Course Assignment 1 - Firas Obeid

Financial Applications with Machine Learning Course:

Data visualization and exploration of a micsellaneous data set from Kaggle.com

In [75]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from matplotlib.pyplot import figure
import seaborn as sns
%matplotlib inline

data = pd.read_csv('data.csv',index_col='rating_action_date',parse_dates=True)
data.head(10)
```

Out[75]:

rating_action_date	rating_agency_name	file_creating_date	issued_paid	rating	rating_action_class
2017-11-30	Morningstar Credit Ratings, LLC.	1/17/2019	False	WO	WO
2012-09-18	Morningstar Credit Ratings, LLC.	1/17/2019	False	BBB+	DG
2010-04-05	Morningstar Credit Ratings, LLC.	1/17/2019	False	A-	HS
2015-06-24	Morningstar Credit Ratings, LLC.	1/17/2019	False	WO	WO
2010-09-01	Morningstar Credit Ratings, LLC.	1/17/2019	False	BB+	HS
2018-11-28	Morningstar Credit Ratings, LLC.	1/17/2019	False	BBB	UP
2013-09-17	Morningstar Credit Ratings, LLC.	1/17/2019	False	BBB-	DG
2012-06-29	Morningstar Credit Ratings, LLC.	1/17/2019	False	BBB	DG
2010-09-10	Morningstar Credit Ratings, LLC.	1/17/2019	False	BBB+	HS
2015-12-24	Morningstar Credit Ratings, LLC.	1/17/2019	False	WO	WO

In [76]:
```
data.describe()
```

Out[76]:

	rating_agency_name	file_creating_date	issued_paid	rating	rating_action_class	obligor_se
count	2215	2215	2215	2215	2215	
unique	1	1	1	23	7	
top	Morningstar Credit Ratings, LLC.	1/17/2019	False	WO	HS	
freq	2215	2215	2215	679	847	

In [77]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
DatetimeIndex: 2215 entries, 2017-11-30 to 2014-08-04
Data columns (total 7 columns):
rating_agency_name      2215 non-null object
file_creating_date      2215 non-null object
issued_paid             2215 non-null bool
rating                  2215 non-null object
rating_action_class     2215 non-null object
obligor_sec_category    2215 non-null object
obligor_name            2215 non-null object
dtypes: bool(1), object(6)
memory usage: 123.3+ KB
```

In [78]:
```
data.tail()
```

Out[78]:

rating_action_date	rating_agency_name	file_creating_date	issued_paid	rating	rating_action_class
2016-08-19	Morningstar Credit Ratings, LLC.	1/17/2019	False	WO	WO
2014-10-07	Morningstar Credit Ratings, LLC.	1/17/2019	False	BBB+	HS
2016-08-19	Morningstar Credit Ratings, LLC.	1/17/2019	False	WO	WO
2014-10-07	Morningstar Credit Ratings, LLC.	1/17/2019	False	BBB+	HS
2014-08-04	Morningstar Credit Ratings, LLC.	1/17/2019	False	BBB	HS

NOTES:

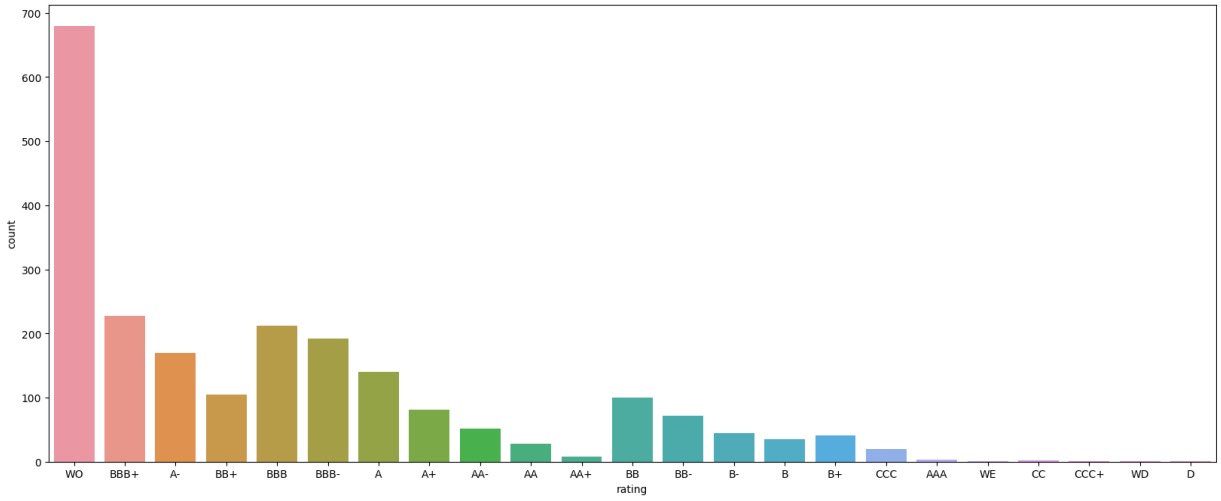
- Columns with a unique character of 1 are removed since are not necessary
- No null values to deal with
- Without understanding what the two rating columns are (field knowledge) the data exploration cant be approached correctly

In [79]:
```
data_new = data[['rating', 'rating_action_class', 'obligor_name']]
data_new.head()
```

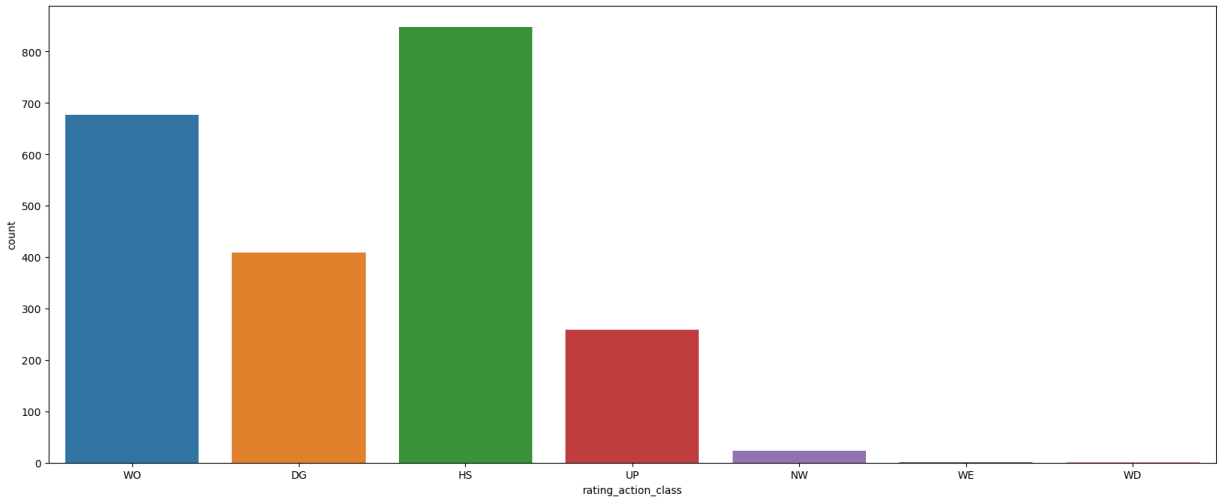
Out[79]:

rating_action_date	rating	rating_action_class	obligor_name
2017-11-30	WO	WO	Baker Hughes Inc
2012-09-18	BBB+	DG	Baker Hughes Inc
2010-04-05	A-	HS	Baker Hughes Inc
2015-06-24	WO	WO	Ball Corp
2010-09-01	BB+	HS	Ball Corp

In [80]:
```
figure(num=None, figsize=(20, 8), dpi=100, facecolor='w', edgecolor='k')
sns.countplot(x='rating',data=data);
```

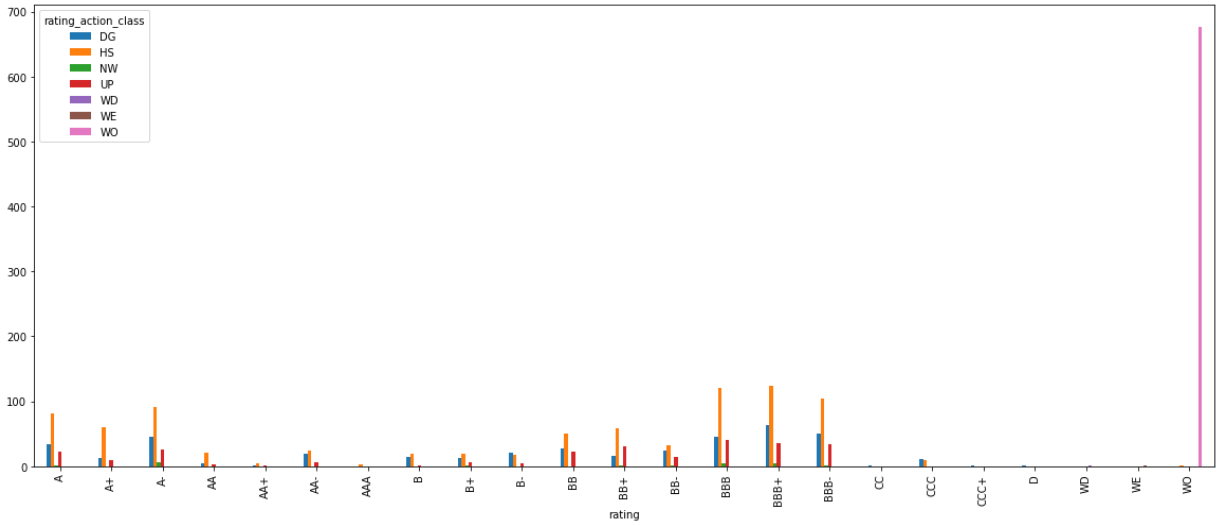


In [81]:
```
figure(num=None, figsize=(20, 8), dpi=100, facecolor='w', edgecolor='k')
sns.countplot(x='rating_action_class',data=data);
```



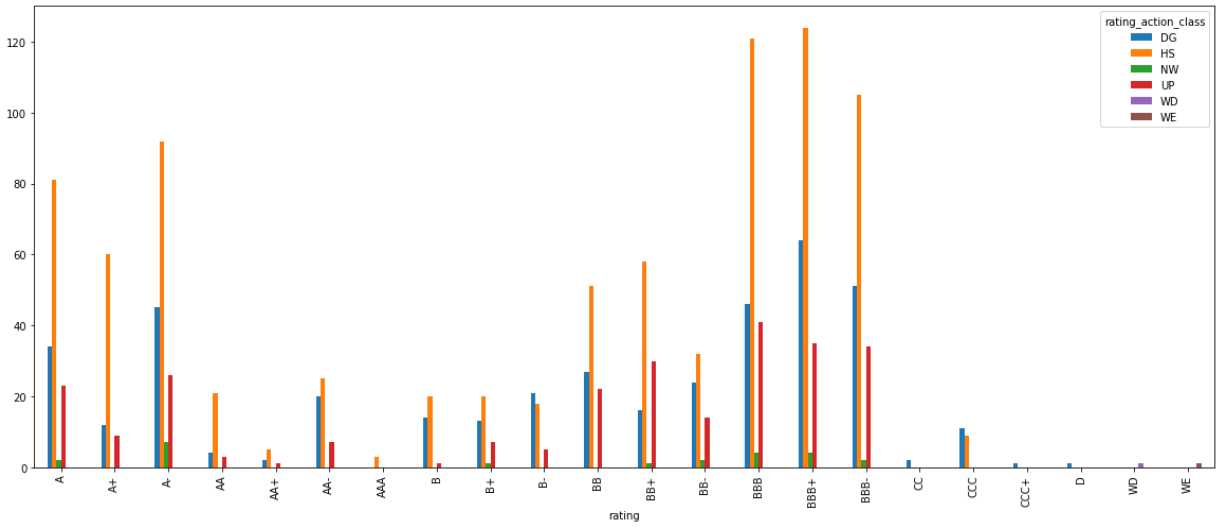
In [82]:
```
figure(num=None, figsize=(20, 8), dpi=100, facecolor='w', edgecolor='k');
df=data.groupby(['rating','rating_action_class']).size();
df=df.unstack();
df.plot(kind='bar', figsize = (20,8));
```

```
<matplotlib.figure.Figure at 0x1a082d064e0>
```



In [83]:
```
data_no_wo = data[data['rating'] != 'WO']
# WO is skewing the data thus tried to remove it to understand how other data are
# has a wo rating class but not the opposite
```

In [84]:
```
df2=data_no_wo.groupby(['rating','rating_action_class']).size()
df2=df2.unstack()
df2.plot(kind='bar', figsize = (20,8));
```



In [ ]:

In [ ]: