PD LAB
ASSIGNMENT - 4

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Batch: 3

Aim:-

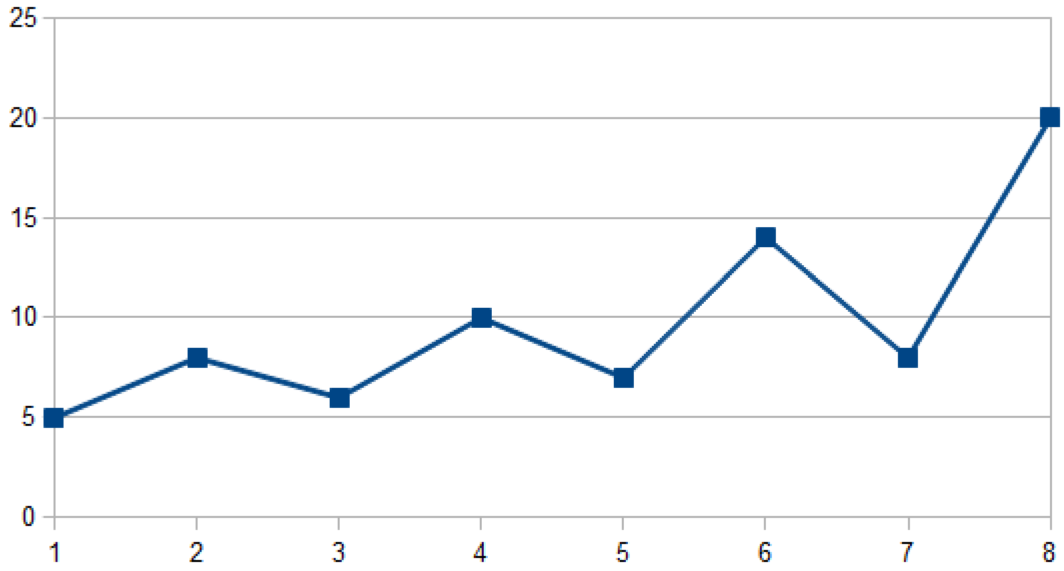
Plot different graphs using matplotlib.
Select any dataset from data.world website and create corresponding dashboard using streamlit

Theory:-

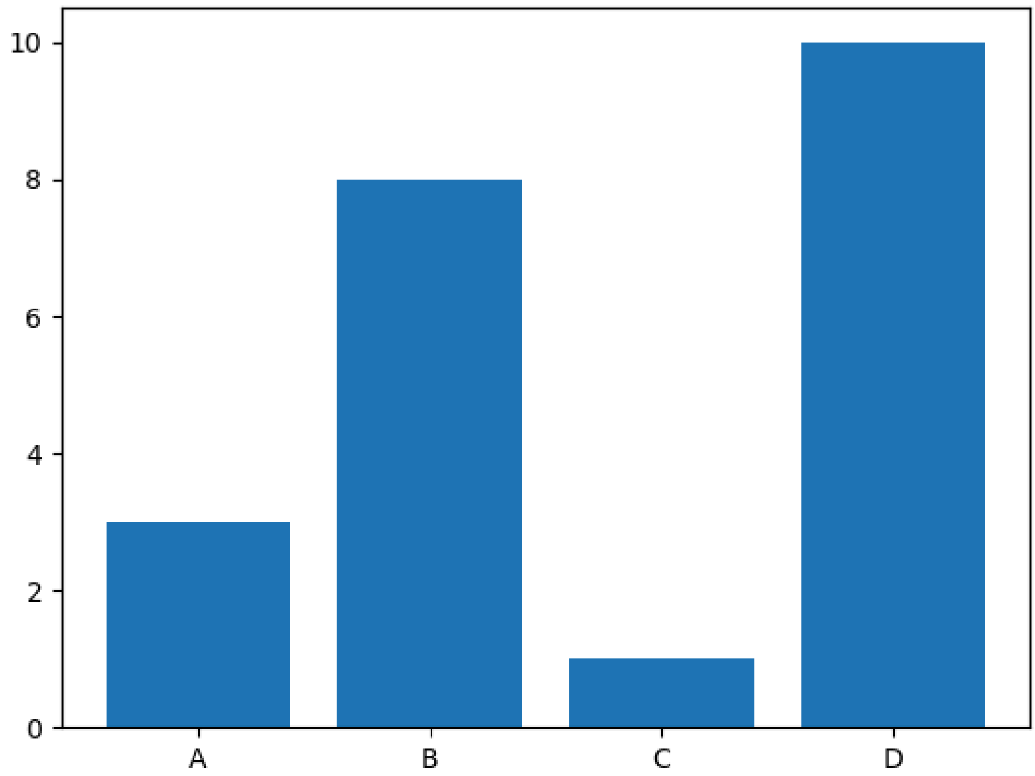
Matplotlib is a low level graph plotting library in python that serves as a visualization utility.
It was created by John D. Hunter.
It is open source and we can use it freely.

Basic Types of Graphs in MatPlotLib:

