In [1]:

```
# Import pandas
import pandas as pd

# Using the datetime function
import datetime

# For generating word cloud
import wordcloud

from matplotlib import pyplot as plt

# For loading in the different categories
import json
```

In [2]:

```
# Reading the dataset into a dataframe df
df = pd.read_csv('USvideos.csv')
```

In [3]:

```
df.shape
# 16 Columns
# 40,949 Rows
```

Out[3]:

```
(40949, 16)
```

In [4]:

```
df.head(1)
# Before
```

Out[4]:

	video_id	trending_date	title	channel_title	category_id	publish_time	ta
0	2kyS6SvSYSE	17.14.11	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13T17:13:01.000Z	SHAN mar

In [5]:

```
# Wrangling Step 1
# Changing it to the date_format for better readability
df["trending_date"] = pd.to_datetime( df["trending_date"], format='%y.%d.%m' ).dt.date
```

In [6]:

```
df.head(1)
# After
```

Out[6]:

	video_id	trending_date	title	channel_title	category_id	publish_time	ta
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13T17:13:01.000Z	SHAN mar

In [7]:

```
# Wrangling Step 2
# Slicing out publishing day and publishing hour from publish_time
# https://www.digitalocean.com/community/tutorials/how-to-index-and-slice-strings-in-python

df["publishing_day"] = df["publish_time"].apply(lambda x: datetime.datetime.strptime(x[:10]

df["publishing_hour"] = df["publish_time"].apply(lambda x: x[11:13])
```

In [8]:

```
df.head(1)
```

Out[8]:

	video_id	trending_date	title	channel_title	category_id	publish_time	ta
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13T17:13:01.000Z	SHAN mar

In [9]:

```
# Wrangling Step 3

# Convert it into a datetime object
publish_time = pd.to_datetime(df.publish_time, format='%Y-%m-%dT%H:%M:%S.%fZ')

# Slicing out publish_date and publish_time_only
# dt.date - helps in retrieving the underlying date
df['publish_date'] = publish_time.dt.date

# dt.time helps in retrieving the underlying time
df['publish_time_only'] = publish_time.dt.time

# Drop publish_time
df.drop('publish_time',axis=1,inplace=True)

# Just for better readability
df['days_to_trending'] = (df.trending_date - df.publish_date).dt.days
```

In [10]:

```
df.head(1)
```

Out[10]:

	video_id	trending_date	title	channel_title	category_id	tags	views	likes
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	SHANtell martin	748374	57527

In [11]:

```
# Wrangling Step 4
# Setting Index
#df.set_index(['trending_date','video_id'],inplace=True)
```

In [12]:

```
#df.head(3)
```

In [13]:

```
# Cleaning Error 1:
# Checking and Cleaning NaN values
```

In [14]:

```
df[df["title"].apply(lambda x: pd.isna(x))].head(2)
```

Out[14]:

video_id	trending_date	title	channel_title	category_id	tags	views	likes	dislikes	commen

In [15]:

```
df[df["channel_title"].apply(lambda x: pd.isna(x))].head(2)
```

Out[15]:

video_id	trending_date	title	channel_title	category_id	tags	views	likes	dislikes	commen

In [16]:

```
df[df["views"].apply(lambda x: pd.isna(x))].head(2)
```

Out[16]:

video_id	trending_date	title	channel_title	category_id	tags	views	likes	dislikes	commen

In [17]:

```
df[df["likes"].apply(lambda x: pd.isna(x))].head(2)
```

Out[17]:

video_id	trending_date	title	channel_title	category_id	tags	views	likes	dislikes	commen

In [18]:

```
df[df["dislikes"].apply(lambda x: pd.isna(x))].head(2)
```

Out[18]:

video_id	trending_date	title	channel_title	category_id	tags	views	likes	dislikes	commen

In [19]:

```
df[df["comment_count"].apply(lambda x: pd.isna(x))].head(2)
```

Out[19]:

video_id	trending_date	title	channel_title	category_id	tags	views	likes	dislikes	commen

In [20]:

```
# Displays the top 2 NaN values
df[df["description"].apply(lambda x: pd.isna(x))].head(2)
```

Out[20]:

	video_id	trending_date	title	channel_title	category_id	tags
42	NZFhMSgbKKM	2017-11-14	Dennis Smith Jr. and LeBron James go back and ...	Ben Rohrbach	17	[none]
47	sbcbvuitiTc	2017-11-14	Stephon Marbury and Jimmer Fredette fight in C...	NBA Highlights · YouTube	17	NBA|"Basketball"|"Sports"

In [21]:

```
# Cleaning Work - Filling the NaN values with blank spaces
df["description"] = df["description"].fillna(value="")
```

In [22]:

```
# Cleaning Error 2 :
# Checking for videos which have an error or have been removed
df[ df["video_error_or_removed"] == True ].head(2)
```

Out[22]:

	video_id	trending_date	title	channel_title	category_id	tags
2203	RK_B4Ez4_5Q	2017-11-25	Verizon 360 Live: The Macy's Thanksgiving Day ...	Verizon	24	live stream|"360 video"|"fun videos for kids"|...
15499	kZete48ZtsY	2018-02-01	Deleted video	Midnight Video	1	horror|"horror short"|"short"|"short film"|"my...

In [23]:

```
# Cleaning Work :
# Keeping only those videos which do not have any errors
df = df[~df.video_error_or_removed]
```

In [24]:

```
df[ df["video_error_or_removed"] == True ]
```

Out[24]:

video_id	trending_date	title	channel_title	category_id	tags	views	likes	dislikes	commen

In [25]:

```
df.shape
# 23 rows eliminated
```

Out[25]:

```
(40926, 20)
```

In [26]:

```
# Cleaning Error 3 -
# Checking for duplicate values of video_id
print( df["video_id"].nunique() )

# Clearly, total number of videos is not same as number of unique video_ids
# Need to manually remove distinct video ids
```

```
6348
```

In [27]:

```
# Cleaning Error 4 -
# Checking the ratings_disabled status
df[ df["ratings_disabled"] == True ].head(2)
```

Out[27]:

	video_id	trending_date	title	channel_title	category_id	tags
1435	Kn5UgGQukYQ	2017-11-21	Breaking Bad's Bryan Cranston on Meeting Charl...	hudsonunionsociety	1	Breaking Bad|"Bryan Cranston"|"malcom in the m...
1667	Kn5UgGQukYQ	2017-11-22	Breaking Bad's Bryan Cranston on Meeting Charl...	hudsonunionsociety	1	Breaking Bad|"Bryan Cranston"|"malcom in the m...

In [28]:

```
# Cleaning Work :
# Keeping only those videos which do not have their ratings disabled
df = df[~df.ratings_disabled]
```

In [29]:

```
df.shape
# 169 rows eliminated
```

Out[29]:

```
(40757, 20)
```

In [30]:

```
df["title_length"] = df["title"].apply(lambda x: len(x))
```

In [31]:

```
df.head(1)
```

Out[31]:

	video_id	trending_date	title	channel_title	category_id	tags	views	likes
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	SHANtell martin	748374	57527

1 rows × 21 columns

In [32]:

```
# Storing the different words from the video title in title_words
# split() - splits the string into a list, default separater is blank space
# Here, every title is stored as a list
title_words = list(df["title"].apply(lambda x: x.split()))
```

In [33]:

```
# Iterating through the list again
# To store all the words in the form of a list
# Here, the words of a title are further separated
title_words = [x for y in title_words for x in y]
```

In [34]:

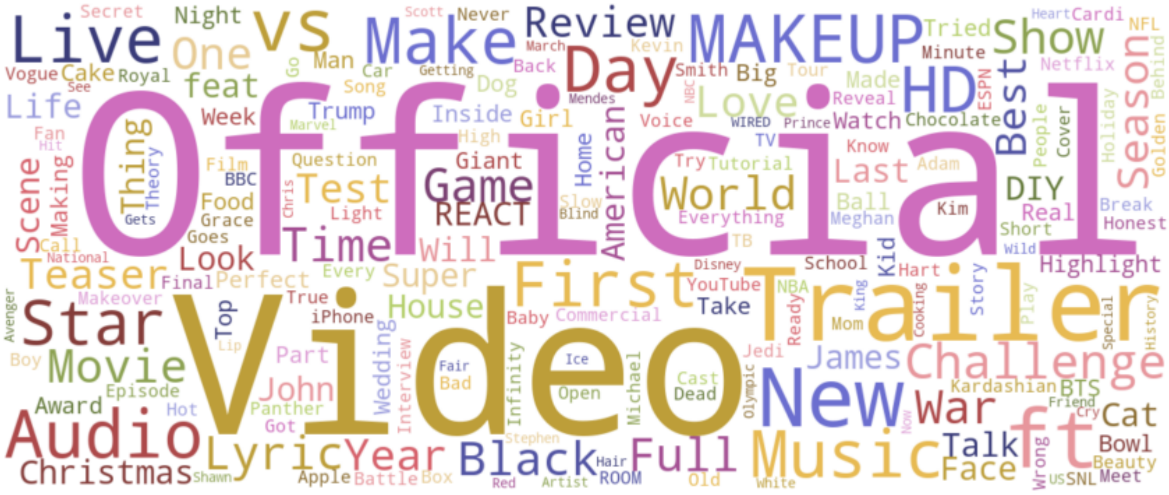
```
#title_words[1:3]
```

In [35]:

```
# Generating word cloud

# https://stackoverflow.com/questions/43954114/python-wordcloud-repetitve-words

wc = wordcloud.WordCloud(background_color="white", width = 1200, height = 500, collocations

plt.figure(figsize=(15,10))

# https://matplotlib.org/3.2.1/gallery/images_contours_and_fields/interpolation_methods.htm
plt.imshow(wc, interpolation='bilinear')

plt.axis("off")
```

Out[35]:

```
(-0.5, 1199.5, 499.5, -0.5)
```



In [36]:

```
# Counter counts the number of occurences of every word
from collections import Counter
Counter(title_words)
```

Out[36]:

```
Counter({'WE': 155,
         'WANT': 7,
         'TO': 537,
         'TALK': 45,
         'ABOUT': 16,
         'OUR': 97,
         'MARRIAGE': 19,
         'The': 5734,
         'Trump': 232,
         'Presidency:': 7,
         'Last': 307,
         'Week': 220,
         'Tonight': 59,
         'with': 1617,
         'John': 356,
         'Oliver': 35,
         '(HBO)': 56,
         'Racist': 40,
```

In [37]:

```
# Adding Channel Categories

# Opening the json file
# Storing the items in a list named different_categories
with open("C:/Users/Gayatri Aniruddha/Desktop/Sem 1 2020/Visualisation/Data Exploration Pro
    different_categories = json.load(cat)["items"]

# Creating an empty dictionary
category_dict = {}

# Extracting the id and title from the categories
for each in different_categories:
    category_dict[int(each["id"])] = each["snippet"]["title"]

# Creating a new column called category name
df['category_name'] = df['category_id'].map(category_dict)
```

In [38]:

```
df.head(1)
```

Out[38]:

	video_id	trending_date	title	channel_title	category_id	tags	views	likes
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	SHANtell martin	748374	57527

1 rows × 22 columns

In [40]:

```
df.to_csv(r'C:\Users\Gayatri Aniruddha\Desktop\Sem 1 2020\Visualisation\Data Exploration Pr
```