In [1]:
```
import sqlite3
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [2]:
```
# Connect to SQLite database.db
conn = sqlite3.connect("sale.db")
cursor = conn.cursor()
```

In [3]:
```
# Show all tables in the database
cursor.execute("SELECT name FROM sqlite_master WHERE type='table';")
tables = cursor.fetchall()
print("Tables in sale.db:", tables)
```

```
Tables in sale.db: [('game_sales',)]
```

In [4]:
```
df1 = pd.read_sql_query("""
                        SELECT genre,ROUND(SUM(na_sales),2) as na_sales,
                        ROUND(SUM(eu_sales),2) as eu_sales,
                        ROUND(SUM(jp_sales),2) as jp_sales,
                        ROUND(SUM(other_sales),2) as other_sales,
                        ROUND(SUM(global_sales),2) as global_sales
                        FROM game_sales
                        GROUP BY genre
                        ORDER BY genre;
    """, conn)
df1.style.hide(axis="index")
```

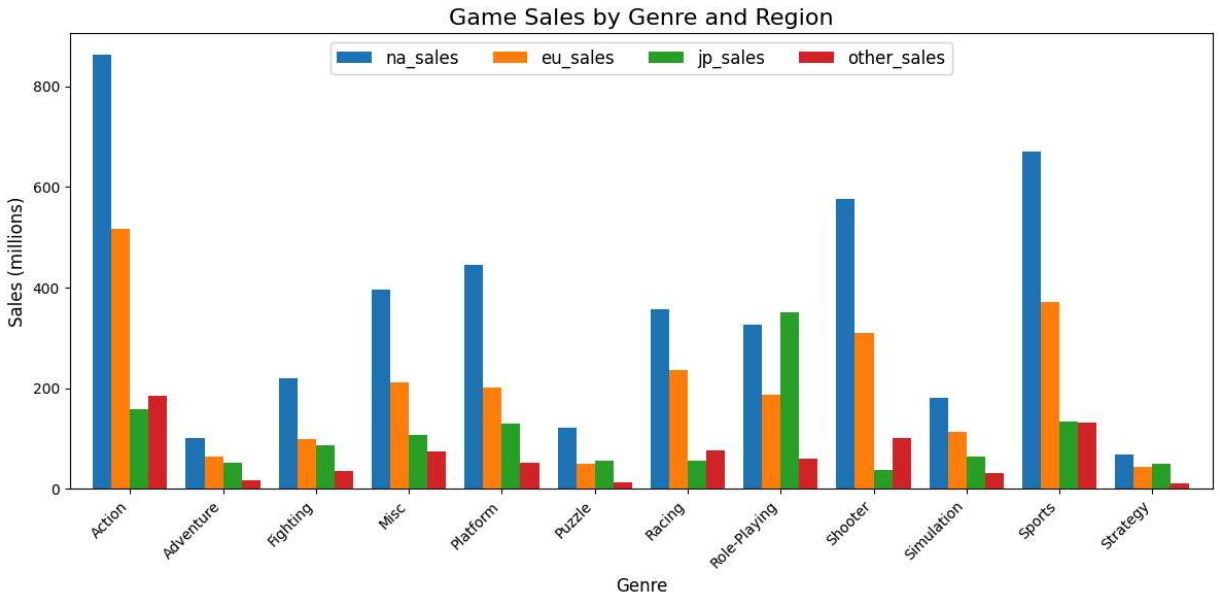
Out[4]:

genre	na_sales	eu_sales	jp_sales	other_sales	global_sales
Action	861.770000	516.480000	158.650000	184.920000	1722.840000
Adventure	101.930000	63.740000	51.990000	16.700000	234.590000
Fighting	220.740000	100.000000	87.150000	36.190000	444.050000
Misc	396.920000	211.770000	106.670000	73.920000	789.870000
Platform	445.990000	200.650000	130.650000	51.510000	829.130000
Puzzle	122.010000	50.520000	56.680000	12.470000	242.210000
Racing	356.930000	236.310000	56.610000	76.680000	726.760000
Role-Playing	326.500000	187.570000	350.290000	59.380000	923.830000
Shooter	575.160000	310.450000	38.180000	101.900000	1026.200000
Simulation	181.780000	113.020000	63.540000	31.360000	389.980000
Sports	670.090000	371.340000	134.760000	132.650000	1309.240000
Strategy	67.830000	44.840000	49.100000	11.230000	173.270000

In [5]:
```
regions = ["na_sales", "eu_sales", "jp_sales", "other_sales"]
```

```
# Plot
ax = df1.plot( x="genre",  y=regions, kind="bar", figsize=(12,6), width=0.8)

plt.title("Game Sales by Genre and Region", fontsize=16)
plt.xlabel("Genre", fontsize=12)
plt.ylabel("Sales (millions)", fontsize=12)
plt.xticks(rotation=45, ha="right")
plt.legend(loc='upper center', ncol=len(regions),fontsize=12)
plt.tight_layout()
plt.savefig("Game Sales by Genre and Region.png")
plt.show()
```



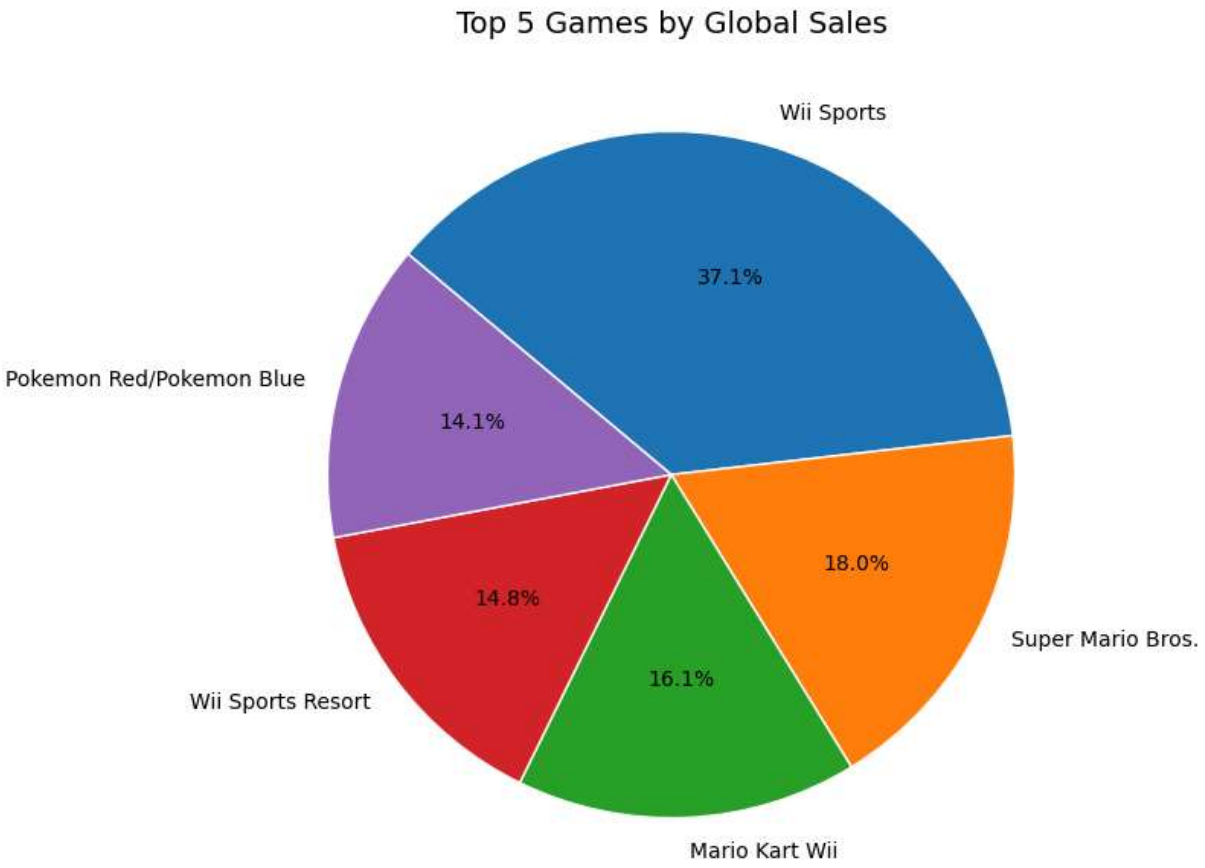
In [6]:
```
df2 = pd.read_sql_query("""
                        SELECT name, global_sales
                        FROM game_sales
                        ORDER BY global_sales DESC
                        LIMIT 5;
    """, conn)
df2.style.hide(axis="index").set_properties(**{'text-align': 'left'}).set_table_sty
```

Out[6]:

name	global_sales
Wii Sports	82.740000
Super Mario Bros.	40.240000
Mario Kart Wii	35.820000
Wii Sports Resort	33.000000
Pokemon Red/Pokemon Blue	31.370000

In [7]:
```
plt.figure(figsize=(8,8))
plt.pie(
    df2["global_sales"],
    labels=df2["name"],
    autopct='%1.1f%%',
    startangle=140,
```

```
    counterclock=False,
    wedgeprops={"edgecolor":"white"}
)
plt.title("Top 5 Games by Global Sales", fontsize=14)
plt.tight_layout()
plt.savefig("Top 5 Games by Global Sales.png")
plt.show()
```



In [8]:
```
df3 = pd.read_sql_query("""
                        SELECT 'na_sales' AS country, ROUND(SUM(na_sales),2) AS sal
                        FROM game_sales
                        UNION ALL
                        SELECT 'eu_sales', ROUND(SUM(eu_sales),2)
                        FROM game_sales
                        UNION ALL
                        SELECT 'jp_sales', ROUND(SUM(jp_sales),2)
                        FROM game_sales
                        UNION ALL
                        SELECT 'other_sales', ROUND(SUM(other_sales),2)
                        FROM game_sales;
    """, conn)
df3.style.hide(axis="index").set_properties(**{'text-align': 'left'}).set_table_sty
```

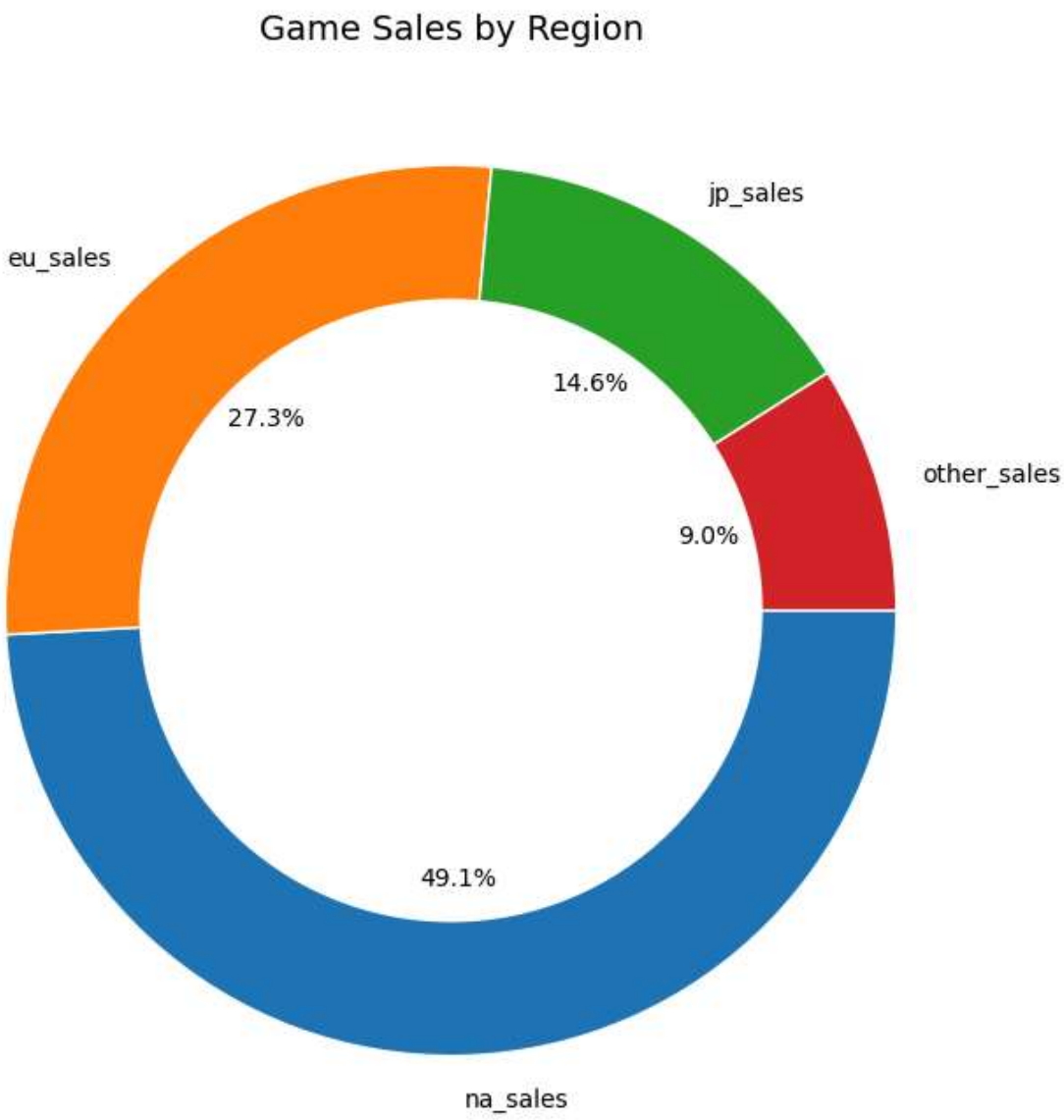
Out[8]:

country	sales
na_sales	4327.650000
eu_sales	2406.690000
jp_sales	1284.270000
other_sales	788.910000

In [9]:

```
plt.figure(figsize=(7, 7))
wedges, texts, autotexts = plt.pie(
    df3["sales"],
    autopct='%1.1f%%',
    labels=df3["country"],
    counterclock=False,
    wedgeprops={"edgecolor":"white"}
)

centre_circle = plt.Circle((0,0), 0.7, fc="white")
plt.gca().add_artist(centre_circle)
plt.title("Game Sales by Region", fontsize=14)
plt.tight_layout()
plt.savefig("Game Sales by Region.png")
plt.show()
```



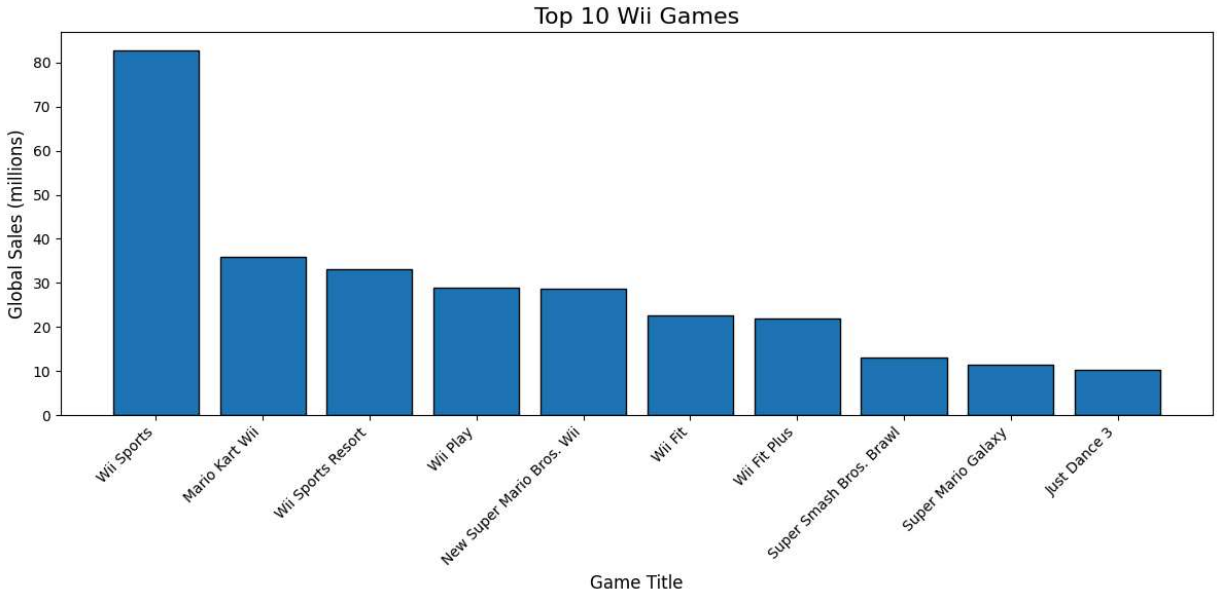
In [10]:
```
df4 = pd.read_sql_query("""
                        SELECT name, global_sales
                        FROM game_sales
                        WHERE platform = 'Wii'
                        ORDER BY  global_sales desc
                        limit 10;
    """, conn)
df4.style.hide(axis="index").set_properties(**{'text-align': 'left'}).set_table_sty
```

Out[10]:

name	global_sales
Wii Sports	82.740000
Mario Kart Wii	35.820000
Wii Sports Resort	33.000000
Wii Play	29.020000
New Super Mario Bros. Wii	28.620000
Wii Fit	22.720000
Wii Fit Plus	22.000000
Super Smash Bros. Brawl	13.040000
Super Mario Galaxy	11.520000
Just Dance 3	10.260000

In [11]:
```
plt.figure(figsize=(12,6))
plt.bar(df4["name"], df4["global_sales"], edgecolor="black")

plt.title("Top 10 Wii Games", fontsize=16)
plt.xlabel("Game Title", fontsize=12)
plt.ylabel("Global Sales (millions)", fontsize=12)
plt.xticks(rotation=45, ha="right")
plt.tight_layout()
plt.savefig("Top 10 Wii Games")
plt.show()
```



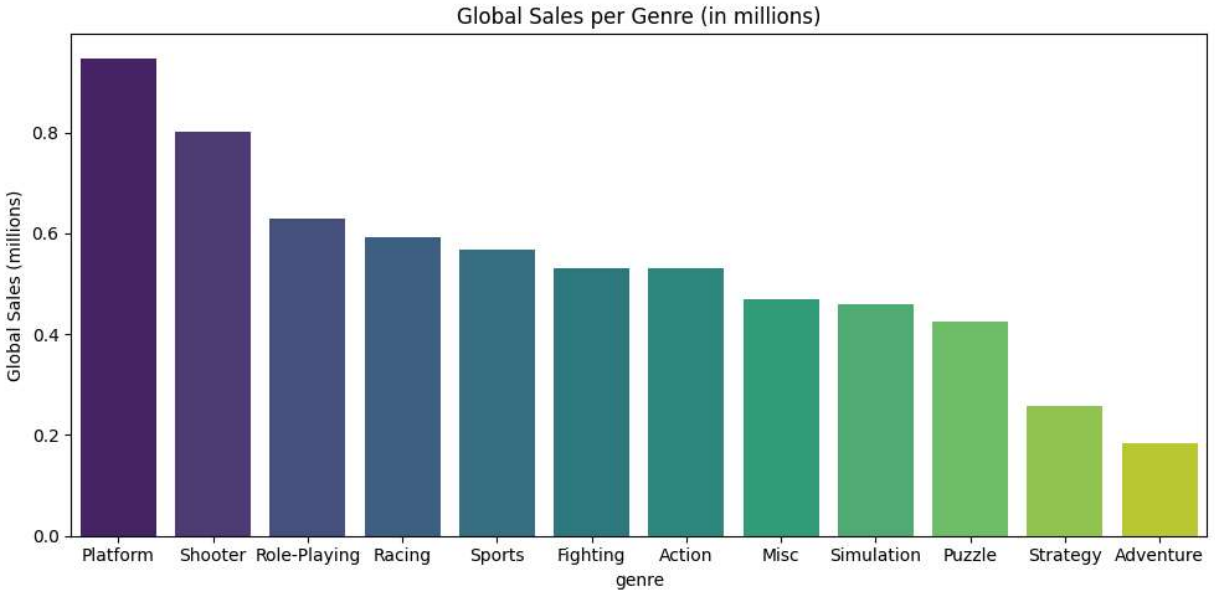
In [12]:
```
df5 = pd.read_sql_query("""
                        SELECT genre, AVG(global_sales) AS avg_global_sales
                        FROM game_sales
                        GROUP BY genre
                        ORDER BY avg_global_sales DESC;
```

```
    """, conn)
df5.style.hide(axis="index").set_properties(**{'text-align': 'left'}).set_table_sty
```

Out[12]:

genre	avg_global_sales
Platform	0.947577
Shooter	0.800468
Role-Playing	0.628456
Racing	0.593273
Sports	0.568247
Fighting	0.531160
Action	0.529942
Misc	0.468488
Simulation	0.459882
Puzzle	0.424930
Strategy	0.258612
Adventure	0.184137

In [13]:
```
plt.figure(figsize=(10,5))
sns.barplot(x='genre', y='avg_global_sales', data=df5, hue='genre', palette='viridi
plt.title('Global Sales per Genre (in millions)')
plt.ylabel('Global Sales (millions)')
plt.tight_layout()
plt.savefig("Global Sales per Genre.png")
plt.show()
```



In [14]:
```
df6 = pd.read_sql_query("""
                        SELECT name, year, global_sales
```

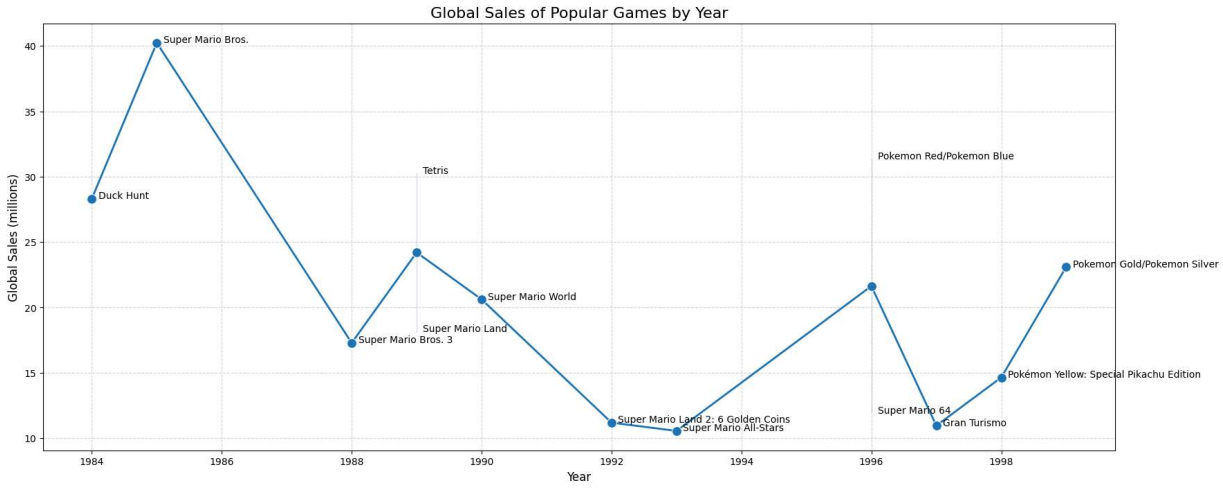
```
                        FROM game_sales
                        WHERE year < 2000 AND global_sales > 10;
    """, conn)
df6.style.hide(axis="index").set_properties(**{'text-align': 'left'}).set_table_sty
```

Out[14]:

name	year	global_sales
Super Mario Bros.	1985	40.240000
Pokemon Red/Pokemon Blue	1996	31.370000
Tetris	1989	30.260000
Duck Hunt	1984	28.310000
Pokemon Gold/Pokemon Silver	1999	23.100000
Super Mario World	1990	20.610000
Super Mario Land	1989	18.140000
Super Mario Bros. 3	1988	17.280000
Pokémon Yellow: Special Pikachu Edition	1998	14.640000
Super Mario 64	1996	11.890000
Super Mario Land 2: 6 Golden Coins	1992	11.180000
Gran Turismo	1997	10.950000
Super Mario All-Stars	1993	10.550000

In [15]:

```
plt.figure(figsize=(20, 8))
sns.lineplot(
    data=df6,
    x="year",
    y="global_sales",
   # hue="name",
    #palette='Set1',
    marker='o',
    markersize=10,
    linewidth=2
)
# Annotate each point with the game name
for i in range(len(df6)):
    plt.text(
        df6["year"][i]+0.1,
        df6["global_sales"][i],
        df6["name"][i],
        fontsize=10
    )
plt.title("Global Sales of Popular Games by Year", fontsize=16)
plt.xlabel("Year", fontsize=12)
plt.ylabel("Global Sales (millions)", fontsize=12)
plt.grid(True, linestyle='--', alpha=0.5)
plt.savefig("Global Sales of Popular Games by Year.png")
plt.show()
```


Global Sales of Popular Games by Year
Global Sales (millions)
Year
Super Mario Bros.
Duck Hunt
Tetris
Super Mario Bros. 3
Super Mario Land
Super Mario World
Super Mario Land 2: 6 Golden Coins
Super Mario All-Stars
Pokemon Red/Pokemon Blue
Super Mario 64
Gran Turismo
Pokemon Gold/Pokemon Silver
Pokémon Yellow: Special Pikachu Edition