In [1]:

```
import pandas as pd
import numpy as np

import matplotlib.pyplot as plt
import collections
import seaborn as sns
%matplotlib inline
```

In [2]:

```
ratings_df = pd.read_csv('ratings.csv')
movies_df = pd.read_csv("movies.csv")
tags = pd.read_csv('tags.csv')
scores = pd.read_csv('genome-scores.csv')
links = pd.read_csv('links.csv')
genome_tags = pd.read_csv('genome-tags.csv')
```

In [3]:

```
ratings_df.head(3)
```

Out[3]:

	userId	movieId	rating	timestamp
0	1	2	3.5	1112486027
1	1	29	3.5	1112484676
2	1	32	3.5	1112484819

In [4]:

```
ratings_df['timestamp'] = pd.to_datetime(ratings_df['timestamp'], unit='s')
ratings_df.head()
```

Out[4]:

	userId	movieId	rating	timestamp
0	1	2	3.5	2005-04-02 23:53:47
1	1	29	3.5	2005-04-02 23:31:16
2	1	32	3.5	2005-04-02 23:33:39
3	1	47	3.5	2005-04-02 23:32:07
4	1	50	3.5	2005-04-02 23:29:40

In [5]:

```
ratings_df['gave_rating_year'] = ratings_df['timestamp'].dt.year
ratings_df['gave_rating_month'] = ratings_df['timestamp'].dt.month_name().str[:3]

ratings_df.drop('timestamp', axis=1, inplace=True)
```

In [6]:

```
ratings_df.head(3)
```

Out[6]:

	userId	movieId	rating	gave_rating_year	gave_rating_month
0	1	2	3.5	2005	Apr
1	1	29	3.5	2005	Apr

	userId	movieId	rating	gave_rating_year	gave_rating_month
2	1	32	3.5	2005	Apr

In [7]:

```
movies_df = pd.read_csv("movies.csv")
movies_df.head()
```

Out[7]:

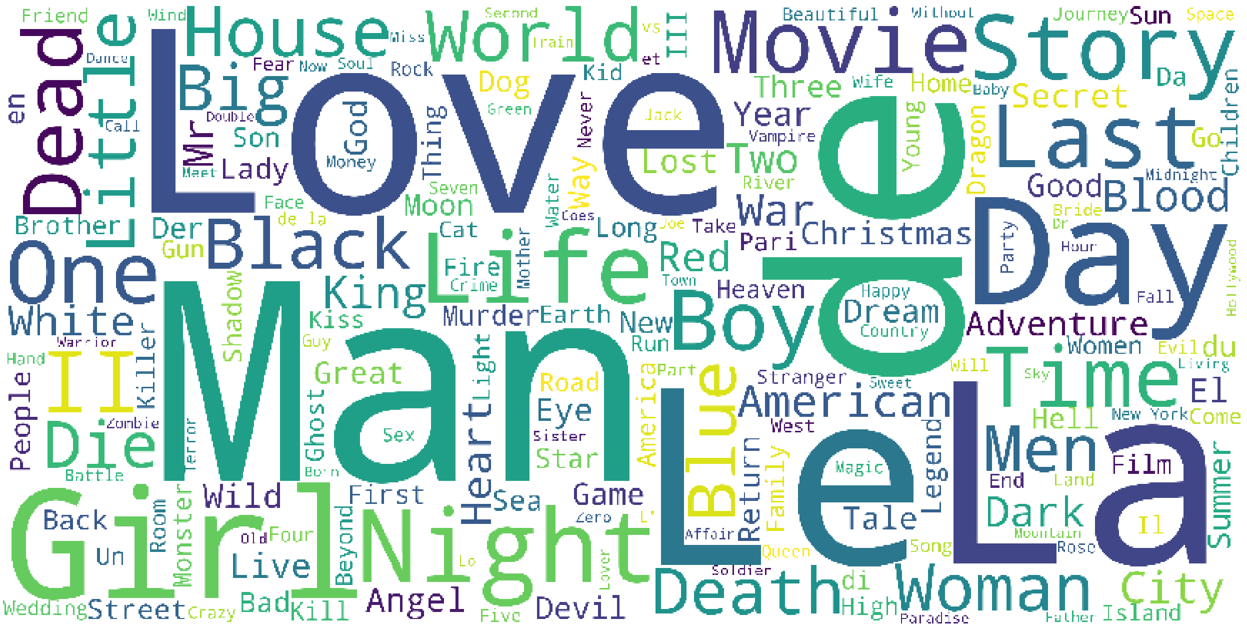
	movieId	title	genres
0	1	Toy Story (1995)	Adventure|Animation|Children|Comedy|Fantasy
1	2	Jumanji (1995)	Adventure|Children|Fantasy
2	3	Grumpier Old Men (1995)	Comedy|Romance
3	4	Waiting to Exhale (1995)	Comedy|Drama|Romance
4	5	Father of the Bride Part II (1995)	Comedy

In [8]:

```
movies_df['title'] = movies_df['title'].astype('str')
title_corpus = ' '.join(movies_df['title'])
```

In [9]:

```
from wordcloud import WordCloud, STOPWORDS
title_wordcloud = WordCloud(stopwords=STOPWORDS, background_color='white', height=2000, width=4000
).generate(title_corpus)
plt.figure(figsize=(16,8))
plt.imshow(title_wordcloud)
plt.axis('off')
plt.show()
```



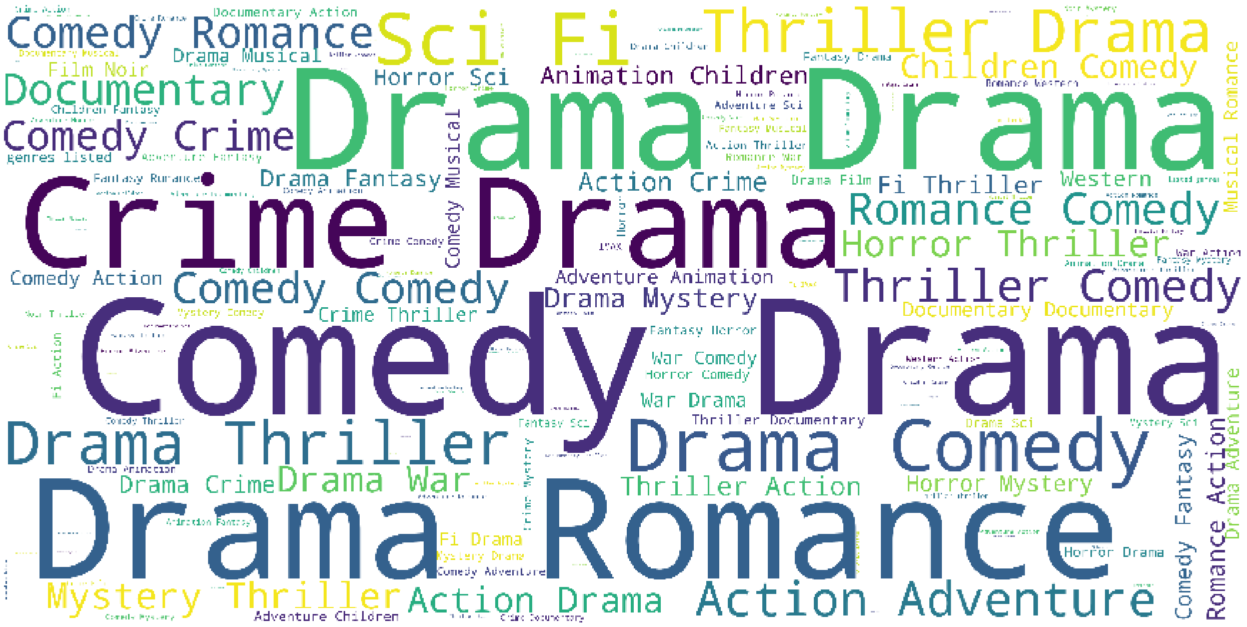
In [10]:

```
movies_df['genres'] = movies_df['genres'].astype('str')
title_corpus = ' '.join(movies_df['genres'])
```

In [11]:

```
from wordcloud import WordCloud, STOPWORDS
title_wordcloud = WordCloud(stopwords=STOPWORDS, background_color='white', height=2000, width=4000
).generate(title_corpus)
```

```
plt.figure(figsize=(16,8))
plt.imshow(title_wordcloud)
plt.axis('off')
plt.show()
```



In [12]:

```
movies_df  = movies_df.iloc[:10000,:]
```

Machine Learning model (TF-IDF vectorizer + Cosine Similarity)

TF-IDF

In [13]:

```
genres_str = movies_df['genres'].str.split('|').astype(str)
```

In [14]:

```
from sklearn.feature_extraction.text import TfidfVectorizer

tfidf = TfidfVectorizer(analyzer='word', ngram_range=(1, 2), min_df=0)

tfidf_matrix = tfidf.fit_transform(genres_str)

tfidf_matrix.shape
```

Out[14]:

```
(10000, 165)
```

Cosine - Similarity

In [15]:

```
# Since we have used the TF-IDF Vectorizer, calculating the Dot Product will directly give us the
Cosine Similarity Score
from sklearn.metrics.pairwise import linear_kernel

cosine_sim = linear_kernel(tfidf_matrix, tfidf_matrix)
cosine_sim[:4, :4]
```

```
cosine_sim[:4, :4]
```

Out[15]:

```
array([[1.        , 0.31566917, 0.05942385, 0.05198214],
       [0.31566917, 1.        , 0.        , 0.        ],
       [0.05942385, 0.        , 1.        , 0.35687666],
       [0.05198214, 0.        , 0.35687666, 1.        ]])
```

In [16]:

```
indices = pd.Series(movies_df.index, index=movies_df['title'])


def genre_recommendations(title, similarity=False):

    if similarity == False:

        idx = indices[title]
        sim_scores = list(enumerate(cosine_sim[idx]))
        sim_scores = sorted(sim_scores, key=lambda x: x[1], reverse=True)
        sim_scores = sim_scores[1:11]

        movie_indices = [i[0] for i in sim_scores]

        return pd.DataFrame({'Movie': movies_df['title'].iloc[movie_indices].values})


    elif similarity == True:

        idx = indices[title]
        sim_scores = list(enumerate(cosine_sim[idx]))
        sim_scores = sorted(sim_scores, key=lambda x: x[1], reverse=True)
        sim_scores = sim_scores[1:11]

        movie_indices = [i[0] for i in sim_scores]
        similarity_ = [i[1] for i in sim_scores]

        return pd.DataFrame({'Movie': movies_df['title'].iloc[movie_indices].values,
                             'Similarity': similarity_})
```

In [17]:

```
genre_recommendations('Toy Story (1995)', similarity=True)
```

Out[17]:

	Movie	Similarity
0	Antz (1998)	1.000000
1	Toy Story 2 (1999)	1.000000
2	Adventures of Rocky and Bullwinkle, The (2000)	1.000000
3	Emperor's New Groove, The (2000)	1.000000
4	Monsters, Inc. (2001)	1.000000
5	Twelve Tasks of Asterix, The (Les douze travau...	0.930851
6	Shrek (2001)	0.893776
7	American Tail, An (1986)	0.870213
8	Bug's Life, A (1998)	0.870213
9	Jimmy Neutron: Boy Genius (2001)	0.870213

In [ ]:

In [ ]: