

```
In [3]: # importing data Amazon Top 50 Bestselling Books 2009 - 2019
import pandas as pd
books = pd.read_csv("bestsellers with categories.csv")
books.head(10)
```

Out[3]:

	Name	Author	User Rating	Reviews	Price	Year	Genre
0	10-Day Green Smoothie Cleanse	JJ Smith	4.7	17350	8	2016	Non Fiction
1	11/22/63: A Novel	Stephen King	4.6	2052	22	2011	Fiction
2	12 Rules for Life: An Antidote to Chaos	Jordan B. Peterson	4.7	18979	15	2018	Non Fiction
3	1984 (Signet Classics)	George Orwell	4.7	21424	6	2017	Fiction
4	5,000 Awesome Facts (About Everything!) (Natio...	National Geographic Kids	4.8	7665	12	2019	Non Fiction
5	A Dance with Dragons (A Song of Ice and Fire)	George R. R. Martin	4.4	12643	11	2011	Fiction
6	A Game of Thrones / A Clash of Kings / A Storm...	George R. R. Martin	4.7	19735	30	2014	Fiction
7	A Gentleman in Moscow: A Novel	Amor Towles	4.7	19699	15	2017	Fiction
8	A Higher Loyalty: Truth, Lies, and Leadership	James Comey	4.7	5983	3	2018	Non Fiction
9	A Man Called Ove: A Novel	Fredrik Backman	4.6	23848	8	2016	Fiction

```
In [4]: # Sorting top 50 books data through reviews in descending order
top_books = books.sort_values(by="Reviews", ascending=False).head(50)
top_books
```

Out[4]:

		Name	Author	User Rating	Reviews	Price	Year	Genre
534		Where the Crawdads Sing	Delia Owens	4.8	87841	15	2019	Fiction
382		The Girl on the Train	Paula Hawkins	4.1	79446	18	2015	Fiction
383		The Girl on the Train	Paula Hawkins	4.1	79446	7	2016	Fiction
32		Becoming	Michelle Obama	4.8	61133	11	2018	Non Fiction
33		Becoming	Michelle Obama	4.8	61133	11	2019	Non Fiction
137		Gone Girl	Gillian Flynn	4.0	57271	9	2014	Fiction
135		Gone Girl	Gillian Flynn	4.0	57271	10	2012	Fiction
136		Gone Girl	Gillian Flynn	4.0	57271	10	2013	Fiction
368		The Fault in Our Stars	John Green	4.7	50482	13	2014	Fiction
367		The Fault in Our Stars	John Green	4.7	50482	7	2014	Fiction
365		The Fault in Our Stars	John Green	4.7	50482	13	2012	Fiction
366		The Fault in Our Stars	John Green	4.7	50482	13	2013	Fiction
437		The Nightingale: A Novel	Kristin Hannah	4.8	49288	11	2015	Fiction
438		The Nightingale: A Novel	Kristin Hannah	4.8	49288	11	2016	Fiction
106	Fifty Shades of Grey: Book One of the Fifty Sh...		E L James	3.8	47265	14	2012	Fiction
107	Fifty Shades of Grey: Book One of the Fifty Sh...		E L James	3.8	47265	14	2013	Fiction
433		The Martian	Andy Weir	4.7	39459	9	2015	Fiction
20		All the Light We Cannot See	Anthony Doerr	4.6	36348	14	2014	Fiction
21		All the Light We Cannot See	Anthony Doerr	4.6	36348	14	2015	Fiction
338		The Alchemist	Paulo Coelho	4.7	35799	39	2014	Fiction
392	The Goldfinch: A Novel (Pulitzer Prize for Fic...		Donna Tartt	3.9	33844	20	2013	Fiction
393	The Goldfinch: A Novel (Pulitzer Prize for Fic...		Donna Tartt	3.9	33844	20	2014	Fiction

	Name	Author	User Rating	Reviews	Price	Year	Genre
409	The Hunger Games (Book 1)	Suzanne Collins	4.7	32122	8	2012	Fiction
408	The Hunger Games (Book 1)	Suzanne Collins	4.7	32122	8	2011	Fiction
407	The Hunger Games	Suzanne Collins	4.7	32122	14	2010	Fiction
491	The Wonky Donkey	Craig Smith	4.8	30183	4	2019	Fiction
490	The Wonky Donkey	Craig Smith	4.8	30183	4	2018	Fiction
515	Unbroken: A World War II Story of Survival, Re...	Laura Hillenbrand	4.8	29673	16	2010	Non Fiction
519	Unbroken: A World War II Story of Survival, Re...	Laura Hillenbrand	4.8	29673	16	2014	Non Fiction
518	Unbroken: A World War II Story of Survival, Re...	Laura Hillenbrand	4.8	29673	13	2014	Non Fiction
516	Unbroken: A World War II Story of Survival, Re...	Laura Hillenbrand	4.8	29673	16	2011	Non Fiction
517	Unbroken: A World War II Story of Survival, Re...	Laura Hillenbrand	4.8	29673	16	2012	Non Fiction
182	Inferno	Dan Brown	4.1	29651	14	2013	Fiction
399	The Handmaid's Tale	Margaret Atwood	4.3	29442	7	2017	Fiction
98	Educated: A Memoir	Tara Westover	4.7	28729	15	2019	Non Fiction
97	Educated: A Memoir	Tara Westover	4.7	28729	15	2018	Non Fiction
462	The Silent Patient	Alex Michaelides	4.5	27536	14	2019	Fiction
75	Divergent	Veronica Roth	4.6	27098	15	2013	Fiction
76	Divergent	Veronica Roth	4.6	27098	15	2014	Fiction
238	Mockingjay (The Hunger Games)	Suzanne Collins	4.5	26741	8	2012	Fiction
237	Mockingjay (The Hunger Games)	Suzanne Collins	4.5	26741	8	2011	Fiction
236	Mockingjay (The Hunger Games)	Suzanne Collins	4.5	26741	8	2010	Fiction
465	The Subtle Art of Not Giving a F*ck: A Counter...	Mark Manson	4.6	26490	15	2018	Non Fiction
466	The Subtle Art of Not Giving a F*ck: A Counter...	Mark Manson	4.6	26490	15	2019	Non Fiction

	Name	Author	User Rating	Reviews	Price	Year	Genre
464	The Subtle Art of Not Giving a F*ck: A Counter...	Mark Manson	4.6	26490	15	2017	Non Fiction
506	To Kill a Mockingbird	Harper Lee	4.8	26234	0	2014	Fiction
505	To Kill a Mockingbird	Harper Lee	4.8	26234	0	2013	Fiction
508	To Kill a Mockingbird	Harper Lee	4.8	26234	0	2016	Fiction
507	To Kill a Mockingbird	Harper Lee	4.8	26234	0	2015	Fiction
509	To Kill a Mockingbird	Harper Lee	4.8	26234	7	2019	Fiction

```
In [5]: # Scapped desired columns
top_review_books = top_books[["Name","Reviews","Year","Genre","User Rating"]]
top_review_books
```

Out[5]:

	Name	Reviews	Year	Genre	User Rating
534	Where the Crawdads Sing	87841	2019	Fiction	4.8
382	The Girl on the Train	79446	2015	Fiction	4.1
383	The Girl on the Train	79446	2016	Fiction	4.1
32	Becoming	61133	2018	Non Fiction	4.8
33	Becoming	61133	2019	Non Fiction	4.8
137	Gone Girl	57271	2014	Fiction	4.0
135	Gone Girl	57271	2012	Fiction	4.0
136	Gone Girl	57271	2013	Fiction	4.0
368	The Fault in Our Stars	50482	2014	Fiction	4.7
367	The Fault in Our Stars	50482	2014	Fiction	4.7
365	The Fault in Our Stars	50482	2012	Fiction	4.7
366	The Fault in Our Stars	50482	2013	Fiction	4.7
437	The Nightingale: A Novel	49288	2015	Fiction	4.8
438	The Nightingale: A Novel	49288	2016	Fiction	4.8
106	Fifty Shades of Grey: Book One of the Fifty Sh...	47265	2012	Fiction	3.8
107	Fifty Shades of Grey: Book One of the Fifty Sh...	47265	2013	Fiction	3.8
433	The Martian	39459	2015	Fiction	4.7
20	All the Light We Cannot See	36348	2014	Fiction	4.6
21	All the Light We Cannot See	36348	2015	Fiction	4.6
338	The Alchemist	35799	2014	Fiction	4.7
392	The Goldfinch: A Novel (Pulitzer Prize for Fic...	33844	2013	Fiction	3.9
393	The Goldfinch: A Novel (Pulitzer Prize for Fic...	33844	2014	Fiction	3.9

