

```
import pandas as pd
```

```
df = pd.read_csv('videogamesales.csv')
df.head()
```

	Name	Platform	Year	Genre	Publisher	NA_Sales	EU_Sales	JP_Sales	Other_Sales
0	Asteroids	2600	1980.0	Shooter	Atari	4.00	0.26	0.0	0.05
1	Missile Command	2600	1980.0	Shooter	Atari	2.56	0.17	0.0	0.03
2	Kaboom!	2600	1980.0	Misc	Activision	1.07	0.07	0.0	0.01
3	Defender	2600	1980.0	Misc	Atari	0.99	0.05	0.0	0.01
4	Boxing	2600	1980.0	Fighting	Activision	0.72	0.04	0.0	0.01

Next steps:

[Generate code with df](#)[View recommended plots](#)[New interactive sheet](#)

```
df.fillna(0, inplace=True)
```

```
df['Global_Sales'] = df['NA_Sales'] + df['EU_Sales'] + df['JP_Sales'] + df['Other_Sales']
```

```
sorted_df = df.sort_values(by='Global_Sales', ascending=False)
```

```
sorted_df.head()
```

	Name	Platform	Year	Genre	Publisher	NA_Sales	EU_Sales	JP_Sales	Other_Sales	Global_Sales
6109	Wii Sports	Wii	2006.0	Sports	Nintendo	41.49	29.02	3.77	8.46	82.74
122	Super Mario Bros.	NES	1985.0	Platform	Nintendo	29.08	3.58	6.81	0.77	40.24
8315	Mario Kart Wii	Wii	2008.0	Racing	Nintendo	15.85	12.88	3.79	3.31	35.83
9743	Wii Sports Resort	Wii	2009.0	Sports	Nintendo	15.75	11.01	3.28	2.96	33.00
705	Pokemon Red/Pokemon Blue	GB	1996.0	Role-Playing	Nintendo	11.27	8.89	10.22	1.00	31.38

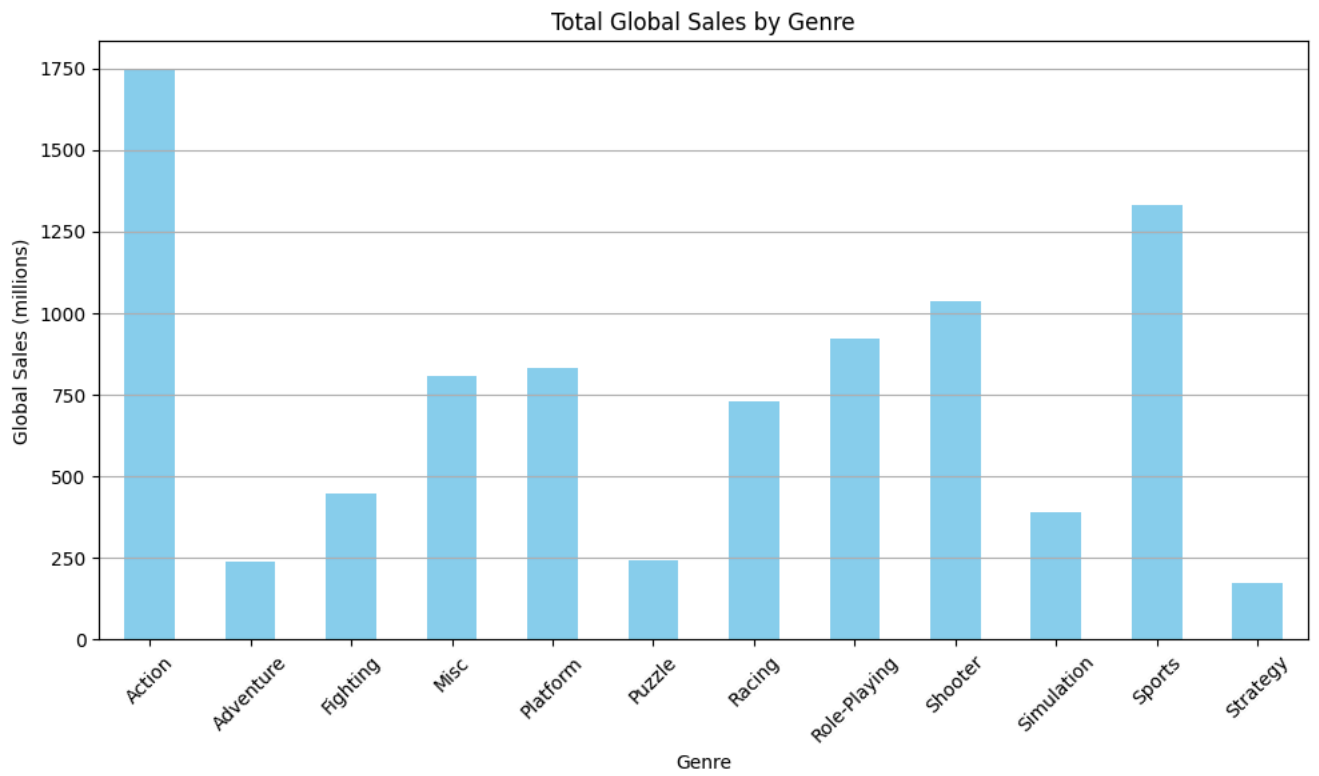
Next steps:

[Generate code with sorted_df](#)[View recommended plots](#)[New interactive sheet](#)

```
import matplotlib.pyplot as plt
```

```
genre_sales = df.groupby('Genre')['Global_Sales'].sum()
```

```
plt.figure(figsize=(10,6))
genre_sales.plot(kind='bar', color='skyblue')
plt.title("Total Global Sales by Genre")
plt.xlabel("Genre")
plt.ylabel("Global Sales (millions)")
plt.xticks(rotation=45)
plt.grid(axis='y')
plt.tight_layout()
plt.show()
```



```
gta_df = df[df['Name'].str.contains('Grand Theft Auto', case=False, na=False)]

gta_summary = gta_df[['Name', 'Platform', 'Year', 'EU_Sales', 'JP_Sales']].copy()
gta_summary['EU_JP_Sales'] = gta_summary['EU_Sales'] + gta_summary['JP_Sales']

gta_summary
```

Next steps:

Generate code with gta_summary

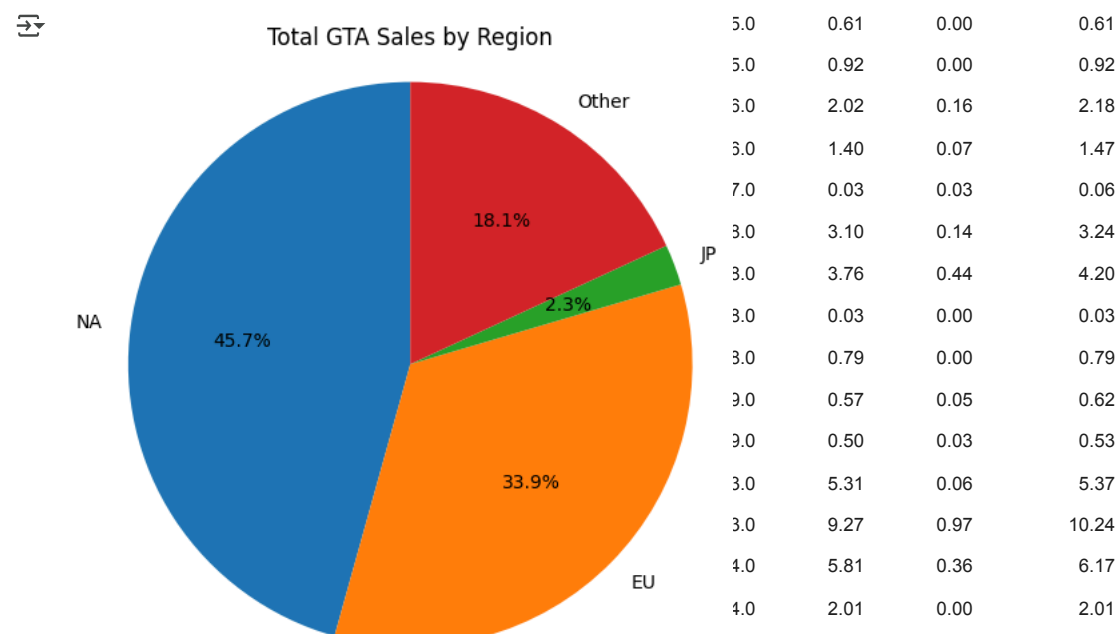
Get view recommended plots

New interactive sheet

	Name	Platform	Year	EU_Sales	JP_Sales	EU_JP_Sales	
999	Grand Theft Auto	PS	1997.0	1.35	0.04	1.39	
1290	Grand Theft Auto 2	PS	1998.0	2.07	0.00	2.07	
1469	Grand Theft Auto: Mission Pack #1, London 1969	PS	1998.0	0.04	0.00	0.04	
2323	Grand Theft Auto III	PS2	2001.0	4.51	0.30	4.81	
2805	Grand Theft Auto: Vice City	PS2	2002.0	5.49	0.47	5.96	

```
na = gta_df['NA_Sales'].sum()
eu = gta_df['EU_Sales'].sum()
jp = gta_df['JP_Sales'].sum()
ot = gta_df['Other_Sales'].sum()

plt.figure(figsize=(6,6))
plt.pie([na, eu, jp, ot], labels=['NA', 'EU', 'JP', 'Other'], autopct='%1.1f%%', startangle=90)
plt.title("Total GTA Sales by Region")
plt.axis('equal')
plt.show()
```



```
In [12]: import numpy as np
```

```
In [11]: arr = np.random.randint(1, 101, size=(5, 5)) #original array  
print(arr)
```

```
[[15  5 89 44 66]  
 [51 90 95 20 93]  
 [82 64 15 71 81]  
 [76 57 64 57 38]  
 [53 29 46  9 79]]
```

```
In [10]: print(arr[2, 2]) #middle
```

```
98
```

```
In [9]: print(np.mean(arr, axis=1))
```

```
[42.4 83.4 61.4 30.4 55.6]
```

```
In [8]: overall_mean = np.mean(arr)  
print(overall_mean)  
print(arr[arr > overall_mean])
```

```
54.64  
[100  95  98  85  57  99  78  98  57  81  90  68  89  59  56]
```

```
In [13]: def numpy_spiral_order(matrix):  
    result = []  
    top, bottom = 0, matrix.shape[0] - 1  
    left, right = 0, matrix.shape[1] - 1  
  
    while top <= bottom and left <= right:  
        for i in range(left, right + 1):  
            result.append(matrix[top, i])  
            top += 1  
  
        for i in range(top, bottom + 1):  
            result.append(matrix[i, right])  
            right -= 1  
  
        if top <= bottom:  
            for i in range(right, left - 1, -1):  
                result.append(matrix[bottom, i])  
                bottom -= 1  
  
        if left <= right:  
            for i in range(bottom, top - 1, -1):  
                result.append(matrix[i, left])  
                left += 1  
  
    return result
```

```
In [14]: print("Spiral order:", numpy_spiral_order(arr))
```

```
Spiral order: [15, 5, 89, 44, 66, 93, 81, 38, 79, 9, 46, 29, 53, 76, 82, 5  
1, 90, 95, 20, 71, 57, 64, 57, 64, 15]
```