Importing Libraries

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

Importing Datasets

In [2]:
```
df=pd.read_csv("rainfall in india.csv")
df
```

Out[2]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
0	0	ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	388.5
1	1	ANDAMAN & NICOBAR ISLANDS	1902	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	666.2	197.2
2	2	ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	181.2
3	3	ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	222.2
4	4	ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	260.7
...	...	...	...	...	...	...	...	...	...	...	...	...	...
4111	4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	117.4
4112	4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	145.9
4113	4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	72.8
4114	4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	169.2
4115	4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	165.4

4116 rows × 20 columns

Data Cleaning and Data Preprocessing

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

Out[3]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
0	0	ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	388.5
1	1	ANDAMAN & NICOBAR ISLANDS	1902	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	666.2	197.2
2	2	ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	181.2
3	3	ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	222.2
4	4	ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	260.7
...	...	...	...	...	...	...	...	...	...	...	...	...	...
4111	4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	117.4
4112	4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	145.9
4113	4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	72.8
4114	4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	169.2
4115	4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	165.4

4090 rows × 20 columns

In [4]:
```
df.columns
```

Out[4]:
```
Index(['index', 'SUBDIVISION', 'YEAR', 'JAN', 'FEB', 'MAR', 'APR', 'MAY',
       'JUN', 'JUL', 'AUG', 'SEP', 'OCT', 'NOV', 'DEC', 'ANNUAL', 'Jan-Feb',
       'Mar-May', 'Jun-Sep', 'Oct-Dec'],
      dtype='object')
```

In [5]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 4090 entries, 0 to 4115
Data columns (total 20 columns):
 #   Column       Non-Null Count  Dtype
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 0   index        4090 non-null   int64
 1   SUBDIVISION  4090 non-null   object
 2   YEAR         4090 non-null   int64
 3   JAN          4090 non-null   float64
 4   FEB          4090 non-null   float64
 5   MAR          4090 non-null   float64
 6   APR          4090 non-null   float64
 7   MAY          4090 non-null   float64
 8   JUN          4090 non-null   float64
 9   JUL          4090 non-null   float64
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 11  SEP          4090 non-null   float64
 12  OCT          4090 non-null   float64
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 13  NOV          4090 non-null   float64
 14  DEC          4090 non-null   float64
 15  ANNUAL       4090 non-null   float64
 16  Jan-Feb      4090 non-null   float64
 17  Mar-May      4090 non-null   float64
 18  Jun-Sep      4090 non-null   float64
 19  Oct-Dec      4090 non-null   float64
dtypes: float64(17), int64(2), object(1)
memory usage: 671.0+ KB
```

Line chart

In [6]:
```
df.plot.line(subplots=True)
```

Out[6]:
```
array([<AxesSubplot:>, <AxesSubplot:>, <AxesSubplot:>, <AxesSubplot:>,
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       <AxesSubplot:>, <AxesSubplot:>, <AxesSubplot:>], dtype=object)
```
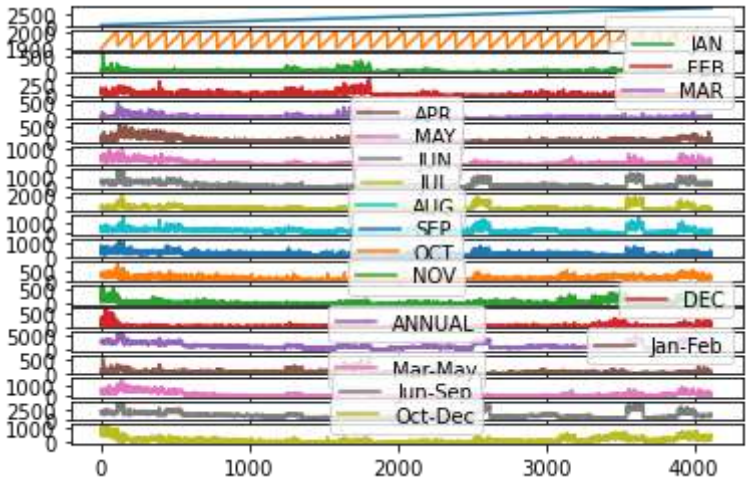
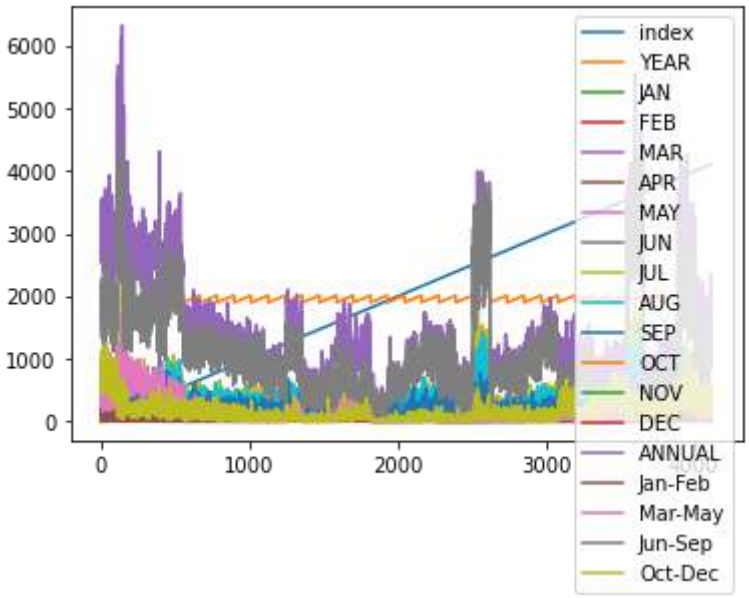



Line chart

In [7]:
```
df.plot.line()
```

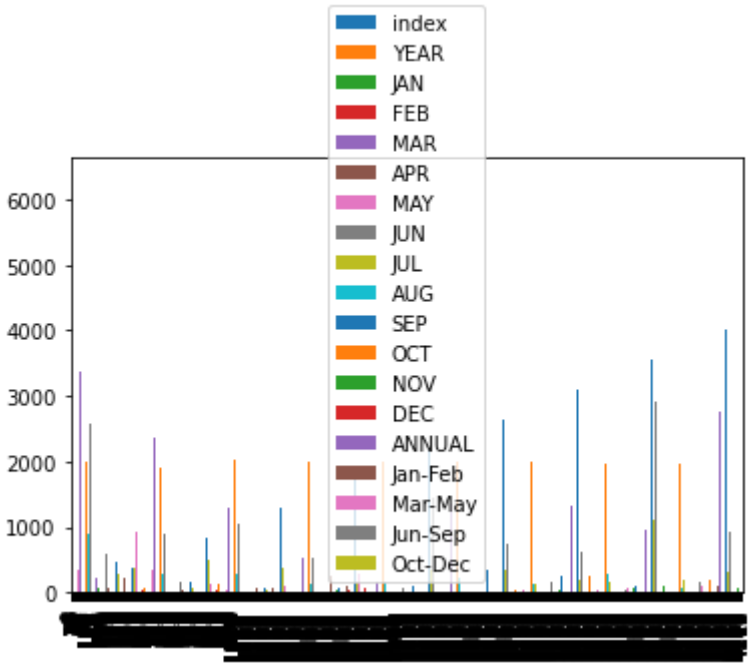
Out[7]: <AxesSubplot:>



Bar chart

In [8]:
```
df.plot.bar()
```

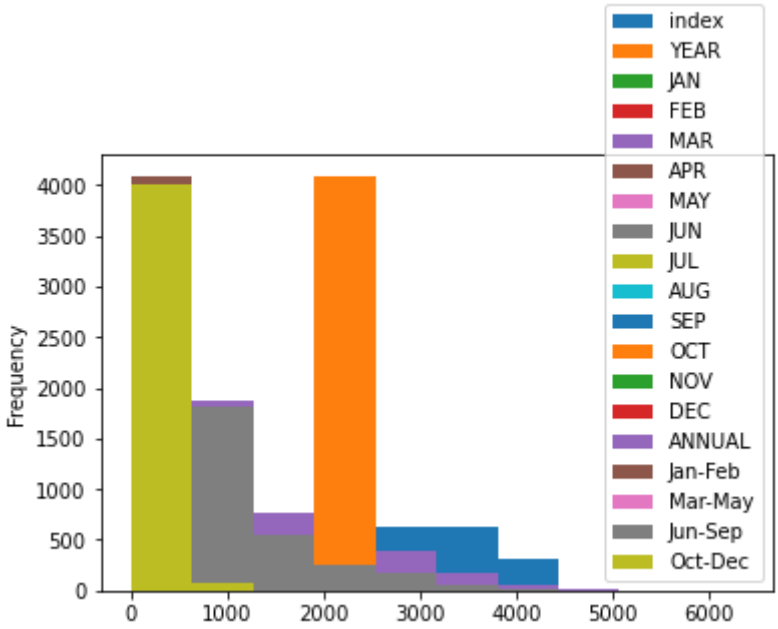
Out[8]: <AxesSubplot:>



Histogram

In [9]:
```
df.plot.hist()
```

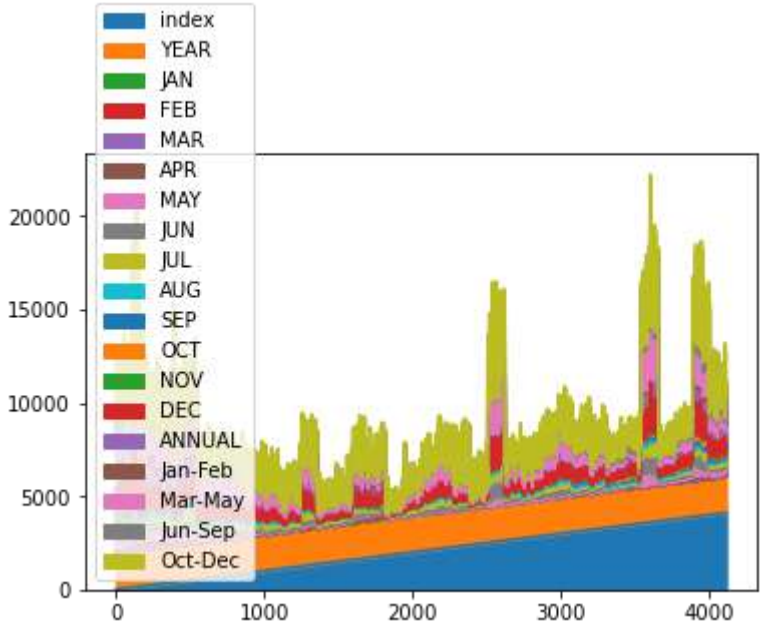
Out[9]: <AxesSubplot:ylabel='Frequency'>



Area chart

In [10]:
```
df.plot.area()
```

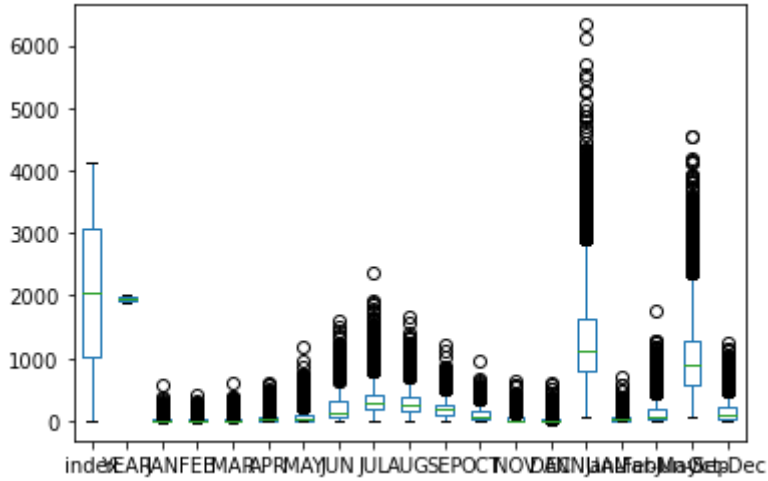
Out[10]: <AxesSubplot:>



Box chart

In [11]:
```
df.plot.box()
```

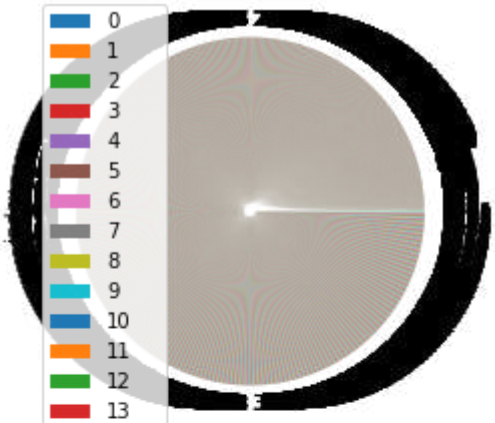
Out[11]: <AxesSubplot:>



Pie chart

In [12]:
```
df.plot.pie(y='index')
```

Out[12]: <AxesSubplot:ylabel='index'>



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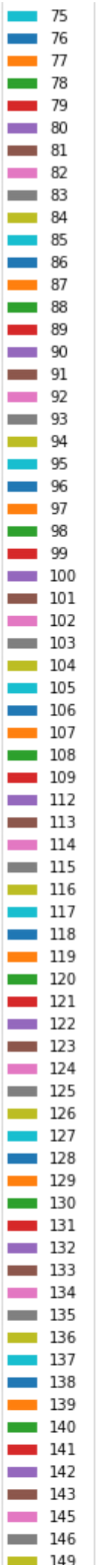
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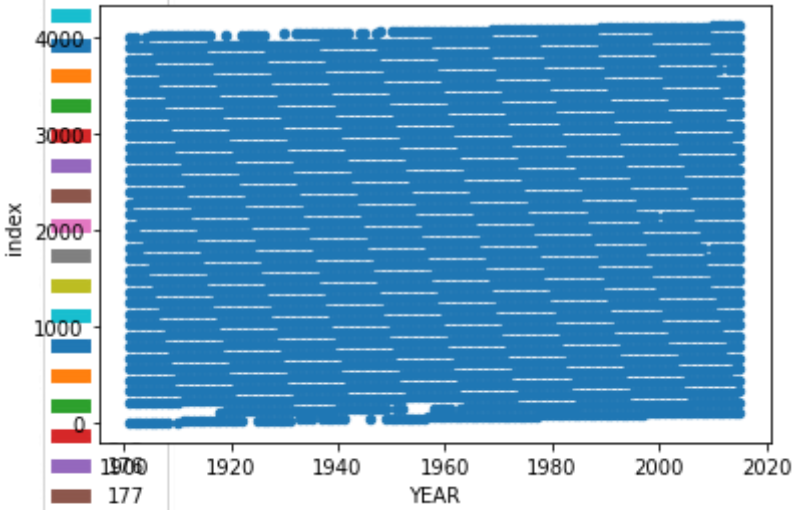
Scatter chart

In [13]:
```
df.plot.scatter(x='YEAR' ,y='index')
```

Out[13]:
```
<AxesSubplot:xlabel='YEAR', ylabel='index'>
```



In [14]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 4090 entries, 0 to 4115
Data columns (total 20 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   index        4090 non-null   int64  
 1   SUBDIVISION  4090 non-null   object 
 2   YEAR         4090 non-null   int64  
 3   JAN          4090 non-null   float64
 4   FEB          4090 non-null   float64
 5   MAR          4090 non-null   float64
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 8   JUN          4090 non-null   float64
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 14  DEC          4090 non-null   float64
 15  ANNUAL       4090 non-null   float64
 16  Jan-Feb      4090 non-null   float64
 17  Mar-May      4090 non-null   float64
 18  Jun-Sep      4090 non-null   float64
 19  Oct-Dec      4090 non-null   float64
dtypes: float64(17), int64(2), object(1)
memory usage: 671.0+ KB
```

In [15]:
```
df.describe()
```

Out[15]:

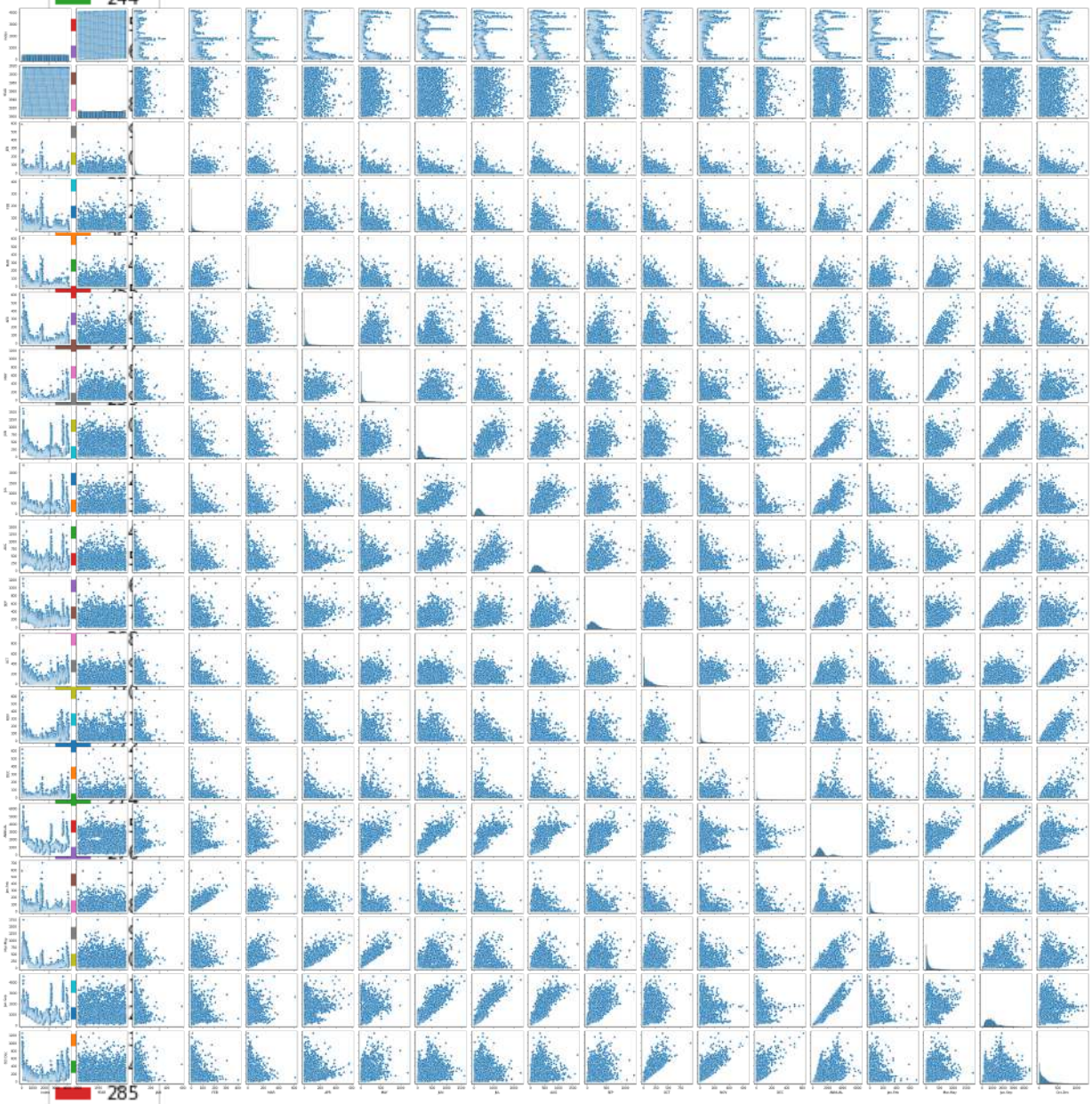
	index	YEAR	JAN	FEB	MAR	APR	MAY	
count	4090.000000	4090.000000	4090.000000	4090.000000	4090.000000	4090.000000	4090.000000	4
mean	2057.638875	1958.321271	18.818484	21.644792	27.252494	42.714548	84.868044	

	index	YEAR	JAN	FEB	MAR	APR	MAY	
std	1182.612736	33.148944	33.521719	35.762010	46.829179	67.264863	122.556801	
min	0.000000	1901.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
25%	1034.250000	1930.000000	0.600000	0.600000	1.000000	3.000000	8.500000	
50%	2057.500000	1959.000000	5.900000	6.600000	7.800000	15.500000	36.050000	
75%	3080.750000	1987.000000	21.950000	26.600000	31.100000	49.375000	94.975000	
max	4115.000000	2015.000000	583.700000	403.500000	605.600000	595.100000	1168.600000	1

EDA AND VISUALIZATION

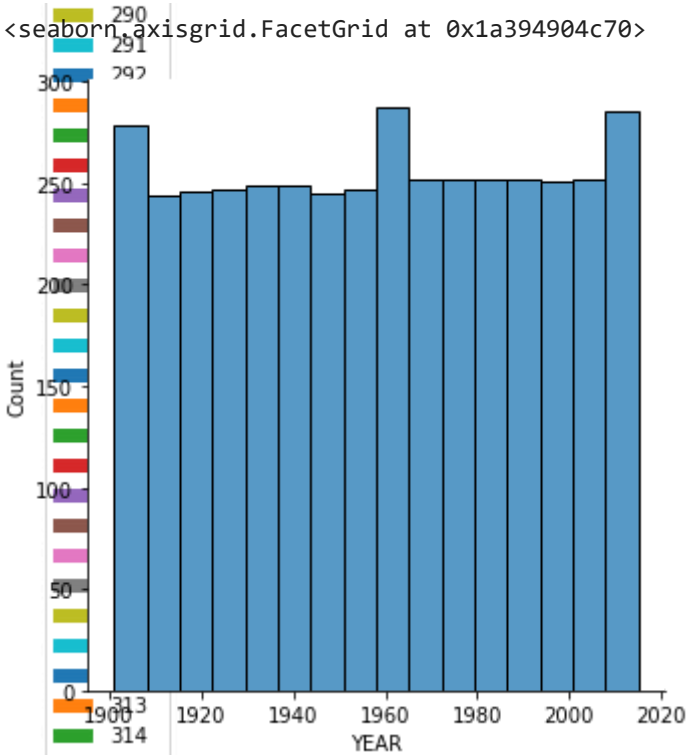
In [16]:
```
sns.pairplot(df)
```

Out[16]: <seaborn.axisgrid.PairGrid at 0x1a3b26c3ac0>



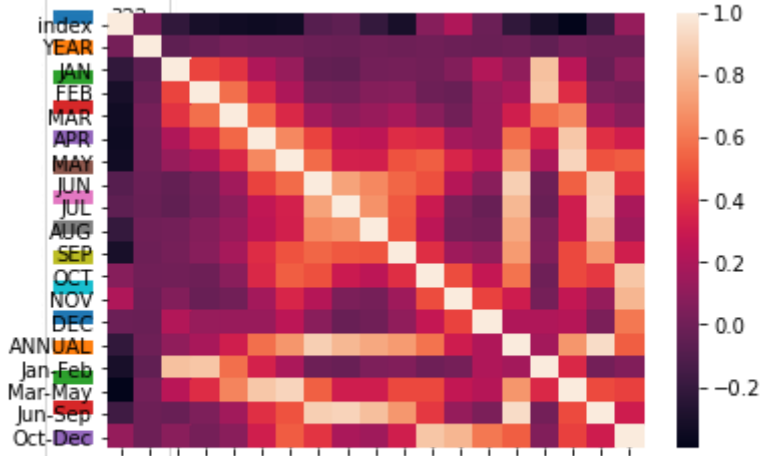
In [17]:
```
sns.displot(df['YEAR'])
```

Out[17]: <seaborn.axisgrid.FacetGrid at 0x1a394904c70>

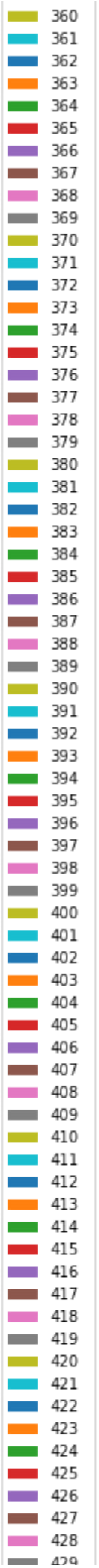


In [18]:
```
sns.heatmap(df.corr())
```

Out[18]: <AxesSubplot:>



In [ ]: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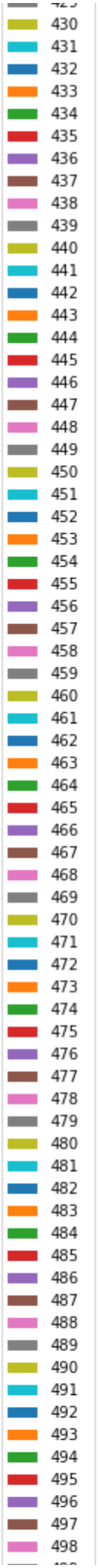
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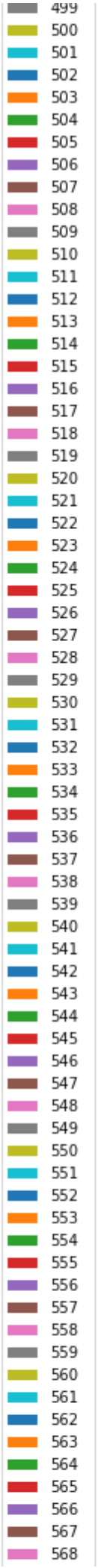
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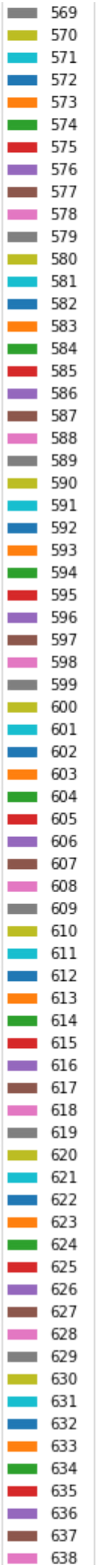
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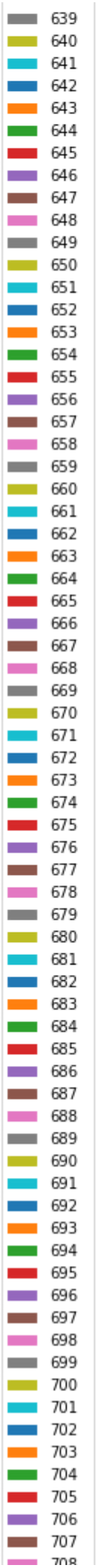
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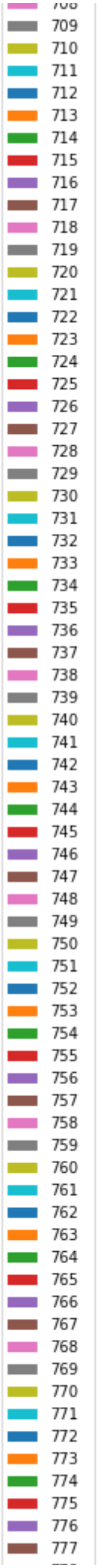
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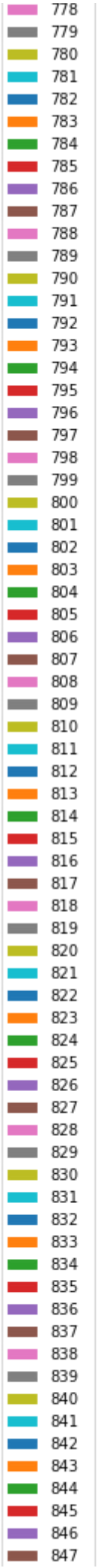
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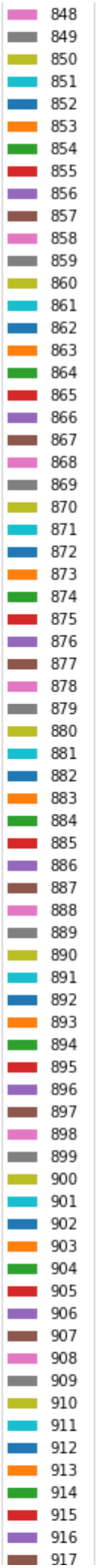
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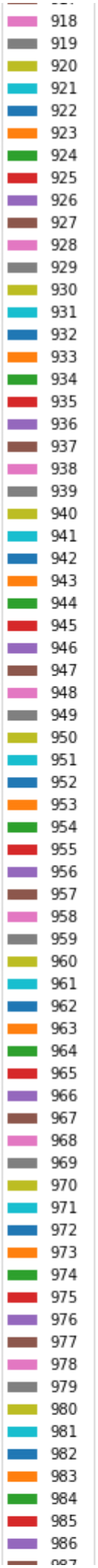
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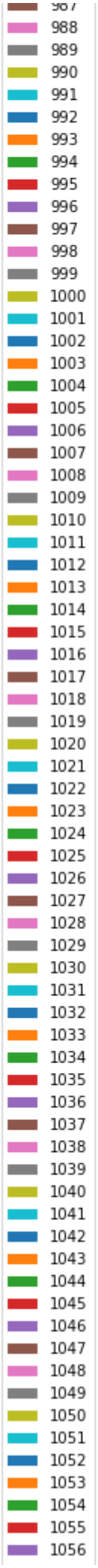
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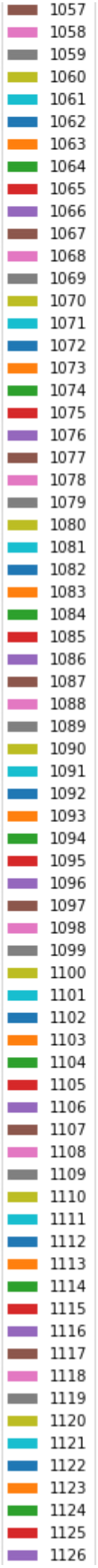
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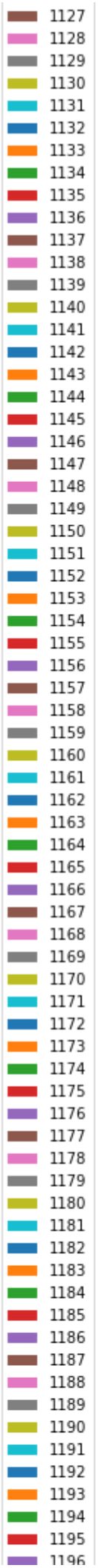
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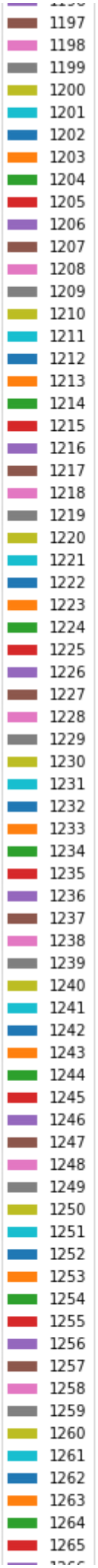
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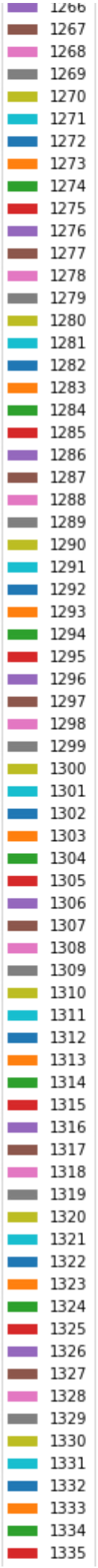
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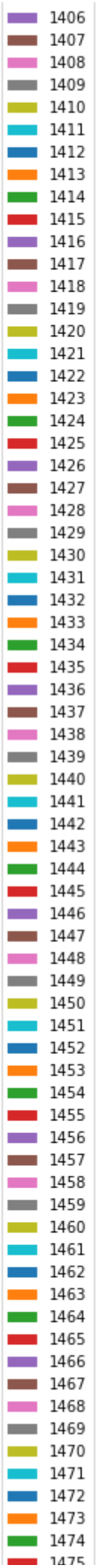
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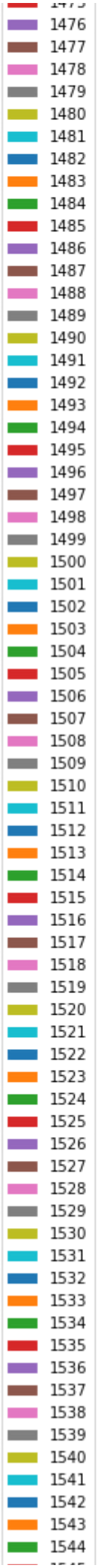
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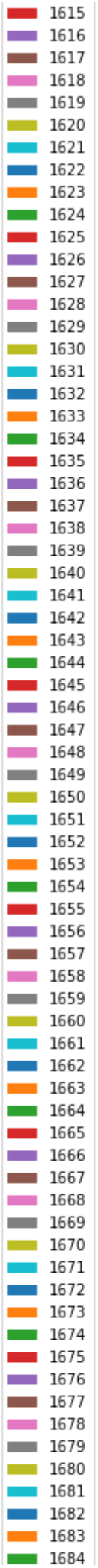
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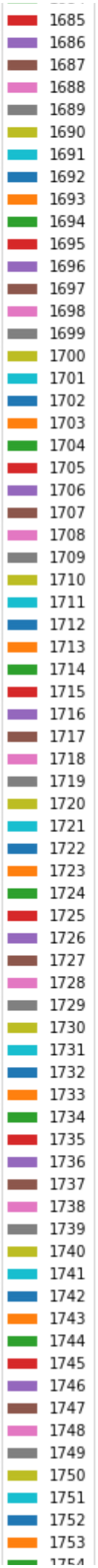
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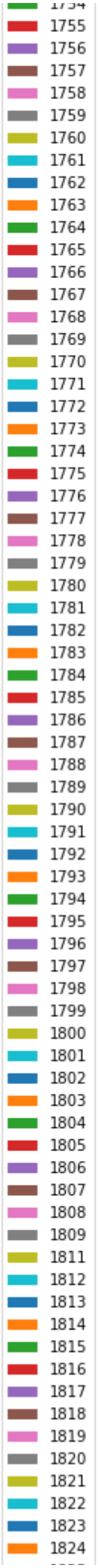
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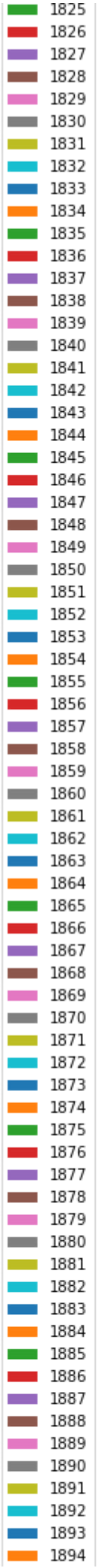
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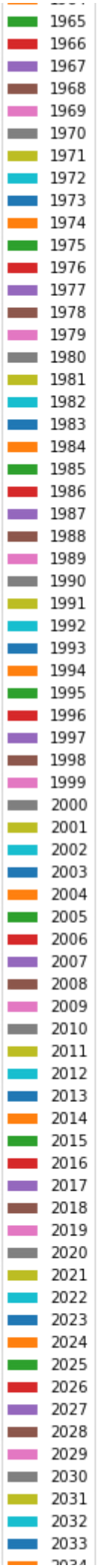
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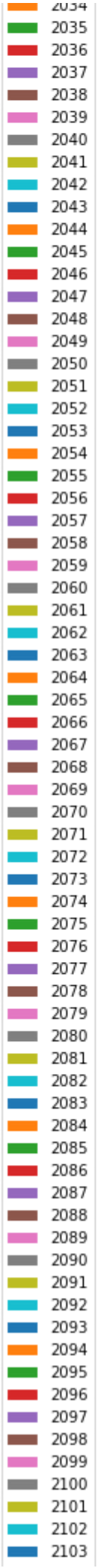
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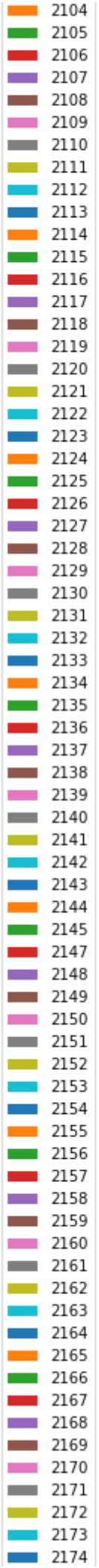
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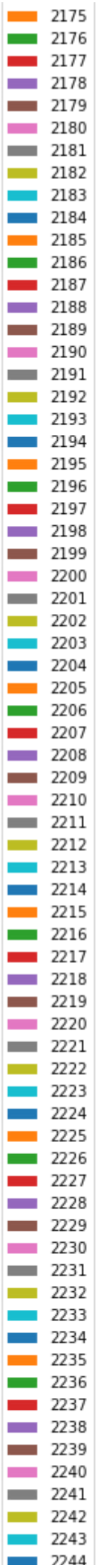
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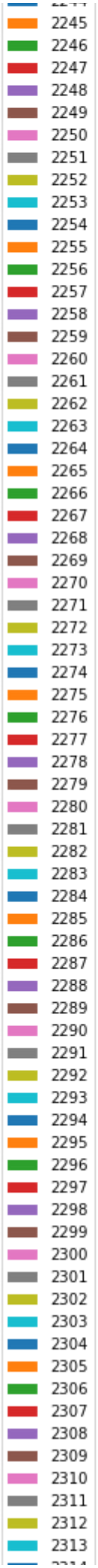
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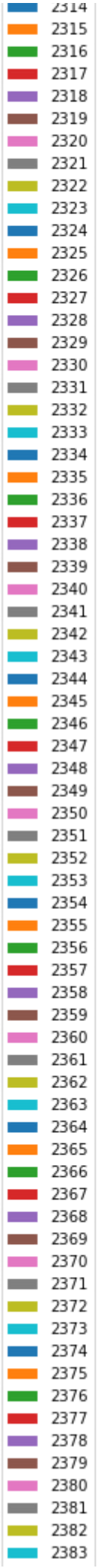
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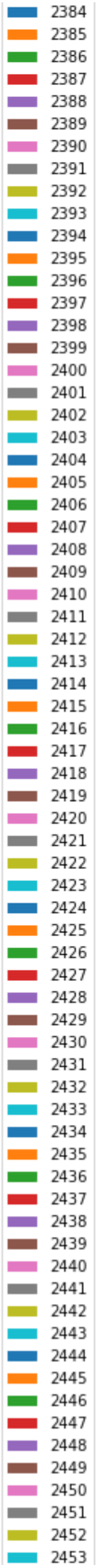
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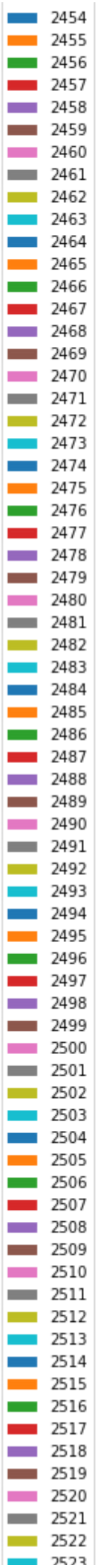
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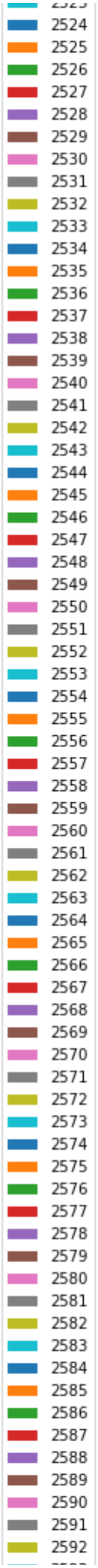
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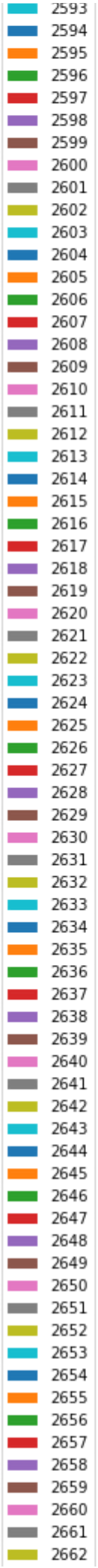
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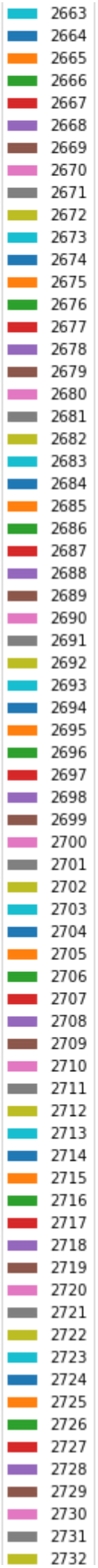
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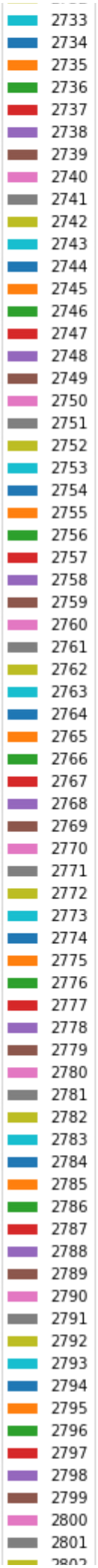
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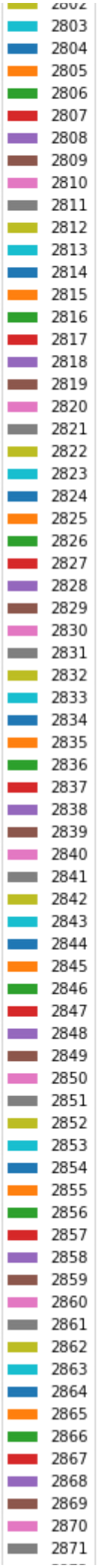
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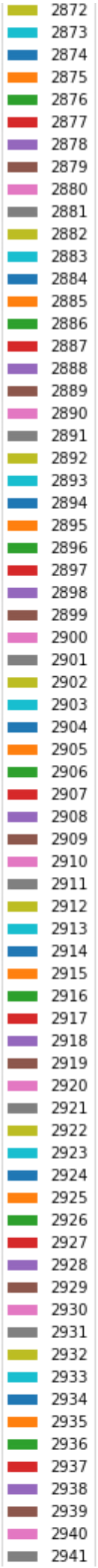
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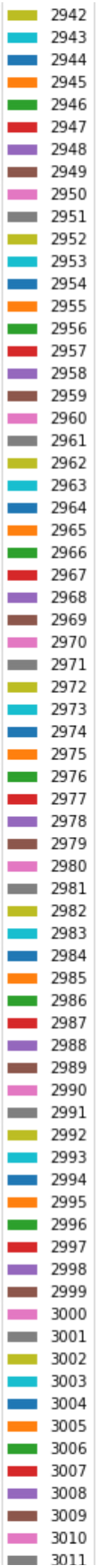
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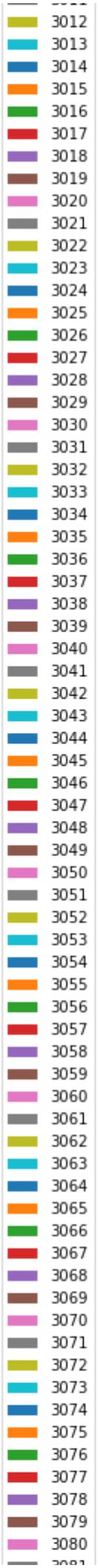
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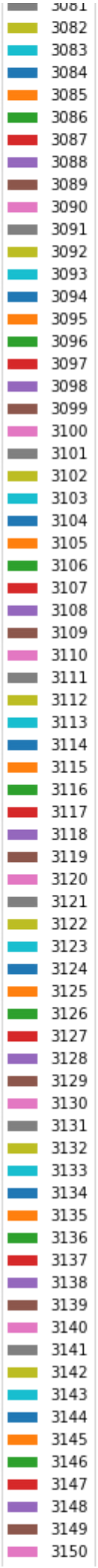
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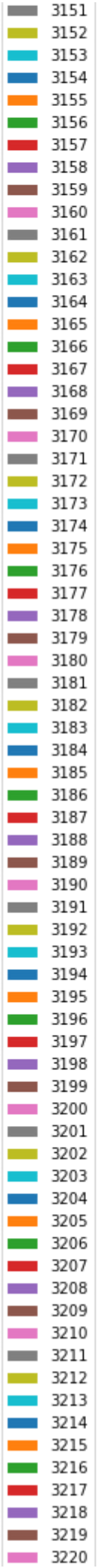
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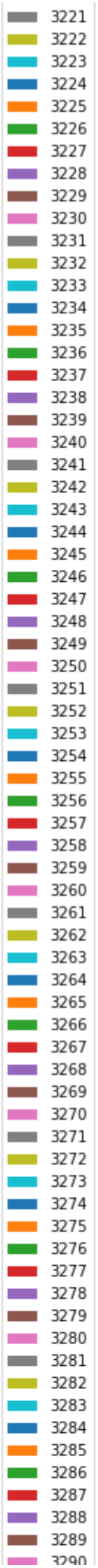
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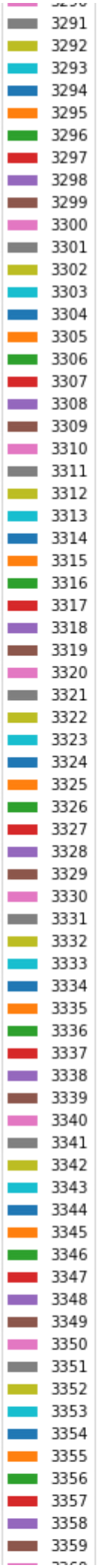
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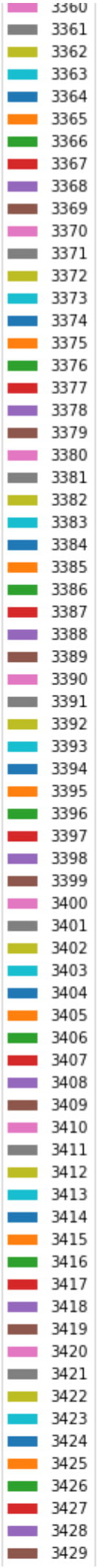
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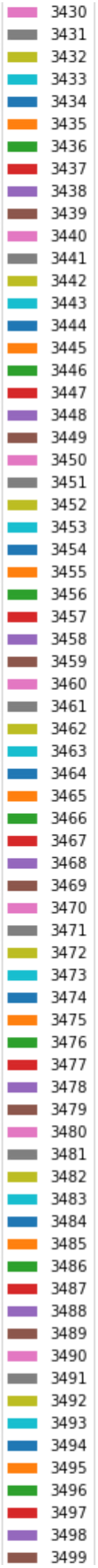
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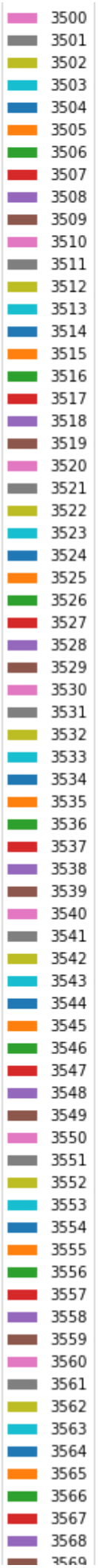
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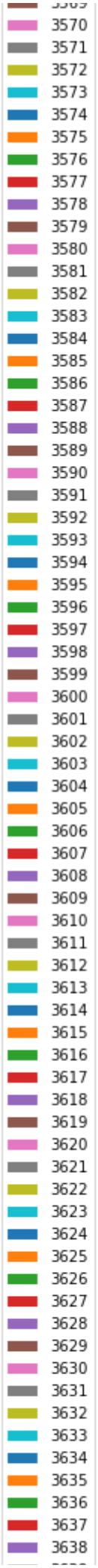
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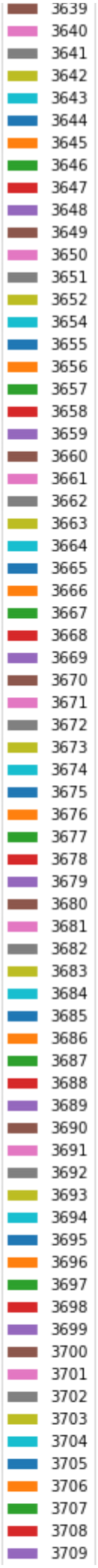
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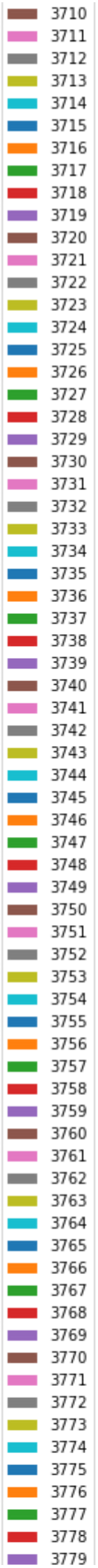
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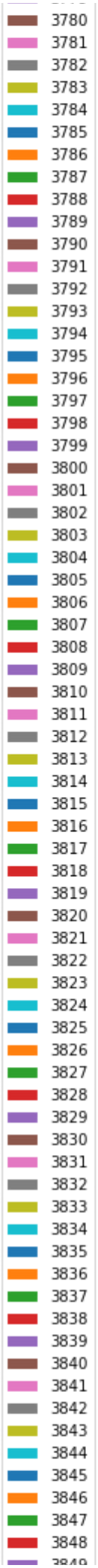
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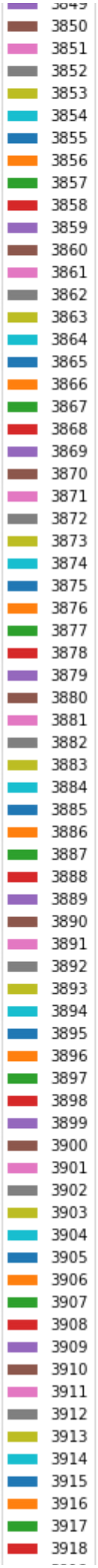
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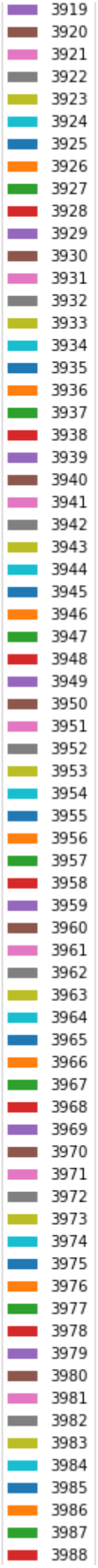
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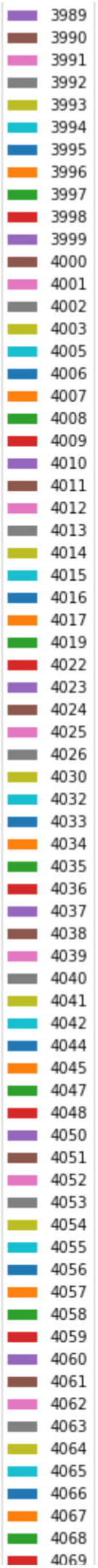
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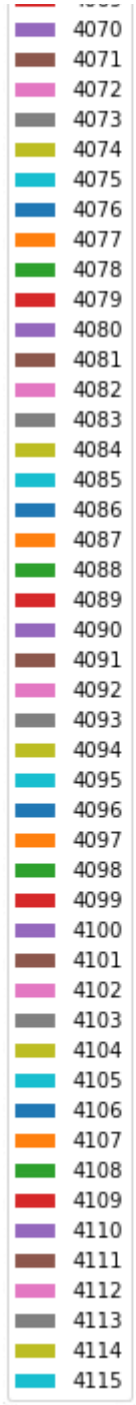
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