In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.metrics import pairwise_distances

import warnings
warnings.filterwarnings('ignore')
```

In [2]:
```
books_data = pd.read_csv('book.csv',encoding='latin1')

books_data.head(50)
```

Out[2]:

	Unnamed: 0	User.ID	Book.Title	Book.Rating
0	1	276726	Classical Mythology	5
1	2	276729	Clara Callan	3
2	3	276729	Decision in Normandy	6
3	4	276736	Flu: The Story of the Great Influenza Pandemic...	8
4	5	276737	The Mummies of Urumchi	6
5	6	276744	The Kitchen God's Wife	7
6	7	276745	What If?: The World's Foremost Military Histor...	10
7	8	276747	PLEADING GUILTY	9
8	9	276747	Under the Black Flag: The Romance and the Real...	9
9	10	276747	Where You'll Find Me: And Other Stories	8
10	11	276747	Nights Below Station Street	7
11	12	276747	Hitler's Secret Bankers: The Myth of Swiss Neu...	7
12	13	276748	The Middle Stories	6
13	14	276751	Jane Doe	8
14	15	276754	A Second Chicken Soup for the Woman's Soul (Ch...	8
15	16	276755	The Witchfinder (Amos Walker Mystery Series)	5
16	17	276760	More Cunning Than Man: A Social History of Rat...	10
17	18	276762	Goodbye to the Buttermilk Sky	5
18	19	276762	The Testament	8
19	20	276762	Beloved (Plume Contemporary Fiction)	3
20	21	276762	Our Dumb Century: The Onion Presents 100 Years...	4
21	22	276768	New Vegetarian: Bold and Beautiful Recipes for...	4
22	23	276772	If I'd Known Then What I Know Now: Why Not Lea...	7
23	24	276772	Mary-Kate & Ashley Switching Goals (Mary-K...	10
24	25	276772	Tell Me This Isn't Happening	10
25	26	276774	Flood : Mississippi 1927	9
26	27	276780	Wild Animus	7
27	28	276780	Airframe	7
28	29	276786	Timeline	6
29	30	276786	OUT OF THE SILENT PLANET	8
30	31	276786	Prague : A Novel	6
31	32	276786	Chocolate Jesus	6
32	33	276788	Wie Barney es sieht.	8

	Unnamed: 0	User.ID	Book.Title	Book.Rating
33	34	276788	Der Fluch der Kaiserin. Ein Richter- Di- Roman.	7
34	35	276788	Sturmzeit. Roman.	10
35	36	276796	Tage der Unschuld.	5
36	37	276798	Lying Awake	5
37	38	276798	To Kill a Mockingbird	7
38	39	276798	Seabiscuit: An American Legend	6
39	40	276800	Pigs in Heaven	7
40	41	276804	Miss Zukas and the Raven's Dance	8
41	42	276808	Pride and Prejudice	10
42	43	276811	The Therapeutic Touch: How to Use Your Hands t...	10
43	44	276812	Downtown	8
44	45	276813	Icebound	8
45	46	276813	I'll Be Seeing You	8
46	47	276813	From the Corner of His Eye	6
47	48	276813	Isle of Dogs	8
48	49	276813	Purity in Death	6
49	50	276813	This Year It Will Be Different: And Other Stories	6

In [3]:
```
books_data.shape
```

Out[3]:
```
(10000, 4)
```

In [4]:
```
books_data.isna().sum()
```

Out[4]:
```
Unnamed: 0     0
User.ID        0
Book.Title     0
Book.Rating    0
dtype: int64
```

In [5]:
```
books_data.describe(include = 'all')
```

Out[5]:

	Unnamed: 0	User.ID	Book.Title	Book.Rating
count	10000.00000	10000.000000	10000	10000.00000
unique	NaN	NaN	9659	NaN
top	NaN	NaN	Fahrenheit 451	NaN
freq	NaN	NaN	5	NaN
mean	5000.50000	95321.249800	NaN	7.56630
std	2886.89568	117645.703609	NaN	1.82152
min	1.00000	8.000000	NaN	1.00000
25%	2500.75000	2103.000000	NaN	7.00000
50%	5000.50000	3757.000000	NaN	8.00000
75%	7500.25000	162052.000000	NaN	9.00000
max	10000.00000	278854.000000	NaN	10.00000

In [6]:
```
books_data.drop(labels='Unnamed: 0',axis=1,inplace=True)
```

In [7]:
```
books_data.head()
```

Out[7]:

	User.ID	Book.Title	Book.Rating
0	276726	Classical Mythology	5
1	276729	Clara Callan	3
2	276729	Decision in Normandy	6
3	276736	Flu: The Story of the Great Influenza Pandemic...	8
4	276737	The Mummies of Urumchi	6

In [8]:
```
books_data['User.ID'].unique()
```

Out[8]:
```
array([276726, 276729, 276736, ..., 162113, 162121, 162129], dtype=int64)
```

In [9]:
```
books_data['User.ID'].nunique()
```

Out[9]:
```
2182
```

In [10]:
```
books_data['Book.Title'].unique()
```

Out[10]:
```
array(['Classical Mythology', 'Clara Callan', 'Decision in Normandy', ...,
       'How to Flirt: A Practical Guide', 'Twilight',
       'Kids Say the Darndest Things'], dtype=object)
```

In [11]:
```
books_data['Book.Title'].nunique()
```

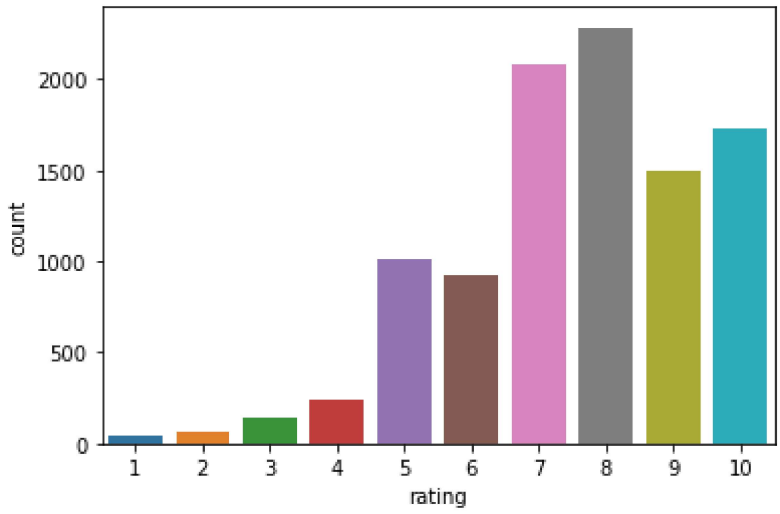
Out[11]:
```
9659
```

In [12]:
```
books_data['Book.Rating'].unique()
```

Out[12]:
```
array([ 5,  3,  6,  8,  7, 10,  9,  4,  1,  2], dtype=int64)
```

In [13]:
```
ta.rename(columns={'User.ID':'userid','Book.Title':'title','Book.Rating':'rating'
```

In [14]:
```
sns.countplot(books_data['rating'])
plt.show()
```



In [15]:
```
cosine_recommendation = pd.pivot_table(data=books_data,values='rating',index='tit
cosine_recommendation
```

Out[15]:

userid	8	9	10	12	14	16	17	19	22	26	...	278831	278832	2
title														
Jason, Madison &amp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	
Other Stories;Merril;1985;McClelland &amp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	
Repairing PC Drives &amp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	
'48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	
'O Au No Keia: Voices from Hawai'I's Mahu and Transgender Communities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	
\Surely You're Joking, Mr. Feynman!\: Adventures of a Curious Character	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	
\Well, there's your problem\: Cartoons	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	
il Paradiso Degli Orchi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	
stardust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	
Ã?Â?bermorgen.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	

9659 rows × 2182 columns

In [16]:
```
cosine_df = pd.DataFrame(1 - pairwise_distances(X = cosine_recommendation,metric=
cosine_df.columns = books_data['title'].unique()
cosine_df.index = books_data['title'].unique()
cosine_df
```

Out[16]:

	Classical Mythology	Clara Callan	Decision in Normandy	Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus That Caused It	The Mummies of Urumchi	The Kitchen God's Wife	What If?: The World's Foremost Military Historians Imagine What Might Have Been	PLEADING GUILTY
Classical Mythology	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0
Clara Callan	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0
Decision in Normandy	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0
Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus That Caused It	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
The Mummies of Urumchi	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
...	...	...	...	...	...	...	...	...
American Fried: Adventures of a Happy Eater.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cannibal In Manhattan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
How to Flirt: A Practical Guide	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twilight	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kids Say the Darndest Things	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0

9659 rows × 9659 columns

In [17]:
```
['title']=='Decision in Normandy') | (books_data['title'] == 'Classical Mythology'
```

Out[17]:

	userid	title	rating
0	276726	Classical Mythology	5
2	276729	Decision in Normandy	6

In [ ]:
```

```