

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

```
In [2]: anime=pd.read_csv("C:\\data science\\anime_Recomendation_dataset\\anime.csv")
ratings=pd.read_csv("C:\\data science\\anime_Recomendation_dataset\\rating.csv")
```

```
In [3]: anime=anime.dropna()
```

```
In [4]: ratings
```

Out[4]:

| | user_id | anime_id | rating |
|---------|---------|----------|--------|
| 0 | 1 | 20 | -1 |
| 1 | 1 | 24 | -1 |
| 2 | 1 | 79 | -1 |
| 3 | 1 | 226 | -1 |
| 4 | 1 | 241 | -1 |
| ... | ... | ... | ... |
| 7813732 | 73515 | 16512 | 7 |
| 7813733 | 73515 | 17187 | 9 |
| 7813734 | 73515 | 22145 | 10 |
| 7813735 | 73516 | 790 | 9 |
| 7813736 | 73516 | 8074 | 9 |

7813737 rows × 3 columns

```
In [5]: ratings=ratings.drop(ratings[ratings["rating"]== -1].index,axis=0)
```

```
In [6]: anime
```

Out[6]:

| | anime_id | name | genre | type | episodes | rating | members |
|-------|----------|---|---|-------|----------|--------|---------|
| 0 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 |
| 1 | 5114 | Fullmetal Alchemist: Brotherhood | Action, Adventure, Drama, Fantasy, Magic, Mili... | TV | 64 | 9.26 | 793665 |
| 2 | 28977 | Gintama° | Action, Comedy, Historical, Parody, Samurai, S... | TV | 51 | 9.25 | 114262 |
| 3 | 9253 | Steins;Gate | Sci-Fi, Thriller | TV | 24 | 9.17 | 673572 |
| 4 | 9969 | Gintama' | Action, Comedy, Historical, Parody, Samurai, S... | TV | 51 | 9.16 | 151266 |
| ... | ... | ... | ... | ... | ... | ... | ... |
| 12289 | 9316 | Toushindai My Lover: Minami tai Mecha-Minami | Hentai | OVA | 1 | 4.15 | 211 |
| 12290 | 5543 | Under World | Hentai | OVA | 1 | 4.28 | 183 |
| 12291 | 5621 | Violence Gekiga David no Hoshi | Hentai | OVA | 4 | 4.88 | 219 |
| 12292 | 6133 | Violence Gekiga Shin David no Hoshi: Inma Dens... | Hentai | OVA | 1 | 4.98 | 175 |
| 12293 | 26081 | Yasuji no Pornorama: Yacchimae!! | Hentai | Movie | 1 | 5.46 | 142 |

12017 rows × 7 columns

```
In [7]: ratings_with_name=anime.merge(ratings,on="anime_id")
```

```
In [8]: ratings_with_name
```

| Out[8]: | anime_id | | name | genre | type | episodes | rating_x | members | user_id | rating_y |
|---------|----------|-------|---|--------------------------------------|-------|----------|----------|---------|---------|----------|
| | 0 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 99 | 5 |
| | 1 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 152 | 10 |
| | 2 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 244 | 10 |
| | 3 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 271 | 10 |
| | 4 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 322 | 10 |
| | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| | 6337141 | 9316 | Toushindai My Lover: Minami tai Mecha-Minami | Hentai | OVA | 1 | 4.15 | 211 | 58483 | 1 |
| | 6337142 | 5543 | Under World | Hentai | OVA | 1 | 4.28 | 183 | 49503 | 4 |
| | 6337143 | 5543 | Under World | Hentai | OVA | 1 | 4.28 | 183 | 58483 | 1 |
| | 6337144 | 5621 | Violence Gekiga David no Hoshi | Hentai | OVA | 4 | 4.88 | 219 | 49503 | 6 |
| | 6337145 | 6133 | Violence Gekiga Shin David no Hoshi: Inma Dens... | Hentai | OVA | 1 | 4.98 | 175 | 60365 | 4 |

6337146 rows × 9 columns

```
In [9]: x=ratings_with_name.groupby("user_id").count()["anime_id"].sort_values(>35
padhe_likhe_users=x[x].index
padhe_likhe_users
```

Out[9]: Int64Index([24257, 33370, 70845, 54269, 62906, 67716, 9462, 62871, 39652, 52178, ..., 22434, 65840, 12431, 7345, 45659, 51693, 59643, 57620, 53698, 42635], dtype='int64', name='user_id', length=38572)

```
In [10]: ## based on users
filtered_rating=ratings_with_name[ratings_with_name["user_id"].isin(padhe_likhe_users)]
```

```
In [11]: filtered_rating
```

| Out[11]: | anime_id | | name | genre | type | episodes | rating_x | members | user_id | rating_y |
|----------|----------|-------|---|--------------------------------------|-------|----------|----------|---------|---------|----------|
| | 0 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 99 | 5 |
| | 1 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 152 | 10 |
| | 2 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 244 | 10 |
| | 3 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 271 | 10 |
| | 4 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 322 | 10 |
| | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| | 6337141 | 9316 | Toushindai My Lover: Minami tai Mecha-Minami | Hentai | OVA | 1 | 4.15 | 211 | 58483 | 1 |
| | 6337142 | 5543 | Under World | Hentai | OVA | 1 | 4.28 | 183 | 49503 | 4 |
| | 6337143 | 5543 | Under World | Hentai | OVA | 1 | 4.28 | 183 | 58483 | 1 |
| | 6337144 | 5621 | Violence Gekiga David no Hoshi | Hentai | OVA | 4 | 4.88 | 219 | 49503 | 6 |
| | 6337145 | 6133 | Violence Gekiga Shin David no Hoshi: Inma Dens... | Hentai | OVA | 1 | 4.98 | 175 | 60365 | 4 |

5932935 rows × 9 columns

```
In [36]: y=filtered_rating.groupby("anime_id").count()["user_id"]>50
famous_animes=y[y].index
```

```
In [37]: final_Ratings=filtered_rating[filtered_rating["anime_id"].isin(famous_animes)]
```

```
In [38]: final_Ratings
```

Out[38]:

| | anime_id | name | genre | type | episodes | rating_x | members | user_id | rating_y | |
|--|----------|-------|----------------|--------------------------------------|----------|----------|---------|---------|----------|-----|
| | 0 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 99 | 5 |
| | 1 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 152 | 10 |
| | 2 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 244 | 10 |
| | 3 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 271 | 10 |
| | 4 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 | 322 | 10 |
| | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| | 6336792 | 1639 | Boku no Pico | Hentai, Yaoi | OVA | 1 | 5.13 | 57355 | 73328 | 2 |
| | 6336793 | 1639 | Boku no Pico | Hentai, Yaoi | OVA | 1 | 5.13 | 57355 | 73329 | 6 |
| | 6336794 | 1639 | Boku no Pico | Hentai, Yaoi | OVA | 1 | 5.13 | 57355 | 73348 | 4 |
| | 6336795 | 1639 | Boku no Pico | Hentai, Yaoi | OVA | 1 | 5.13 | 57355 | 73389 | 7 |
| | 6336796 | 1639 | Boku no Pico | Hentai, Yaoi | OVA | 1 | 5.13 | 57355 | 73462 | 3 |

5868225 rows × 9 columns

In [68]:

```
# pd.concat([pt_try, show_mode], axis=1)
final_Ratings["anime_id"].unique().shape
```

Out[68]: (5133,)

In [39]:

```
pt=final_Ratings.pivot_table(index="name", columns="user_id", values="rating_x")
```

In [40]:

```
pt.index[1000:]
```

Out[40]: Index(['Digimon Adventure Movie', 'Digimon Adventure tri. 1: Saikai',
'Digimon Adventure tri. 2: Ketsui',
'Digimon Adventure tri. 3: Kokuhaku',
'Digimon Adventure: Bokura no War Game!', 'Digimon Frontier',
'Digimon Frontier: Ornismon Fukkatsu!!', 'Digimon Savers',
'Digimon Savers 3D: Digital World Kiki Ippatsu!',
'Digimon Savers the Movie: Kyuukyoku Power! Burst Mode Hatsudou!!',
...,
'ef: A Tale of Memories.', 'ef: A Tale of Memories. - Prologue',
'ef: A Tale of Memories. - Recollections', 'iDOLM@STER Xenoglossia',
's.CRY.ed', 'xxxHOLiC', 'xxxHOLiC Kei',
'xxxHOLiC Movie: Manatsu no Yoru no Yume', 'xxxHOLiC Rou',
'xxxHOLiC Shunmuki'],
dtype='object', name='name', length=4133)

In [41]:

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

In [42]:

```
pt_try.columns.shape[0]/3
```

Out[42]: 12857.333333333334

In [43]:

```
from sklearn.metrics.pairwise import cosine_similarity
scores=cosine_similarity(pt)
```

In [59]:

```
pt.shape
```

Out[59]: (5133, 38572)

In [46]:

```
np.where(pt.index=="Boku no Pico")
```

Out[46]: (array([536], dtype=int64),)

In [45]:

```
def recommend(anime_name):
    index=np.where(pt.index==anime_name)[0][0]
    similar_items=sorted(list(enumerate(scores[index])),key=lambda x:x[1],reverse=True)[1:6])

    for i in similar_items:
        print(pt.index[i[0]])
```

In [65]:

```
recommend("Haikyuu!!: Karasuno Koukou VS Shiratorizawa Gakuen Koukou")
#recommend("Final Fantasy VII: On the Way to a Smile - Episode: Denzel")

Haikyuu!! Second Season
Haikyuu!!
Shokugeki no Souma: Ni no Sara
Kuroko no Basket 3rd Season
Boku no Hero Academia
```