ultimately, it identifies opportunities for revenue growth, such as untapped customer segments or emerging product trends. Detailed sales analysis can also reveal inefficiencies in the sales process and areas for cost reduction, leading to improved profitability and a stronger competitive position in the market.

	Invoice ID	Branch	City	Customer ty	Gender	Product line	Unit price	Quantity	Tax 5%	Total	Date	Time	Payment	cogs	gross margir	gross incom	Rating
1																	
2	750-67-8428	A	Yangon	Member	Female	Health and I	74.69	7	26.1415	548.9715	01-05-2019	13:08	Ewallet	522.83	4.7619048	26.1415	9.1
3	226-31-308:	C	Naypyitaw	Normal	Female	Electronic a	15.28	5	3.82	80.22	03-08-2019	10:29	Cash	76.4	4.7619048	3.82	9.6
4	631-41-3108	A	Yangon	Normal	Male	Home and li	46.33	7	16.2155	340.5255	03-03-2019	13:23	Credit card	324.31	4.7619048	16.2155	7.4
5	123-19-1176	A	Yangon	Member	Male	Health and I	58.22	8	23.288	489.048	1/27/2019	20:33	Ewallet	465.76	4.7619048	23.288	8.4
6	373-73-7910	A	Yangon	Normal	Male	Sports and t	86.31	7	30.2085	634.3785	02-08-2019	10:37	Ewallet	604.17	4.7619048	30.2085	5.3
7	699-14-3026	C	Naypyitaw	Normal	Male	Electronic a	85.39	7	29.8865	627.6165	3/25/2019	18:30	Ewallet	597.73	4.7619048	29.8865	4.1
8	355-53-594:	A	Yangon	Member	Female	Electronic a	68.84	6	20.652	433.692	2/25/2019	14:36	Ewallet	413.04	4.7619048	20.652	5.8
9	315-22-566!	C	Naypyitaw	Normal	Female	Home and li	73.56	10	36.78	772.38	2/24/2019	11:38	Ewallet	735.6	4.7619048	36.78	8
10	665-32-916;	A	Yangon	Member	Female	Health and I	36.26	2	3.626	76.146	01-10-2019	17:15	Credit card	72.52	4.7619048	3.626	7.2
11	692-92-558;	B	Mandalay	Member	Female	Food and be	54.84	3	8.226	172.746	2/20/2019	13:27	Credit card	164.52	4.7619048	8.226	5.9
12	351-62-082:	B	Mandalay	Member	Female	Fashion acc	14.48	4	2.896	60.816	02-06-2019	18:07	Ewallet	57.92	4.7619048	2.896	4.5
13	529-56-3974	B	Mandalay	Member	Male	Electronic a	25.51	4	5.102	107.142	03-09-2019	17:03	Cash	102.04	4.7619048	5.102	6.8
14	365-64-051!	A	Yangon	Normal	Female	Electronic a	46.95	5	11.7375	246.4875	02-12-2019	10:25	Ewallet	234.75	4.7619048	11.7375	7.1
15	252-56-269!	A	Yangon	Normal	Male	Food and be	43.19	10	21.595	453.495	02-07-2019	16:48	Ewallet	431.9	4.7619048	21.595	8.2

Dataset Overview : Supermarket Sales (Kaggle)

Data Volume

The dataset comprises 1,000 rows and 17 columns. It offers a focused view of supermarket operations.

Key Columns

- Invoice ID, Branch, City
- Customer Type, Gender
- Product Line, Unit Price, Quantity
- Total, Date, Time, Payment

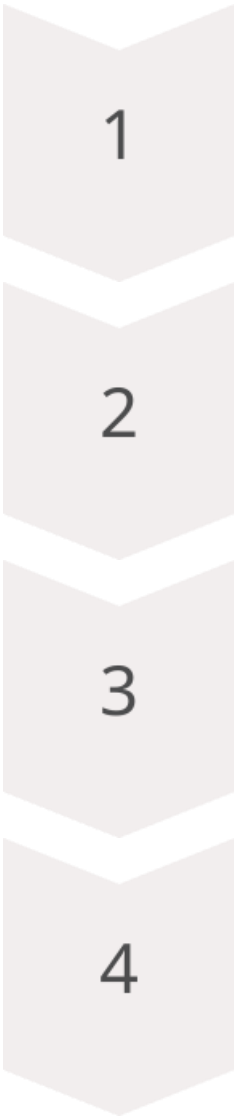# Research Tools & Methodology

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Google Collab

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Pandas

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Seaborn/

Matplotlib

Google Collab enables collaborative analysis. Pandas handles data manipulation and cleaning. Seaborn and Matplotlib create advanced visualizations. These provide comprehensive data exploration.

Key Visual Insights: Monthly Trends

1 Sales Volume

Understand variations across months.

2 Peak Periods

Identify high purchasing times.

3 Seasonal Patterns

Recognize spending trends.

4 Revenue Fluctuations

Analyze product lines.

SALES STANS
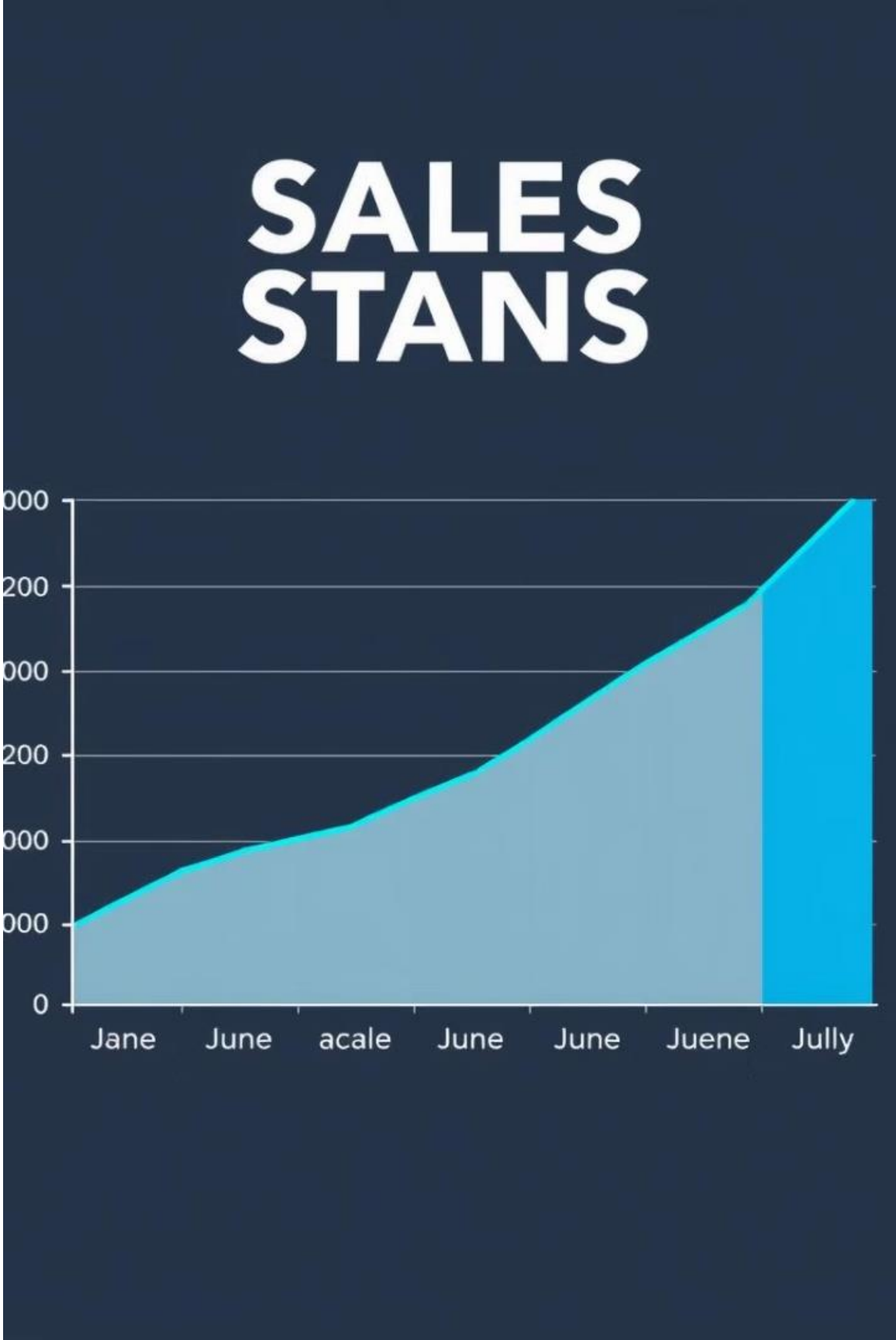
Outcomes

Summary Statistics

	Unit price	Quantity	Tax 5%	Total	Date	cogs	gross margin percentage	gross income	Rating	Total Sales	Day of Week
count	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
mean	55.6721	5.51	15.3794	322.9667	2019-02-14 00:05:45.600000	307.5874	4.7619	15.3794	6.9727	307.5874	3.032
min	10.08	1	0.5085	10.6785	2019-01-01 00:00:00	10.17	4.7619	0.5085	4	10.17	0
25%	32.875	3	5.9249	124.4224	2019-01-24 00:00:00	118.4975	4.7619	5.9249	5.5	118.4975	1
50%	55.23	5	12.088	253.848	2019-02-13 00:00:00	241.76	4.7619	12.088	7	241.76	3
75%	77.935	8	22.4453	471.3503	2019-03-08 00:00:00	448.905	4.7619	22.4453	8.5	448.905	5
max	99.96	10	49.65	1042.65	2019-03-30 00:00:00	993	4.7619	49.65	10	993	6
std	26.4946	2.9234	11.7088	245.8853	None	234.1765	0	11.7088	1.7186	234.1765	1.9735

Top Product Lines

Payment Method Distribution

Monthly Sales Trend

Sales by Gender
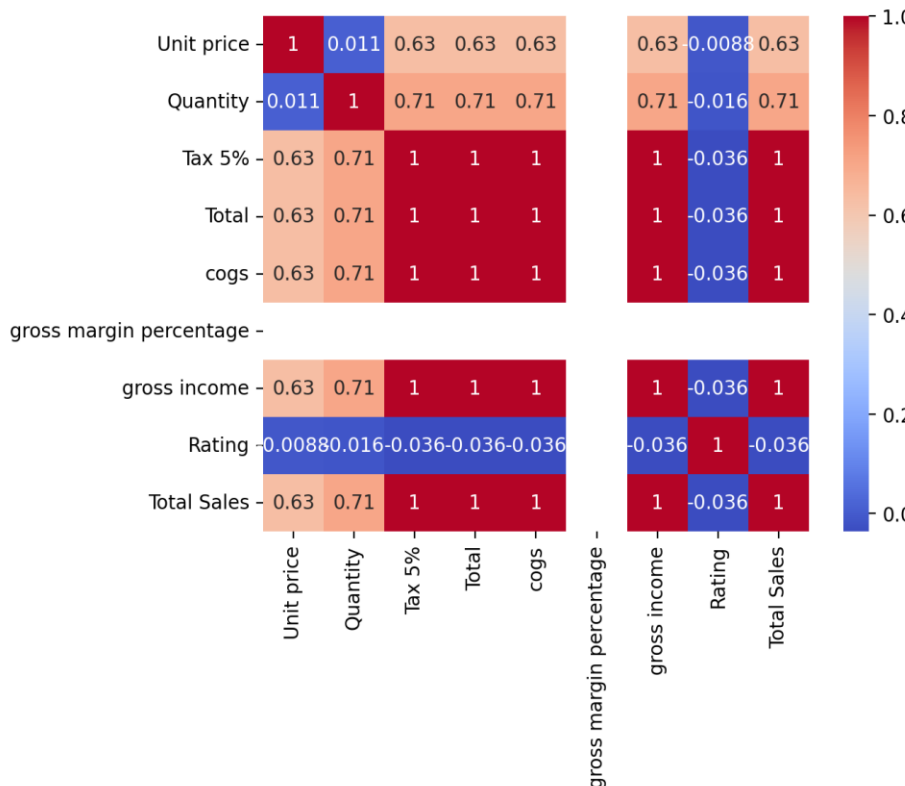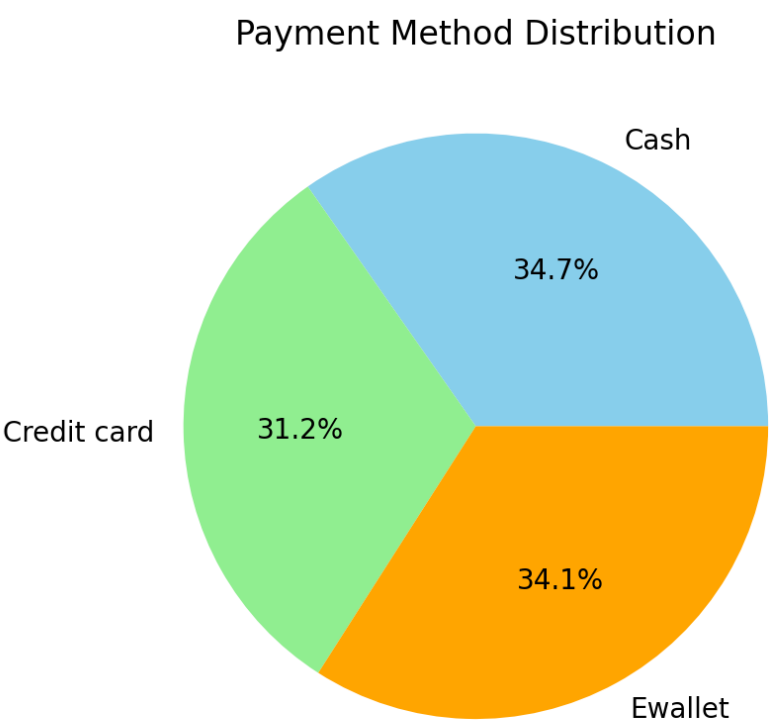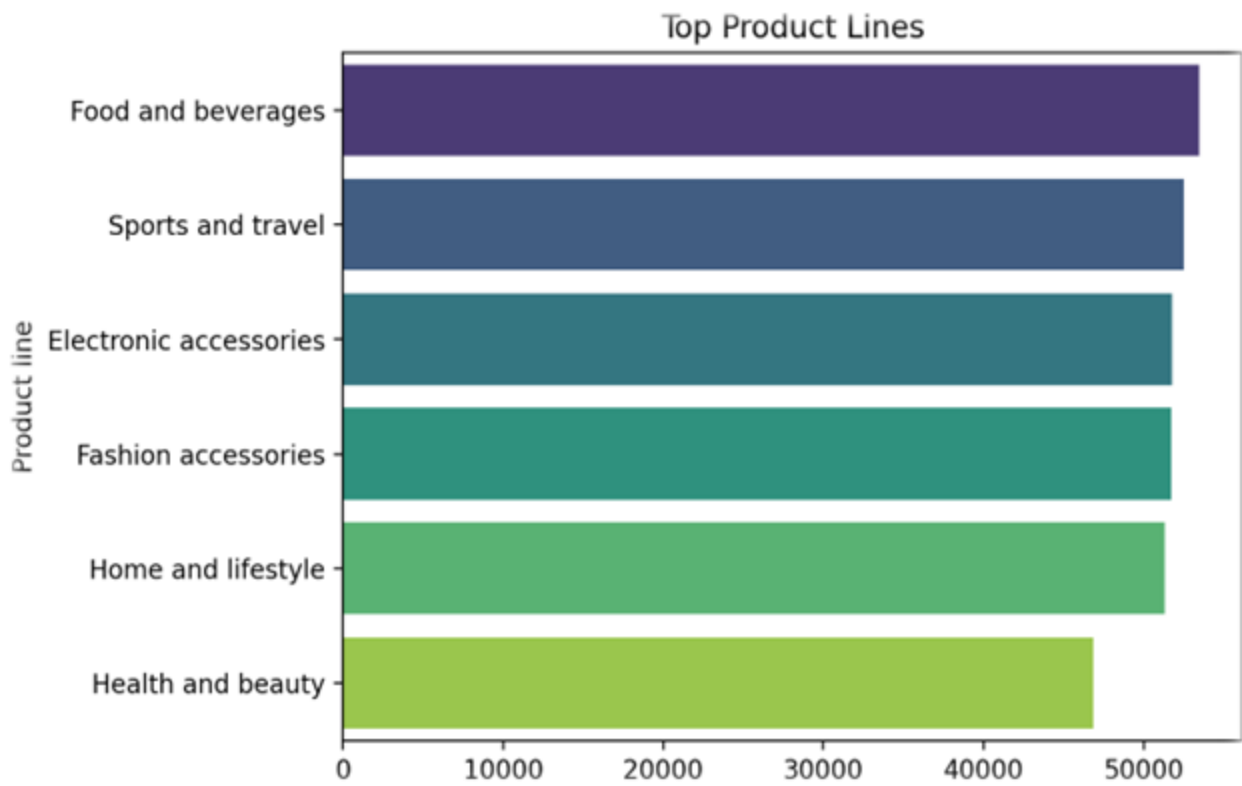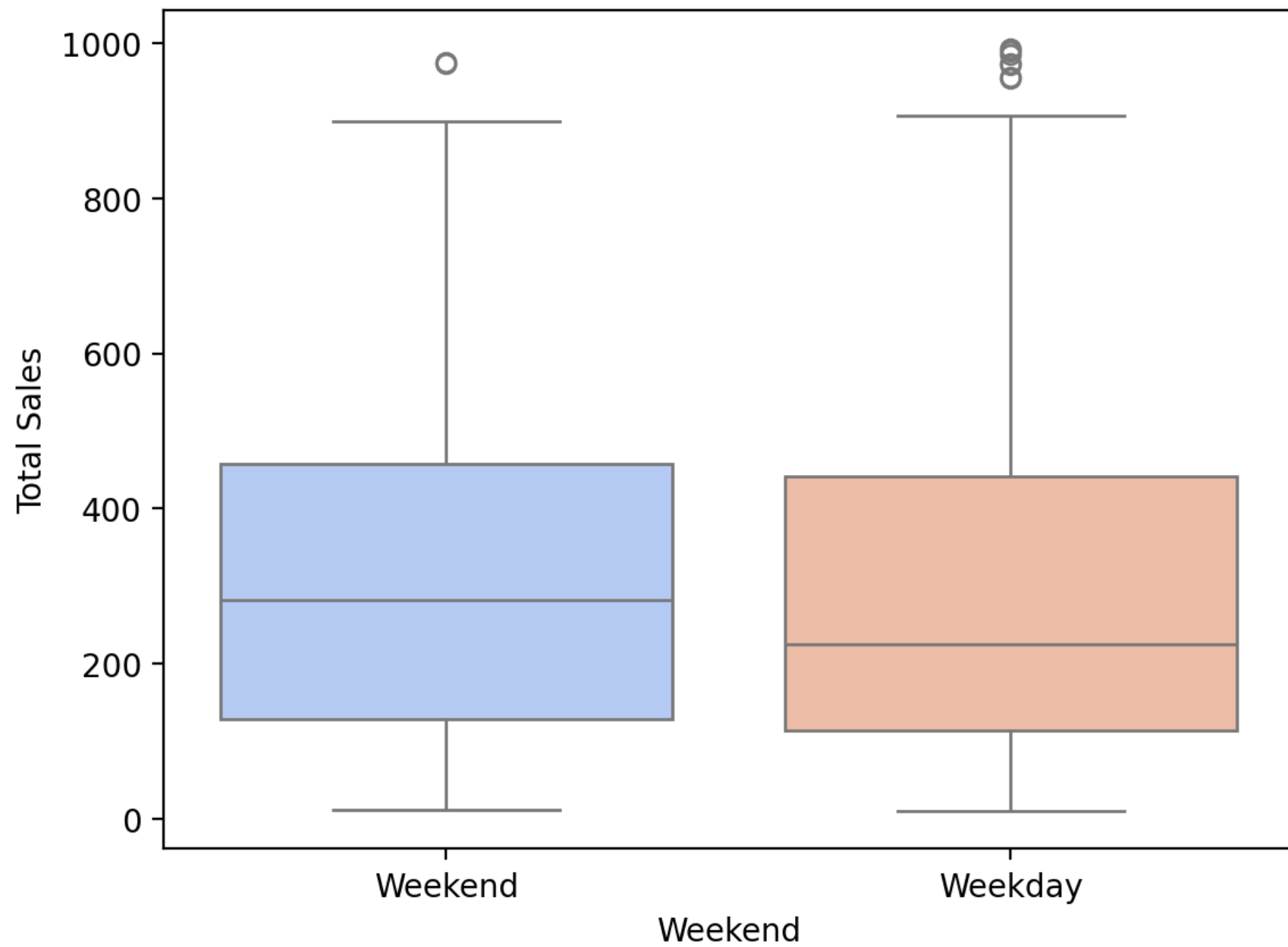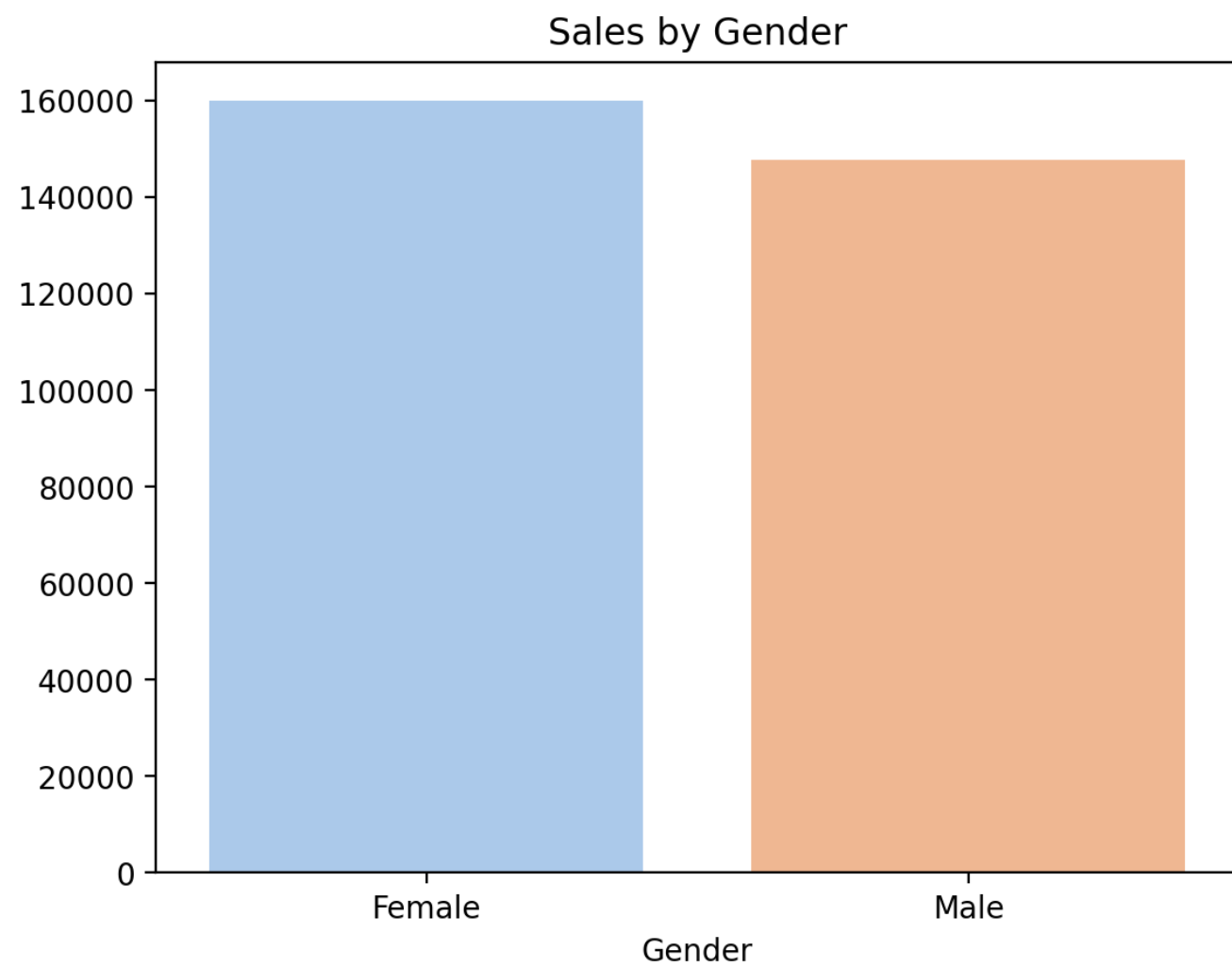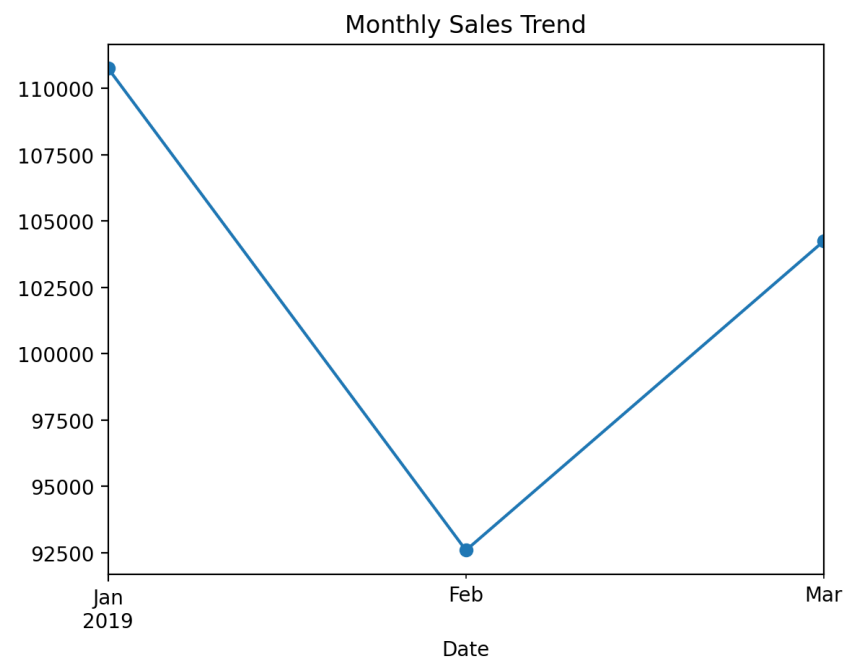
Learnings and Outcomes:

1   Data cleaning and preprocessing using Pandas

2   Creating interactive dashboard using Streamlit

3   Visualizing trends and distributions using Matplotlib and Seaborn

Data analysis provides actionable insights. Explore potential areas for further investigation. Recognize limitations and future research directions.

Possible Future Enhancements

- Add downloadable summary reports or charts
- Include additional filters and user controls
- Deploy the application on the cloud (e.g., Streamlit Cloud or Heroku)
- Implement user authentication for personalized views

🛒 Supermarket Sales Analysis Dashboard

Upload the Supermarket Sales CSV file

> ☁ **Drag and drop file here**
> Limit 200MB per file • CSV   **Browse files**

📄 **supermarket_sales - Sheet1.csv** 128.4KB   ✕

📊 Overview   🔮 Insights   📈 Trends   💾 More

📌 Dataset Preview

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