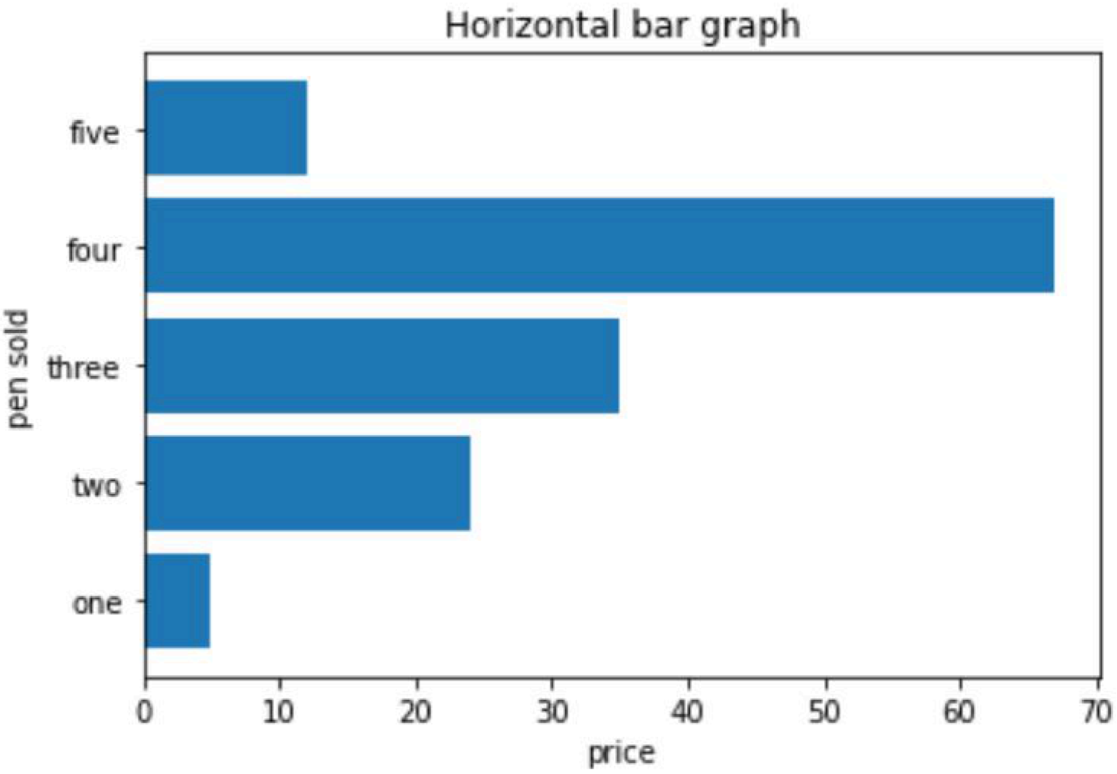
1.Line Graph



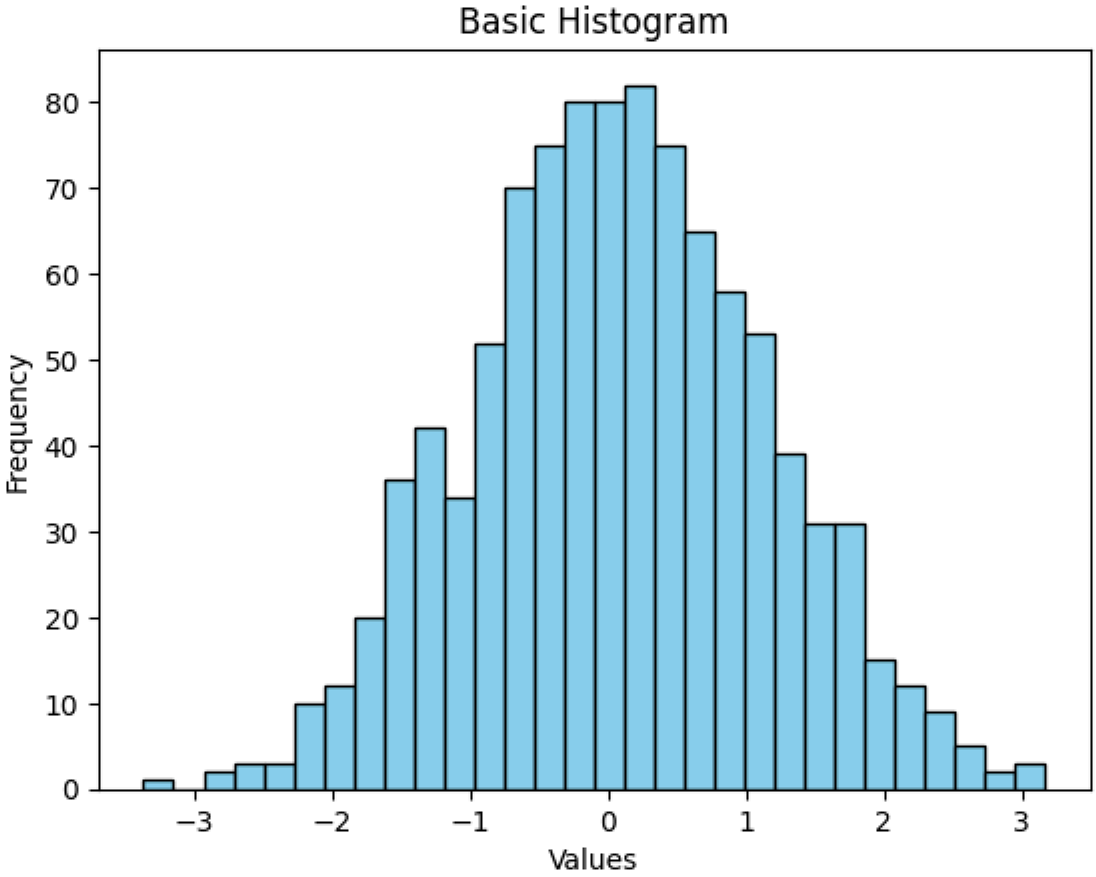
2.Bar Chart



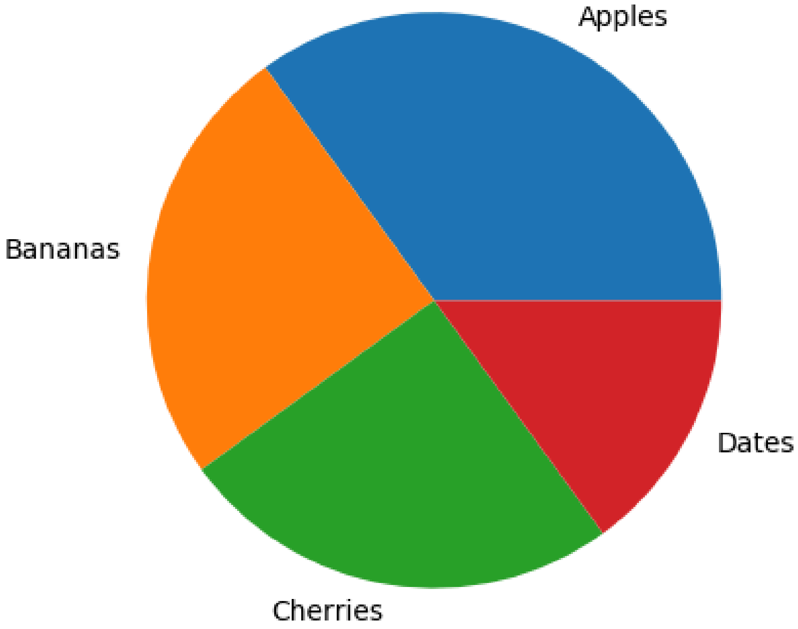
3.Horizontal Bar Chart:


Horizontal bar graph
five
four
three
two
one
pen sold
0
10
20
30
40
50
60
70
price

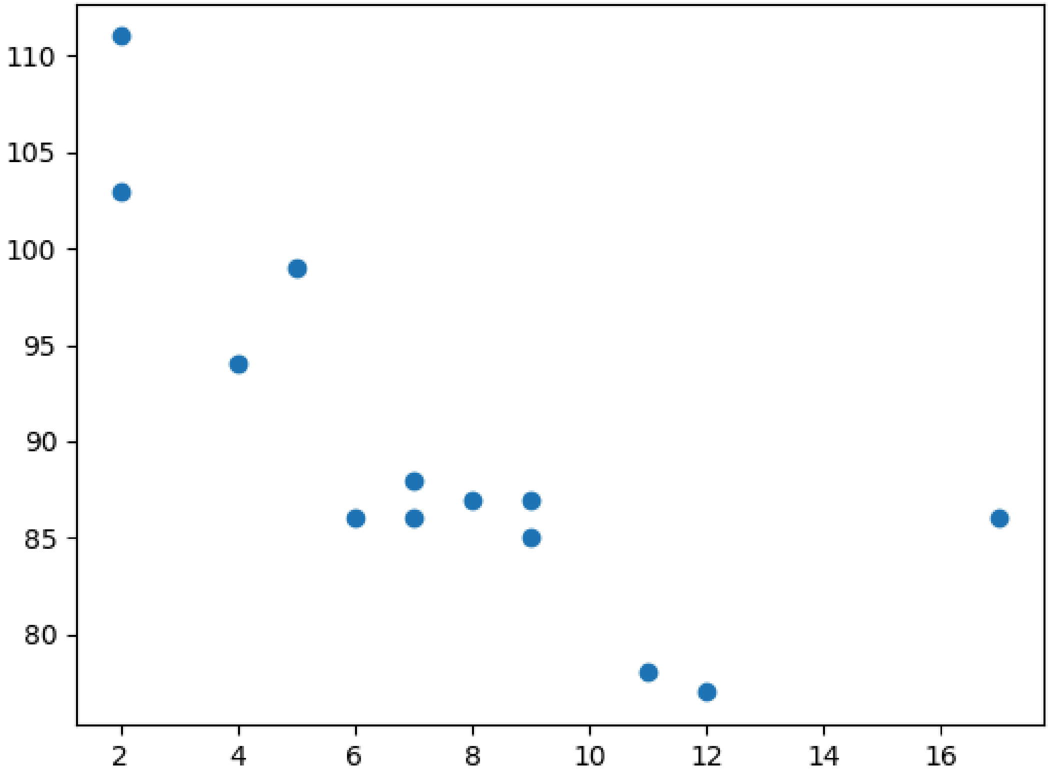
4. Histogram:


Basic Histogram
Frequency
0
10
20
30
40
50
60
70
80
−3
−2
−1
0
1
2
3
Values

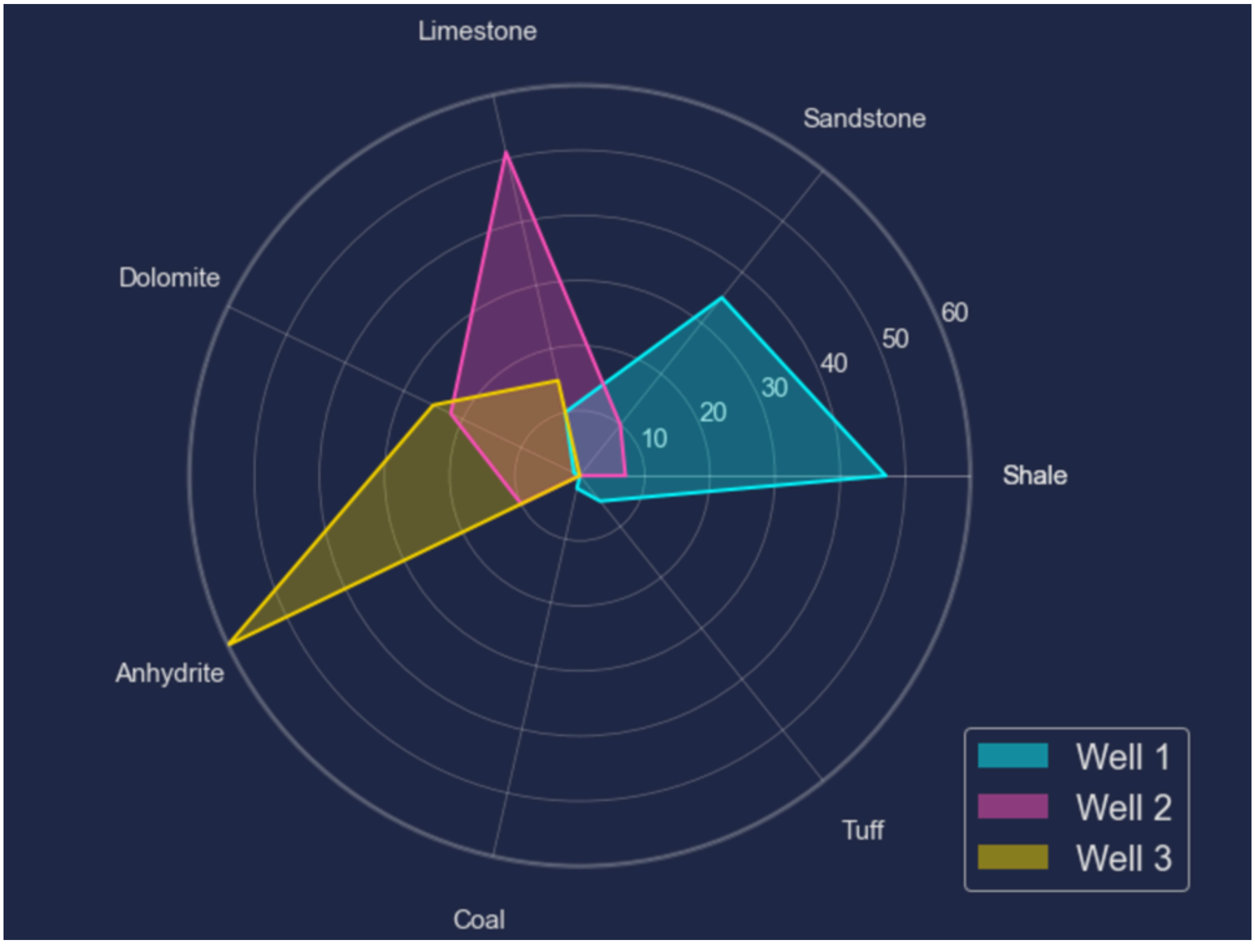
5. Pie Chart:



6.Scatter Plot:



7. Radar Chart:



StreamLit:

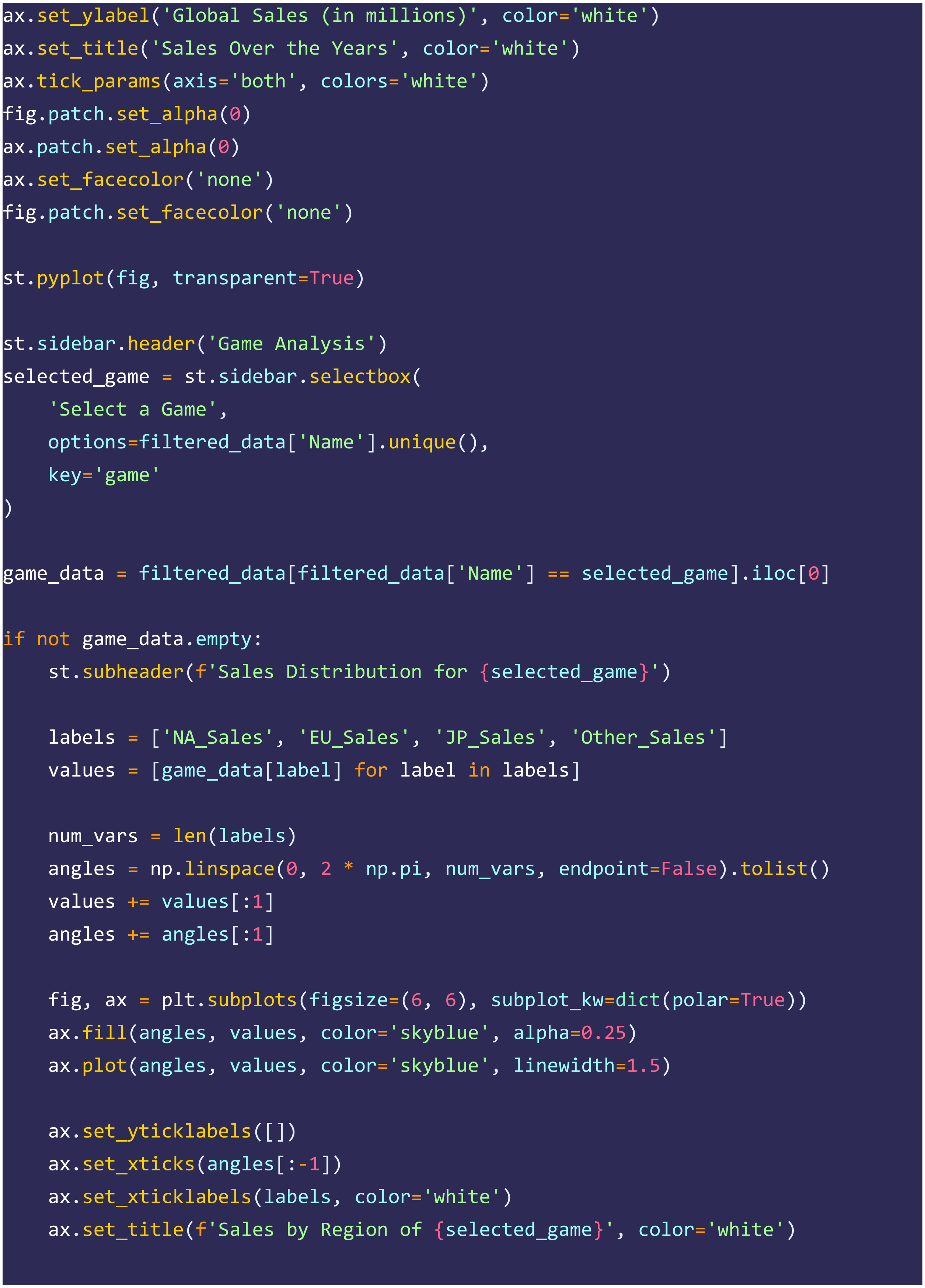
Streamlit is an open-source Python library that simplifies the creation of interactive web applications for data science and machine learning.
It enables developers to turn Python scripts into shareable apps with minimal coding.

Streamlit provides a range of built-in widgets, such as sliders, buttons, and text inputs, for user interaction.
It seamlessly integrates with popular data visualization libraries like Matplotlib, allowing for dynamic and real-time data presentation.
With Streamlit, we can build apps that automatically update in response to code changes or user input, making it a powerful tool for data exploration and sharing insights.

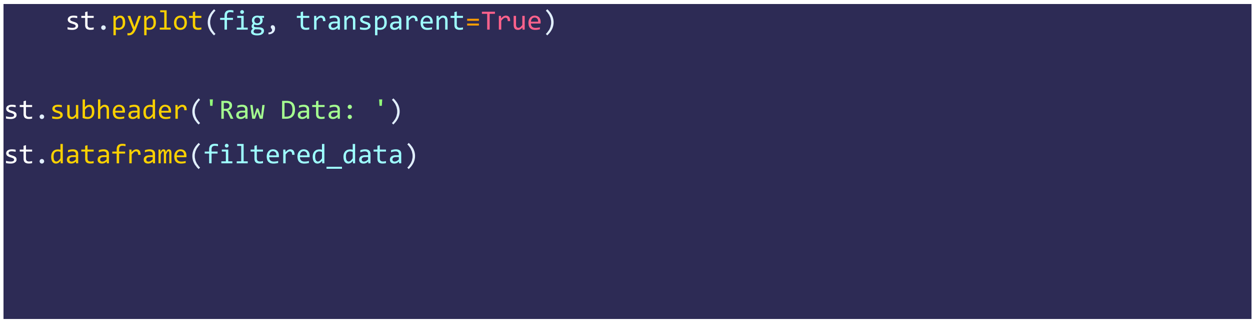
Code and Output:

```
import streamlit as st
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np

file_path = 'vgsales.csv'
vgsales_data = pd.read_csv(file_path)

st.sidebar.header('Filters')

selected_genre = st.sidebar.multiselect(
    'Select Genre/s',
    options=vgsales_data['Genre'].unique(),
    default=[],
    key='genre'
)

selected_publisher = st.sidebar.multiselect(
    'Select Publisher/s',
    options=vgsales_data['Publisher'].unique(),
    default=[],
    key='publisher'
)

selected_platform = st.sidebar.multiselect(
    'Select Platform/s',
    options=vgsales_data['Platform'].unique(),
    default=[],
    key='platform'
)

filtered_data = vgsales_data

if selected_genre:
    filtered_data = filtered_data[filtered_data['Genre'].isin(selected_genre)]

if selected_publisher:
    filtered_data =
filtered_data[filtered_data['Publisher'].isin(selected_publisher)]

if selected_platform:
    filtered_data =
filtered_data[filtered_data['Platform'].isin(selected_platform)]

st.header('Video Game Sales Dashboard')

st.subheader('Top 10 Games in Sales')

top_games = filtered_data.sort_values('Global_Sales', ascending=False).head(10)
```

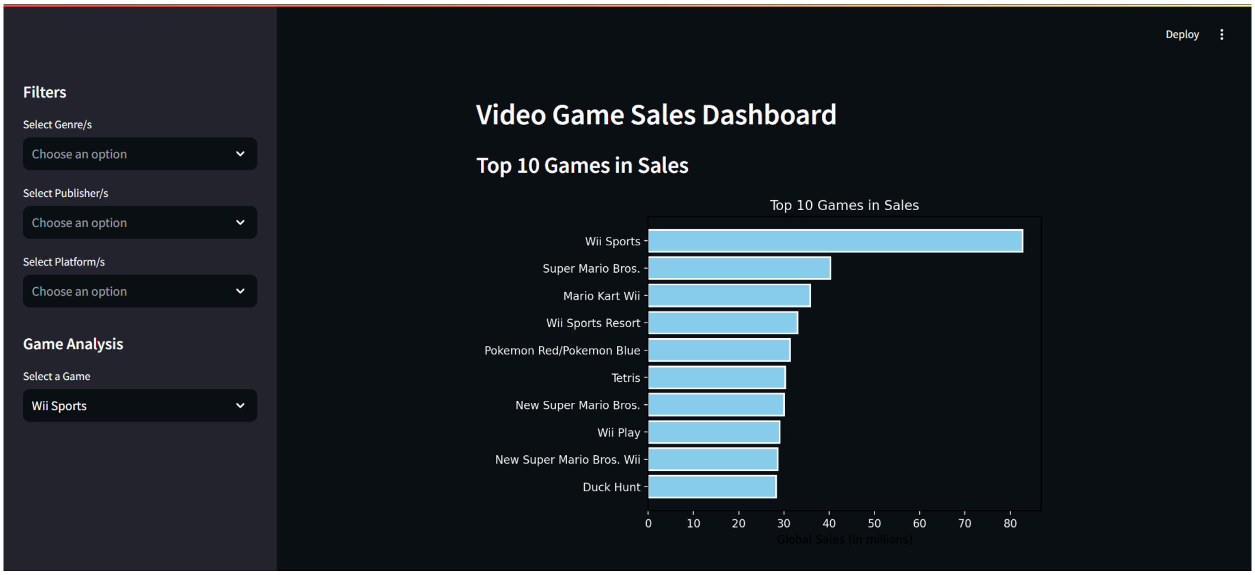
```
fig, ax = plt.subplots()
bars = ax.barh(top_games['Name'], top_games['Global_Sales'], color='skyblue',
edgecolor='white')
ax.set_xlabel('Global Sales (in millions)')
ax.set_title('Top 10 Games in Sales')
ax.invert_yaxis()

for bar in bars:
    bar.set_edgecolor('white')
    bar.set_linewidth(1.5)

ax.tick_params(axis='both', colors='white')
ax.title.set_color('white')

st.pyplot(fig, transparent=True)

st.subheader('Sales by Genre')
genre_sales = filtered_data.groupby('Genre')['Global_Sales'].sum()

fig, ax = plt.subplots()
ax.pie(genre_sales, labels=genre_sales.index, autopct='%1.1f%%', startangle=140)
ax.axis('equal')
fig.patch.set_alpha(0)
ax.patch.set_alpha(0)
ax.set_facecolor('none')
fig.patch.set_facecolor('none')

for text in ax.texts:
    text.set_color('white')

st.pyplot(fig, transparent=True)

st.subheader('Sales Trends Over Time')
sales_over_time = filtered_data.groupby('Year')['Global_Sales'].sum()

fig, ax = plt.subplots()
ax.plot(sales_over_time.index, sales_over_time, marker='o', linestyle='-',
color='skyblue', linewidth=1.5)
ax.set_xlabel('Year', color='white')
```



```python
ax.set_ylabel('Global Sales (in millions)', color='white')
ax.set_title('Sales Over the Years', color='white')
ax.tick_params(axis='both', colors='white')
fig.patch.set_alpha(0)
ax.patch.set_alpha(0)
ax.set_facecolor('none')
fig.patch.set_facecolor('none')

st.pyplot(fig, transparent=True)

st.sidebar.header('Game Analysis')
selected_game = st.sidebar.selectbox(
    'Select a Game',
    options=filtered_data['Name'].unique(),
    key='game'
)

game_data = filtered_data[filtered_data['Name'] == selected_game].iloc[0]

if not game_data.empty:
    st.subheader(f'Sales Distribution for {selected_game}')

    labels = ['NA_Sales', 'EU_Sales', 'JP_Sales', 'Other_Sales']
    values = [game_data[label] for label in labels]

    num_vars = len(labels)
    angles = np.linspace(0, 2 * np.pi, num_vars, endpoint=False).tolist()
    values += values[:1]
    angles += angles[:1]

    fig, ax = plt.subplots(figsize=(6, 6), subplot_kw=dict(polar=True))
    ax.fill(angles, values, color='skyblue', alpha=0.25)
    ax.plot(angles, values, color='skyblue', linewidth=1.5)

    ax.set_yticklabels([])
    ax.set_xticks(angles[:-1])
    ax.set_xticklabels(labels, color='white')
    ax.set_title(f'Sales by Region of {selected_game}', color='white')
```



```
    st.pyplot(fig, transparent=True)

st.subheader('Raw Data: ')
st.dataframe(filtered_data)
```



Filters

Select Genre/s: Choose an option

Select Publisher/s: Choose an option

Select Platform/s: Choose an option

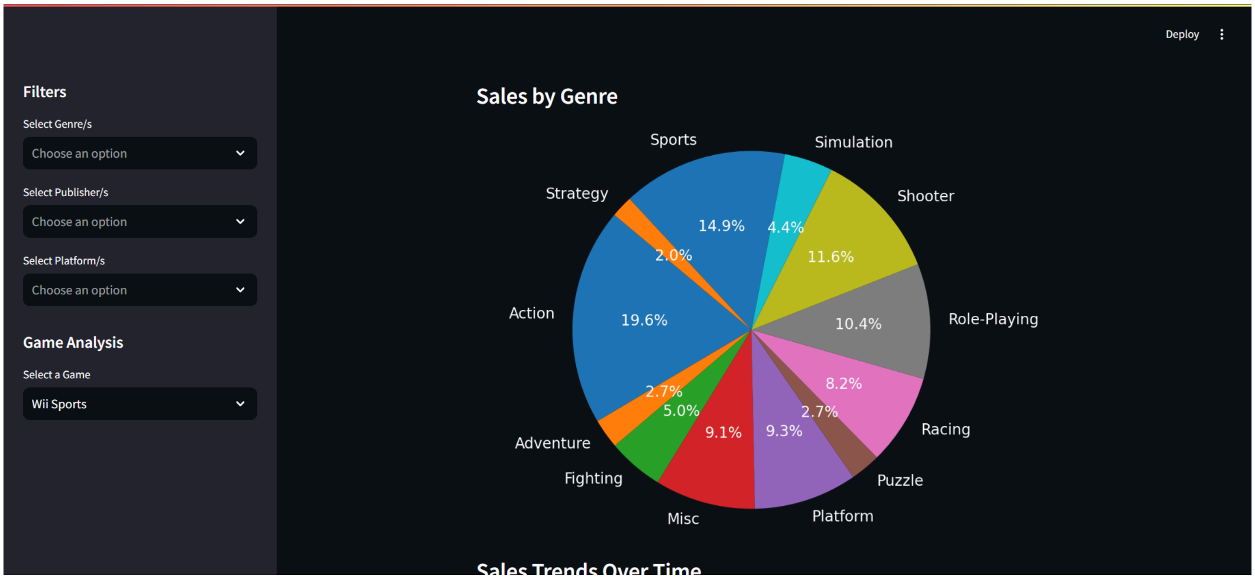
Game Analysis

Select a Game: Wii Sports

Video Game Sales Dashboard

Top 10 Games in Sales

Output when we open it directly



Filters

Select Genre/s: Choose an option

Select Publisher/s: Choose an option

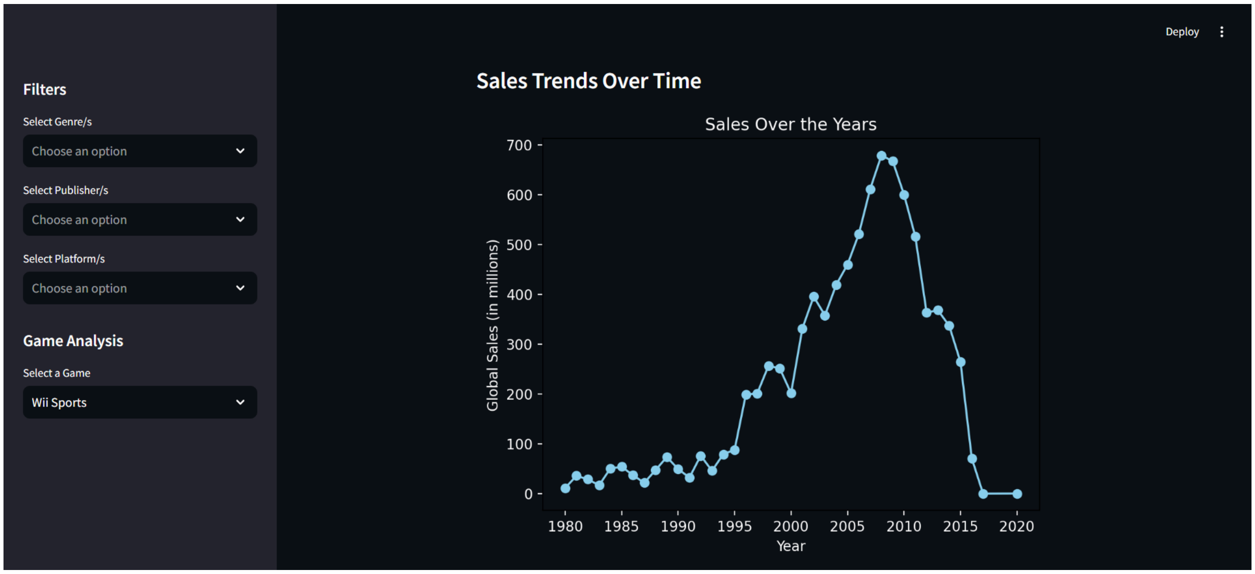
Select Platform/s: Choose an option

Game Analysis

Select a Game: Wii Sports

Sales by Genre

Sales Trends Over Time



Deploy

Filters

Select Genre/s: Choose an option

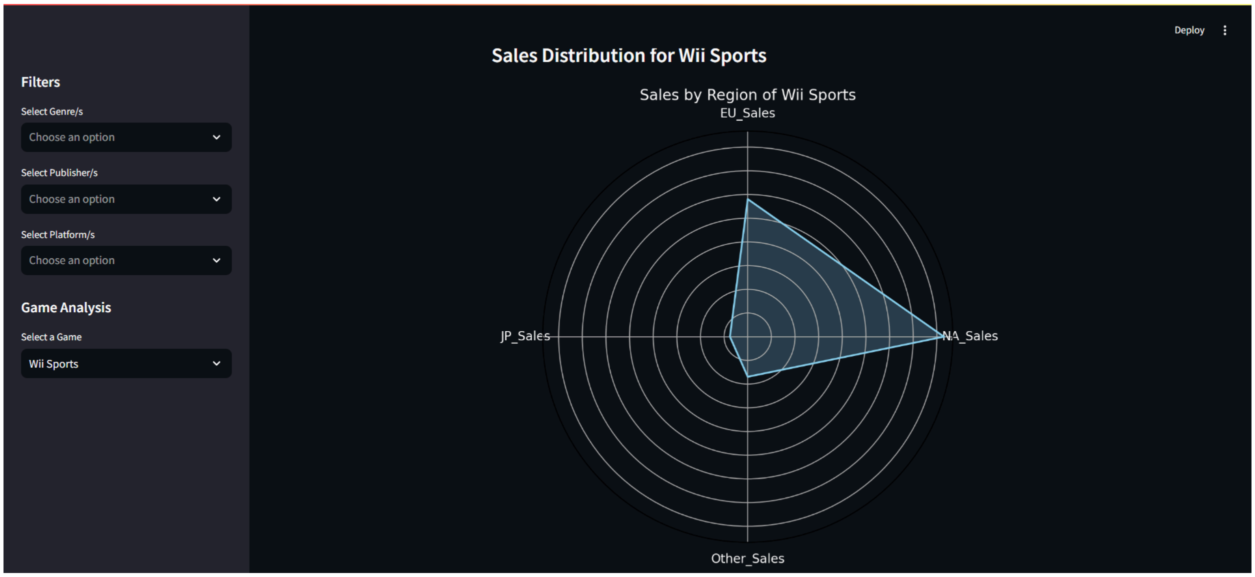
Select Publisher/s: Choose an option

Select Platform/s: Choose an option

Game Analysis

Select a Game: Wii Sports

Sales Trends Over Time



Deploy

Filters

Select Genre/s: Choose an option

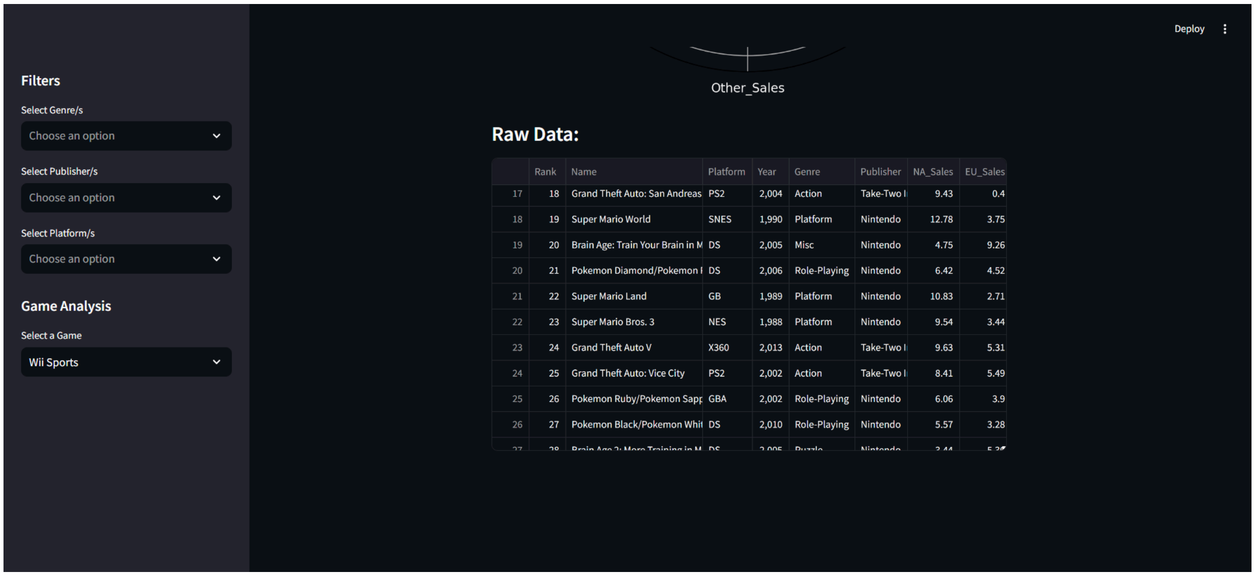
Select Publisher/s: Choose an option

Select Platform/s: Choose an option

Game Analysis

Select a Game: Wii Sports

Sales Distribution for Wii Sports



Deploy

Filters

Select Genre/s

Choose an option

Select Publisher/s

Choose an option

Select Platform/s

Choose an option

Game Analysis

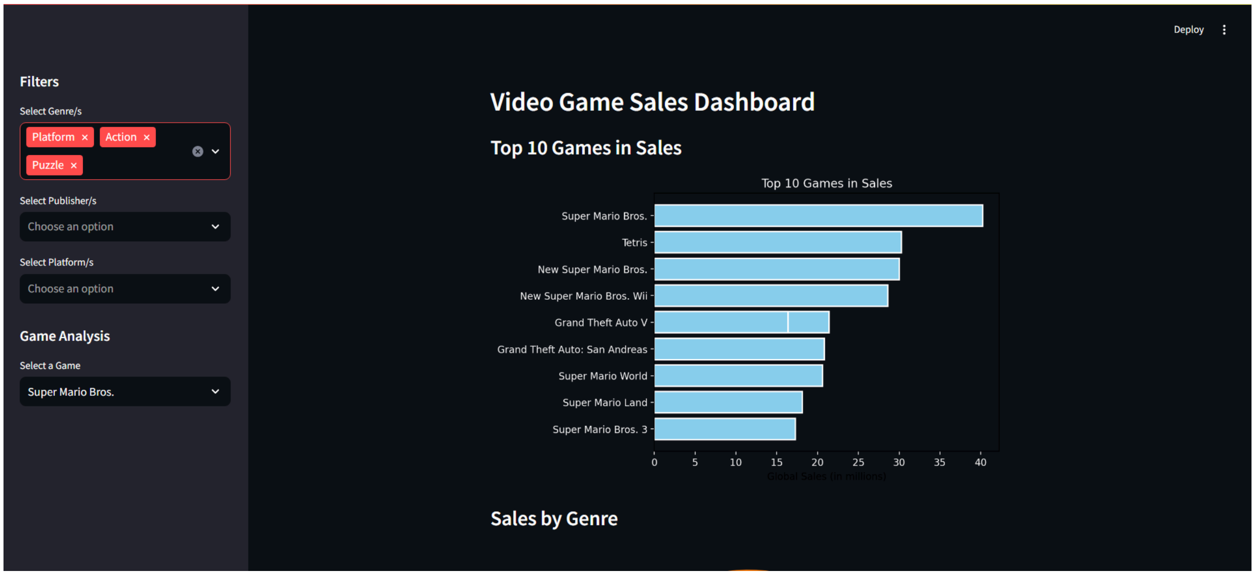
Select a Game

Wii Sports

Raw Data:

	Rank	Name	Platform	Year	Genre	Publisher	NA_Sales	EU_Sales
17	18	Grand Theft Auto: San Andreas	PS2	2,004	Action	Take-Two I	9.43	0.4
18	19	Super Mario World	SNES	1,990	Platform	Nintendo	12.78	3.75
19	20	Brain Age: Train Your Brain in M	DS	2,005	Misc	Nintendo	4.75	9.26
20	21	Pokemon Diamond/Pokemon I	DS	2,006	Role-Playing	Nintendo	6.42	4.52
21	22	Super Mario Land	GB	1,989	Platform	Nintendo	10.83	2.71
22	23	Super Mario Bros. 3	NES	1,988	Platform	Nintendo	9.54	3.44
23	24	Grand Theft Auto V	X360	2,013	Action	Take-Two I	9.63	5.31
24	25	Grand Theft Auto: Vice City	PS2	2,002	Action	Take-Two I	8.41	5.49
25	26	Pokemon Ruby/Pokemon Sapp	GBA	2,002	Role-Playing	Nintendo	6.06	3.9
26	27	Pokemon Black/Pokemon Whit	DS	2,010	Role-Playing	Nintendo	5.57	3.28
27	28	Brain Age 2: More Training in M	DS	2,005	Puzzle	Nintendo	3.44	5.3

When we select a couple of genres to filter



Deploy

Filters

Select Genre/s

Platform × Action × Puzzle ×

Select Publisher/s

Choose an option

Select Platform/s

Choose an option

Game Analysis

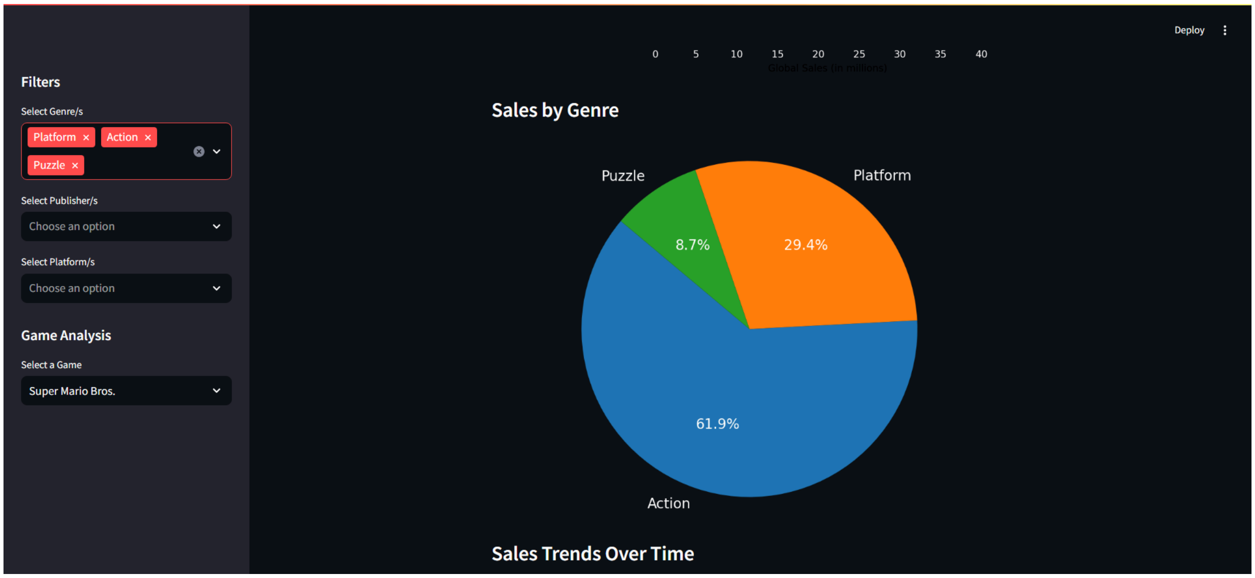
Select a Game

Super Mario Bros.

Video Game Sales Dashboard

Top 10 Games in Sales

Sales by Genre



Filters

Select Genre/s: Platform × Action × Puzzle ×

Select Publisher/s: Choose an option

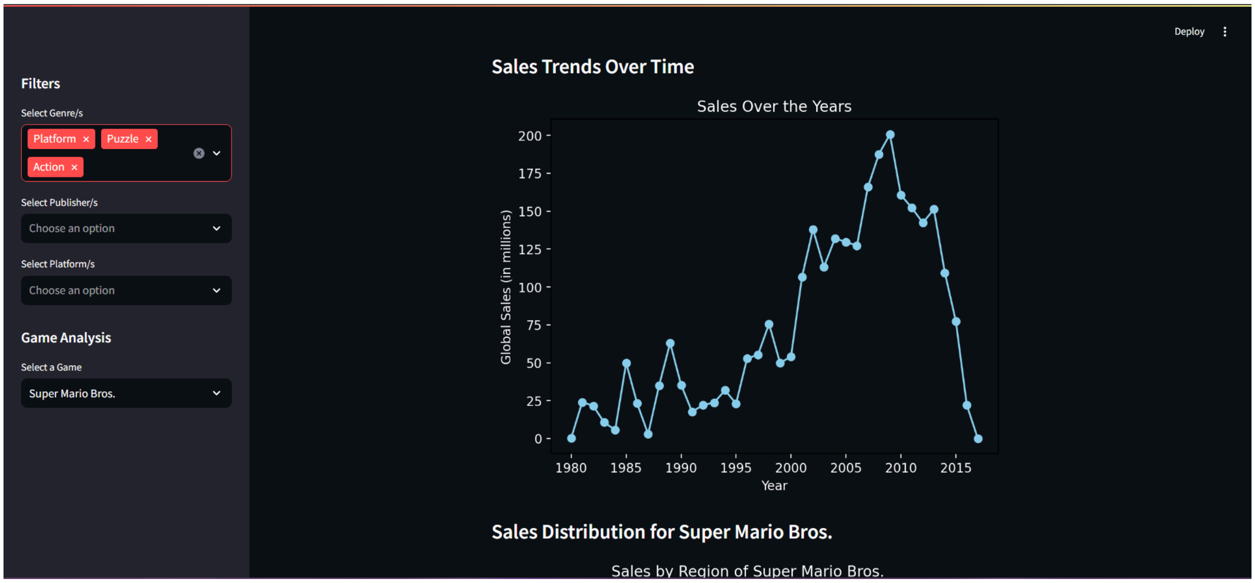
Select Platform/s: Choose an option

Game Analysis

Select a Game: Super Mario Bros.

Sales by Genre

Sales Trends Over Time



Filters

Select Genre/s: Platform × Puzzle × Action ×

Select Publisher/s: Choose an option

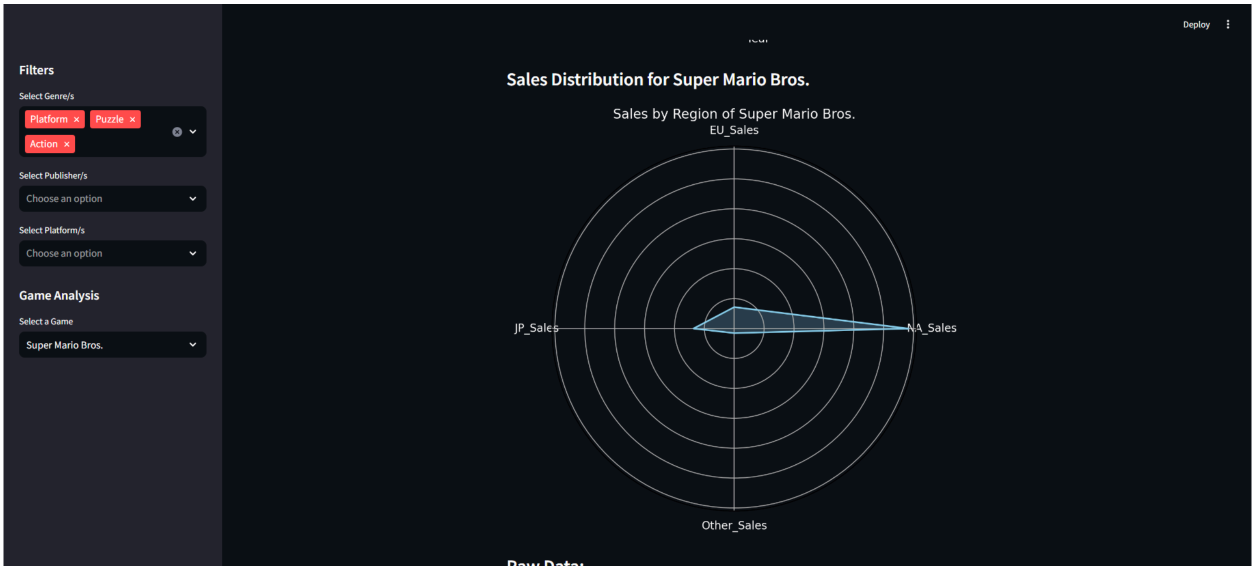
Select Platform/s: Choose an option

Game Analysis

Select a Game: Super Mario Bros.

Sales Trends Over Time

Sales Distribution for Super Mario Bros.



Filters

Select Genre/s

Platform × Puzzle × Action ×

Select Publisher/s

Choose an option

Select Platform/s

Choose an option

Game Analysis

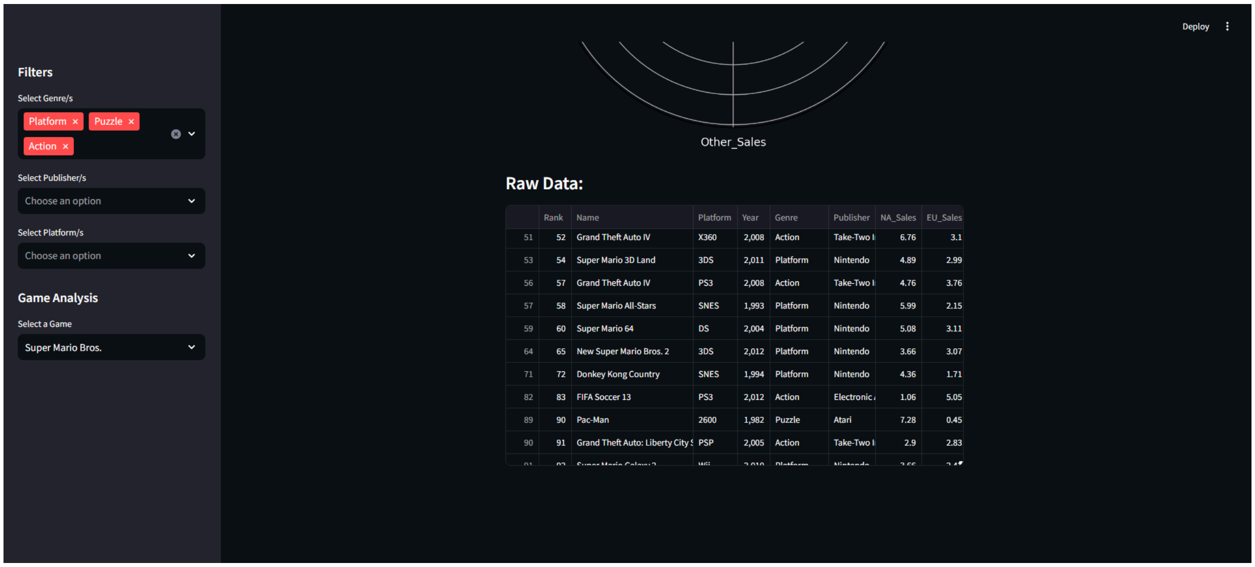
Select a Game

Super Mario Bros.

Sales Distribution for Super Mario Bros.

Sales by Region of Super Mario Bros.

Raw Data:



Filters

Select Genre/s

Platform × Puzzle × Action ×

Select Publisher/s

Choose an option

Select Platform/s

Choose an option

Game Analysis

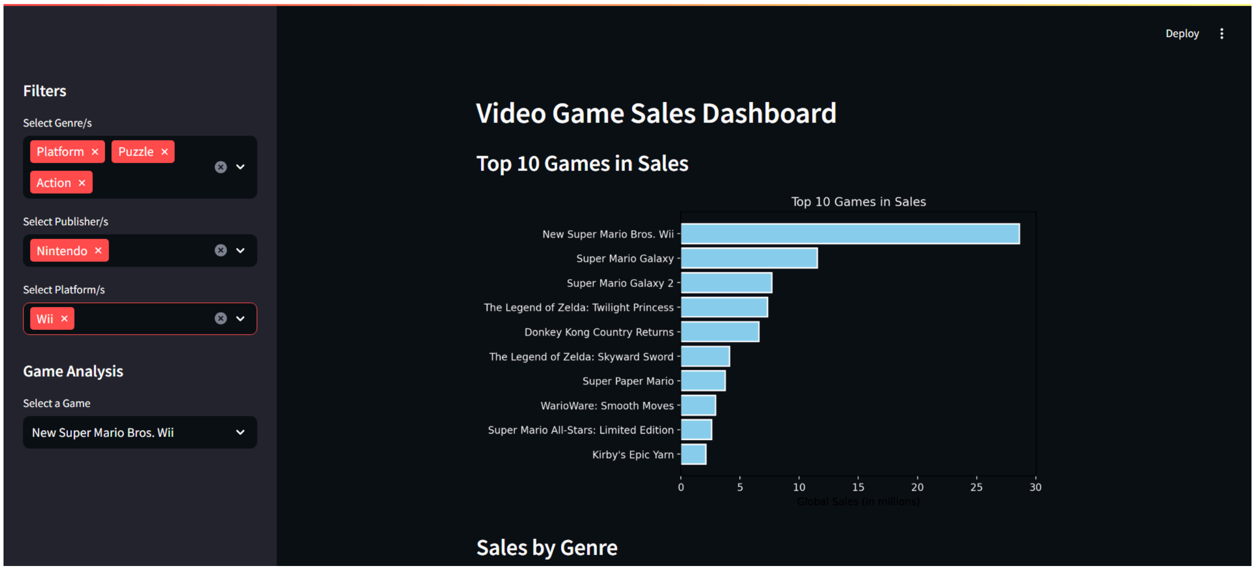
Select a Game

Super Mario Bros.

Raw Data:

	Rank	Name	Platform	Year	Genre	Publisher	NA_Sales	EU_Sales
51	52	Grand Theft Auto IV	X360	2,008	Action	Take-Two I	6.76	3.1
53	54	Super Mario 3D Land	3DS	2,011	Platform	Nintendo	4.89	2.99
56	57	Grand Theft Auto IV	PS3	2,008	Action	Take-Two I	4.76	3.76
57	58	Super Mario All-Stars	SNES	1,993	Platform	Nintendo	5.99	2.15
59	60	Super Mario 64	DS	2,004	Platform	Nintendo	5.08	3.11
64	65	New Super Mario Bros. 2	3DS	2,012	Platform	Nintendo	3.66	3.07
71	72	Donkey Kong Country	SNES	1,994	Platform	Nintendo	4.36	1.71
82	83	FIFA Soccer 13	PS3	2,012	Action	Electronic A	1.06	5.05
89	90	Pac-Man	2600	1,982	Puzzle	Atari	7.28	0.45
90	91	Grand Theft Auto: Liberty City S	PSP	2,005	Action	Take-Two I	2.9	2.83
91	92	Super Mario Galaxy 2	Wii	2,010	Platform	Nintendo	3.66	[illegible]

When we also select a Publisher and a Platform



Filters

Select Genre/s

Platform × Puzzle × Action ×

Select Publisher/s

Nintendo ×

Select Platform/s

Wii ×

Game Analysis

Select a Game

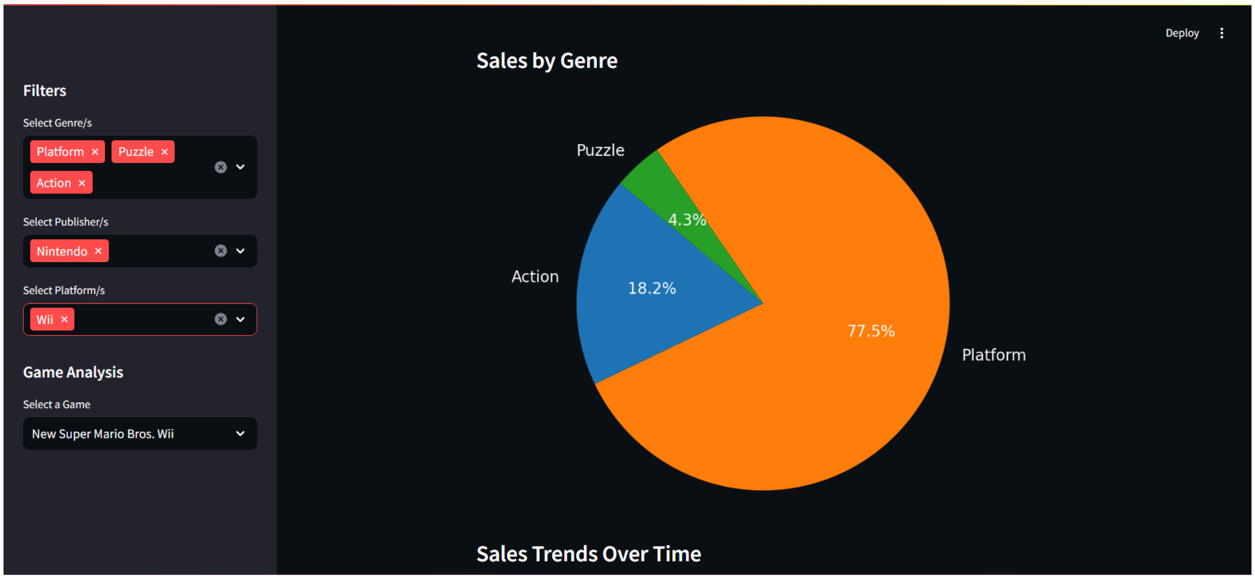
New Super Mario Bros. Wii

Video Game Sales Dashboard

Top 10 Games in Sales

Top 10 Games in Sales
New Super Mario Bros. Wii
Super Mario Galaxy
Super Mario Galaxy 2
The Legend of Zelda: Twilight Princess
Donkey Kong Country Returns
The Legend of Zelda: Skyward Sword
Super Paper Mario
WarioWare: Smooth Moves
Super Mario All-Stars: Limited Edition
Kirby's Epic Yarn
0
5
10
15
20
25
30
Global Sales (in millions)

Sales by Genre



Filters

Select Genre/s

Platform × Puzzle × Action ×

Select Publisher/s

Nintendo ×

Select Platform/s

Wii ×

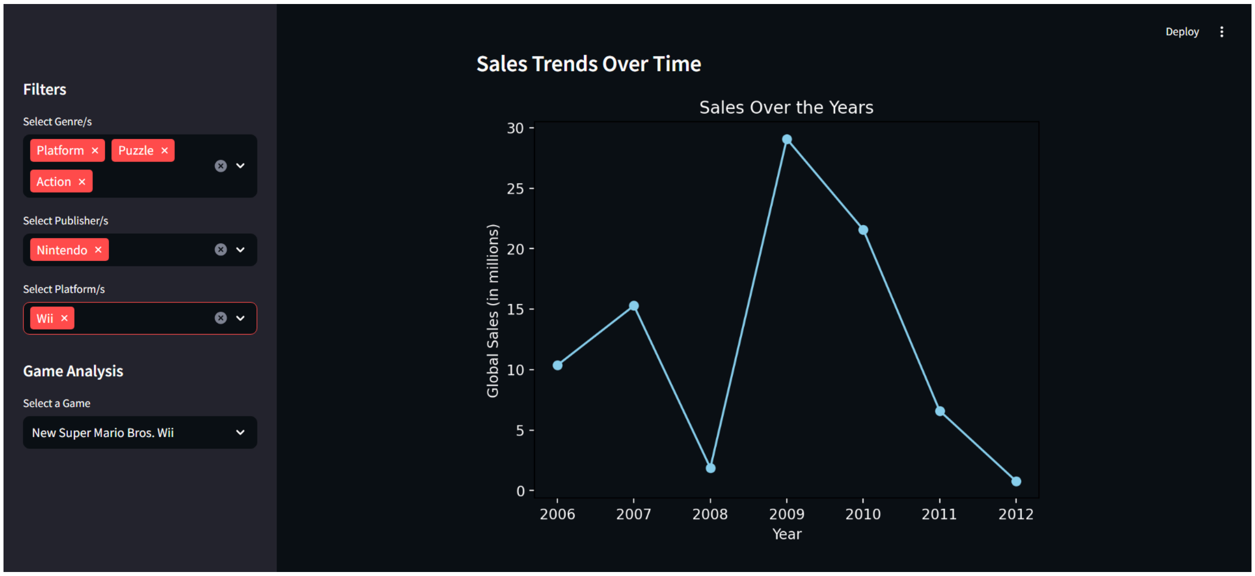
Game Analysis

Select a Game

New Super Mario Bros. Wii

Sales by Genre

Sales Trends Over Time



Filters

Select Genre/s

Platform × Puzzle × Action ×

Select Publisher/s

Nintendo ×

Select Platform/s

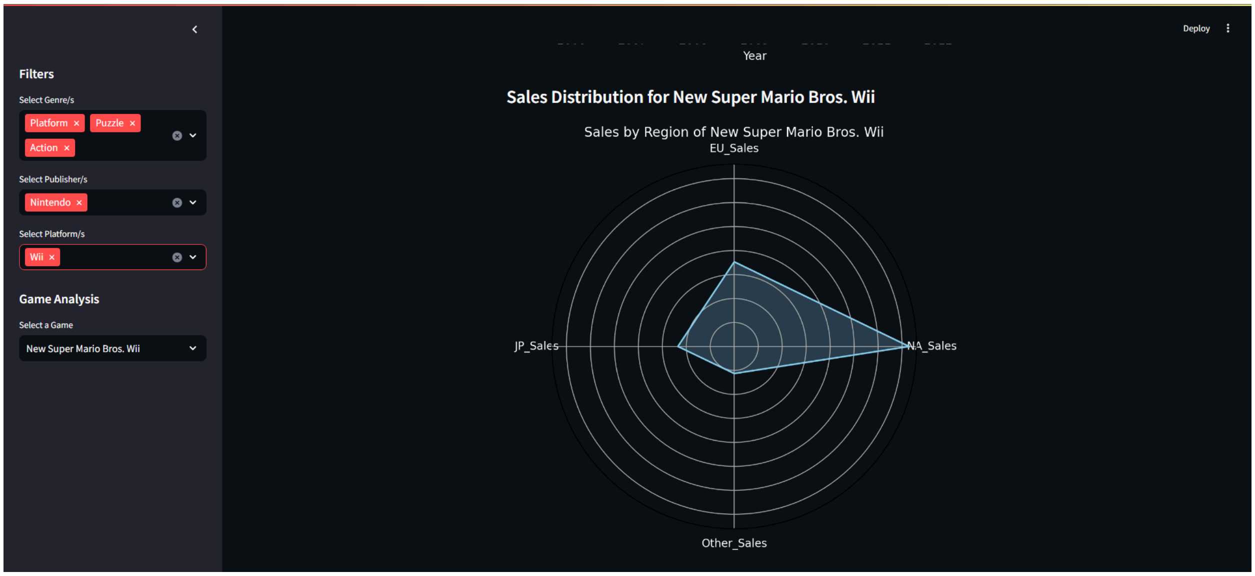
Wii ×

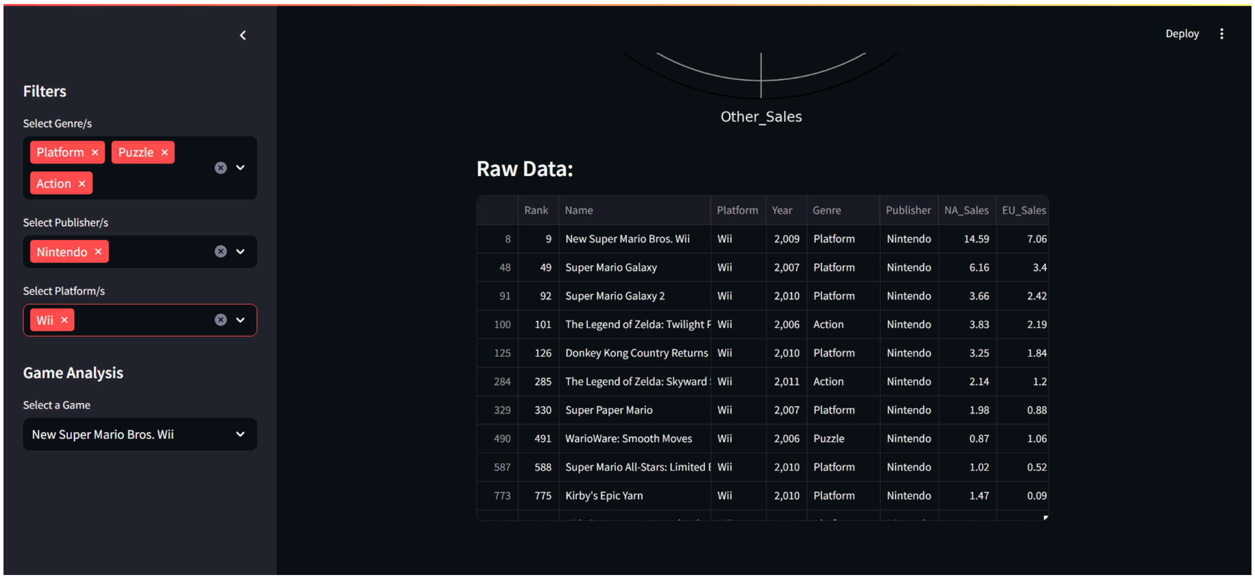
Game Analysis

Select a Game

New Super Mario Bros. Wii

Sales Trends Over Time

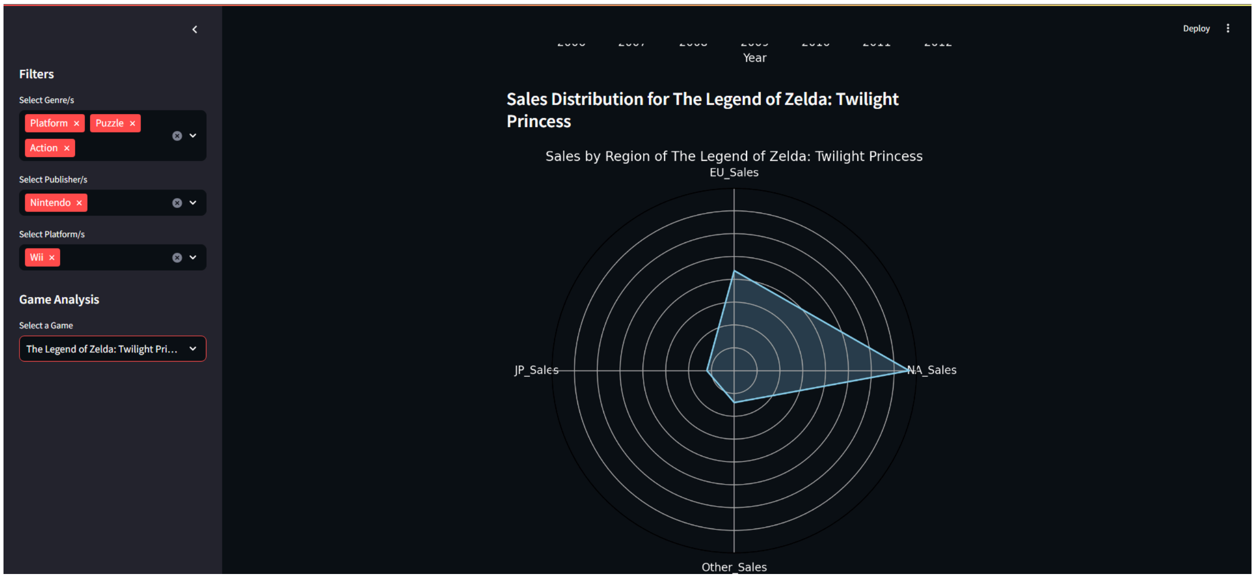




Raw Data:

	Rank	Name	Platform	Year	Genre	Publisher	NA_Sales	EU_Sales
8	9	New Super Mario Bros. Wii	Wii	2,009	Platform	Nintendo	14.59	7.06
48	49	Super Mario Galaxy	Wii	2,007	Platform	Nintendo	6.16	3.4
91	92	Super Mario Galaxy 2	Wii	2,010	Platform	Nintendo	3.66	2.42
100	101	The Legend of Zelda: Twilight P	Wii	2,006	Action	Nintendo	3.83	2.19
125	126	Donkey Kong Country Returns	Wii	2,010	Platform	Nintendo	3.25	1.84
284	285	The Legend of Zelda: Skyward S	Wii	2,011	Action	Nintendo	2.14	1.2
329	330	Super Paper Mario	Wii	2,007	Platform	Nintendo	1.98	0.88
490	491	WarioWare: Smooth Moves	Wii	2,006	Puzzle	Nintendo	0.87	1.06
587	588	Super Mario All-Stars: Limited E	Wii	2,010	Platform	Nintendo	1.02	0.52
773	775	Kirby's Epic Yarn	Wii	2,010	Platform	Nintendo	1.47	0.09

When we select a specific game the radar chart shows its sales per region



Filters

Select Genre/s: Platform, Puzzle, Action

Select Publisher/s: Nintendo

Select Platform/s: Wii

Game Analysis

Select a Game: The Legend of Zelda: Twilight Pri…

Sales Distribution for The Legend of Zelda: Twilight Princess

Conclusion:

Thus we have written a program to make a dashboard with the help of matplotlib to plot some graphs to make it look more appealing and also with streamlit to make the dashboard more seamless.

The dashboard we made was for video game sales for which the dataset was found on kaggle in the format of a csv file.