	Name	Reviews	Year	Genre	User Rating
409	The Hunger Games (Book 1)	32122	2012	Fiction	4.7
408	The Hunger Games (Book 1)	32122	2011	Fiction	4.7
407	The Hunger Games	32122	2010	Fiction	4.7
491	The Wonky Donkey	30183	2019	Fiction	4.8
490	The Wonky Donkey	30183	2018	Fiction	4.8
515	Unbroken: A World War II Story of Survival, Re...	29673	2010	Non Fiction	4.8
519	Unbroken: A World War II Story of Survival, Re...	29673	2014	Non Fiction	4.8
518	Unbroken: A World War II Story of Survival, Re...	29673	2014	Non Fiction	4.8
516	Unbroken: A World War II Story of Survival, Re...	29673	2011	Non Fiction	4.8
517	Unbroken: A World War II Story of Survival, Re...	29673	2012	Non Fiction	4.8
182	Inferno	29651	2013	Fiction	4.1
399	The Handmaid's Tale	29442	2017	Fiction	4.3
98	Educated: A Memoir	28729	2019	Non Fiction	4.7
97	Educated: A Memoir	28729	2018	Non Fiction	4.7
462	The Silent Patient	27536	2019	Fiction	4.5
75	Divergent	27098	2013	Fiction	4.6
76	Divergent	27098	2014	Fiction	4.6
238	Mockingjay (The Hunger Games)	26741	2012	Fiction	4.5
237	Mockingjay (The Hunger Games)	26741	2011	Fiction	4.5
236	Mockingjay (The Hunger Games)	26741	2010	Fiction	4.5
465	The Subtle Art of Not Giving a F*ck: A Counter...	26490	2018	Non Fiction	4.6
466	The Subtle Art of Not Giving a F*ck: A Counter...	26490	2019	Non Fiction	4.6

	Name	Reviews	Year	Genre	User Rating
464	The Subtle Art of Not Giving a F*ck: A Counter...	26490	2017	Non Fiction	4.6
506	To Kill a Mockingbird	26234	2014	Fiction	4.8
505	To Kill a Mockingbird	26234	2013	Fiction	4.8
508	To Kill a Mockingbird	26234	2016	Fiction	4.8
507	To Kill a Mockingbird	26234	2015	Fiction	4.8
509	To Kill a Mockingbird	26234	2019	Fiction	4.8

```
In [6]: # finding number of rows
len(top_review_books)
```

Out[6]: 50

```
In [7]: # removing duplicates
clean_top_review_books = top_review_books.drop_duplicates()
clean_top_review_books
```

Out[7]:

	Name	Reviews	Year	Genre	User Rating
534	Where the Crawdads Sing	87841	2019	Fiction	4.8
382	The Girl on the Train	79446	2015	Fiction	4.1
383	The Girl on the Train	79446	2016	Fiction	4.1
32	Becoming	61133	2018	Non Fiction	4.8
33	Becoming	61133	2019	Non Fiction	4.8
137	Gone Girl	57271	2014	Fiction	4.0
135	Gone Girl	57271	2012	Fiction	4.0
136	Gone Girl	57271	2013	Fiction	4.0
368	The Fault in Our Stars	50482	2014	Fiction	4.7
365	The Fault in Our Stars	50482	2012	Fiction	4.7
366	The Fault in Our Stars	50482	2013	Fiction	4.7
437	The Nightingale: A Novel	49288	2015	Fiction	4.8
438	The Nightingale: A Novel	49288	2016	Fiction	4.8
106	Fifty Shades of Grey: Book One of the Fifty Sh...	47265	2012	Fiction	3.8
107	Fifty Shades of Grey: Book One of the Fifty Sh...	47265	2013	Fiction	3.8
433	The Martian	39459	2015	Fiction	4.7
20	All the Light We Cannot See	36348	2014	Fiction	4.6
21	All the Light We Cannot See	36348	2015	Fiction	4.6
338	The Alchemist	35799	2014	Fiction	4.7
392	The Goldfinch: A Novel (Pulitzer Prize for Fic...	33844	2013	Fiction	3.9
393	The Goldfinch: A Novel (Pulitzer Prize for Fic...	33844	2014	Fiction	3.9
409	The Hunger Games (Book 1)	32122	2012	Fiction	4.7

	Name	Reviews	Year	Genre	User Rating
408	The Hunger Games (Book 1)	32122	2011	Fiction	4.7
407	The Hunger Games	32122	2010	Fiction	4.7
491	The Wonky Donkey	30183	2019	Fiction	4.8
490	The Wonky Donkey	30183	2018	Fiction	4.8
515	Unbroken: A World War II Story of Survival, Re...	29673	2010	Non Fiction	4.8
519	Unbroken: A World War II Story of Survival, Re...	29673	2014	Non Fiction	4.8
516	Unbroken: A World War II Story of Survival, Re...	29673	2011	Non Fiction	4.8
517	Unbroken: A World War II Story of Survival, Re...	29673	2012	Non Fiction	4.8
182	Inferno	29651	2013	Fiction	4.1
399	The Handmaid's Tale	29442	2017	Fiction	4.3
98	Educated: A Memoir	28729	2019	Non Fiction	4.7
97	Educated: A Memoir	28729	2018	Non Fiction	4.7
462	The Silent Patient	27536	2019	Fiction	4.5
75	Divergent	27098	2013	Fiction	4.6
76	Divergent	27098	2014	Fiction	4.6
238	Mockingjay (The Hunger Games)	26741	2012	Fiction	4.5
237	Mockingjay (The Hunger Games)	26741	2011	Fiction	4.5
236	Mockingjay (The Hunger Games)	26741	2010	Fiction	4.5
465	The Subtle Art of Not Giving a F*ck: A Counter...	26490	2018	Non Fiction	4.6
466	The Subtle Art of Not Giving a F*ck: A Counter...	26490	2019	Non Fiction	4.6
464	The Subtle Art of Not Giving a F*ck: A Counter...	26490	2017	Non Fiction	4.6
506	To Kill a Mockingbird	26234	2014	Fiction	4.8

	Name	Reviews	Year	Genre	User Rating
505	To Kill a Mockingbird	26234	2013	Fiction	4.8
508	To Kill a Mockingbird	26234	2016	Fiction	4.8
507	To Kill a Mockingbird	26234	2015	Fiction	4.8
509	To Kill a Mockingbird	26234	2019	Fiction	4.8

```
In [8]: len(clean_top_review_books)
```

Out[8]: 48

```
In [9]: # grouping same name books with the sum of their reviews
group_name_books = clean_top_review_books.groupby(["Name"])["Reviews"].sum().sort_values(ascending=False).reset_index()
group_name_books
```

Out[9]:

	Name	Reviews
0	Gone Girl	171813
1	The Girl on the Train	158892
2	The Fault in Our Stars	151446
3	To Kill a Mockingbird	131170
4	Becoming	122266
5	Unbroken: A World War II Story of Survival, Re...	118692
6	The Nightingale: A Novel	98576
7	Fifty Shades of Grey: Book One of the Fifty Sh...	94530
8	Where the Crawdads Sing	87841
9	Mockingjay (The Hunger Games)	80223
10	The Subtle Art of Not Giving a F*ck: A Counter...	79470
11	All the Light We Cannot See	72696
12	The Goldfinch: A Novel (Pulitzer Prize for Fic...	67688
13	The Hunger Games (Book 1)	64244
14	The Wonky Donkey	60366
15	Educated: A Memoir	57458
16	Divergent	54196
17	The Martian	39459
18	The Alchemist	35799
19	The Hunger Games	32122
20	Inferno	29651
21	The Handmaid's Tale	29442

	Name	Reviews
22	The Silent Patient	27536

```
In [10]: # Average rating of top 50 books, according to genre, from 2009 to 2019
clean_top_review_books.groupby("Genre")["User Rating"].mean().reset_index()
```

Out[10]:

	Genre	User Rating
0	Fiction	4.486486
1	Non Fiction	4.727273

```
In [11]: # Getting each genre's total reviews from 2009 to 2019
group_genre_books = clean_top_review_books.groupby(["Genre"])["Reviews"].sum().reset_index()
group_genre_books
```

Out[11]:

	Genre	Reviews
0	Fiction	1487690
1	Non Fiction	377886

```
In [12]: # total number of genre in top 50 books
clean_top_review_books["Genre"].value_counts().reset_index()
```

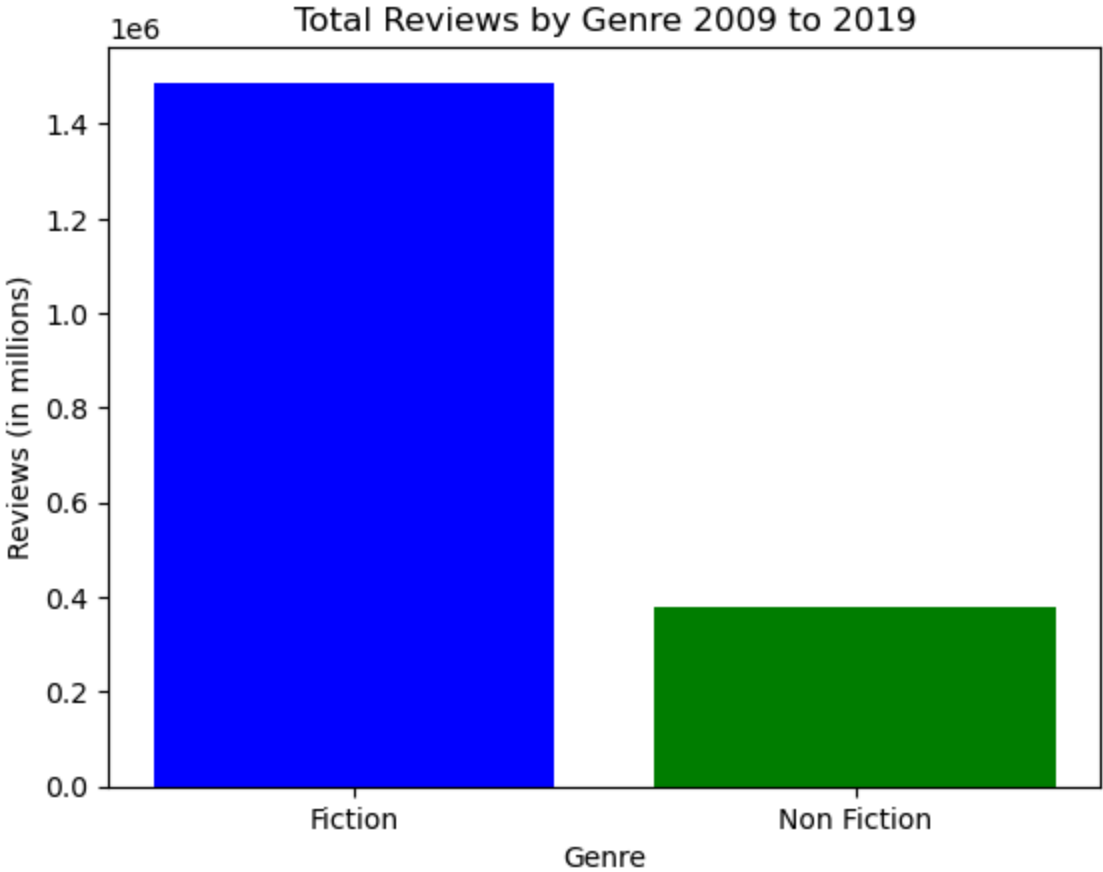
Out[12]:

	Genre	count
0	Fiction	37
1	Non Fiction	11

```
In [13]: import matplotlib.pyplot as plt
```

```
In [14]: # plotting graph of total reviews by genre
plt.bar(group_genre_books["Genre"], group_genre_books["Reviews"], color=["blue", "green"])
plt.title("Total Reviews by Genre 2009 to 2019")
plt.xlabel("Genre")
plt.ylabel("Reviews (in millions)")
```

```
plt.savefig("Total Reviews by Genre 2009 to 2019.png")
plt.show()
```



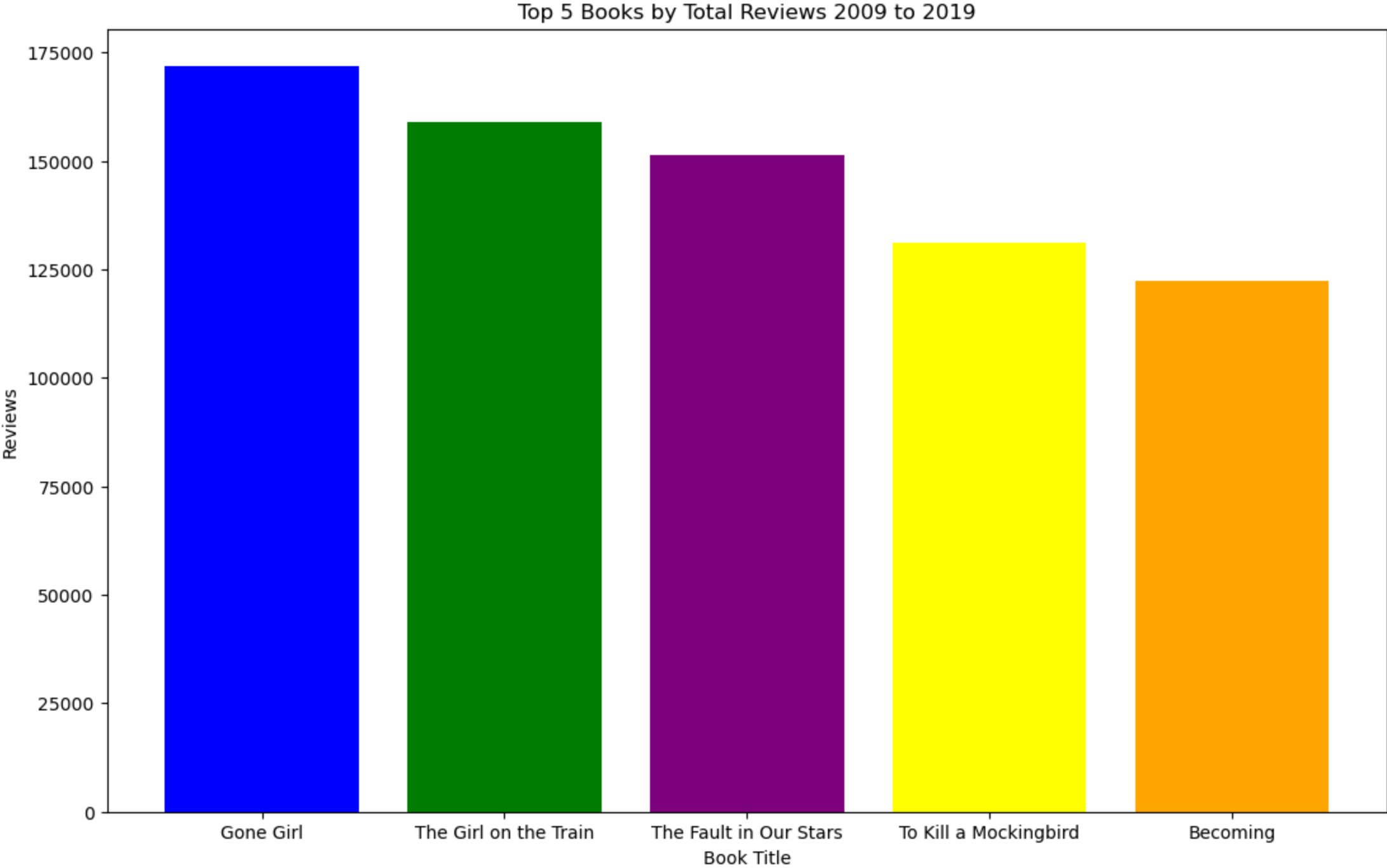
```
In [15]: top_5 = group_name_books.head()
top_5
```

Out[15]:

	Name	Reviews
0	Gone Girl	171813
1	The Girl on the Train	158892
2	The Fault in Our Stars	151446
3	To Kill a Mockingbird	131170
4	Becoming	122266

In [17]:

```
# plotting graph of top 5 books from top 50 books with their total number of reviews
plt.figure(figsize=(13, 8))
plt.bar(top_5["Name"], top_5["Reviews"], color=["blue", "green","purple","yellow","orange"])
plt.title("Top 5 Books by Total Reviews 2009 to 2019")
plt.xlabel("Book Title")
plt.ylabel("Reviews")
plt.savefig("Top 5 books by Total Reviews 2009 to 2019.png")
plt.show()
```



In []: