Introduction

Everyone loves Lego (unless you ever stepped on one). Did you know by the way that "Lego" was derived from the Danish phrase leg godt, which means "play well"? Unless you speak Danish, probably not.

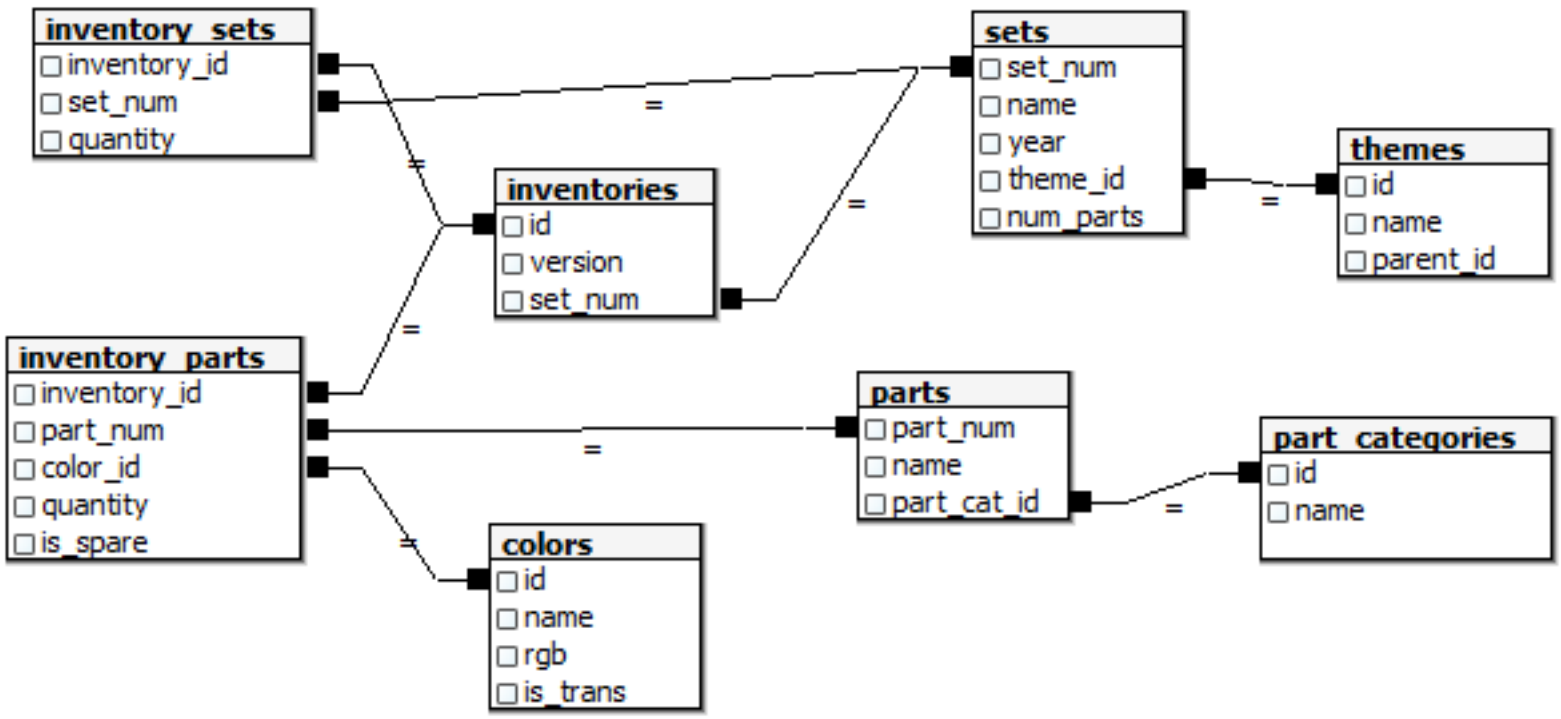
In this project, we will analyze a fascinating dataset on every single lego block that has ever been built!

In [7]:

```
# Nothing to do here
```

Reading Data

This comprehensive database of lego blocks is provided by Rebrickable (https://rebrickable.com/downloads/). The data is available as csv files and the schema is shown below.



Let us start by reading in the colors data to get a sense of the diversity of lego sets!

In [9]:

```
# Import modules
import pandas as pd

# Read colors data
colors = pd.read_csv('datasets/colors.csv')

# Print the first few rows
colors.head()
```

Out[9]:

	id	name	rgb	is_trans
0	-1	Unknown	0033B2	f
1	0	Black	05131D	f
2	1	Blue	0055BF	f
3	2	Green	237841	f
4	3	Dark Turquoise	008F9B	f

Exploring Colors

Now that we have read the `colors` data, we can start exploring it! Let us start by understanding the number of colors available.

In [11]:

```
# How many distinct colors are available?
num_colors=colors.id.count()
print(num_colors)
```

```
135
```

Transparent Colors in Lego Sets

The `colors` data has a column named `is_trans` that indicates whether a color is transparent or not. It would be interesting to explore the distribution of transparent vs. non-transparent colors.

In [13]:

```
# colors_summary: Distribution of colors based on transparency
num_colors=colors.groupby(['is_trans'])
colors_summary = num_colors.count()
print(colors_summary)
```

```
            id  name  rgb
is_trans
f          107   107  107
t           28    28   28
```

Explore Lego Sets

Another interesting dataset available in this database is the `sets` data. It contains a comprehensive list of sets over the years and the number of parts that each of these sets contained.

	set_num	name	year	theme_id	num_parts
0	00-1	Weetabix Castle	1970	414	471
1	0011-2	Town Mini-Figures	1978	84	12
2	0011-3	Castle 2 for 1 Bonus Offer	1987	199	2
3	0012-1	Space Mini-Figures	1979	143	12
4	0013-1	Space Mini-Figures	1979	143	12

Let us use this data to explore how the average number of parts in lego sets has varied over the years.

In [15]:

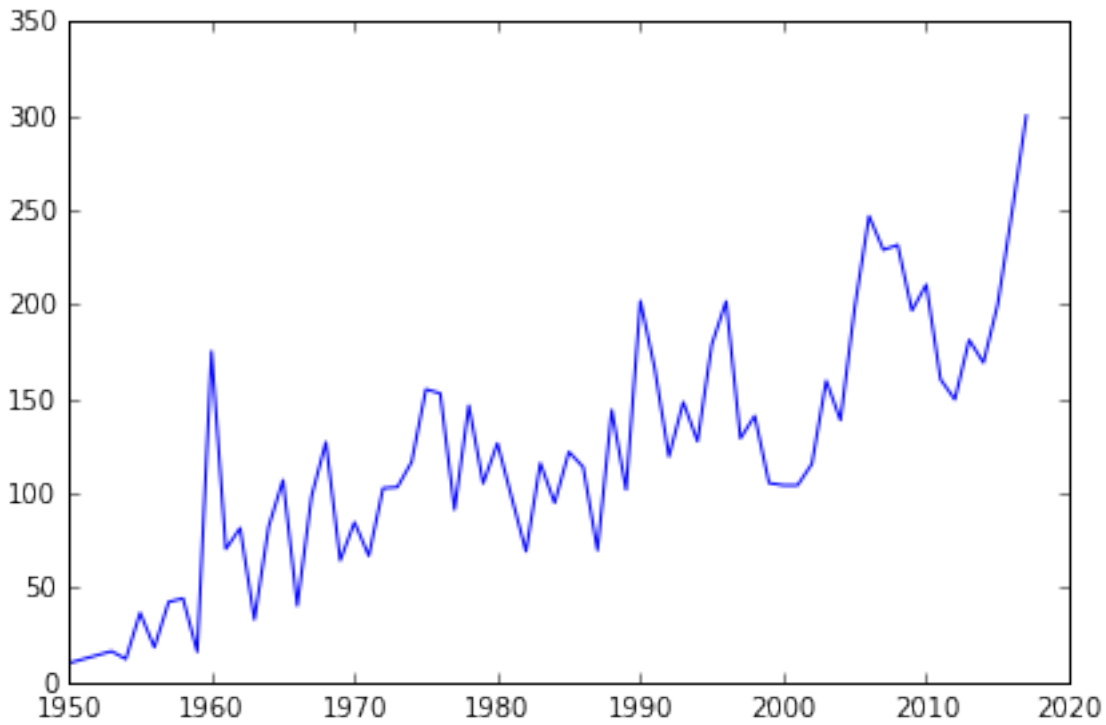
```
%matplotlib inline
import pandas as pd
import matplotlib.pyplot as plt
file = 'datasets/sets.csv'
sets = pd.read_csv(file)

parts_by_year = sets.groupby('year').mean()


# Plot trends in average number of parts by year
plt.plot(parts_by_year['num_parts'])
```

Out[15]:

```
[<matplotlib.lines.Line2D at 0x7fed3c6e6a58>]
```



Lego Themes Over Years

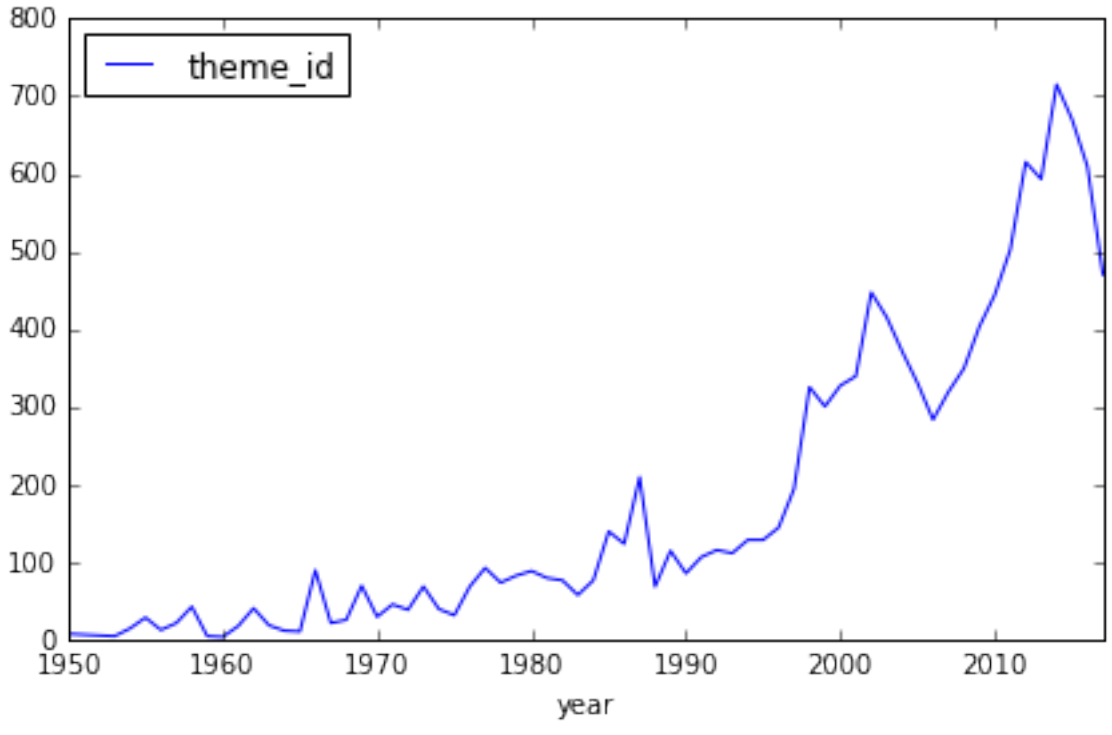
Lego blocks ship under multiple themes (https://shop.lego.com/en-US/Themes). Let us try to get a sense of how the number of themes shipped has varied over the years.

In [17]:

```
# themes_by_year: Number of themes shipped by year
themes_by_year = sets[['year','theme_id']].groupby('year',as_index = False).agg({"th
themes_by_year.plot(x= 'year',y= 'theme_id')
```

Out[17]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fed3c663198>
```



Wrapping It All Up!

Lego blocks offer an unlimited amoung of fun across ages. We explored some interesting trends around colors, parts and themes.

In [19]:

```
# Nothing to do here
```