BEST SELLING BOOKS ANALYSIS

INTRODUCTION

The goal of this analysis was to analyze book sales data over a number of years to draw insights in python. The dataset used for this analysis has 6 columns namely,Book,Author(s),Original language,First published,Approximate sales in millions and Genre. It also has a total of 174 entries,with a few entries missing in the Genre column.

The dataset used for this project was obtained from kaggle (https://www.kaggle.com/datasets/drahulsingh/best-selling-books/data)

DATA COLLECTION

The dataset was in a csv format.I downloaded the dataset to local storage and loaded it into jupyter notebook by passing the file in the parentheses in `pd.read_csv()` . The whole DataFrame was loaded using `.to_string()`

All relevant libraries and modules were imported at the beginning of the analysis

In [1]:

```
#importing libraries
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import datetime
```

In [2]:

```
#reading dataset
books_data=pd.read_csv(r"C:\Users\user\Downloads\Compressed\best-selling-books
print(books_data.to_string())
```

```
                                                                         Bo
ok                                   Author(s) Original language  First pub
lished  Approximate sales in millions
Genre
0                                                        A Tale of Two Citi
es                             Charles Dickens           English
1859                          200.0
Historical fiction
1                                         The Little Prince (Le Petit Princ
e)                    Antoine de Saint-Exupéry            French
1943                          200.0
Novella
2                                    Harry Potter and the Philosopher's Sto
ne                               J. K. Rowling           English
1997                          120.0
Fantasy
3                                                    And Then There Were No
ne                             Agatha Christie           English
1939                          100.0
```

DATA EXPLORATION AND CLEANING

Since the DataFrame was already well-structured,I only went through a few steps at this stage

- Checked the column names and few entries from the DataFrame with the `.head()` method
- Checked summary statistics with the `.describe()` method
- Used the `.info()` method to find details such as data types ,non-null values of the DataFrame
- Utilized the `.shape` attribute to check number of rows and columns of the DataFrame. The number of rows tell the number of entries in the DataFrame
- Filled the null entries in the Genre column by passing 'Unknown' in the parentheses in `.fillna()`
- `.duplicated()` to check for duplicates

In [3]:
```
books_data.head(10)
```

Out[3]:

	Book	Author(s)	Original language	First published	Approximate sales in millions	Genre
0	A Tale of Two Cities	Charles Dickens	English	1859	200.0	Historical fiction
1	The Little Prince (Le Petit Prince)	Antoine de Saint-Exupéry	French	1943	200.0	Novella
2	Harry Potter and the Philosopher's Stone	J. K. Rowling	English	1997	120.0	Fantasy
3	And Then There Were None	Agatha Christie	English	1939	100.0	Mystery
4	Dream of the Red Chamber (紅樓夢)	Cao Xueqin	Chinese	1791	100.0	Family saga
5	The Hobbit	J. R. R. Tolkien	English	1937	100.0	Fantasy
6	The Lion, the Witch and the Wardrobe	C. S. Lewis	English	1950	85.0	Fantasy, Children's fiction
7	She: A History of Adventure	H. Rider Haggard	English	1887	83.0	Adventure
8	Vardi Wala Gunda (वर्दी वाला गुंडा)	Ved Prakash Sharma	Hindi	1992	80.0	Detective
9	The Da Vinci Code	Dan Brown	English	2003	80.0	Mystery thriller

In [4]:
```
books_data.describe()
```

Out[4]:

	First published	Approximate sales in millions
count	174.000000	174.000000
mean	1962.522989	30.097126
std	64.268737	27.957985
min	1304.000000	10.000000
25%	1947.000000	14.000000
50%	1974.000000	20.000000
75%	1995.000000	36.300000
max	2018.000000	200.000000

In [5]:

```
books_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 174 entries, 0 to 173
Data columns (total 6 columns):
 #   Column                        Non-Null Count  Dtype  
---  ------                        --------------  -----  
 0   Book                          174 non-null    object 
 1   Author(s)                     174 non-null    object 
 2   Original language             174 non-null    object 
 3   First published               174 non-null    int64  
 4   Approximate sales in millions 174 non-null    float64
 5   Genre                         118 non-null    object 
dtypes: float64(1), int64(1), object(4)
memory usage: 8.3+ KB
```

In [6]:

```
books_data.shape
```

Out[6]:

```
(174, 6)
```

In [7]:

```
books_data.isnull().sum()
```

Out[7]:

```
Book                              0
Author(s)                         0
Original language                 0
First published                   0
Approximate sales in millions     0
Genre                            56
dtype: int64
```

In [8]:

```
books_data['Genre'].fillna('Unknown',inplace=True)
```

In [9]:

```
books_data['Genre'].info()
```

```
<class 'pandas.core.series.Series'>
RangeIndex: 174 entries, 0 to 173
Series name: Genre
Non-Null Count  Dtype 
--------------  ----- 
174 non-null    object
dtypes: object(1)
memory usage: 1.5+ KB
```

```
In [57]: books_data.duplicated()
```

```
Out[57]: 0      False
         1      False
         2      False
         3      False
         4      False
                ...  
         169    False
         170    False
         171    False
         172    False
         173    False
         Length: 174, dtype: bool
```

DATA VISUALIZATION

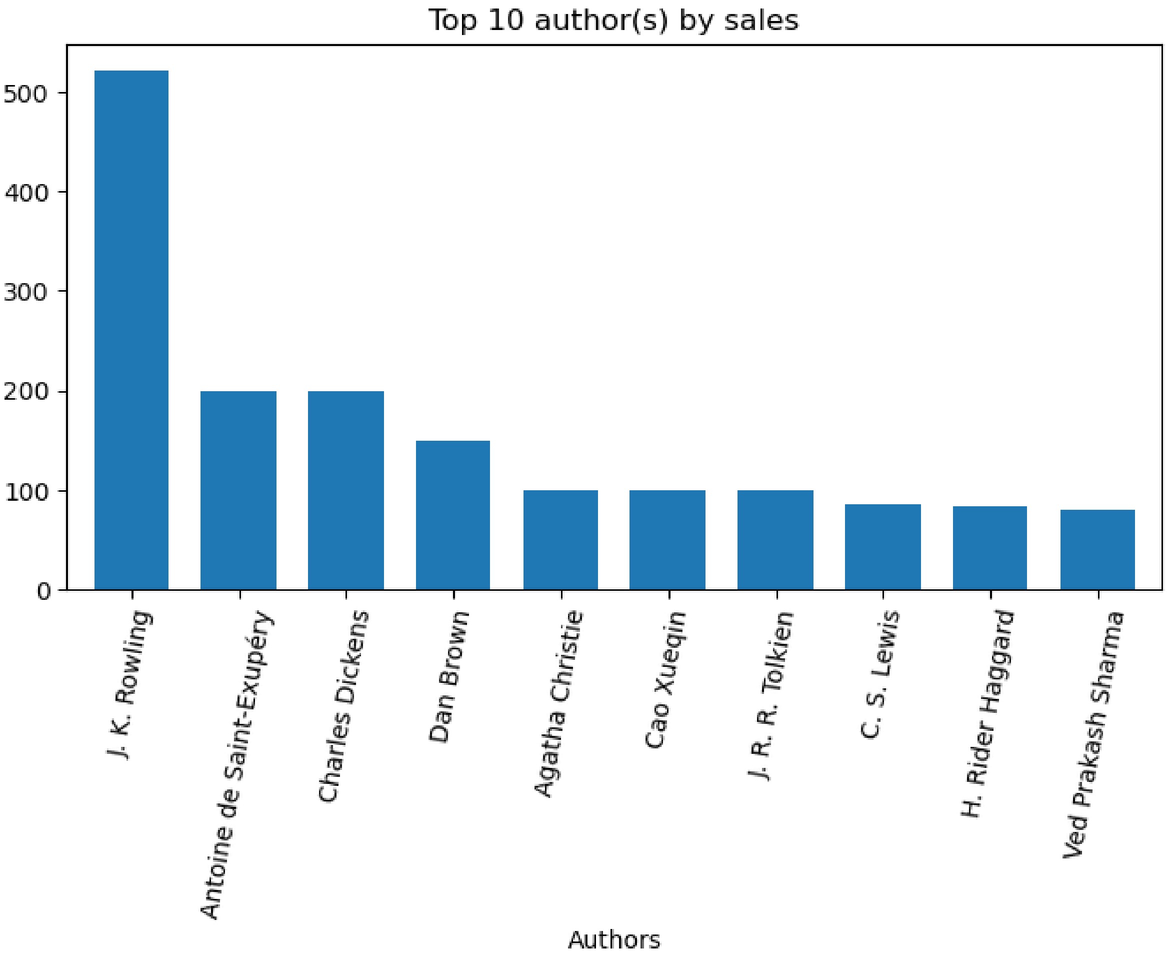
```
In [10]: top_selling_books=books_data.sort_values('Approximate sales in millions',ascen
         print('the top 10 selling books are:\n',top_selling_books)
```

```
the top 10 selling books are:
                                         Book                 Author(s)  \
0                      A Tale of Two Cities           Charles Dickens
1       The Little Prince (Le Petit Prince)  Antoine de Saint-Exupéry
2  Harry Potter and the Philosopher's Stone             J. K. Rowling
4            Dream of the Red Chamber (紅樓夢)                Cao Xueqin
5                                The Hobbit          J. R. R. Tolkien
3                  And Then There Were None           Agatha Christie
6      The Lion, the Witch and the Wardrobe               C. S. Lewis
7               She: A History of Adventure          H. Rider Haggard
8       Vardi Wala Gunda (वर्दी वाला गुंडा)        Ved Prakash Sharma
9                         The Da Vinci Code                 Dan Brown

  Original language  First published  Approximate sales in millions  \
0           English             1859                          200.0
1            French             1943                          200.0
2           English             1997                          120.0
4           Chinese             1791                          100.0
5           English             1937                          100.0
3           English             1939                          100.0
6           English             1950                           85.0
7           English             1887                           83.0
8             Hindi             1992                           80.0
9           English             2003                           80.0

                         Genre
0           Historical fiction
1                      Novella
2                      Fantasy
4                  Family saga
5                      Fantasy
3                      Mystery
6  Fantasy, Children's fiction
7                    Adventure
8                    Detective
9             Mystery thriller
```

In [46]:
```
#top author(s) by sales
top_author = books_data.groupby('Author(s)')['Approximate sales in millions'].
plt.figure(figsize=(8,4))
top_author.plot(kind='bar',width=0.7)
plt.title('Top 10 author(s) by sales')
plt.xlabel('Authors')
#plt.ylabel('Total sales(millions)')
plt.xticks(rotation=80)
plt.show()
```

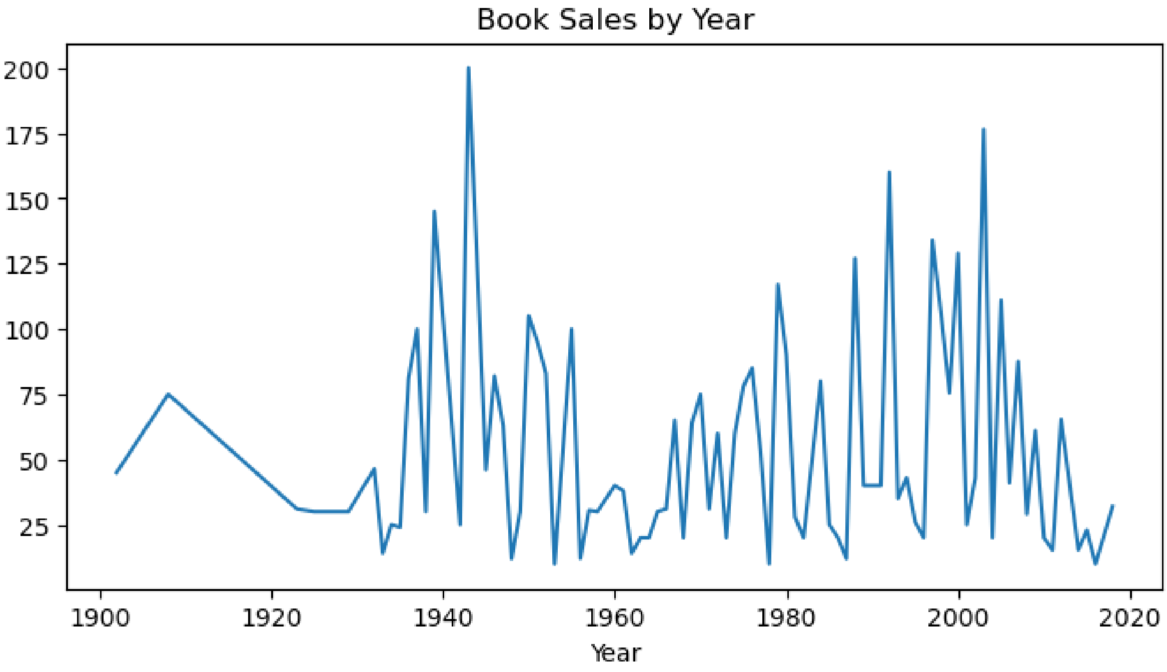


In [45]:

```
grouping = books_data.groupby('First published')['Approximate sales in millions
line = grouping.loc[grouping['First published']>=1900]
plt.figure(figsize=(8,4))
x = line['First published']
y = line['Approximate sales in millions']
plt.plot( x, y)
plt.xlabel('Year')
plt.title('Book Sales by Year')
```

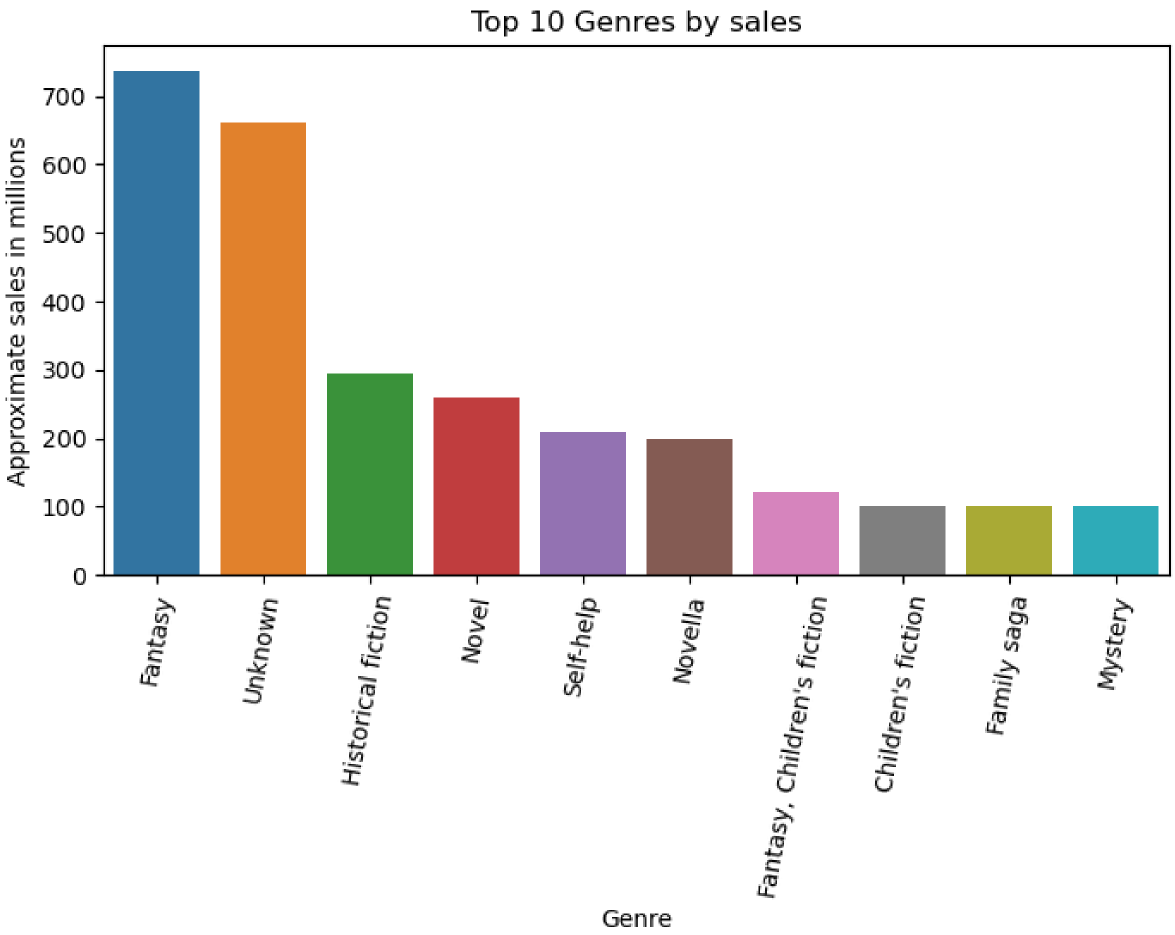
Out[45]:

```
Text(0.5, 1.0, 'Book Sales by Year')
```



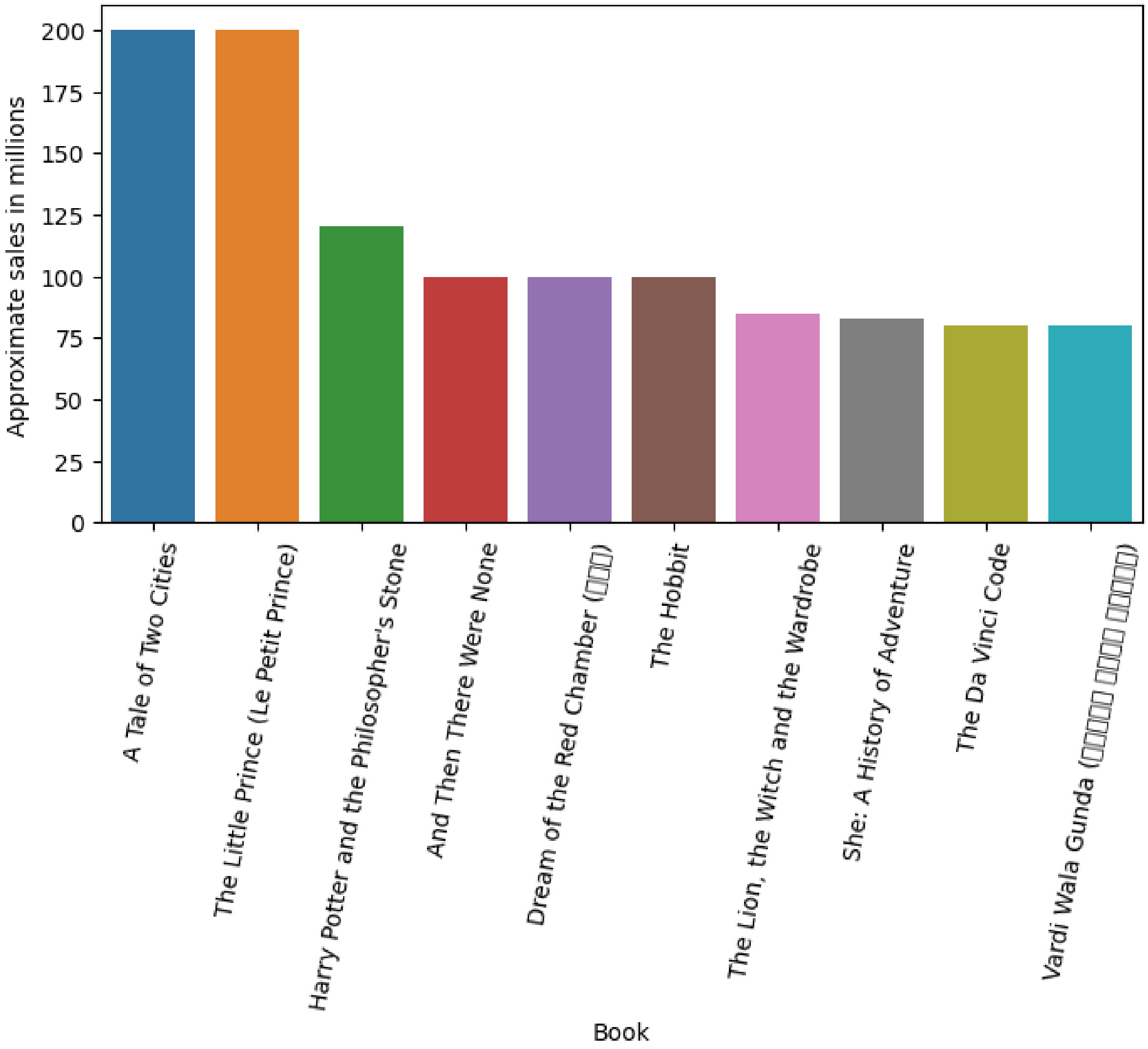
In [47]:

```
sales_by_genre = books_data.groupby('Genre')['Approximate sales in millions'].s
top_10_genres = sales_by_genre.nlargest(10, 'Approximate sales in millions')
plt.figure(figsize=(8, 4))
sns.barplot(data=top_10_genres, x='Genre', y='Approximate sales in millions')
plt.title('Top 10 Genres by sales')
plt.xticks(rotation=80)
plt.show()
```



In [48]:
```
books=books_data.groupby('Book')['Approximate sales in millions'].sum().reset_
top_10_books=books.nlargest(10,'Approximate sales in millions')
plt.figure(figsize=(8,4))
sns.barplot(data=top_10_books,x='Book',y='Approximate sales in millions')
plt.xticks(rotation=80)
plt.show()
```

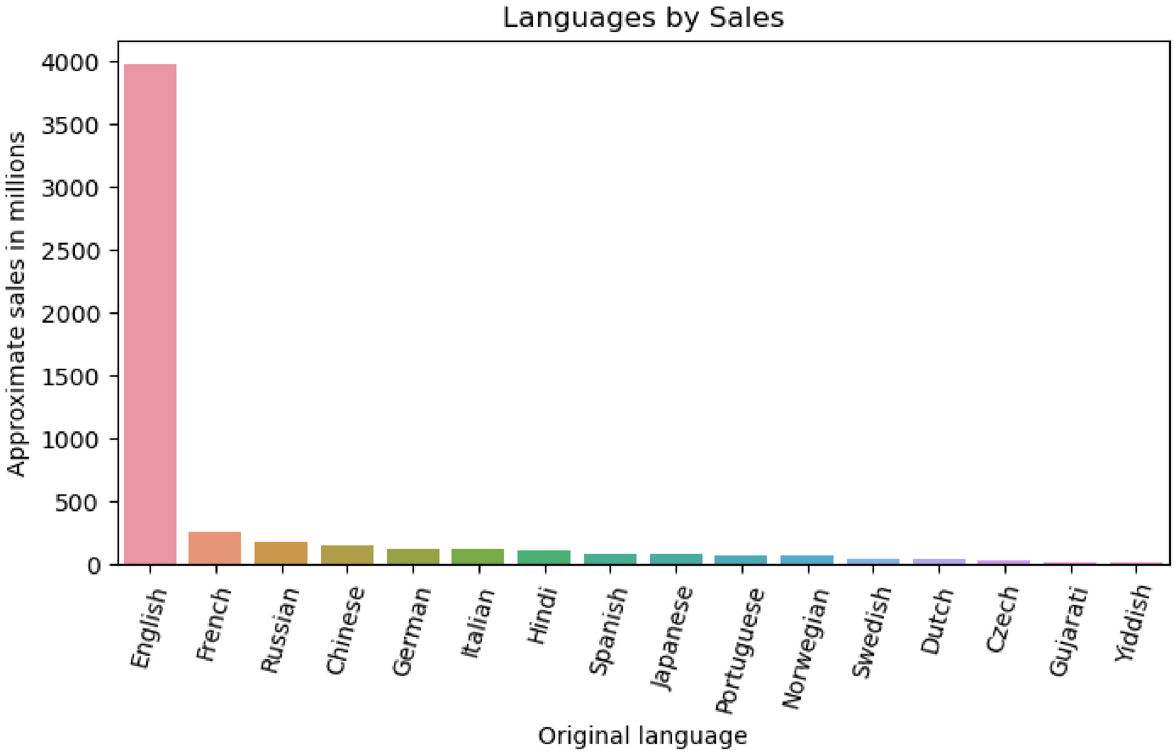
```
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 32005 (\N{CJK UNIFIED IDEOGRAPH-7D05}) missing from current
font.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 27155 (\N{CJK UNIFIED IDEOGRAPH-6A13}) missing from current
font.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 22818 (\N{CJK UNIFIED IDEOGRAPH-5922}) missing from current
font.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 2357 (\N{DEVANAGARI LETTER VA}) missing from current font.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Matplotlib currently does not support Devanagari natively.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 2352 (\N{DEVANAGARI LETTER RA}) missing from current font.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 2381 (\N{DEVANAGARI SIGN VIRAMA}) missing from current fon
t.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 2342 (\N{DEVANAGARI LETTER DA}) missing from current font.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 2368 (\N{DEVANAGARI VOWEL SIGN II}) missing from current fo
nt.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 2366 (\N{DEVANAGARI VOWEL SIGN AA}) missing from current fo
nt.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 2354 (\N{DEVANAGARI LETTER LA}) missing from current font.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 2327 (\N{DEVANAGARI LETTER GA}) missing from current font.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 2369 (\N{DEVANAGARI VOWEL SIGN U}) missing from current fon
t.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 2306 (\N{DEVANAGARI SIGN ANUSVARA}) missing from current fo
nt.
  fig.canvas.print_figure(bytes_io, **kw)
C:\Users\user\anaconda3.0\Lib\site-packages\IPython\core\pylabtools.py:152: U
serWarning: Glyph 2337 (\N{DEVANAGARI LETTER DDA}) missing from current font.
  fig.canvas.print_figure(bytes_io, **kw)
```


Approximate sales in millions
200
175
150
125
100
75
50
25
0
A Tale of Two Cities
The Little Prince (Le Petit Prince)
Harry Potter and the Philosopher's Stone
And Then There Were None
Dream of the Red Chamber (□□□)
The Hobbit
The Lion, the Witch and the Wardrobe
She: A History of Adventure
The Da Vinci Code
Vardi Wala Gunda (□□□□□ □□□□ □□□□□)
Book

In [44]:

```
language=books_data.groupby('Original language')['Approximate sales in millions

plt.figure(figsize=(8,4))
sns.barplot(x='Original language',y='Approximate sales in millions',data=langua
plt.title('Languages by Sales')
plt.xticks(rotation=75)
plt.show()
```



CONCLUSION

From the analysis,I arrived at a number of conclusions including:

- Most of the best selling books are written in English
- Amongst the top 10 genres,Fantasy has the highest amount of sales
- J.K. Rowling is the author with the highest sales amount
- A Tale of Two Cities and The Little Prince(Le petit prince) are the best selling books amongst the top 10
- There is an observed rising and falling of book sales over the years,with sales peaking in the 1940's and 2000's

In [ ]: