Book Sales Analysis

The file Books_Data_Clean.csv contains comprehensive information on book sales, ratings, and genres, including publishing year, author details, ratings, sales performance data, and genre classification

- Publishing Year: The year in which the book was published. (Numeric)
- Book Name: The title of the book. (Text)
- Author: The name of the author of the book. (Text)
- language_code: The code representing the language in which the book is written. (Text)
- Author_Rating: The rating of the author based on their previous works. (Numeric)
- Book_average_rating: The average rating given to the book by readers. (Numeric)
- Book_ratings_count: The number of ratings given to the book by readers. (Numeric)
- genre: The genre or category to which the book belongs. (Text)
- gross sales: The total sales revenue generated by a specific book. (Numeric)
- publisher revenue: The revenue earned by a publisher from selling a specific book. (Numeric)
- sale price: The price at which a specific book was sold. (Numeric)
- sales rank: The rank of a particular book based on its sale performance. (Numeric)
- units sold: The number of units sold for any particular book. (Numeric)

Import Liberaies

In [5]:

```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
from warnings import filterwarnings
filterwarnings("ignore")
```

In [19]:

```
Book_Data = pd.read_csv("Books_Data_Clean.csv")
```

In [52]:

```
Book_Data.head()
```

Out[52]:

	Publishing Year	Book Name	Author	language_code	Author_Rating	Book_average_rating	Book_ratings_count	genre	gross sales
0	1975.0	Beowulf	Unknown, Seamus Heaney	en-US	Novice	3.42	155903	genre fiction	34160.0
1	1987.0	Batman: Year One	Frank Miller, David Mazzucchelli, Richmond Lew...	eng	Intermediate	4.23	145267	genre fiction	12437.5
2	2015.0	Go Set a Watchman	Harper Lee	eng	Novice	3.31	138669	genre fiction	47795.0
3	2008.0	When You Are Engulfed in Flames	David Sedaris	en-US	Intermediate	4.04	150898	fiction	41250.0
4	2011.0	Daughter of Smoke & Bone	Laini Taylor	eng	Intermediate	4.04	198283	genre fiction	37952.5

In [21]:

```
Book_Data.drop("index",axis =1,inplace=True)
```

check the no of columns and rows

In [22]:

```
print("shape :",Book_Data.shape)
```

```
shape : (1070, 14)
```

In [23]:

```
Book_Data.describe()
```

Out[23]:

	Publishing Year	Book_average_rating	Book_ratings_count	gross sales	publisher revenue	sale price	sales rank	units sol
count	1069.000000	1070.000000	1070.000000	1070.000000	1070.000000	1070.000000	1070.000000	1070.00000
mean	1971.377923	4.007000	94909.913084	1856.622944	843.281030	4.869561	611.652336	9676.98037
std	185.080257	0.247244	31513.242518	3936.924240	2257.596743	3.559919	369.849830	15370.57130
min	-560.000000	2.970000	27308.000000	104.940000	0.000000	0.990000	1.000000	106.00000
25%	1985.000000	3.850000	70398.000000	372.465000	0.000000	1.990000	287.500000	551.25000
50%	2003.000000	4.015000	89309.000000	809.745000	273.078000	3.990000	595.500000	3924.00000
75%	2010.000000	4.170000	113906.500000	1487.957500	721.180500	6.990000	932.500000	5312.25000
max	2016.000000	4.770000	206792.000000	47795.000000	28677.000000	33.860000	1273.000000	61560.00000

In [27]:

```
Book_Data.columns
```

Out[27]:

```
Index(['Publishing Year', 'Book Name', 'Author', 'language_code',
       'Author_Rating', 'Book_average_rating', 'Book_ratings_count', 'genre',
       'gross sales', 'publisher revenue', 'sale price', 'sales rank',
       'Publisher ', 'units sold'],
      dtype='object')
```

In [29]:

```
Book_Data = Book_Data[Book_Data["Publishing Year"] >1900]
```

Checking Null values

In [30]:

```
Book_Data.isnull().sum()
```

Out[30]:

```
Publishing Year         0
Book Name              21
Author                  0
language_code          49
Author_Rating           0
Book_average_rating     0
Book_ratings_count      0
genre                   0
gross sales             0
publisher revenue       0
sale price              0
sales rank              0
Publisher               0
units sold              0
dtype: int64
```

In [32]:

```
Book_Data.dropna(subset="Book Name",inplace=True)
```

In [33]:

```
Book_Data.isnull().sum()
```

Out[33]:

```
Publishing Year         0
Book Name               0
Author                  0
language_code          47
Author_Rating           0
Book_average_rating     0
Book_ratings_count      0
genre                   0
gross sales             0
publisher revenue       0
sale price              0
sales rank              0
Publisher               0
units sold              0
dtype: int64
```

In [35]:

```
Book_Data.duplicated().sum()
```

Out[35]:

```
np.int64(0)
```

In [36]:

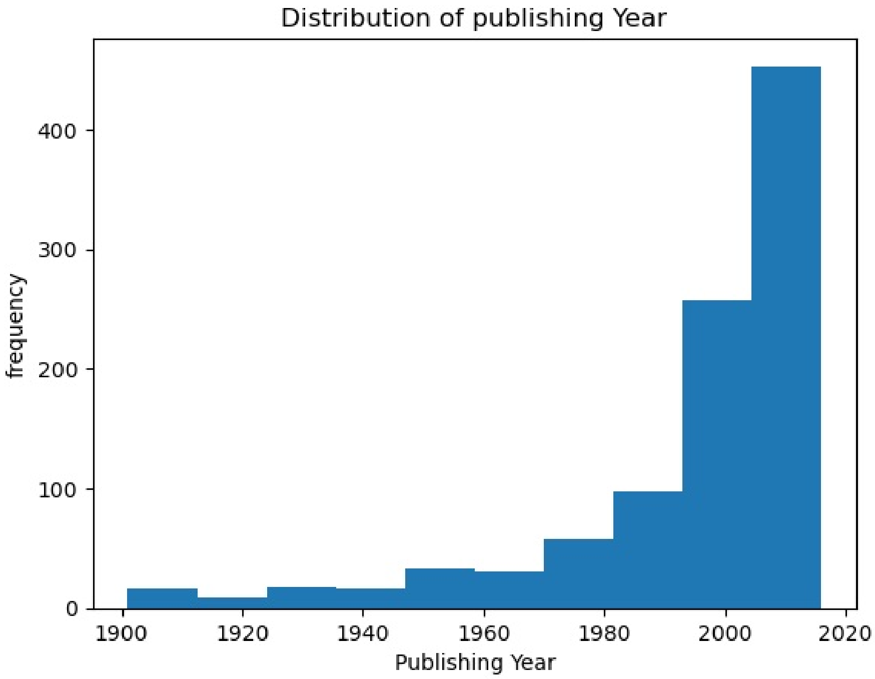
```
Book_Data.nunique()
```

```
Out[36]:  Publishing Year        101
          Book Name              987
          Author                 669
          language_code            8
          Author_Rating            4
          Book_average_rating    133
          Book_ratings_count     983
          genre                    4
          gross sales            774
          publisher revenue      570
          sale price             143
          sales rank             818
          Publisher                9
          units sold             470
          dtype: int64
```

Year Distribution

```
In [39]:  plt.hist(Book_Data["Publishing Year"])
          plt.xlabel("Publishing Year")
          plt.ylabel("frequency")
          plt.title("Distribution of publishing Year")
```

```
Out[39]:  Text(0.5, 1.0, 'Distribution of publishing Year')
```

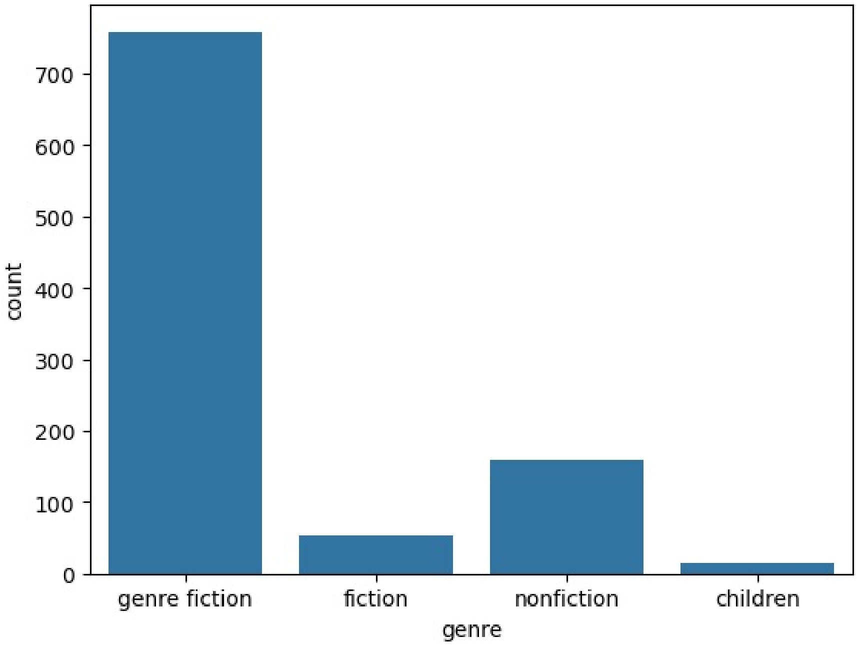


```
In [47]:  genre_count = Book_Data['genre'].value_counts()
          genre_count
```

```
Out[47]:  genre
          genre fiction    759
          nonfiction       160
          fiction           54
          children          15
          Name: count, dtype: int64
```

```
In [51]:  sns.countplot(data = Book_Data,x= "genre")
```

```
Out[51]:  <Axes: xlabel='genre', ylabel='count'>
```



```
In [55]: Book_Data.groupby("Book Name")["Book_average_rating"].mean().sort_values(ascending=False).head()
```

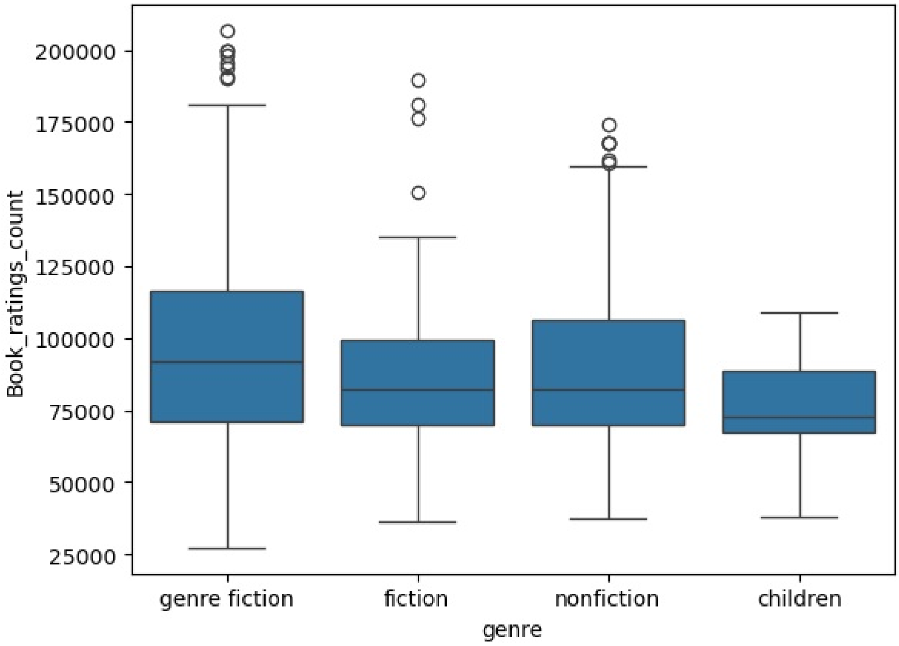
```
Out[55]: Book Name
         Words of Radiance                                               4.77
         A Court of Mist and Fury                                        4.72
         The Essential Calvin and Hobbes: A Calvin and Hobbes Treasury    4.65
         The Way of Kings                                                4.64
         Calvin and Hobbes                                               4.61
         Name: Book_average_rating, dtype: float64
```

```
In [57]: Book_Data.columns
```

```
Out[57]: Index(['Publishing Year', 'Book Name', 'Author', 'language_code',
                'Author_Rating', 'Book_average_rating', 'Book_ratings_count', 'genre',
                'gross sales', 'publisher revenue', 'sale price', 'sales rank',
                'Publisher ', 'units sold'],
               dtype='object')
```

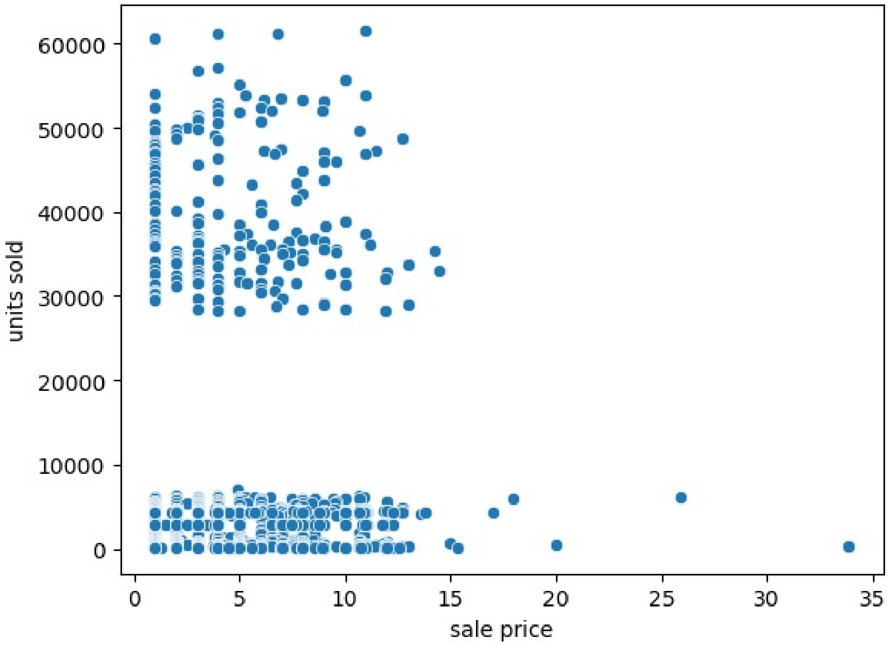
```
In [58]: sns.boxplot(data = Book_Data,x = "genre",y= "Book_ratings_count")
```

```
Out[58]: <Axes: xlabel='genre', ylabel='Book_ratings_count'>
```



```
In [59]: sns.scatterplot(data = Book_Data,x= "sale price",y= "units sold")
```

```
Out[59]: <Axes: xlabel='sale price', ylabel='units sold'>
```



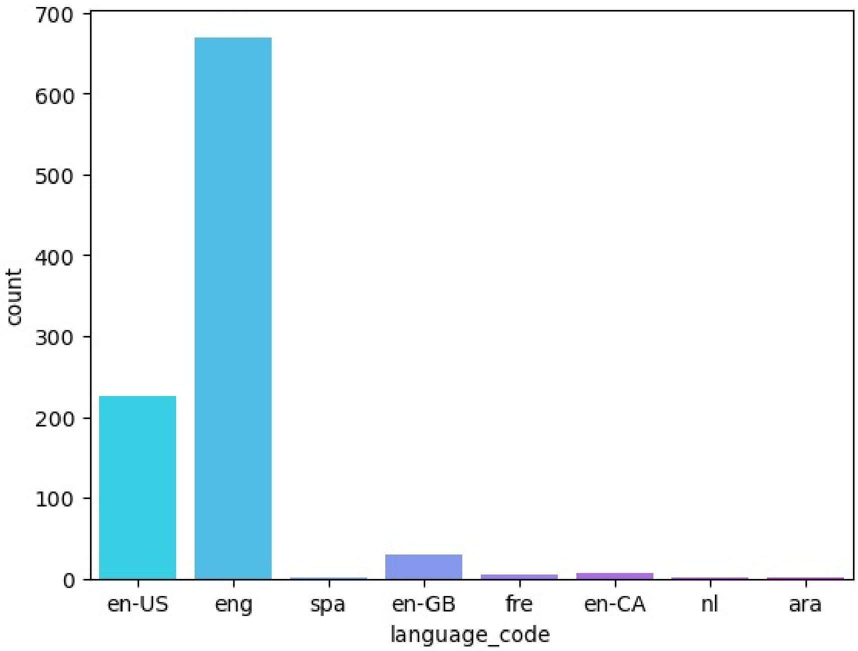
- where the Sales price is low the unit sold is increase

```
In [70]: Book_Data["language_code"].value_counts()
```

```
Out[70]: language_code
         eng      670
         en-US    226
         en-GB     29
         en-CA      7
         fre        4
         spa        2
         ara        2
         nl         1
         Name: count, dtype: int64
```

```
In [69]: sns.countplot(data = Book_Data,x = "language_code",palette="cool")
```

```
Out[69]: <Axes: xlabel='language_code', ylabel='count'>
```



Most books are used languages are **eng** then en-US

```
In [71]: Book_Data.columns
```

```
Out[71]: Index(['Publishing Year', 'Book Name', 'Author', 'language_code',
                'Author_Rating', 'Book_average_rating', 'Book_ratings_count', 'genre',
                'gross sales', 'publisher revenue', 'sale price', 'sales rank',
                'Publisher ', 'units sold'],
               dtype='object')
```

Which publisher get higher revenu based on their names

```
In [82]: revenue = Book_Data.groupby("Publisher ")["publisher revenue"].sum()
         revenue.sort_values(ascending =False)
```

```
Out[82]: Publisher
         Penguin Group (USA) LLC                191581.104
         Random House LLC                       174956.244
         Amazon Digital Services,  Inc.         141767.772
         HarperCollins Publishers               121769.814
         Hachette Book Group                    107410.968
         Simon and Schuster Digital Sales Inc    46858.206
         Macmillan                               31249.830
         HarperCollins Publishing                 2830.806
         HarperCollins Christian Publishing       2135.670
         Name: publisher revenue, dtype: float64
```

```
In [83]: Book_Data.Author_Rating.value_counts()
```

```
Out[83]: Author_Rating
         Intermediate    576
         Excellent       336
         Famous           48
         Novice           28
         Name: count, dtype: int64
```

who are the Excellent Author

```
In [85]: Book_Data[Book_Data.Author_Rating =="Excellent"]
```

Out[85]:

	Publishing Year	Book Name	Author	language_code	Author_Rating	Book_average_rating	Book_ratings_count	genre
279	2003.0	æ¡œè˜-é«˜æ ¡ãƒ›ã‚¹ãƒˆéƒ¨ 1	Bisco Hatori	eng	Excellent	4.36	113881	genre fiction
281	2012.0	Fallen Too Far (Too Far, #1)	Abbi Glines	eng	Excellent	4.21	138871	genre fiction
284	2005.0	No Country for Old Men	Cormac McCarthy	eng	Excellent	4.12	100513	genre fiction
286	1986.0	Howl's Moving Castle	Diana Wynne Jones	eng	Excellent	4.30	123945	genre fiction
289	1989.0	The Remains of the Day	Kazuo Ishiguro	eng	Excellent	4.10	105892	nonfiction
...	...	...	...	...	...	...	...	...
1062	1982.0	Magician	Raymond E. Feist	en-US	Excellent	4.17	62432	genre fiction
1064	1994.0	Long Walk to Freedom: The Autobiography of Nel...	Nelson Mandela	eng	Excellent	4.31	43927	genre fiction
1066	1989.0	The Power of One	Bryce Courtenay	eng	Excellent	4.34	57312	genre fiction
1068	2011.0	Night Road	Kristin Hannah	en-US	Excellent	4.17	58028	genre fiction
1069	1999.0	Tripwire	Lee Child	eng	Excellent	4.07	55251	genre fiction

336 rows × 14 columns

In [91]:

```
Book_Data.groupby("Author_Rating")["Book_ratings_count"].mean().sort_values(ascending=False)
```

Out[91]:

```
Author_Rating
Intermediate    101400.272569
Famous           98295.250000
Novice           87318.464286
Excellent        83804.800595
Name: Book_ratings_count, dtype: float64
```

Which Author get highest growth sale

In [99]:

```
growth_Sales = Book_Data.groupby("Author")["gross sales"].max().sort_values(ascending =False).head()
growth_Sales
```

Out[99]:

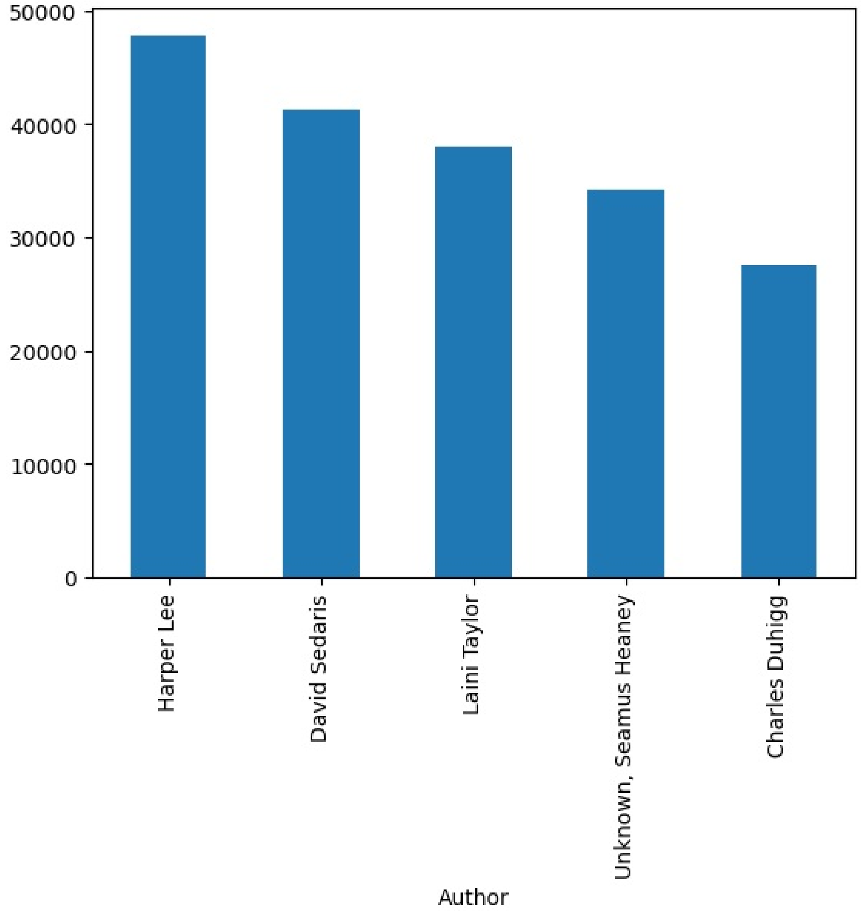
```
Author
Harper Lee                47795.00
David Sedaris             41250.00
Laini Taylor              37952.50
Unknown, Seamus Heaney    34160.00
Charles Duhigg            27491.67
Name: gross sales, dtype: float64
```

In [103…

```
growth_Sales.plot(kind = "bar")
```

Out[103…

```
<Axes: xlabel='Author'>
```



In [97]:

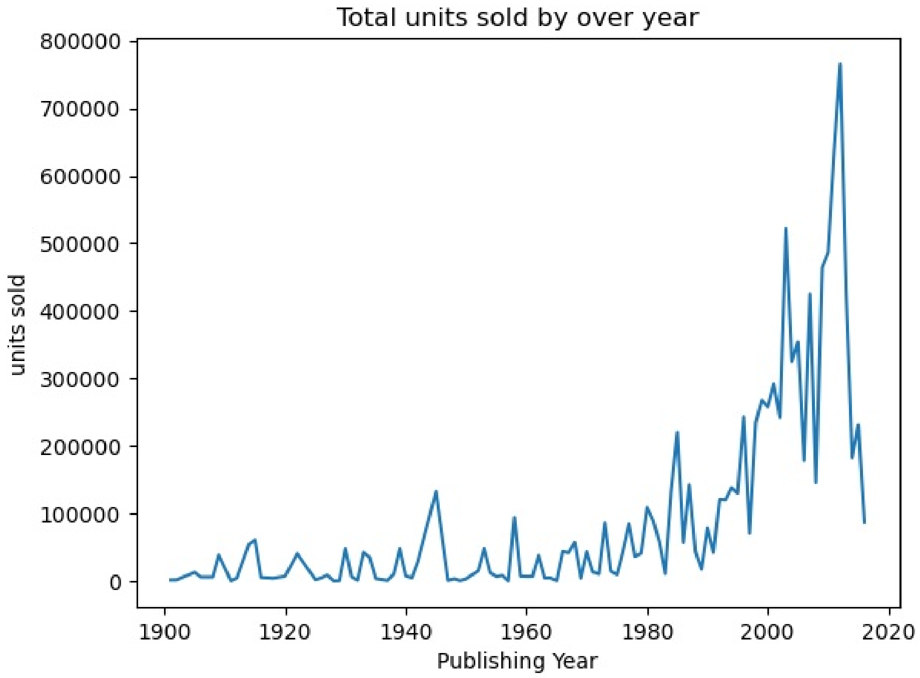
```
Book_Data.groupby("Book Name")["sales rank"].max().sort_values(ascending =False).head()
```

Out[97]:

```
Book Name
Tripwire              1273
Night Road            1272
The Maltese Falcon    1271
The Power of One      1270
Gray Mountain         1268
Name: sales rank, dtype: int64
```

In [108…

```
Book_Data.groupby("Publishing Year")["units sold"].sum().plot(kind = "line")
plt.xlabel("Publishing Year")
plt.ylabel("units sold")
plt.title("Total units sold by over year")
plt.show()
```



- The data shows a long-term upward trend in book sales from 1900 to 2015.
- The industry experiences:
  - Slow growth (1900–1950)
  - growth (1950–1980)
  - Rapid expansion (1980–2015)
- After reaching a historical peak, there is a decline, possibly due to:
  - Shift to digital books
  - Changes in consumer behavior
  - Market saturation
  - Fewer blockbuster titles during the years after the peak